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**KRAKOW UNIVERSITY OF ECONOMICS**  
Department of International Trade  
Centre for Strategic and International Entrepreneurship

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# Is the euro area a prelude to the fiscal union? Introduction to the ‘fiscal confluence criteria’

Wojciech Ficek

## ABSTRACT

**Objective:** The objective of the article is to investigate the suitability of the European Union (EU) convergence criteria as an evaluative instrument in assessing its progression from the monetary union (MU) to the fiscal union (FU). The secondary aim was to propose a list of ‘fiscal confluence criteria’ as a foundation for evaluating member states’ ability to adhere to the fiscal union.

**Research Design & Methods:** A quantitative research methodology was employed, using eight indicators and three distinct methods (Euclidean distance, standardized sums, Technique for Order Preference and Similarity to Ideal Solution) to create a joint development measure, known as the core measure, for each group: CMMU and CMFU. I employed Spearman’s  $\rho$  to calculate the rank correlation between Monetary and fiscal union. The research sample comprised all 27 European Union member states (EU MS). I sourced the datasets from reputable databases, namely Eurostat, the International Monetary Fund (IMF), the World Bank (WB), and Accounting for Transparency (AFT).

**Findings:** The integrity level of the EU member states falls notably below the established thresholds. There are significant discrepancies between the countries. Consequently, the possibility of the EU attaining the next level of integration (FU) in the foreseeable future is limited.

**Implications & Recommendations:** Given the obvious limitations on the ability of EU member states to pursue further integration in the immediate future, policymakers, and business entities within the EU should prioritize maintaining the agreement in its current form (Economic and monetary union). Further research should immediately concentrate on the causes and remedies of rising Euroscepticism in EU MS.

**Contribution & Value Added:** This research offers valuable insights into the potential for further integration within the EU. Moreover, it initiates a discourse on the formulation of new criteria for the next level of integration (fiscal union).

**Article type:** research article

**Keywords:** European Union; monetary union; fiscal union; convergence criteria; fiscal confluence criteria

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## INTRODUCTION

The foundations of today’s EU were laid by Germany, France, Italy, and the Benelux countries (Taşcu-Stavre & Staicu, 2021). It came a long way through all of Balassa’s levels of integration: starting from a free trade area and later becoming a customs union and a common market. For the time being, the EU is the Economic and monetary union (Głodowska, 2017; Butorina & Borko, 2022). The next step in this economic-political integration process is the establishment of the European fiscal union, whose economic field is the subject of this article. However, the fiscal union has never been consensually agreed upon by all EU member states to be a necessity (Uramová *et al.*, 2021).



It all started with the establishment of the European Coal and Steel Community in 1951 and the European Community that came into effect on 1 January 1958 under the Treaty of Rome (Cremona, 2019). Later, seven enlargements created the European Union in today's shapes: 1973 (the UK, Ireland, Denmark), 1981 (Greece), 1986 (Portugal, Spain), 1995 (Austria, Sweden Finland), 2004 (Czechia, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia, Slovakia), 2007 (Romania, Bulgaria), and 2013 (Croatia). After Brexit in 2018, the EU consists of 27 member states (Ficek & Gawlik, 2022).

With the conclusion of the Maastricht Treaty as an act of Primary Law in 1992, the process of adopting a common currency began. It came into force in 1993. However, the history of the adoption of the euro is much more complex, including many sensitive details that should be analyzed in another theoretical article.

In 1999, eleven countries adopted the euro as their currency (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain). Regarding the Eurozone, there were eight enlargements: 2001 (Greece), 2007 (Slovenia), 2008 (Malta, Cyprus), 2009 (Slovakia), 2011 (Estonia), 2014 (Latvia), 2015 (Lithuania) (Cervelló-Royo, 2023), and the most recent one: 2023 (Croatia) (Šarić, 2023). To sum up, 20 out of 27 EU member states have participated in the monetary union so far. In this article, they will be called the 'EUR group,' as an opposite to the seven countries within the EU but outside of the euro area: the 'non-EUR group' (Poland, Romania, Czechia, Hungary, Sweden, Denmark, Bulgaria).

We may interpret the differentiation of these two groups as 'two-speed Europe' or 'multi-speed Europe' (Kundera, 2019; Califano & Gasperin, 2019). While this concept is not directly tied to the integration levels, it implies that the EU should form smaller, more homogenous groups of MS and then integrate within themselves in slightly different directions, compared with other sub-groups (Michalewska-Pawlak, 2021). However, it would certainly create a legislative disruption regarding the variety of competence structures (Cremona, 2019).

Having discussed the fiscal union (FU), the concept of 'multi-speed Europe' needs to be considered. As Kundera (2019) indicates, 'in connection with the concept of the multi-speed Europe always the question arises as to which countries are fit for the first speed of integration, and which countries remain outside this group. It can, of course, be assumed that the "first speed Europe" creates the euro area and the countries which have not adopted the euro are in "Europe of second speed."' Needless to say, the PIIGS countries did join the Eurozone, and it could be discussed whether they should be considered the 'first speed Europe.' Nonetheless, monetary integration is an important factor to move further to the next level. Therefore, participating in the Eurozone is treated as a mandatory condition to be a part of the FU (Kundera, 2019).

The objective of this article is to verify whether the EU member states are ready to create the FU, even in a lesser group than the euro area. In this article, using a quantitative approach, only the economic sphere is measured. The qualitative political nature is not addressed in this work. The research gap is the lack of propositions regarding the shapes of the FU, especially regarding the criteria that should be met to join such a Union. In this article, I called the proposed criteria the 'fiscal confluence criteria.'

I formulated three research questions:

- RQ1:** Do the European Union convergence criteria serve as an effective tool for fulfilling the 'fiscal confluence criteria'?
- RQ2:** Do European Union member states (EU MS) exhibit statistically significant economic disparities among themselves?
- RQ3:** To what extent do the envisioned confluence criteria prove that the transformation of the current monetary union into a fiscal union is an inevitable progression for the European Union?

The abovementioned research questions seek answers using a quantitative research methodology. The economic potential of further integration will be measured based on datasets from the 2015-2022 indicators of Eurostat, IMF, WB, and AFT.

The main goal of this research was to investigate whether the convergence criteria are a good benchmark for further integration within the EU and to propose a new set of 'fiscal confluence criteria' as a foundation for FU.

Firstly, I will develop hypotheses. Next, I will present a review of the literature on fiscal integration, followed by a section on methodology, a presentation, a discussion of the results of the research, and finally, conclusions.

## LITERATURE REVIEW (AND HYPOTHESES DEVELOPMENT)

### Fiscal Integration

One could ask, what does the European fiscal union (EFU) mean precisely? As Mileusnic (2021) indicated, the Union should include 'a substantial Eurozone budget, an enabled stabilization function, and an enhanced risk sharing. This final degree of the EFU would entail a significant degree of economic convergence, financial integration, further coordination, and pooling of decision making on national budgets, with adequate strengthening of democratic accountability.'

Blanchard *et al.* (2021) claim that 'there are two dimensions to the European Union's (EU) fiscal framework. The first relates to the development of a fiscal union, through increased risk sharing, common borrowing, and the size and use of the common EU budget. The second focuses on the design and application of EU-level fiscal rules to national fiscal policies.'

According to Bilbiie *et al.* (2021), this would 'mean a centralized European entity with an autonomous taxing and spending authority. This European "finance minister" could spend its resources either as block grants to individual countries or directly on specific projects or via automatic programs. Furthermore, as discussed above, this fiscal union could be an additional instrument for risk-sharing, stabilization policies, or coordinating large public investment projects. Supporters of a European finance minister also often argue that it is a precondition for a closer Political Union.' However, the unknown seems to be the tax side of fiscal integration. Would it mean a joint tax policy? Creation of dedicated taxes? Or maybe shares of tax revenues collected by the MS? Distressingly, this topic is barely specified.

We may see some EU documents as benchmarks for fiscal integrity, especially the Maastricht Treaty and the subsequent Stability and Growth Pact (SGP). 'The EU rules on public finances, as laid down in Article 126 and Protocol No. 12 of the Treaty of the Functioning of the European Union (TFEU), demand a budget deficit of less than three per cent of GDP and a public debt below 60 per cent of GDP' (Mileusnic, 2021). Through its preventive and corrective arm, the supplementary SGP supports the aforementioned thresholds (Dermine & Larch, 2023).

The frameworks were enhanced after the financial crisis, resulting in additional pacts called the 'Six-Pack,' 'Two-Pack,' and 'Fiscal Compact.' 'The first two are responsible for setting up the annual budgetary and debt targets, taxation, and public expenditure while the third one influences fiscal policy by providing independent analysis, forecasts, and advice' (Ioannou & Stracca, 2014).

'In Meseberg, France and Germany proposed establishing a Eurozone Budget within the framework of the European Union to promote competitiveness, convergence, and stabilization in the euro area' (European Council, 2018). Countries must be aware that the creation of the FU includes risk sharing both in the micro- and macroeconomic spheres. The centralized budget would certainly help deal with asynchronous macroeconomic shocks, but at the same time, a moral hazard could follow (Berger *et al.*, 2019). Therefore, centralized control is necessary (Fuest & Peichl, 2012).

Conversely, Howarth and Schild (2021) show a rather skeptical approach regarding Germany. Chancellor Merkel and her government were not supportive of a bailout program for Greece that included emergency loans. Moreover, the working process of a centralized fiscal authority can raise questions. member states would receive unconditional transfers that, in the long run, they would have to pay back (Bilbiie *et al.*, 2021). This could create another spiral of indebtedness.

Noteworthy, countries that adopted the euro, cannot simply use current inflation to inflate their debt. With that being said, EU member states should have a sound debt situation, even before joining the Eurozone (Stanek, 2019), not to mention a more advanced integration stadium, the FU.

The discussion about fiscal integration in the EU has its ups and downs. Mileusnic (2023) inspected 160 documents between 2007 and 2022. The downward and nil shifts can be seen during the 2016-2019 period mainly caused by Brexit and the sovereign debt crisis. At that time, there were also talks

about the unprecedented Eurozone leave either by Greece or the PIIGS group as a whole (Pera, 2016), the so-called eurexit.

On the contrary, 'upward shifts could be viewed as the prevalent force in the EU fiscal processes. The analysis showed that deeper fiscal integration might happen as an answer to crises as long as it does not entail reaching sophisticated versions of a fiscal union with a centralized fiscal capacity' (Mileusnic, 2023).

- Price stability (HICP): measured using the HICP index, with a reference value based on the three best-performing countries (with the lowest inflation rates). The criterion is met when a country's figure does not exceed the referenced value by more than 1.5%pt;
- Government budgetary position: measured as government deficit and debt (as % of GDP). The criterion is met when the values of deficit (DF) and debt (DB) are below 3% and 60% accordingly;
- Exchange rate (ER): participation in ERM II for at least two years, without devaluing against the euro (not used as an index in the research since, technically speaking, all 'EUR' countries meet this criterion, that is why it would disfavour the 'non-EUR' countries);
- Long-term interest rate (LTIR): measured as an average nominal long-term interest rate with a referenced value based on the three best-performing countries in terms of price stability (the same three countries as in the price stability yardstick). The criterion is met when a country's figure does not exceed the referenced value by more than 2 percentage points (European Central Bank, 2022).

Moreover, to the convergence criteria, fiscal frameworks called the 'fiscal confluence criteria' were created:

- The Financial Development Index (FDEV): it consists of sub-indices 'that summarize how developed financial institutions and financial markets are in terms of their depth, access, and efficiency' (Svi-rydzenka, 2016). The FDEV index assumes values ranging from 0 to 1. The higher the value, the greater the financial development. However, Sahay *et al.* (2015) claim that 'an FD index between 0.45 and 0.7 (with 95% likelihood) could generate the largest cumulative growth returns.' Therefore, the interval of [0.55;0.65] was used as a yardstick;
- Tax Complexity Index (TCI): 'a survey-based measure that captures the complexity of corporate income tax systems across countries and, thereby, allows users to comprehensively assess the tax complexity faced by multinational corporations' (Hoppe *et al.*, 2023). The higher the value, the more complex the tax system;
- (r-g): the differential between the interest rate on sovereign debt and the GDP growth rate. The 'r' and 'g' are either nominal or real (Blanchard *et al.*, 2021). 'If the growth rate exceeds the interest rate, the debt might be sustainable in spite of primary deficits' (Stanek, 2019);
- Trade openness (TO): the sum of exports measured together with imports as a share of GDP. 'The higher degree of trade openness reflects the greater openness of the economy to the outside world, which is beneficial for foreign trade, increases the level of exports and GDP, and boosts economic growth. Consequently, greater economic strength benefits the health of public finances and increases the responsiveness of budgetary authorities' (Afonso *et al.*, 2023).

In summary, I employed a total of eight indicators in the research, with an equal distribution of four indices of both monetary and fiscal aspects. Based on the literature review, all of them have a significant correlation with fiscal integration (Sahay *et al.*, 2015; Taghizadeh-Hesary *et al.*, 2019; Wasserfallen, 2022; Stanek, 2019; Blanchard *et al.*, 2021; Afonso *et al.*, 2023). Hence, I selected them to participate in this research endeavour.

Empirical evidence from prior literature studies was crucial to build the following main research thesis (H0):

**H0:** The prospect of the European Union's evolution into a fiscal union can be systematically evaluated through the application of 'fiscal confluence criteria', which are grounded in the European Union's convergence criteria framework.

To prove (or reject) the H0, I considered the following hypotheses:

- H1:** The European Union convergence criteria effectively contribute to meeting the fiscal confluence criteria.
  - H2:** There are statistically significant economic disparities among European Union member states.
  - H3:** The expected confluence criteria provide substantial evidence supporting the argument that the evolution of the current monetary union into a fiscal union is an inevitable progression for the EU.
- The following section discusses the research methodology and metadata used in this study.

### RESEARCH METHODOLOGY

The research design of this article is quantitative. As a sample, I used eight indicators mentioned in the previous section (Statistics Poland, 2024):

- two stimulants (DF, TO): the increased value indicates an increase in the level of the dependent variable; the higher the value, the better (also called ‘the benefit criteria’);
- three destimulants (DB, TCI, (r-g)): the increased value indicates a decrease in the level of the dependent variable; the higher the value, the worse (also called ‘the cost criteria’);
- one nominant (FDEV): a statistical characteristic that is considered desirable when its values are ‘normal’ or nominal. Any deviations from the ‘normal’ level are considered negative. In other words, values should circulate close to the reference value;
- two one-sided nominants (HICP, LTIR): in this case, they are one-sided; therefore, figures below or equal to the reference value are desirable (Ficek & Gawlik, 2022).

Initially, I used three methods to perform multi-criteria decision-making, based on the eight aforementioned indices: Euclidean distance (ED), standardized sums (SSM), and Technique for Order Preference and Similarity to Ideal Solution (TOPSIS) as an alternative method to econometric models. They order objects (countries) on the basis of their distance to the ideal solution formed on the given indicators. The Table below represents the process of creating the three measures grounded on the comprehensive empirical literature, in which:

- $i$  - EU MS,  $i = [1, 2, \dots, n_{EU}]$ ,  $n_{EU} = 27$ ;
- $j$  - number of indices,  $j = [1, 2, \dots, m]$ ,  $j_{MU} = 4$ ,  $j_{FU} = 8$ ;
- $\bar{x}_j$  - a value of the  $j$ -th index for the  $i$ -th country;
- $s_j$  - an arithmetic mean of the  $j$ -th index;
- $z_{ij}$  - a standardized value of the  $j$ -th index in the  $i$ -th country;
- $qi$  - an aggregated value of the measure in the  $i$ -th country.

**Table 1. Process of creating ED, SSM, and TOPSIS**

Step number	ED	SSM	TOPSIS
(1)	$z_{ij} = \frac{x_{ij} - \bar{x}_j}{s_j}$	$z_{ij} = \frac{x_{ij} - \bar{x}_j}{s_j}$	$z_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^n x_{ij}^2}}$
(2)	$d_i = \sqrt{\sum_{j=1}^m (z_{ij} - z_{0j}^+)^2}$	$p_P = \sum_{j=1}^m \max_i \{z_{ij}\}$ $p_A = \sum_{j=1}^m \min_i \{z_{ij}\}$	$z_{0j}^+ = \max_i \{z_{ij}\}$ $z_{0j}^- = \min_i \{z_{ij}\}$
(3)	$d_0 = \max_i \{d_i\}$	$p_i = \sum_{j=1}^m z_{ij}$	$d_{i0}^+ = \sqrt{\sum_{j=1}^m (z_{ij} - z_{0j}^+)^2}$ $d_{i0}^- = \sqrt{\sum_{j=1}^m (z_{ij} - z_{0j}^-)^2}$
(4)	$q_i = 1 - \frac{d_i}{d_0}$	$q_i = \frac{p_i - p_A}{p_P - p_A}$	$q_i = \frac{d_{i0}^-}{d_{i0}^+ + d_{i0}^-}$
Source:	Kovacova <i>et al.</i> (2019) Ficek and Gawlik (2022) Zabawa and Kozyra (2020)	Maciejewski (2017) Maciejewski and Głodowska (2020) Bąk and Szczecińska (2022)	Thakkar (2021) Bąk (2018) Dyson (2017) Kacprzak (2018)

Source: own study based on the literature.

Each of the three measures yields a value in the range,  $qi \in [0;1]$ . I calculated the arithmetic and weighted arithmetic averages of the aggregated values. Then, I transformed all figures into a ranking system from 1 to 27, to apply Spearman's  $\rho$  rank correlation. Later, I created two core measures:  $CM_{MU}$  (monetary) and  $CM_{FU}$  (monetary & fiscal). The final comparison was made between the ranks of MU and FU for 27 EU member states.

The next section clarifies the research results of this study.

## RESULTS AND DISCUSSION

Data samples come from four different databases for the years 2015-2022 (average):

- Eurostat (2023) for HICP, DF, DB, LTIR, and (r-g);
- International Monetary Fund (2023) for FDEV (2022 data extrapolated);
- World Bank (2023) for TO;
- Transparency International (2023) for TCI (2016, 2018, 2020, 2022).

**Table 2. Datasets used in the research**

2015-2022	HICP <sup>a</sup>	DF	DB	LTIR <sup>b</sup>	FDEV <sup>c</sup>	TCI	r-g	TO
<b>Austria</b>	2.55	-2.45	79.31	0.48	0.63	0.34	-3.33	106.97
<b>Belgium</b>	2.75	-3.35	104.50	0.57	0.66	0.41	-3.45	166.34
<b>Bulgaria</b>	2.61	-0.84	24.19	1.21	0.37	0.30	-7.74	125.03
<b>Croatia</b>	2.03	-1.66	77.18	2.15	0.49	0.48	-3.49	100.33
<b>Cyprus</b>	1.08	-0.80	98.94	2.30	0.51	0.35	-3.41	155.34
<b>Czechia</b>	3.66	-1.46	37.05	1.61	0.41	0.41	-5.78	146.43
<b>Denmark</b>	1.68	1.59	36.19	0.35	0.68	0.32	-4.30	108.51
<b>Estonia</b>	4.20	-1.26	12.55	0.10	0.27	0.23	-7.68	150.70
<b>Finland</b>	1.63	-1.96	69.04	0.47	0.65	0.31	-2.87	77.27
<b>France</b>	1.69	-4.48	103.29	0.57	0.81	0.40	-2.08	63.03
<b>Germany</b>	2.30	-0.46	66.08	0.17	0.70	0.37	-3.44	87.78
<b>Greece</b>	1.24	-2.85	184.48	4.55	0.51	0.41	2.30	78.87
<b>Hungary</b>	4.14	-3.90	73.33	3.49	0.44	0.36	-2.71	165.19
<b>Ireland</b>	1.46	-0.95	62.14	0.72	0.66	0.32	-12.28	230.79
<b>Italy</b>	1.70	-4.48	140.30	1.88	0.78	0.46	-0.23	60.60
<b>Latvia</b>	3.63	-2.41	39.51	0.72	0.23	0.37	-5.88	125.61
<b>Lithuania</b>	4.13	-0.90	39.90	0.53	0.21	0.30	-7.42	148.31
<b>Luxembourg</b>	2.19	0.93	22.43	0.32	0.73	0.29	-4.99	366.43
<b>Malta</b>	1.78	-2.09	50.76	1.14	0.53	0.31	-7.67	313.46
<b>Netherlands</b>	2.68	-0.43	55.31	0.34	0.73	0.34	-4.28	156.87
<b>Poland</b>	3.26	-2.48	51.39	3.03	0.45	0.43	-3.28	104.11
<b>Portugal</b>	1.64	-2.33	125.15	1.77	0.68	0.39	-2.48	85.27
<b>Romania</b>	3.25	-4.39	40.46	4.37	0.28	0.43	-4.11	85.57
<b>Slovakia</b>	2.85	-2.68	53.98	0.68	0.29	0.40	-3.99	185.34
<b>Slovenia</b>	1.90	-2.36	74.38	0.88	0.35	0.40	-5.00	157.06
<b>Spain</b>	1.83	-5.03	107.29	1.21	0.85	0.38	-2.14	67.41
<b>Sweden</b>	2.36	0.20	38.78	0.55	0.79	0.33	-2.64	88.20
<b>Variables</b>	<b>N</b>	<b>S</b>	<b>D</b>	<b>N</b>	<b>N</b>	<b>D</b>	<b>D</b>	<b>S</b>

Note: <sup>a</sup> referenced value measured as an average of Cyprus, Greece, and Ireland and equals 1.26;

<sup>b</sup> referenced value measured as an average of Cyprus, Greece, and Ireland and equals 2.52;

<sup>c</sup> the referenced value is either 0.55 or 0.65 for values outside the range of [0.55;0.65].

*variables* – statistical features (stimulants – S; destimulants – D or nominats – N)

Source: own study using the databases.

To apply the measures, there is a need to transform all indices to stimulants. The destimulants are simply multiplied by -1 (Maciejewski, 2017). Concerning the nominants, it must be done as follows:

$$z^*_{ij} = \begin{cases} 1 & \text{if } z_{ij} = N_j \\ \frac{-1}{z_{ij}-N_j-1} & \text{if } z_{ij} < N_j \\ \frac{1}{z_{ij}-N_j+1} & \text{if } z_{ij} > N_j \end{cases} \quad (5)$$

in which:

$z^*_{ij}$  - the standard deviation for EU MS;

$N_j$  - specific value in a data set.

With respect to one-sided nominants, the formula is the same, but takes [1] if  $z_{ij} < N_j$ .

Therefore, the data from Table 2 were converted to the stimulants (Table 3).

**Table 3. Datasets after conversion to stimulants**

2015-2022	HICP	DF	DB	LTIR	FDEV	TCI	r-g	TO
<b>Austria</b>	0.44	-2.45	-79.31	1.00	1.00	-0.34	3.33	106.97
<b>Belgium</b>	0.40	-3.35	-104.50	1.00	0.99	-0.41	3.45	166.34
<b>Bulgaria</b>	0.42	-0.84	-24.19	1.00	0.85	-0.30	7.74	125.03
<b>Croatia</b>	0.57	-1.66	-77.18	1.00	0.94	-0.48	3.49	100.33
<b>Cyprus</b>	1.00	-0.80	-98.94	1.00	0.96	-0.35	3.41	155.34
<b>Czechia</b>	0.29	-1.46	-37.05	1.00	0.88	-0.41	5.78	146.43
<b>Denmark</b>	0.71	1.59	-36.19	1.00	0.97	-0.32	4.30	108.51
<b>Estonia</b>	0.25	-1.26	-12.55	1.00	0.78	-0.23	7.68	150.70
<b>Finland</b>	0.73	-1.96	-69.04	1.00	1.00	-0.31	2.87	77.27
<b>France</b>	0.70	-4.48	-103.29	1.00	0.86	-0.40	2.08	63.03
<b>Germany</b>	0.49	-0.46	-66.08	1.00	0.95	-0.37	3.44	87.78
<b>Greece</b>	1.00	-2.85	-184.48	0.33	0.96	-0.41	-2.30	78.87
<b>Hungary</b>	0.26	-3.90	-73.33	0.51	0.90	-0.36	2.71	165.19
<b>Ireland</b>	0.83	-0.95	-62.14	1.00	0.99	-0.32	12.28	230.79
<b>Italy</b>	0.69	-4.48	-140.30	1.00	0.89	-0.46	0.23	60.60
<b>Latvia</b>	0.30	-2.41	-39.51	1.00	0.76	-0.37	5.88	125.61
<b>Lithuania</b>	0.26	-0.90	-39.90	1.00	0.75	-0.30	7.42	148.31
<b>Luxembourg</b>	0.52	0.93	-22.43	1.00	0.93	-0.29	4.99	366.43
<b>Malta</b>	0.66	-2.09	-50.76	1.00	0.98	-0.31	7.67	313.46
<b>Netherlands</b>	0.41	-0.43	-55.31	1.00	0.93	-0.34	4.28	156.87
<b>Poland</b>	0.33	-2.48	-51.39	0.67	0.91	-0.43	3.28	104.11
<b>Portugal</b>	0.73	-2.33	-125.15	1.00	0.97	-0.39	2.48	85.27
<b>Romania</b>	0.33	-4.39	-40.46	0.35	0.79	-0.43	4.11	85.57
<b>Slovakia</b>	0.39	-2.68	-53.98	1.00	0.79	-0.40	3.99	185.34
<b>Slovenia</b>	0.61	-2.36	-74.38	1.00	0.84	-0.40	5.00	157.06
<b>Spain</b>	0.64	-5.03	-107.29	1.00	0.83	-0.38	2.14	67.41
<b>Sweden</b>	0.48	0.20	-38.78	1.00	0.88	-0.33	2.64	88.20
<b>Variables</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>

Source: own study using Microsoft Excel (2023).

The following table corresponds to the  $qi$  values for ED, SSM, and TOPSIS, respectively, for both MU and FU. It also contains the arithmetic (AVG) and weighted arithmetic (WAVG) means, and the ranking measure based on the WAVG.

Table 4. ED, SSM, and TOPSIS data with ranking

ISO 2	monetary union						fiscal union					
	ED	SSM	TOPSIS	AVG	WAVG	RANK	ED	SSM	TOPSIS	AVG	WAVG	RANK
AT	0.35	0.55	0.47	0.46	0.46	18	0.31	0.52	0.41	0.41	0.41	17
BE	0.23	0.47	0.36	0.35	0.36	22	0.26	0.46	0.37	0.37	0.37	19
BG	0.50	0.71	0.66	0.62	0.63	6	0.44	0.61	0.60	0.55	0.56	5
HR	0.47	0.63	0.55	0.55	0.55	13	0.23	0.45	0.44	0.37	0.39	18
CY	0.57	0.76	0.63	0.65	0.65	5	0.42	0.61	0.51	0.52	0.51	8
CZ	0.38	0.62	0.58	0.53	0.54	14	0.32	0.51	0.53	0.45	0.47	11
DK	0.76	0.87	0.85	0.83	0.83	1	0.47	0.68	0.60	0.58	0.59	4
EE	0.37	0.66	0.61	0.55	0.56	11	0.39	0.61	0.59	0.53	0.55	6
FI	0.53	0.68	0.57	0.60	0.59	10	0.36	0.58	0.44	0.46	0.46	13
FR	0.26	0.51	0.36	0.38	0.37	21	0.17	0.38	0.31	0.29	0.29	23
DE	0.51	0.67	0.64	0.61	0.62	7	0.33	0.53	0.49	0.45	0.46	12
GR	0.00	0.31	0.35	0.22	0.25	27	0.00	0.28	0.26	0.18	0.20	27
HU	0.09	0.29	0.36	0.24	0.27	26	0.20	0.36	0.35	0.31	0.32	22
IE	0.65	0.76	0.68	0.70	0.69	3	0.66	0.78	0.73	0.72	0.72	1
IT	0.17	0.45	0.29	0.30	0.30	24	0.06	0.31	0.23	0.20	0.21	26
LV	0.33	0.58	0.52	0.48	0.49	16	0.27	0.46	0.49	0.41	0.43	15
LT	0.38	0.63	0.61	0.54	0.55	12	0.35	0.54	0.58	0.49	0.51	9
LU	0.63	0.81	0.78	0.74	0.75	2	0.61	0.77	0.70	0.69	0.70	2
MT	0.53	0.69	0.58	0.60	0.59	9	0.61	0.73	0.64	0.66	0.66	3
NL	0.48	0.67	0.65	0.60	0.61	8	0.41	0.58	0.54	0.51	0.52	7
PL	0.28	0.46	0.49	0.41	0.43	20	0.21	0.39	0.41	0.34	0.36	21
PT	0.36	0.57	0.44	0.46	0.45	19	0.25	0.47	0.36	0.36	0.36	20
RO	0.05	0.30	0.40	0.25	0.29	25	0.08	0.27	0.38	0.24	0.28	24
SK	0.35	0.57	0.50	0.47	0.48	17	0.29	0.46	0.46	0.40	0.42	16
SI	0.45	0.62	0.52	0.53	0.52	15	0.34	0.50	0.48	0.44	0.45	14
ES	0.19	0.47	0.32	0.33	0.32	23	0.15	0.36	0.29	0.27	0.27	25
SE	0.57	0.74	0.72	0.68	0.69	4	0.34	0.55	0.52	0.47	0.48	10

Source: own study using Microsoft Excel (2023).

Comparison of standard deviations of the WAVGs (25% ED, 25% SSM, 50% TOPSIS) between the two groups (MU vs. FU) shows that the discrepancies were lower in the FU:

- $CM_{MU} = 0.153$ ;
- $CM_{FU} = 0.137$ .

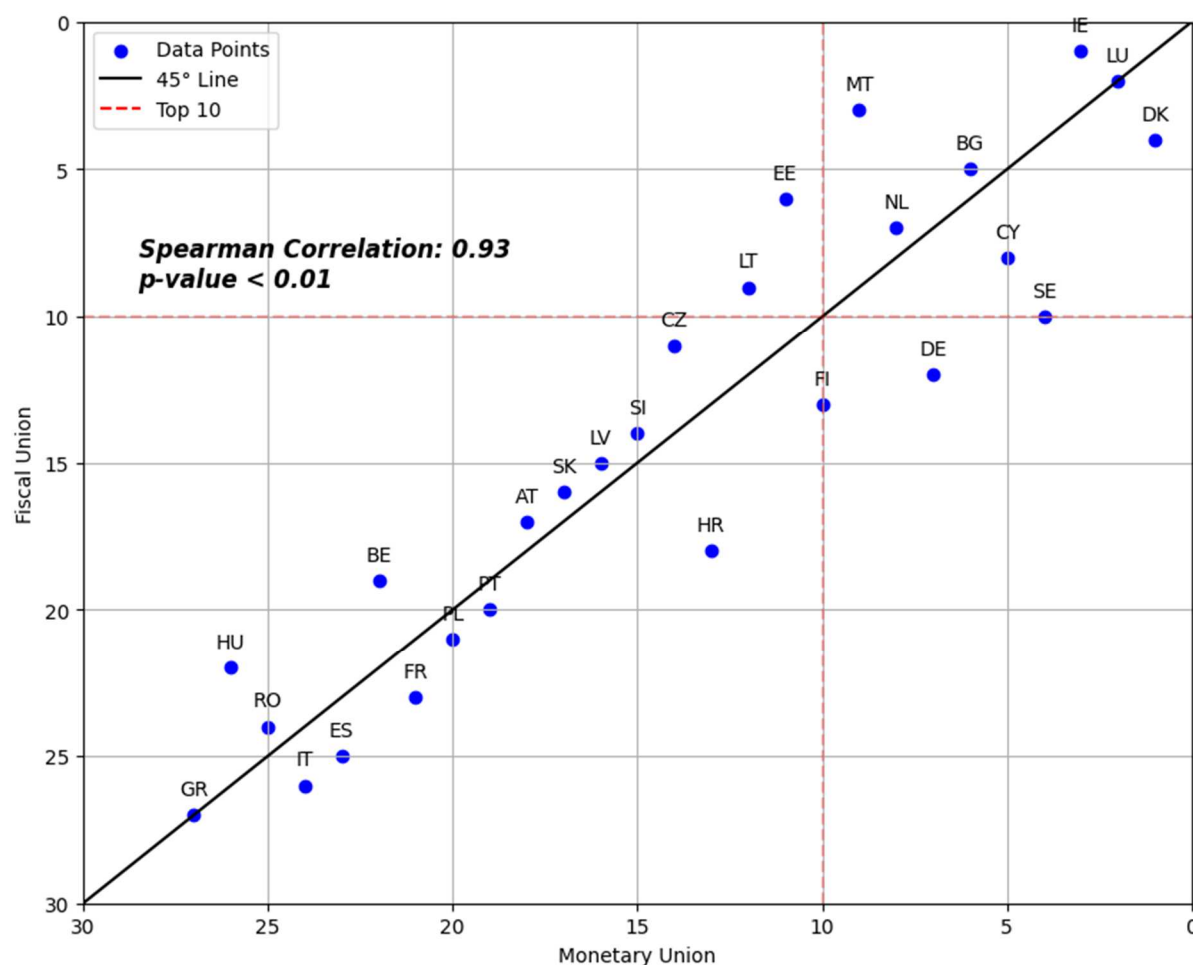
I used Spearman's  $\rho$  based on the ranks in Table 4 to determine if MU was a good benchmark for FU. The correlation between monetary and fiscal integration is shown below.

As presented in Figure 1., the set of fiscal indices is correlated with the monetary indices. Spearman's  $\rho$  is equal to 0.93 and shows a significant correlation ( $p$ -value < 0.01). Therefore, H1 can be confirmed.

Although discrepancies between  $CM_{FU}$  and  $CM_{MU}$  are not significant, EU member states differ from one another. Thus, H2 is denied.

It is also established that MU is a good benchmark for FU, but it is not a sufficient condition. On the top right (the red square), nine countries achieved the top 10 in both monetary and fiscal integration. Six of them are from the 'EUR group.'

On the other hand, there are also 3 out of 7 'non-EUR' countries inside that square. Therefore, H3 can be confirmed conditionally.



**Figure 1. Monetary vs. fiscal integration**

Source: own elaboration using Python (2023).

The objective of this article was to substantiate that sound convergence criteria can contribute to transformation into a fiscal union. With the applied methods, based on various databases, we can draw the following conclusions:

- Ireland is an undisputed European leader in fiscal integration. This country significantly reduced its debt after the financial crisis to 62% of GDP, with an (r-g) ratio of -12.3%. This is another proof that this country left the inglorious PIIGS group a long time ago;
- Three countries seem ready to adopt the euro: Denmark (monetary leader), Sweden, and Bulgaria. Even though Denmark has an opt-out clause (Butler, 2020), it could consider joining the euro area soon;
- There are two visible bookend outliers: Luxembourg and Greece (both lie on the 45° line). Luxembourg gained such a position thanks to good results in almost every index, especially with a government surplus, 22% debt (% of GDP), and TO equal to 366% of GDP. Greece, the opposite, with a government debt of 184%, and the only positive (r-g) ratio, could not catch up with other countries;
- PIGS countries, or rather 'GISP' based on the findings in this article, still fell behind after the financial crisis with a visible deficit and debt exceeding 100% of GDP each;
- Interesting are findings for France and Belgium. Both countries received lower ranks than one could expect. This is caused mainly by the complexity of tax systems and the high value of deficit: -3.4% for BE and -4.5% for FR. Their debt values are over 100% of GDP, similar to 'GISP' countries. Nevertheless, the (r-g) ratio for these countries is negative;
- Croatia, a new member of the 'EUR group', seems to be better monetary integrated than fiscally. It is mainly caused by tax complexity and indifferent financial development;



- Sweden appears to be highly developed regarding MU because of the general government surplus, accurate debt, and low value of the long-term nominal rate. Conversely, the fiscal side is less integrated mainly because of the low value of TO (88% of GDP) and over-developed financial institutions and market (0.79);
- Malta achieved sound results in both integration spheres. Transparency of their tax system, (r-g) equal to -7.7% and TO over 300% of GDP let Malta take the 3rd place regarding fiscal integrity.

Based on the findings and the literature review, H1 was confirmed to be contrary to H2. H3 was confirmed conditionally. Therefore, the MRT, which states that the European Union will become the FU with the use of the 'fiscal confluence criteria,' is denied.

Nevertheless, it needs to be highlighted that the Eurozone is itself a non-optimal currency area (Costa, 2021; Scharpf, 2014). That is why a buffer should be used to adjust the findings to the actual condition of the area.

Future research should concentrate on the following:

- The future of Denmark, Sweden, and Bulgaria in the Eurozone;
- Verifying whether the Eurozone countries meet the convergence criteria;
- Concentrate on the European business cycle (Beck & Okhrimenko, 2023);
- Debt sustainability in Belgium and France;
- The current 'GISP' situation, mainly regarding debt sustainability;
- Examination of the integration process within the Visegrád Group (V4) and its impact on the EU (with Slovakia being the only V4 country using the euro);
- The dynamics and historical context of the European unification process;
- The dynamics of supranational and national political decisions, including necessary conditionality, and idea development;
- Euroscepticism regarding the integration process;
- Recalculating this research using alternative sets of indicators (e.g. corruption, CAR, legal rights index).

## CONCLUSIONS

This article adds value to the Science of Finance and Economics, and especially to the European integration process. It starts the discussion in what direction fiscal integration should go and what indicators, other than the 'fiscal confluence criteria' ought to be considered.

The limitations of this study can also be found. Firstly, the selection of used indices. All of them were thoroughly analyzed based either on the literature review or other empirical studies. Even though, a better set of indicators surely can be found. Secondly, outliers such as Luxembourg and Greece are responsible for major discrepancies between EU member states. It is worth investigating whether H2 could be confirmed without these countries. Third, the government debt index could alternatively be measured as a nominant, which would change the findings. However, the reference value for indebtedness is difficult to establish. Thirdly, I did not directly address the political nature of the European integration process in this study. The quantitative indicators utilized in this article measured only economic aspects of integration.

The findings have some crucial implications and recommendations for policymakers. The convergence criteria are important although not sufficient, for transformation into the fiscal union. New criteria, such as the 'fiscal confluence criteria' should be added, either to the FU or to the enhanced MU, which would become an optimum currency area and be beneficial for all participants. Nonetheless, it would be extremely difficult to achieve. The divergence between the 'EUR' countries is significant, and even the convergence criteria are not meant for the countries already in the Eurozone. Therefore, the euro area will never become an optimum currency area without solid reforms and strict joining restrictions.

Business entities shall recognize the benefits that would result from establishing the FU. For countries with complex tax systems, this would be a chance to introduce a European-level fiscal law that could be more transparent than national ones. There is always the other side of the coin. Countries with clear tax laws such as Estonia, Luxembourg, Bulgaria, or Malta could negotiate their opt-out from

the tax rules. It is necessary to find a common solution that all countries would accept. Otherwise, the functionality of the fiscal union would be based on a 'multi-speed' Europe.

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# Eco-innovation performance in the European Union economies: Perspective on outcomes

Agnieszka Hajdukiewicz, Bożena Pera

## ABSTRACT

**Objective:** The objective of this article was to examine the eco-innovation performance of the European Union's economies in terms of eco-innovation outcomes with a particular focus on resource efficiency and socio-economic outcomes.

**Research Design & Methods:** We used quantitative research methods, such as descriptive statistics, Euclidean distance, and Pearson's correlation index. We based the comparative analysis of the eco-innovation indices related to outputs and outcomes on the Eco-innovation Scoreboard. We conducted it for the years 2013-2022.

**Findings:** The research results showed that EU countries considered as one group improved their eco-innovation performance as measured by the Eco-innovation Index (EII), as well as in terms of the EII composite indices related to innovation outcomes during the study period. We also observed improvement in the EII and the EII thematic areas observed for both the eco-innovation leaders and catching-up economies. However, the leading countries maintained and even slightly increased the distance to the EU-27 average in terms of the total EII index, while significantly increasing the distance in terms of socio-economic outcomes and eco-innovation outputs. Moreover, the rates of growth of eco-innovation outputs and outcomes were much higher for these countries than the growth rate of their eco-innovation inputs.

**Implications & Recommendations:** The study highlights the importance of the effective conversion of the eco-innovation inputs into eco-innovation outputs and outcomes, which is a big challenge, especially for the economies with poorer eco-innovation performance. The increase in eco-innovation inputs alone does not translate directly into an increase in eco-innovation outcomes in all conditions. Creating appropriate conditions for the development of eco-innovation requires a coordinated political approach, especially between innovation, research and environmental policy.

**Contribution & Value Added:** The study contributes to a better understanding of eco-innovation for better policymaking. In particular, it can give a comprehensive picture of eco-innovation outcomes in the European Union as one of the key components of eco-innovation performance. The article also addresses the vital issue of the relationship between eco-innovation inputs and eco-innovation outputs and outcomes.

**Article type:** research article

**Keywords:** eco-innovation; eco-innovation index; eco-innovation outputs; resource efficiency outcomes; socio-economic outcomes; the European Union; leading economies

**JEL codes:** O30, O01, P47

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## INTRODUCTION

The article explores the problem of the development of eco-innovation of the EU Member States (EU MSs) with the main focus on the resource efficiency and socio-economic outcomes of their eco-innovation activities. Innovation in general and its specific type of eco-innovation are important factors in achieving sustainable development goals, with their role being particularly crucial in recent years,

when the global economy has been shaken by multiple crises. Eco-innovation can contribute to creating smart, sustainable, and inclusive post-crisis growth while addressing Europe's major societal challenges. For the EU companies, it can also be a path to capitalizing on emerging business opportunities and strengthening competitiveness. Although many companies limit investments in innovation in times of crisis or uncertainty (Wang *et al.*, 2021), resource efficiency and maximizing eco-innovation outputs and outcomes have been issues of growing importance and interest among scientists and policy-makers in the area of innovation policy and sustainable development (Wei *et al.*, 2022; Zulkiffli *et al.*, 2022). Innovation can support economic recovery from the COVID-19 pandemic and the crisis caused by Russia's invasion of Ukraine, deepened by the conflict in the Middle East.

Researching this problem implies an accurate measurement of eco-innovation. It is a complex category and measuring its performance requires considering the multiple dimensions included in the methodology of the eco-innovation index (EII).

Considering various aspects of eco-innovation outputs and outcomes in the context of existing global challenges, we formulated the following research questions:

- RQ1:** What is the latest eco-innovation performance in terms of resource efficiency and socio-economic outcomes in the EU-27 as a group of countries compared to the economies of Eco-innovation leaders in the EU?
- RQ2:** Is the distance between EU countries regarding the eco-innovation outcomes decreasing or increasing?
- RQ3:** What is the effectiveness of transforming eco-innovation inputs into outputs and outcomes in the countries that are leaders in eco-innovation in the EU compared to other EU countries?

Following the research questions, we aimed to examine the eco-innovation performance of the European Union's economies in recent years, with a particular emphasis on resource efficiency outcomes (REO) and socio-economic outcomes (SEO). In their efforts to improve their eco-innovation performance, EU countries are trying to effectively convert eco-innovation inputs into outputs and, subsequently, improve their resource efficiency understood as a country's efficiency of resources and GHG emission intensity, and socio-economics outcomes, which refer to the positive societal as well as economic outcomes of eco-innovation. To some extent, we also included eco-innovation outputs (EIO) in the study, which refer to the number of patents and academic publications. We can consider them direct, tangible results of eco-innovation. However, we think that eco-innovation outcomes deserve special attention because in today's turbulent environment, achieving sustainable development goals through innovation requires much more than just delivering innovation outputs, and consequential economic effects and changes that occur in society as a result of eco-innovation are needed (Hajdukiewicz & Pera, 2013).

As in the case of inputs, which were the subject of our previous research, and also in the case of outputs and outcomes, an innovation gap persists between innovation leaders and the other EU MS, including the group of catching-up countries. Considering that eco-innovations are important tools for ensuring economic growth and achieving sustainable development goals, this concept is crucial to businesses and policymakers and the results of the study may provide important guidance in the area of eco-innovation policy.

The article consists of substantive parts. The first section will contain the literature review of previous studies focusing on the nature, impact, and factors driving eco-innovation, and government policy encompassing the efficient conversion of eco-innovation inputs into outputs and outcomes. The second section will present research methods and assumptions of the study. The third part will contain the results of our investigation and discussion. The last part of the study will comprise the main conclusions and research limitations and outline further research directions.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

An eco-innovation is any form of innovation that results in or leads to 'significant and demonstrable progress towards the goal of sustainable development through reducing impacts on the environment,

enhancing resilience to environmental pressures, or achieving a more efficient and responsible use of natural resources, including energy' (European Commission, 2011).

In creating a sustainable economy, eco-innovation plays a key role in reducing the negative environmental impacts of economic growth (Dogaru, 2020). We may treat eco-innovation as a category of innovation that resides in both innovation and environmental policy and thus links innovation and sustainability (Doran & Ryan, 2012; Horbach *et al.*, 2012). Simultaneously, eco-innovation allows companies to generate revenue by solving environmental problems.

James proposed one of the first definitions of eco-innovation (1997). He views it as 'new products and processes that provide customer and business value but significantly decrease environmental impacts.' Other scholars understand eco-innovation more comprehensively as deliberate entrepreneurial behaviour which involves designing a product and managing it in an integrated manner throughout its life cycle (Kemp & Pearson, 2007). This contributes to the ecological modernisation of contemporary societies by considering environmental concerns in the development of products and related processes. Environmental innovation leads to integrated solutions that aim to reduce resource and energy inputs while improving the quality of a product or service. Meanwhile, Carrillo-Hermosilla *et al.* (2010) view eco-innovation as an innovation dealing with green returns on the market. The importance of eco-innovation is crucial for the economy's growth and in transforming societies towards sustainable development (Jo *et al.*, 2015; Arranz *et al.*, 2020; Carchano *et al.*, 2023). Eco-innovation should not be limited to environmentally motivated innovations. It needs also to encompass products, processes, and organizational innovations with environmental benefits. The eco-innovation can be oriented, *e.g.*, on resource use, energy efficiency, greenhouse gas reduction, waste minimization, reuse and recycling, and eco-design (Arundel & Kemp, 2009). We can also view eco-innovation through the lens of implementing the novelty in the production, assimilation and exploitation of a product, production process, service or business method that result in reducing environmental pollution (Zubeltzu-Jaka *et al.*, 2018), limiting the negative impacts of the intensive use of resources (Yurdakul & Kazan, 2020), and mitigating the environmental risk (Kemp & Pearson, 2007). According to Rennings (2000), eco-innovations differ from normal innovations, because they produce a double externality, consisting of (1) the usual knowledge externalities generated in the research and innovation phases and (2) externalities in the adoption and diffusion phases due to positive impact upon the environment.

In the literature, we can find three main categories of factors driving eco-innovation. These are supply-side factors, demand-side factors and regulatory framework (Triguero *et al.*, 2013; Horbach *et al.*, 2012; Sanni, 2018). The supply side factors include human and technological capabilities such as access to knowledge and research and development, whereas the demand side factors cover all determinants related to the market, *e.g.* market structure and competition. Besides conventional technology-pushed and demand-pulled factors, the regulatory framework and environmental policy are key drivers of eco-innovation. Environmental policies may fall under the 'command-and-control' or 'market-based' types. Market-based instruments such as pollution charges, subsidies, tradable permits, and some types of information programs can encourage firms or individuals to undertake pollution control efforts that are in their own interests and that collectively meet policy goals (Jaffe *et al.*, 2002). By contrast, command and control regulations, by setting uniform standards for firms, tend to force firms to take on similar shares of the pollution burden, regardless of the cost. The type of regulation/policy and the way it is implemented is significantly important (Liao *et al.*, 2020). It should lead firms to effectively address environmental problems rather than restrict firms in a specific technology and leave the environmental problem unsolved.

Supporting eco-innovation with the use of government policy instruments is a big challenge and requires a coordinated political approach (Urbaniec, 2019), especially between innovation research and environmental policy. Implementation of eco-innovation measures, which include both supply-side and demand-side measures, has to be conducted in close inter-organizational collaboration, involving sectoral, local, and national levels. Environmental policy agencies should communicate priorities and cooperate more systematically with innovation policy-makers (Sarkar, 2013).

The EU now acknowledges that sustainable green growth requires eco-innovation (see, *e.g.* European Commission, 2013; European Union, 2022) and that environmental policy and legislation are



among the key drivers to promote eco-innovation (European Commission 2011). Environmental policy can also direct research and development efforts and set the pace of technological change. In this regard, the European Commission with the MSs and in cooperation with international standardization bodies set up a dialogue-based process to identify and prioritise those areas where the development of standards and performance targets has the greatest potential in terms of driving eco-innovation. It also uses financial instruments to accelerate eco-innovation absorption and development with particular attention to financial instruments and support services for SMEs (Lai, 2016; Zygmunt, 2022).

Ensuring efficient conversion of eco-innovation inputs (EIn) into EIO and outcomes should be an issue of particular importance for policy-makers and researchers. Many of the existing studies cover the selected issues of EIO with increased attention to the reduction of negative environmental impacts (Urbaniec *et al.*, 2021). However, they do not encompass the analysis of all issues related to the wider effects of eco-innovation, as suggested by Arundel and Kemp (2009) and interactions between inputs and outcomes. They often deal with the evaluation of the eco-innovation situation in the selected economy (Loucanova *et al.*, 2015) or the EU as a group of countries in the previous years (Tarnawska, 2013). Moreover, they enable the comparison of the eco-innovation performance of national economies only to a small extent.

Based on the literature review, we have identified the research gap that indicates the need for further development of comparative analyses revealing the differences and similarities of eco-innovation outcomes between EU MSs' economies, setting directions of change, and providing possible patterns for the countries with low performance. We may view eco-innovation outputs and outcomes from the perspective of different macro- and microenvironment factors affecting them (Rodríguez-Rebés *et al.*, 2021).

The results achieved from the previous analysis for the groups of countries, with the use of EII methodology, showed that the distance between the EU-27 average and leading countries in terms of EIn and eco-innovation activities (EIA) has slightly narrowed over the period under review (Hajdukiewicz & Pera, 2023). This should translate into reducing the gap also in terms of eco-innovation outputs and outcomes. However, it may vary depending on the country and a given thematic field. It is very important for EU economies to identify those eco-innovation outcomes areas that require substantial improvement. We develop the following research hypothesis in our article:

**(H.1a,b,c):** During the studied period, the distance in eco-innovation outputs and outcomes occurring between the EU-27 average and the eco-innovation leaders was narrowed in terms of (a) eco-innovation outputs, (b) resource efficiency outcomes, and (c) socio-economic outcomes.

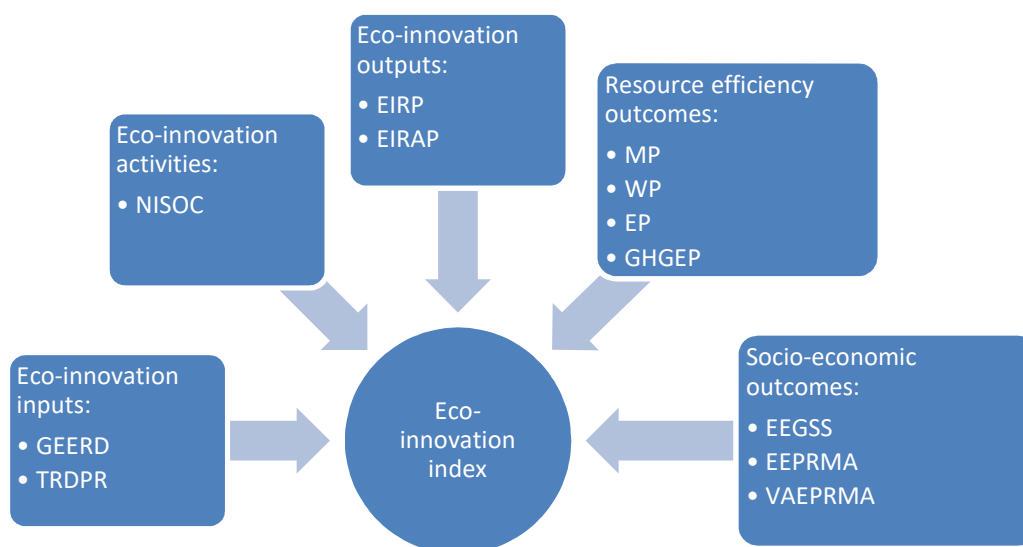
Chaparro-Banegas *et al.* (2023) argued that five factors are key drivers that stimulate eco-innovation performance in European Union countries. They include governance, human capital capacity, research institutions, and public and private R&D investments. They correspond well with the composite indicators adopted by the European Commission (2022) as the components of EII measuring the EIn and EIA. They pinpoint a country's performance concerning government's environmental and energy R&D appropriations and outlays, R&D personnel and researchers, the value of green early-stage investments, implementation of resource efficiency actions and sustainable products among SMEs, and a number of ISO 14001 certificates, being the components of the eco-innovation index (Hajdukiewicz & Pera, 2023). The improvement of eco-innovation performance at the enterprise level can lead to a sustainable development of the economy and can contribute significantly and profitably to the attainment of the European Green Deal's objectives. Al-Aylani *et al.* (2021) stated that leading countries in eco-innovation often benefit from strong governmental support. The countries that invested the most in the R&D sector showed significant improvements in some inputs of eco-innovation. Government support is an important factor in the field of the ecology and energy sector, as it contributes to the improvement of results, especially with green investments in the initial phase of research, as well as the engagement of expert teams and academic researchers. Focusing on the overall EII, a high overall country's performance does not mean that a country has performed well in all eco-innovation areas (Loucanova & Nosalova, 2020). Drawing conclusions, scholars should analyse specific eco-innovation aspects covering particular fields (Rizos *et al.*, 2015). Eco-innovation is a complex category and it is difficult to identify all the factors affecting its development. Moreover, the drivers and impact of eco-

innovation may be different for different countries and different eco-innovation thematic areas (Tri-guero Cano *et al.*, 2013). Nevertheless, many studies suggest that governments' support for R&D and green investment appear to be a key driver of eco-innovation. As recorded for leading eco-innovators, strong governmental support is crucial for progress and should continuously increase over the years (Al-Aylani *et al.*, 2021). Does this mean, however, that the eco-innovation leaders spend these funds more effectively than others, expressed by a higher growth rate of outputs and outcomes compared to the growth rate of inputs? Moreover, have they improved more than other countries in the crucial area of REO? It is also worth considering whether or how countries with relatively low government support, which cannot expect a significant increase, can improve their relative position in the eco-innovation field. To address these issues, we decided to identify relationships between EII compared to achieved eco-innovation outputs and outcomes for the EU economies with developed government support innovation systems versus countries with more limited inputs. Hence, we hypothesised:

**(H.2):** The EU economies with the best performance in terms of eco-innovation inputs convert them into eco-innovation outputs and outcomes more effectively than other EU countries.

## RESEARCH METHODOLOGY

We based the investigation on the EII and its components referring to the eco-innovation performance in terms of EIO, REO, and SEO (Figure 1).



**Figure 1. The new EII framework (2021 methodology)**

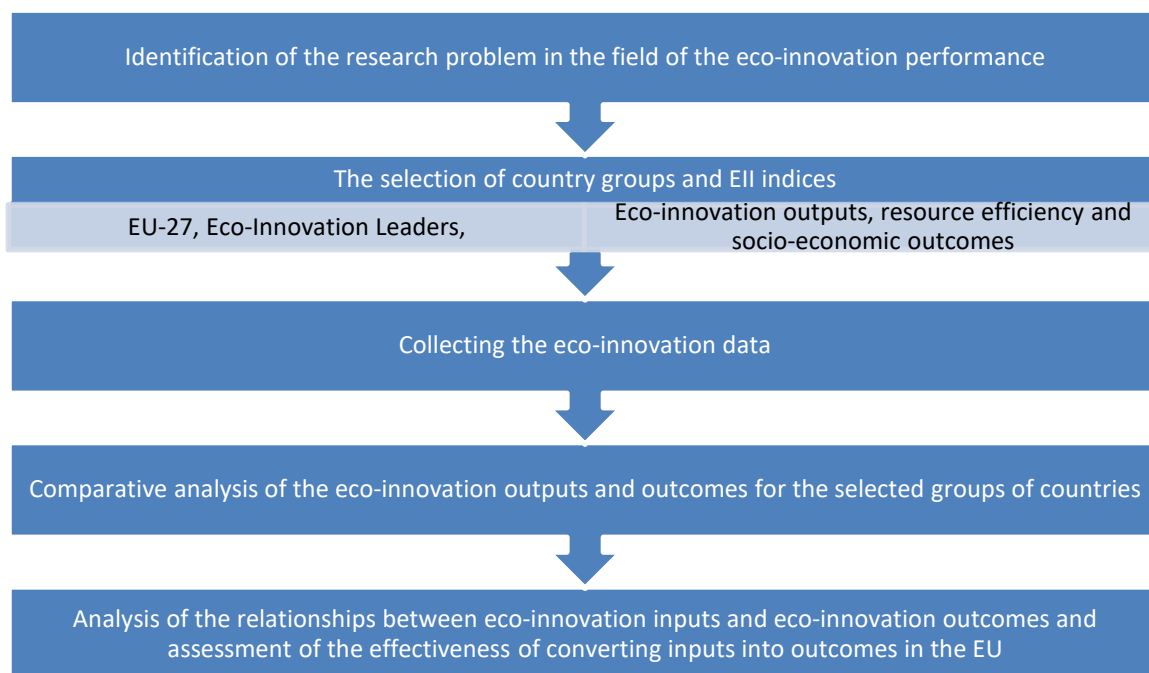
*Note:* GEERD – Governments environmental and energy R&D TRDPR – Total R&D personnel and researchers; NISOC – Number of IS 14001 certificates; EIRP – Eco-innovation related patents; EIRAP – Eco-innovation related academic publications; MP – Material productivity; WP – Water productivity; EP – Energy productivity; GHGEP – GHG emissions productivity; EEGSS – Exports of environmental goods and service sector; EEPRMA – Employment in environmental protection and resource management activities; VAEPRMA – Value added in environmental protection and resource management activities.

Source: European Eco-innovation Scoreboard, 2022 and own elaboration.

We examined the relationship between the outcomes and the inputs and between the outcomes and the EII for selected EU countries. We analysed the eco-innovation outputs and outcomes in the years 2013-2022. We applied the amended measurement methodology of the EII considering changes introduced in 2021 to the method of the index calculation and its component indicators. The research procedure follows the diagram depicted below (Figure 2).

Firstly, based on the literature review and the thorough analysis of official materials regarding eco-innovation, we identified the specific research problem in the field of eco-innovation performance in the EU. We focused mainly on the eco-innovation outputs and outcomes of the EU countries and also examined their relationships with eco-innovation inputs to assess the effectiveness of converting inputs into

outcomes. Following literature (Godin, 2007; Janger *et al.*, 2016; OECD/Eurostat, 2018), we understand the eco-innovation outputs and outcomes as different final stages of an innovation process, preceded by two earlier phases, *i.e.*, innovation inputs (resources and capabilities) and innovation activities (supported by resources). While innovation outputs are direct, tangible results of innovation activity, innovation outcomes refer to the broader, longer-term consequences of innovations, including the effects of innovation on organisations, the economy, society, and the environment. However, outputs and outcomes are interconnected, which is why we analysed both of these elements of the innovation process



**Figure 2. Research conceptualisation**

Source: own elaboration.

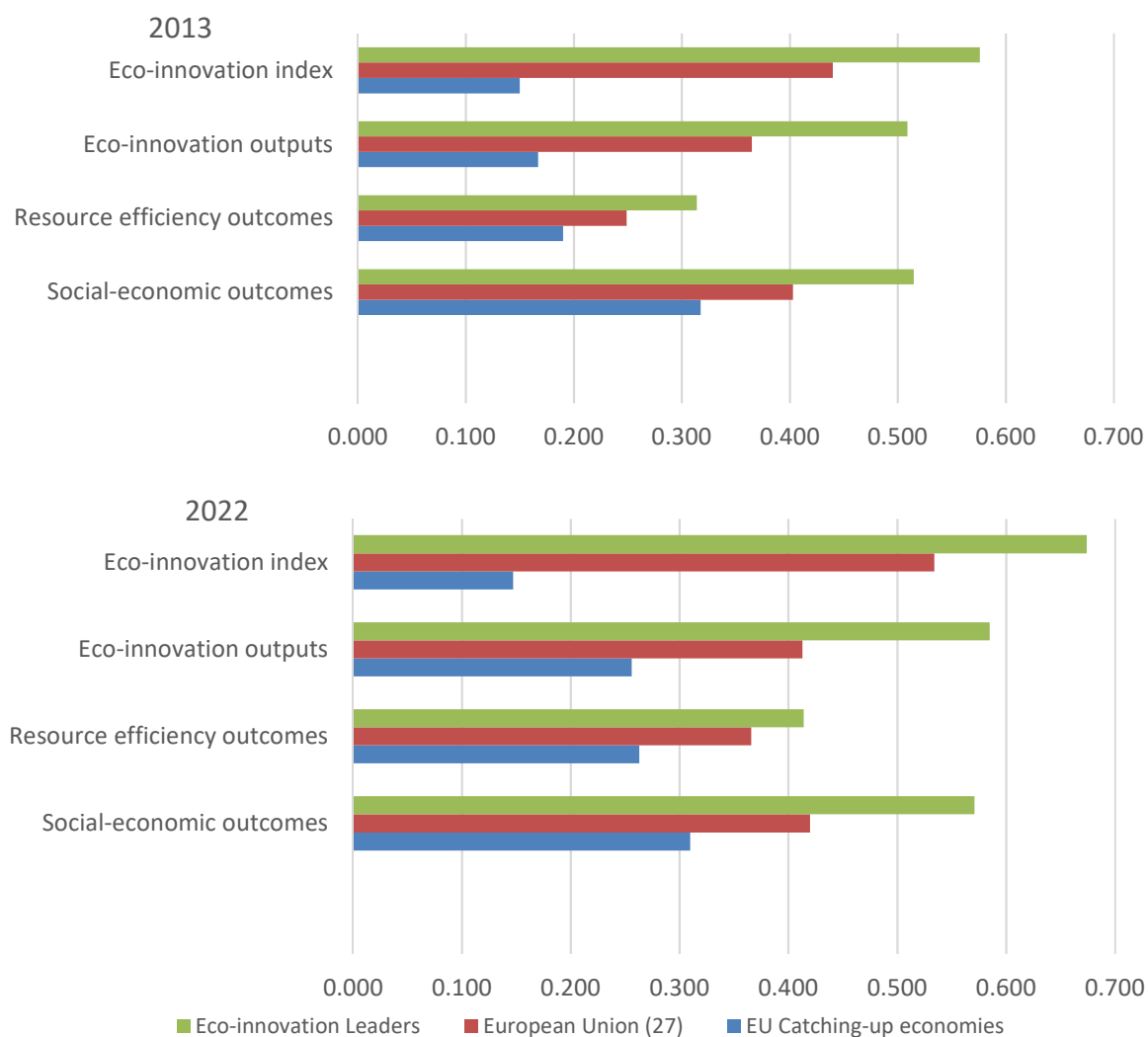
Secondly, we identified countries that make up the EU eco-innovation leaders, which is the group of countries we analysed in more detail, due to achieving the best results in terms of eco-innovation. According to the recent EU classification, the group consists of Austria, Denmark, Finland, France, Germany, Italy, Luxembourg, the Netherlands, and Sweden. The European Union (27) as one group and eco-innovation catching up were also included in some of our analyses, constituting a reference point in comparative studies. Then, we focused on the three performance components of the EII, which are important from the outcome perspective, *i.e.*, eco-innovation outputs, resource efficiency outcomes and socio-economic outcomes. The data used in our calculations comes from the European Eco-innovation Scoreboard (2022). Due to the changes in the composition of the EII, we decided to narrow our research to the last decade (2013-2022).

Next, we applied the quantitative approach to investigate the research problem and answer research questions. We conducted a comparative analysis of changes in the examined indicators in the selected economies and groups of countries, supported by descriptive statistics and selected taxonomic methods and tools. We used the Euclidean distance to assess the gaps between the EU Eco-innovation leaders and the EU-27 average. We also used Pearson's correlation coefficient ( $r$ ) to investigate the relations between EIO, REO, and SEO. We explored the differences across the EU countries and the distance of the EU average to leading economies regarding resource efficiency, which encompasses material productivity, water productivity, energy productivity, and GHG (Greenhouse gases) emissions productivity. We also compared the EU countries' eco-innovation performance in terms of EIO, which includes eco-innovation-related patents and publications, and in terms of SEO, which covers, *e.g.*, exports of environmental goods and service sector. We also examined the compound annual change of outputs and outcomes in relation to the compound annual change of inputs in the years

2013-2022, in an attempt to assess the effectiveness of converting inputs into outcomes in the EU. We applied the amended methodology of the EII considering changes in the methodological framework introduced in 2021, which referred to three of five composite indicators of the main EII, namely EIn and EIO (one of three sub-indicators was removed in both groups compared to the previous EII methodology) and EIA respectively (only one of the three sub-indicators remained) (Figure 1).

## RESULTS AND DISCUSSION

The results of the analysis conducted with the use of the EII for the European Union (27) and the group of eco-innovation leaders and catching-up economies (Figure 3) showed an increase in its value and the value of all analysed composite indices between 2013 and 2022.



**Figure 3. The selected composite indicators of the eco-innovation index\* for the European Union-27, eco-innovation leaders and catching-up economies in 2013 and 2022**

Note: \* The eco-innovation index normalised score (0-1).

Source: European Eco-innovation Scoreboard, 2022 and own elaboration.

The growth was the highest in REO, whilst the lowest in SEO. The distance between the EU-27 average and eco-innovation leaders decreased in REO. In contrast, there was a slight increase in distance for EIO. The distance notably increased in SEO. The eco-innovation leaders maintained the distance to the EU average and significantly increased their distance to catching up economies in terms of the total EII (Figure 3). Thus, the achieved results only partially support the hypothesis 1. In light of our empirical study, we rejected the hypothesis 1a (H1a) and the hypothesis 1c (H1c) and confirmed hypothesis 1b (H1b).

Next, we identified the individual eco-innovation performance and distances between selected EU-leading economies and the EU-27 in terms of EII, EIO, REO, and SEO (Table 1).

**Table 1. Eco-innovation index and selected composite indicators for the EU-27 and eco-innovation leaders (2013-2022)**

Descriptive statistics	EU-27	FI	LU	SE	DK	AT	DE	IT	FR	NL
<b>EII</b>										
Mean	0.481	0.767	0.748	0.706	0.699	0.671	0.546	0.522	0.519	0.475
Median	0.478	0.765	0.762	0.706	0.697	0.664	0.539	0.523	0.514	0.471
Minimum	0.440	0.742	0.663	0.673	0.668	0.604	0.483	0.451	0.480	0.418
Maximum	0.534	0.799	0.788	0.740	0.737	0.765	0.621	0.569	0.575	0.523
Range	0.094	0.057	0.124	0.065	0.069	0.161	0.138	0.118	0.095	0.104
Standard deviation	0.027	0.021	0.037	0.019	0.019	0.045	0.044	0.036	0.032	0.036
Skewness	0.576	0.265	-1.568	0.178	0.553	0.790	0.325	-0.695	0.362	-0.031
<b>EIO</b>										
–	EU-27	FI	SE	DK	LU	DE	AT	NL	FR	IT
Mean	0.395	0.817	0.795	0.709	0.682	0.580	0.525	0.445	0.358	0.272
Median	0.398	0.830	0.804	0.698	0.691	0.577	0.521	0.457	0.358	0.279
Minimum	0.365	0.735	0.715	0.595	0.469	0.561	0.494	0.410	0.342	0.236
Maximum	0.413	0.877	0.871	0.840	0.798	0.594	0.566	0.473	0.380	0.289
Range	0.048	0.142	0.155	0.245	0.329	0.034	0.073	0.063	0.038	0.053
Standard deviation	0.013	0.046	0.058	0.075	0.092	0.011	0.021	0.022	0.012	0.016
Skewness	-1.179	-0.504	-0.145	0.315	-1.335	-0.183	0.597	-0.491	0.393	-1.375
<b>REO</b>										
–	EU-27	LU	IT	NL	DK	FR	DE	AT	SE	FI
Mean	0.303	0.671	0.617	0.427	0.339	0.337	0.330	0.302	0.266	0.082
Median	0.301	0.680	0.663	0.431	0.338	0.342	0.335	0.311	0.269	0.086
Minimum	0.249	0.652	0.409	0.371	0.075	0.285	0.251	0.242	0.239	0.043
Maximum	0.366	0.681	0.681	0.459	0.307	0.403	0.416	0.347	0.293	0.111
Range	0.117	0.029	0.272	0.088	0.382	0.119	0.165	0.105	0.054	0.067
Standard deviation	0.038	0.013	0.094	0.030	0.026	0.039	0.057	0.032	0.020	0.019
Skewness	0.303	-0.613	-1.570	-0.639	0.365	0.240	0.098	-0.547	-0.060	-0.728
<b>SEO</b>										
–	EU-27	FI	AT	DK	LU	SE	DE	FR	NL	IT
Mean	0.401	0.962	0.799	0.658	0.628	0.528	0.324	0.317	0.301	0.271
Median	0.400	0.962	0.782	0.667	0.608	0.515	0.324	0.311	0.299	0.268
Minimum	0.388	0.958	0.731	0.619	0.544	0.489	0.307	0.295	0.281	0.264
Maximum	0.420	0.962	0.875	0.693	0.733	0.580	0.345	0.351	0.326	0.288
Range	0.032	0.004	0.143	0.074	0.190	0.091	0.038	0.055	0.046	0.024
Standard deviation	0.010	0.001	0.055	0.030	0.059	0.033	0.011	0.018	0.013	0.008
Skewness	0.581	-3.162	0.188	-0.336	0.676	0.525	0.272	0.736	0.408	1.616

Note: AT – Austria, DK – Denmark, EU-27 – The European Union, FI – Finland, FR – France, DE – Germany, IT – Italy, LU – Luxembourg, NL – The Netherlands, SE – Sweden.

Source: European Eco-innovation Scoreboard, 2022 and own study.

The results of the calculation of descriptive statistics point to the moderate shifts in EII for the EU-27 and examined countries between 2013 and 2022. It indicates that the performance of the analysed countries was clustered tightly around the mean. There were minor changes in each of the analysed countries. The standard deviation measure confirmed it. We recorded the largest performance differences for Luxembourg in three out of the four presented categories (excluding REO). Austria recorded relatively big changes in EII, REO, and SEO. We noted a remarkable span in EII for Germany and Italy, and in REO for Denmark, Italy and Germany. Moreover, the performance of the Scandinavian countries, *i.e.*, Denmark, Sweden and Finland was outstanding in terms of EIO. Even small differences be-

tween the mean and the median indicate a positive or negative skewed distribution of the performance of the analysed economies. In the case of the EII, EIO, and REO for Luxembourg, Italy and the Netherlands, higher performance values were on the left of the average. We recorded similar results in EIO for the EU-27. The mean was quite a bit higher than the median in other cases, and the extreme, more numerous values of the component indicators were on the right side (Table 1).

The recorded differences enabled us to identify more precisely the distance between EU-leading economies and the EU-27 in three studied composite indicators of the EII.

**Table 2. The average distance in terms of EIO, REO and SEO between Eco-innovation leaders and the EU-27 in 2013-2022**

Composite indicators	AT	DK	FI	FR	DE	IT	LU	NL	SE
Eco-innovation index	0.436	0.467	0.534	0.196	0.255	0.202	0.517	0.110	0.474
Eco-innovation outputs	0.135	0.326	0.429	0.035	0.190	0.119	0.303	0.059	0.408
Resource effectiveness outcomes	0.033	0.055	0.215	0.049	0.049	0.330	0.379	0.135	0.041
Socio-economic outcomes	0.104	0.066	0.320	0.073	0.088	0.233	0.270	0.037	0.137

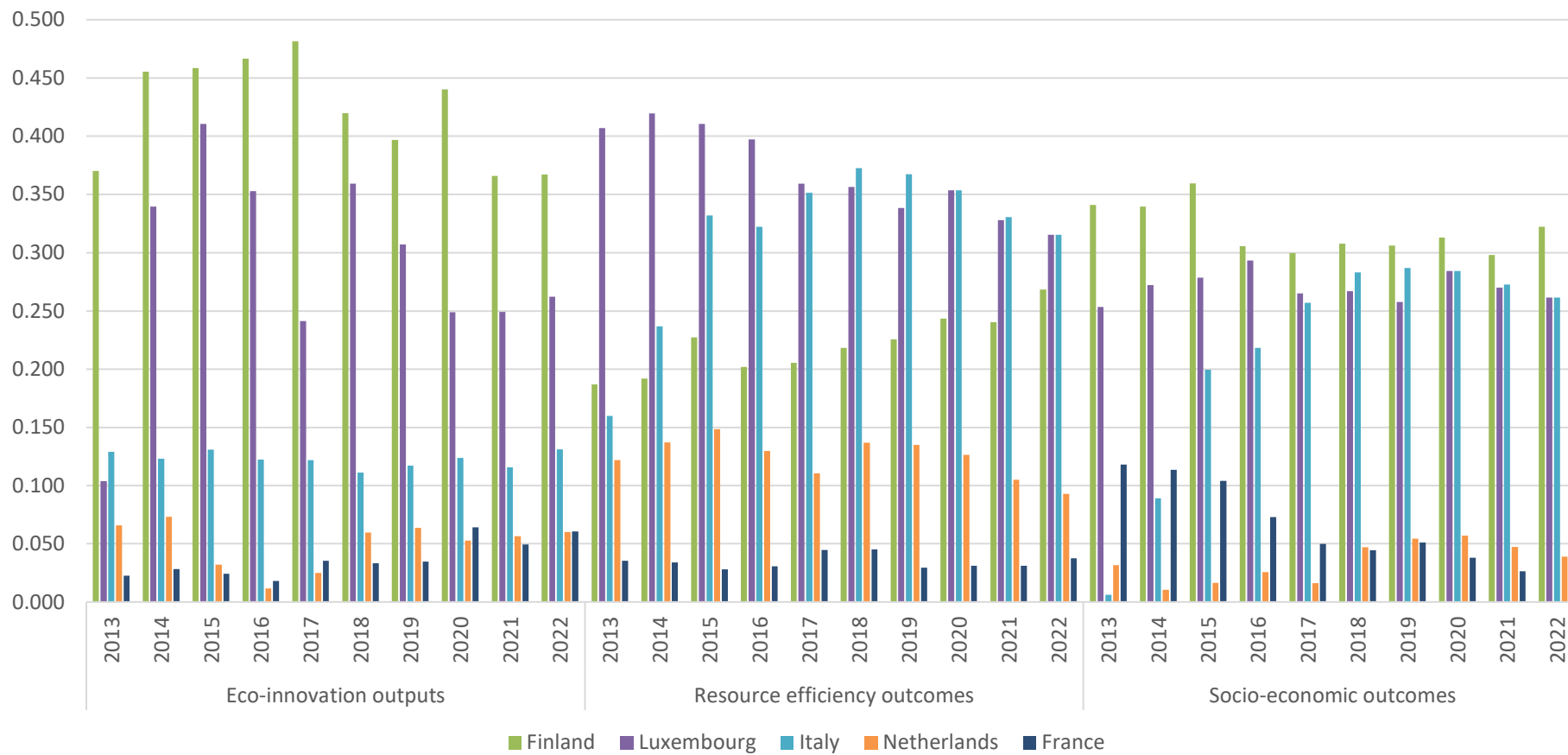
Source: European Eco-innovation Scoreboard, 2022 and own study.

The average results of leading economies were significantly above the EU-27 average results in 2013-2022. We recorded the largest advantage for Finland and Luxembourg, which were the best EU performers in this respect, while the results of other member states were relatively close to the EU average. The average distance between the eco-innovation leaders and the EU-27 varied by the examined component indicators. We observed the highest dominance in all analysed components of the EII in the case of Finland and Luxembourg. Denmark's and Sweden's results were significantly above the EU average in the case of EIO but not much higher in REO and SEO. Meanwhile, Italy performed the best in EIO compared to REO and SEO. France's performance was closest to the EU-27 average in all three analysed components. The Netherlands' results were similar to those of the EU-27, particularly in EIO and SEO. Other EU-leading economies achieved a value much closer to the EU-27, at least in one of three component indicators (Table 2).

We conducted a more in-depth analysis of the existing distance for Finland, Luxembourg, Italy, France, and the Netherlands. This group included the best performers (Finland, Luxembourg, and Italy) and countries performing closest to the EU-27 (The Netherlands and France).

The analysis of the results of the EU-27 and five selected leading economies in 2013-2022 showed that Luxembourg improved its performance relative to the EU average in terms of EIO. Finland performed even better in this area, but it maintained its advantage at a similar level in 2022 compared to 2013. It increased between 2013 and 2017 and then slightly narrowed. We observed the smallest advantage for the Netherlands and France. We recorded a slight increase in distance for the latter country. The distance between the EU-27 and Finland and Italy increased in terms of REO. Despite the slight decrease in Luxembourg's resource efficiency results, its distance to the EU average remained high. The difference between the EU-27 and France remained almost at the same level throughout the analysed period. At the same time, we noted a slight decrease in the distance between the EU-27 and the Netherlands. The analysis of SEO showed different patterns of change. The largest increase in the gap occurred between the EU-27 and Italy. In 2022, it reached the level of the distance between the EU-27 and Luxembourg. Similarly, the advantage of the Netherlands over the EU-27 average recorded a slight increase. In contrast, Finland and France recorded a decrease in their relative results in this respect (Figure 4).

Overall, the growth rate of the EII index in the analysed period was lower for the leading countries than for the entire EU. However, a closer look at the achieved results shows that the growth rate of outputs and outcomes was higher for these countries than for the EU-27 (except for REO). Moreover, the growth rates of outputs and outcomes were much higher for these countries than the growth rate of their inputs. We observed a different result in the case of the EU27, for which we recorded a relatively high growth rate in inputs. However, it did not translate into an equally high growth rate in the thematic area of outputs and outcomes, again except for REO. Looking at this latter area in more detail,



**Figure 4. The distance between the selected Eco-Innovation leaders and the EU-27 average according to the eco-innovation outputs and outcomes in 2013-2022**

Source: European Eco-innovation Scoreboard, 2022 and own elaboration.

we can notice that although the leading countries recorded lower dynamics of REO than the average in the EU-27. However, the dynamics in relation to the dynamics of inputs were higher for them than for the EU considered as one group. These results support the hypothesis 2. We can explain them by the fact that the effectiveness of converting inputs into outputs and outcomes in countries with weaker results in terms of eco-innovation is limited by many barriers both on the demand and supply side, which have already been at least partially overcome in the countries of innovation leaders. Moreover, EIn, which provides financial and human resources for eco-innovation activity, can bring results in the longer term, by influencing the supply and demand side of the market, if an appropriate, coordinated government policy in the field of innovation, research, and the environment is applied.

**Table 3. Compound annual change of the Eco-innovation index and its composite indicators in 2013-2022 (in%)**

Economy	EII			EIn			EIA			EIO			REO			SEO		
	2013-2017	2018-2022	2013-2022	2013-2017	2018-2022	2013-2022	2013-2017	2018-2022	2013-2022	2013-2017	2018-2022	2013-2022	2013-2017	2018-2022	2013-2022	2013-2017	2018-2022	2013-2022
EU-27	2.6	3.0	2.5	13.3	-4.8	2.3	5.6	-3.6	0.2	2.7	1.1	1.6	5.9	5.4	4.9	-1.0	1.8	0.5
EU leaders	2.7	2.0	2.0	0.0	1.5	0.8	-1.7	0.8	-0.3	4.6	0.1	1.8	6.1	2.6	3.5	-0.5	3.0	1.3
Austria	2.7	4.0	3.0	6.5	7.6	6.2	10.1	1.2	4.3	2.1	1.9	1.7	9.2	0.1	3.4	-1.6	4.5	1.6
Denmark	1.4	1.4	1.2	-3.9	-1.9	-2.4	-0.1	-3.3	-1.7	5.1	4.0	3.9	1.7	4.3	2.8	2.0	0.8	1.1
Finland	2.5	-0.5	0.7	-1.0	-2.8	-1.8	8.6	1.3	3.8	6.0	-2.9	0.7	13.5	1.8	5.8	0.1	0.0	0.1
France	2.4	2.6	2.2	2.4	1.1	1.5	-7.2	-3.0	-4.2	1.7	-0.5	0.4	6.2	4.3	4.5	-1.4	3.9	1.4
Germany	3.5	3.7	3.2	4.5	2.6	3.0	16.3	6.5	9.2	1.8	0.1	0.7	9.5	6.0	6.5	-2.2	2.9	0.6
Italy	5.0	2.2	2.9	-1.8	8.7	3.6	9.0	-7.0	-0.4	5.0	0.8	2.2	16.6	1.3	6.6	-0.3	2.2	1.0
Luxembourg	2.6	2.4	2.2	-5.3	-2.8	-3.4	105.7	-11.2	23.5	10.7	1.5	4.7	0.0	1.0	0.5	-2.9	7.8	2.8
Netherlands	3.1	3.3	2.8	7.0	1.7	3.4	19.4	-1.4	6.1	-0.8	3.0	1.2	3.1	3.1	2.7	0.3	2.3	1.3
Sweden	1.7	0.0	0.6	-3.6	2.8	0.0	-4.6	-9.1	-6.3	6.8	-4.2	0.3	2.7	3.2	2.6	1.1	3.5	2.2

Source: European Eco-innovation Scoreboard, 2022 and own study.

Simultaneously, the changes in particular EII areas and for individual economies occurred with varying intensity over the examined period. We observed the slowdown in changes between 2018 and 2022 for the EU eco-innovation leaders. Most likely, this was due to greater uncertainty and crisis phenomena in the economy during this period, related to the COVID-19 pandemic and Russia's invasion of Ukraine. Finally, we recorded lower rates of change than in the previous years in Finland, Italy, Luxembourg, and Sweden.

Looking closer into composite indicators of the EII, we observed adverse changes that affected the rate of change from 2013 to 2022. We recorded the largest annual changes among all composite indicators in the REO. These are primarily evident in Italy and Finland and secondarily in Austria and Germany from 2013 to 2017. From 2013 to 2022 and 2018 to 2022, the development of the REO in the EU-27 has been faster than in the leading economies. Only Finland, Germany, and Italy performed better than the EU-27 as a whole. Changes in the other analysed economies were slower. The slightest changes in REO occurred in Luxembourg. The average annual rate of change in the EU-27 was higher in 2018-2022 compared to the eco-innovation leaders. Denmark and Luxembourg were the main drivers of change in the latter group of countries. We recorded the lowest compound annual rate of change in SEO. Both in the EU-27 and the leading economies, the performance decreased between 2013-2017. Luxembourg, Germany, Austria, France, and Italy mainly influenced the result of the leading group in these years in this thematic area. For the whole analysed period, we recorded the highest change in the overall EII for Germany, Austria, Italy, and the Netherlands (Table 3).

Moreover, we tried to find out if the composite indicators on the inputs' side are strongly linked with the indicators on the 'effects' side for the leading countries, and which of the composite indicators strongly relate to the total EII.



**Table 4. The value of Pearson's correlation coefficient (r) between components of the eco-innovation index and the EII for Eco-Innovation Leaders, 2022**

Variables	EII	EIIIn	EIA	EIO	REO	SEO
EII	1.000	0.204	0.178	0.783**	-0.350	0.933***
EIIIn	0.204	1.000	0.005	0.284	-0.722**	0.224
EIA	0.178	0.005	1.000	0.151	-0.221	0.210
EIO	0.783**	0.284	0.151	1.000	-0.528	0.716**
REO	-0.350	-0.722**	-0.221	-0.528	1.000	-0.531
SEO	0.933***	0.224	0.210	0.716**	-0.531	1.000

Note: EII – Eco-innovation index, EIIIn – eco-innovation inputs, EIA – co-innovation activities, EIO – eco-innovation outputs, REO – Resource effectiveness outcomes, SEO – socio-economic outcomes; \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ .

Source: European Eco-innovation Scoreboard, 2022 and own study.

The study revealed strong correlations between EII, EIO and SEO. We found no significant relationship between the other components of the EII and the total EII. Moreover, the results achieved by the eco-innovation leaders show that there was a negative relationship between inputs (EIIIn) and REO (Table 4). This last finding is a bit surprising, but we can probably explain it by the fact that the results in terms of efficiency of resources and GHG emission intensity in these economies are the current effect of financial and human capital investment made much earlier.

**Table 5. The value of Pearson's correlation coefficient (r) between components of the eco-innovation index for the EU-27, 2022**

Variables	EII	EIIIn	(EIA	EIO	REO	SEO
EII	1.000	0.737***	-0.093	0.859***	0.328*	0.633**
EIIIn	0.737***	1.000	-0.203	0.605**	0.160	0.236
EIA	-0.093	-0.203	1.000	-0.194	-0.327*	0.204
EIO	0.859***	0.605**	-0.194	1.000	0.141	0.570**
REO	0.328*	0.160	-0.327*	0.141	1.000	-0.284
SEO	0.633**	0.236	0.204	0.570**	-0.284	1.000

Note: EII (main) – eco-innovation index, EII – eco-innovation inputs, EIA – co-innovation activities, EIO – eco-innovation outputs, REO – resource effectiveness outcomes, SEO – socio-economic outcomes; \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$

Source: European Eco-innovation Scoreboard, 2022 and own study.

We also examined the correlation strength between individual component indices and the total EII in EU-27 as one group of countries. We found that the strongest correlation occurred between EIIIn, EIO, SEO, and EII and the weakest – between EIA, REO and EII (Table 5). Unlike in the group of eco-innovation leaders, for the EU-27, we recorded a strong relationship between EIIIn and the EII. Catching up countries may want to improve their overall eco-innovation to pay particular attention to improvements in the thematic area of EIO and SEO, following the example of leading countries, but at the same time, they cannot neglect other areas of eco-innovation performance.

## CONCLUSIONS

The article aimed to examine the eco-innovation performance of the European Union's economies in terms of its outcomes with a particular focus on REO and SEO. Eco-innovation contributes significantly to the economy's growth and transforming societies towards sustainable development. One of the main challenges in European eco-innovation is to ensure the effective conversion of inputs into outputs and improve the REO and SEO in the EU economies.

The research results showed that EU countries considered as one group improved their eco-innovation performance as measured by the overall EII, as well as in terms of the index components related to innovation outcomes during the study period. We also observed improvement in the EII and in the EII thematic areas for both the eco-innovation leaders and catching-up economies. However, the leading countries maintained and even slightly increased the distance between the EU-27

average in terms of the total EII, while significantly increasing the distance in terms of SEO and EIO. The only one of the studied eco-innovation thematic areas in which the leading countries reduced the distance to the EU-27 average (yet extending it to the group of Catching-up) was REO. Thus, the achieved results only partially support the hypothesis 1. In light of our empirical study, we rejected the hypothesis 1a (H1a) and the hypothesis 1c (H1c) and confirmed the hypothesis 1b (H1b). This may indicate serious difficulties and barriers in catching up with leading countries by countries with weaker eco-innovation results in terms of eco-innovation outputs and outcomes.

The countries with the best results in terms of eco-innovation outcomes were Finland and Luxembourg, whilst we recorded the highest growth rates of the REO in the leading group for Germany and Italy, and in the SEO for Luxembourg and Austria.

Even though the growth rate of inputs in the economies of eco-innovation leaders was lower than the EU average, they recorded a significantly higher growth rate of EIO and SEO than the EU average growth rate, and lower but still at a high level growth rate of REO, which contributes to the persistent gap between them and other EU economies.

Moreover, the rates of growth of outputs and outcomes were much higher for these countries than the growth rate of their inputs. We observed a different result in the case of the EU-27, for which we recorded a relatively high growth rate in inputs. However, it did not translate into an equally high growth rate in the thematic area of outputs and outcomes. This proves the higher efficiency of the use of inputs by the leading countries. Thus, the obtained results support the hypothesis 2. At the same time, the results indicate problems with ensuring the effectiveness of operations by the catching-up countries. This may relate to long-term lagging behind in these countries, which have recorded significant improvements, especially in terms of resource efficiency, but insufficient to improve overall eco-innovation results and to reduce the distance to the leading economies. This also shows the importance of conducting an appropriate innovation policy integrated with the general economic development policy, and coordinated with the research and environmental policy, because improvement in inputs or company innovation activities does not translate directly into improved eco-innovation outcomes in all conditions. The strong correlation between EIO, SEO, and the total EII in the leading countries indicates that these are the thematic areas that are particularly important for achieving significant improvement in the field of eco-innovation and that the attention of business and policy-makers should not focus excessively on the size of inputs, especially financial ones, but more on the effectiveness of their use.

There are some limitations to our study that need to be considered. Based on the European Commission indicators, the research did not cover all aspects that need to be addressed to improve a country's eco-innovation performance in terms of outcomes. Moreover, changes in the EII methodology introduced by the European Commission resulted in difficulties in data comparability and access to some data.

Despite the limitations, this study will contribute to a better understanding of eco-innovation for better policymaking. In particular, it can give a comprehensive picture of eco-innovation outcomes in the European Union as one of the components of the eco-innovation performance. It also highlights the importance of creating appropriate conditions for the development of eco-innovation, including creating sound policy frameworks at the national, regional, and international levels.

The study is certainly worth continuing. Future research directions may include a more thorough comparison of eco-innovation leaders and catching-up countries, considering more detailed, disaggregated measures of eco-innovation (*e.g.* EII and SEO sub-indicators). Scholars may also consider the further identification of various factors affecting eco-innovation beyond those included in the EII. Research can also go beyond EU countries and cover other regions of the world. It would also be worth extending research on eco-innovation by analysing the micro level, focusing on various aspects of eco-innovation management in enterprises.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# Investigating impacts of implementing earnings manipulation practices on stakeholders' perception of earnings management: The case of Poland

Michał Comporek

## ABSTRACT

**Objective:** The objective of the article is to investigate the impact of earnings manipulation on the perception of the earnings management phenomenon by financial specialists in public enterprises listed on the Main Market of the Warsaw Stock Exchange (WSE).

**Research Design & Methods:** Empirical analyses were based on questionnaire research conducted among 124 finance specialists of listed companies. We used the Mann-Whitney U Test to compare the significance of differences in perceiving the earnings management phenomenon.

**Findings:** The research proved statistically significant differences in the ethical perception of earnings manipulation between participants representing firms that implement and do not implement earnings management behaviours. Moreover, it allowed for gathering statistical evidence about the differences in the judgement of the possibility of detecting earnings-violating practices by statutory auditors in the eyes of diverse stakeholder groups. Furthermore, this study revealed significant differences between the respondents regarding the assertion that the auditor's positive opinion on the financial report constitutes a guarantee for investors of the high-quality reported data.

**Implications & Recommendations:** This study evidenced that participants who declared deploying earnings management in the companies they represent perceived the earnings management behaviour less rigorously and more liberally than individuals engaged in firms that did not manipulate earnings.

**Contribution & Value Added:** The conducted research is an important contribution to the research gap and the foundation for future studies on the perception of earnings manipulation in the context of the Polish capital market.

**Article type:** research article

**Keywords:** earnings management perception; earnings manipulation; questionnaire research; Warsaw Stock Exchange; public companies; ethical attitudes

**JEL codes:** G4, M4

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## INTRODUCTION

Perception is a psychological process that involves stimulus interpretation and a recognition of the object that produces a sensation. Based on earlier experience, it is a process by which one becomes acquainted with the environment (Gragner, 1972). This article investigates the impact of implementing earnings manipulation practices on the general perception of the earnings management phenomenon by finance managers and accounting officers of public enterprises listed on the Main Market of the Warsaw Stock Exchange (WSE). Previous research has shown that the formation of employee ethical attitudes towards earnings management or the tendency to commit accounting

and operational manipulations may depend on many determinants, such as gender, age, education, professional experience and respondents' personalities (Maruszczyńska, 2020; Cygańska & Bartoszewicz, 2023). This study adds to the existing literature on the issue of perceptions of earnings management in the conditions of implementing activities that do not go beyond the framework of the law but are generally considered negative. It contributes by suggesting that decision-makers who affect reporting data can demonstrate a less rigorous and more liberal approach to the moral assessment of earnings management than other financial or accountant specialists. Moreover, they can take a different position in terms of the possibility of detecting earnings manipulations or the assessment of the harmful effects of their occurrence on the organization. We operationalized the set research with the following hypotheses:

- H1:** There are statistical differences in the perception of the earnings management phenomenon from an ethical point of view among participants who declare or do not declare implementing earnings manipulation behaviours in companies they engage.
- H2:** The prevailing belief among respondents is that earnings management behaviours are pernicious and should be perceived as activities that always lead to deterioration of the quality of the reported data and misleading the company's stakeholders about the real economic performance of the company.
- H3:** Respondents who do not declare the use of earnings manipulation in firms they represent judge earnings management as an accounting or operational practice more seamlessly detectable by the auditor than participants who declare to manage earnings.

This research is part of a discussion on the endogenous factors of accounting ethics, which are related to the personal moral stance, individual predispositions, and the perception of accounting as a system providing the truth and fair view of a business entity. Among other elements, it refers to the assumptions of the positive accounting theory, developing a spectrum of middle-range theories explaining selected areas of phenomena related to reporting the economic performance of an enterprise (Riahi-Belkaoui, 2005). Previous studies paid little attention to questionnaire research to diagnose earnings manipulation determinants. The vast majority of scientific explorations on discussed issues focus exclusively on using econometric models, enabling the extraction of individual subcategories of accruals. However, inferencing based on estimated values of discretionary accruals may lead to certain distortions. For example, regression models explain the magnitude of earnings management without indicating how abnormal accruals would evolve without managerial interference (McNichols, 2000). By considering social and psychological mechanisms in economic analyses, it will be possible to provide economic models with a more realistic dimension, increasing their accuracy and improving their forecasting values.

The article is organized as follows. The first section will contain theoretical backgrounds regarding prior studies. The second section will present the research design and data on hand. The third part will include findings and a discussion of the empirical results. The last section will contain a conclusion, limitations, potential path, and future research directions.

## LITERATURE REVIEW

### Earnings Management: Definition and Dimensions

There are many definitions of earnings management in the scientific literature. The diversified meanings of accounting profit combine earnings manipulation features with flexibility and discretion in financial reporting, unconventional interpretation of applicable accounting principles, various ethical justifications for the actions taken and concerns about violations of accounting standards. Following the position of Klietnik *et al.* (2020), in this article, we strictly equated earnings management with earnings manipulation.

As underlined by Healy and Wahlen (1999), earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence con-

tractual outcomes that depend on reported accounting practices. The presented terminological approach emphasizes the negative perspective (pernicious earnings management), which refers to achieving private gains by the managers at the expense of deterioration of the quality of the reported financial result and depreciation of the company's value. Schipper (1989), Leuz *et al.* (2003), and Fuad *et al.* (2019) express a similar opinion. They perceive the implementation of earnings management as a desire to distort the financial statements motivated by low-purpose motives. However, as noted by Scott (2015) and Ronen and Yaari (2010), a broader analysis of the nature of the earnings manipulation phenomenon enables distinguishing opposing insight to assessing the transparency of the relationship between financial statements and the generated earnings. The concept of beneficial earnings management considers it in categories of proven accounting practices that do not violate the reliability of the financial statements but aim to increase its quality, thus signalling the possibility of the influence of specific factors on the company's value. Sankar and Subramanyam (2002) also expressed that although researchers mainly focus on opportunistic earnings management, which lowers the information content of earnings, managers may use discretion to enhance the quality of information communicated through earnings. Likewise, as Healy (1985) defined, earnings management could be considered reasonable decision-making and reporting intended to achieve stable and predictable financial results. In general, earnings management practices refer to accounting activities conducted in correspondence with the adopted balance sheet policy and within the limits of the law (even if they are not always consistent with the spirit of the law). The ambiguity and heterogeneity of earnings manipulation often lead to its ambivalent perception in the eyes of diverse enterprise stakeholders.

#### **Factors Influencing the Perception of the Earnings Management Phenomenon**

Although most adults judge the morality of actions by comparing them to society's expectations (Grabiński & Wójtowicz, 2019), the current research indicates that earnings management perception depends on many variables. The ethicality of earnings manipulations may be considered in its relationship with institutional or cultural factors, participants' morality, personality traits, applied techniques of earnings manipulation, the temporal scope of the impact of earnings management practices on the quality of reported results, etc.

Geiger *et al.* (2006) gathered evidence that the perception of the acceptability of earnings manipulations varies depending on the country in which the empirical analyses were conducted. They proved that the differences in aggregate perceptions across countries were associated with the power distance index and the masculinity index. Geiger and Smith (2010) examined the association between the level of cultural secrecy and the perceptions of accrual-based and real earnings management in selected countries. They found that individuals from secretive cultures were more accepting of both concepts of earnings manipulation activities. Moreover, they discovered that participants from stakeholder-oriented corporate governance countries perceive earnings management more rigorously than individuals from shareholder-oriented countries. Dayanandan *et al.* (2012) showed the relationship between ethical values and personality traits of individuals on the perception of earnings manipulation activities. They found statistically significant evidence that participants with high idealism judge earnings management more harshly than those with low idealism. Moreover, they proved that respondents known as situationists rate earnings manipulations as more unethical. At least, aside from personality traits, participants consider accrual-based earnings management more unethical than real earnings management. Similarly, Maruszewska (2020) conducted experimental research examining the tendency to reproduce unethical accounting operations in the presence of an agency relationship in the organization. The results were compared with the taxonomy of personal moral philosophies that divides individuals into four groups (situationists, absolutists, subjectivists, or utilitarians) (Forsyth, 1980). She proved that the ethical orientation of the participants did not play a major role in the tendency to repeat inappropriate behaviour. However, idealists were more strict in assessing the moral situation than relativists. Bruns and Merchant (1990) conducted a moral judgement of the consequences of the intentional shaping of company financial results by readers of the Harvard Business Review. Their research results lead to the conclusion that in a case where an accounting practice is not explicitly prohibited or where there is a slight deviation from the rules, earnings management activities



are considered ethically acceptable, regardless of who might be affected by the distorted information. Johnson *et al.* (2012) referred to the perception of the consequences of earnings management due to its impact on the organization. The results of empirical analyses indicated that managers might be motivated to discount the ethical impact of earnings manipulation activities when the final consequence favours the company they represent. Ambiguous conclusions regarding the ethical perception of earnings management by stakeholders of commercial banks were highlighted by research conducted by Barghathi *et al.* (2020). As the authors indicated, conclusions drawn from semi-structured interviews indicated that half of the individuals were convinced that earnings management is generally ethical, especially when these practices were applied within GAAP and the legal framework. In turn, the findings from a parallel questionnaire study lead to the conclusion that the dominant share of respondents generally considers earnings management unethical. In turn, Kaplan (2001) surveyed two groups of respondents (managers and shareholders), examining their attitudes towards three earnings management techniques, considering deferral of discretionary expenses, requesting an invoice from a consulting firm to be delayed, and an increasing accounting loss through an unnecessary increase in the obsolescence reserve. Kaplan revealed that managers rated operating manipulations (*via* real earnings management) more ethically than accounting manipulations (*via* accrual-based earnings management), whereas shareholders assessed both strategies as unethical. Ismail and Atik (2011) discovered that the ethical attitudes towards earnings manipulation differ depending on the profile of the surveyed individuals and the earnings management behaviour scenarios used in the company. They proved that accountant officers opposed income smoothing, management buyouts or manipulation before IPO practices more strongly than financial analysts, while the latter perceived banks' misleading activity as more unethical than bookkeepers. Similarly, Baskaran *et al.* (2020) indicated that the perception of practices of intentionally influencing the company's financial results may depend on the earnings manipulation technique used in an accounting year and the scale of impact on the reported accounting data. For example, according to authors, the ethical approach to earnings cosmetics practices (understood as the tendency to small rounding of reported net income upward) could be different from an attitude towards earnings management practices, referred to as managerial tricks to deceive other users of financial statements for the sake of private benefits. Nowghabi and Anbarani (2012) evidenced significant differences between the perception of earnings management practices that affect accounting data in quarterly financial statements and earnings manipulation distorting earnings yearly. Moreover, they showed that research participants judged income-increasing practices to manage earnings upward as less ethical than downward earnings manipulation activities. Sugiarto and Djeni Indrajati (2020) proved that the perception of earnings manipulation is significantly associated with respondent maturity. Hence, individuals aged 40 years and over are more aware of the impact of earnings management on the quality of reported data compared to those under 40 years of age. Several studies also focused on the impact of gender on earnings management (Giacomino *et al.*, 2006; Jooste, 2011; Sugiarto & Djeni Indrajati, 2020; Cygańska & Bartoszewicz, 2024). However, the results of this research have not been conclusive.

The abbreviated outline of the issue of understanding and judgement of earnings management practices indicates the high importance of social factors of perception in the assessment of business activities. A closer examination of determinants affecting earnings manipulation perception could be inestimable in explaining or expanding existing knowledge about motivations for the intentional shaping of financial results in contemporary enterprises.

## RESEARCH METHODOLOGY

We conducted the questionnaire survey among 124 representatives of non-financial public companies listed in the Main Market of the WSE in June-August 2023. The target group of respondents included finance managers, accounting officers and other professionals authorised by representatives of the company's management at the level of the owner, president, member of the management board, and general director. The research sample selection was random (exhaustive testing). However, according to the assumptions, it was to cover at least 30% of enterprises listed on the

Main Market of the WSE. A specialised external company conducted the research using the method of standardised computer-assisted questionnaire interviews (CATI).

We divided the study into two stages. In the first step, respondents were asked to answer questions to assess their tendency to implement particular accrual-based and real earnings management tools in business practice. Moreover, participants judged earnings manipulation from an ethical perspective and evaluated the possibility of detecting practices aimed at the intentional shaping of financial results by auditors. A total of thirteen close-ended questions were asked in the questionnaire, of which five were used for the article (Table 1).

A weakness of the obtained research results was the possibility of respondents using the 'no opinion' answer from the available list. In total, 13, 10, 2 and 1 individuals, respectively used this option (questions 2-5). During the research, it turned out that 29% of respondents (36 individuals) declared that earnings management practices were implemented in the company they represent. The remaining respondents (88 individuals) denied that accounting or operational practices aimed at earnings manipulation occurred in the companies they represented. This separation allowed for the extraction of two distinct research subpopulations.

**Table 1. List of substantive questions used in the study**

The content of the question	Possible answers with assigned grades
1. How would you verify the statement that the reported earnings are susceptible to intentional manipulation (i.e. lowering or increasing followed by the specific goals of the company's management)?	
2. How would you verify the statement that earnings management practices are ethically acceptable?	1 – definitely agree 2 – rather agree
3. How would you verify the statement that the implementation of earnings management practices always results in misleading the users of financial statements?	3 – rather disagree 4 – definitely disagree X – no opinion (response not included in further non-parametric the U Mann Whitney test)
4. How would you verify the statement that earnings management activities are relatively seamless to detect by a statutory auditor?	
5. How would you verify the assertion that the auditor's positive opinion on the financial statements constitutes a guarantee for investors of the reliability of the reported financial data?	

Source: own study.

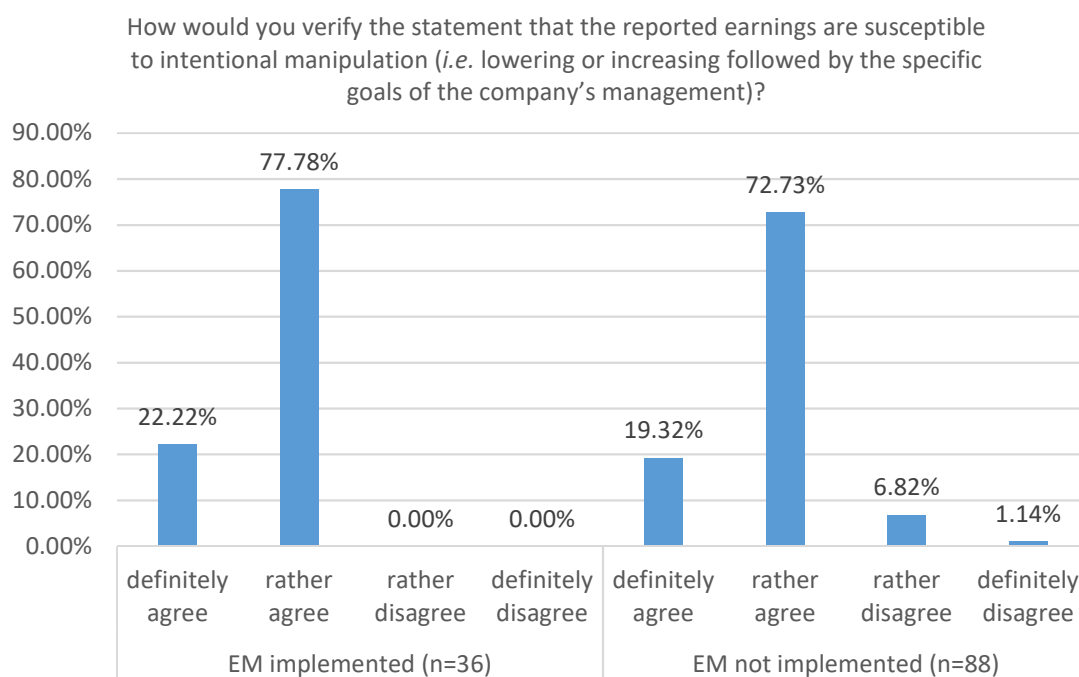
The second stage of the study referred to comparing the significance of differences in the perception of the earnings management phenomenon by finance specialists representing firms that manipulate or do not alter earnings. In the face of failure to meet the condition normality of the distribution of variables and the occurrence of qualitative features on an ordinal scale, this examination was performed by the Mann-Whitney U Test. It is commonly used to determine whether two independent samples come from populations having the same distribution.

## RESULTS AND DISCUSSION

The first stage of the empirical research was related to evaluating reported earnings as a measure prone to intentional manipulation. The results shown in Figure 1 indicate that the vast majority of respondents agreed that the financial result is an economic category rather susceptible to intentional shaping due to its accrual nature. Hence, through appropriate accounting policy instruments and operational activities, it will be possible to present the level of earnings consistent with the intentions and expectations of selected groups of company stakeholders. Only in the case of participants representing companies that do not implement earnings management behaviours, a small percentage of respondents (approx. 8%) declared that the reported profits (losses) are not receptive to deliberate management.

The analyses using the U Mann-Whitney test shown in Table 2 highlighted that in the tested sample, there were no statistical differences in perception of reported earnings as a measure susceptible

to manipulation by respondents who were engaged in firms that implemented or did not implement earnings management activities, respectively.



**Figure 1. The share of participants who consider financial results as a category susceptible to intentional manipulation**

Source: own elaboration.

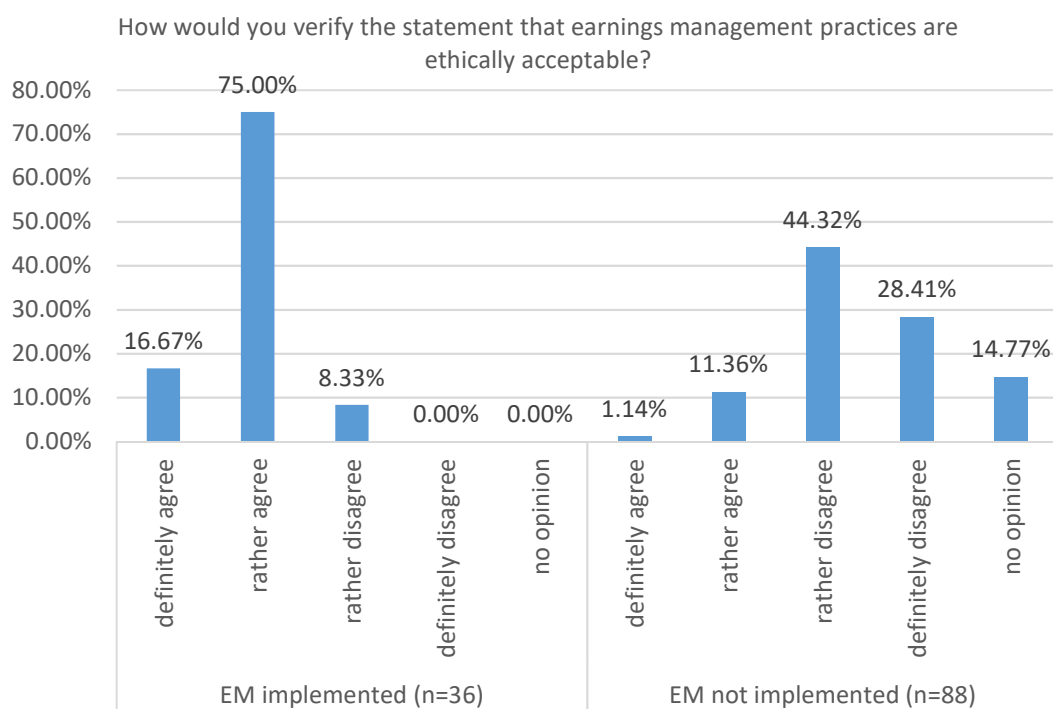
**Table 2. Results of the U Mann-Whitney test concerning the differences in perception of reported earnings as a measure susceptible to intentional manipulation**

Comparison	N	Mean Rank	Sum of Ranks	Test statistics Mann-Whitney U	Z	p-value
Firms that implement earnings management	36	58.50	2106.00	1440.00	-1.038	0.299
Firms that do not implement earnings management	88	64.14	5644.00			

Source: own study.

The next part of the empirical research concerns judging earnings management as an accounting or operating activity ethically acceptable (Figure 2). Among the participants who declared occurring earnings management in firms they represent, as many as three-quarters of respondents believed that earnings manipulation behaviour is rather morally acceptable. About 17% of these respondents unambiguously confirmed that the mentioned practices are acceptable from an ethical point of view. In turn, among respondents who officially admitted that earnings management was not used in their organization, only 12.5% of individuals completely or rather agreed with the assertion that the earnings management phenomenon is ethically acceptable. Moreover, nearly 73% of this subpopulation's representatives considered earnings manipulation rather or definitely unethical behaviour.

The results of the U Mann-Whitney tests shown in Table 3 underlined that in the examined research sample, there are statistically significant differences in the ethical perception of earnings management behaviour by representatives of public companies manipulating and not manipulating reported profits (losses). This outcome allowed for positive verification of the first research hypothesis and indicated that implementing earnings manipulations in business practice could contribute to a more liberal approach of individuals in their moral assessment of these activities.



**Figure 2. The share of participants who consider earnings management as an ethically acceptable practice**

Source: own elaboration.

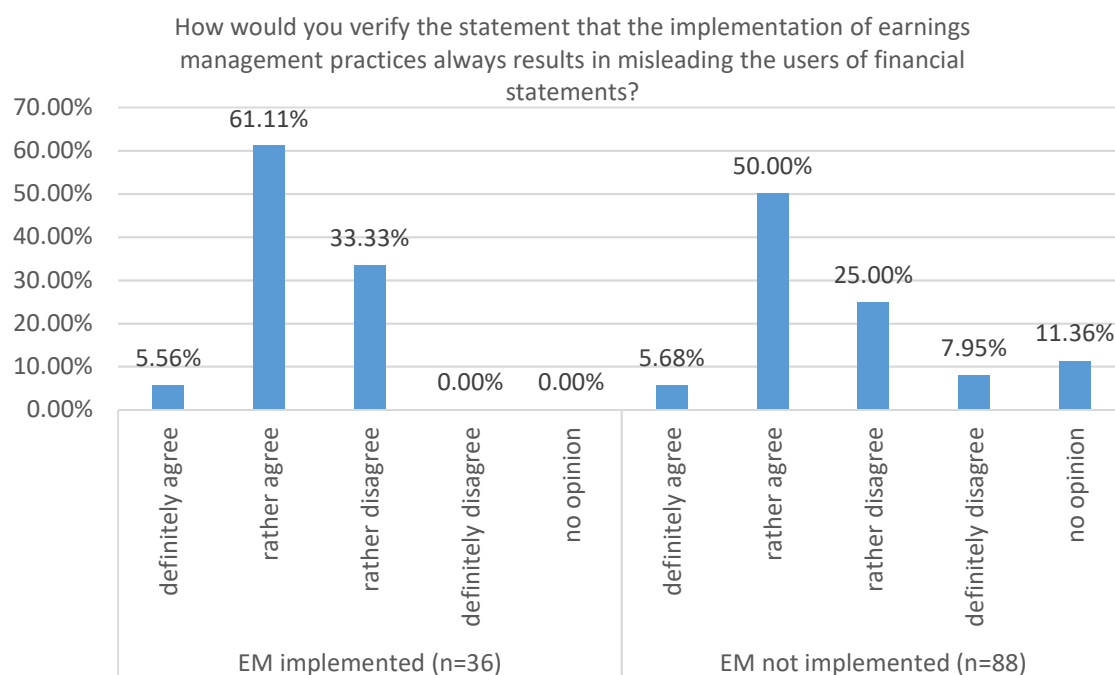
**Table 3. Results of the U Mann-Whitney test concerning the differences in perception of earnings management as an ethically acceptable practice**

Comparison	N	Mean Rank	Sum of Ranks	Test statistics Mann-Whitney U	Z	p-value
Firms that implement earnings management	36	25.63	922.5	256.50	-7.272	0.000
Firms that do not implement earnings management	75	70.58	5293.5			

Source: own study.

A closer analysis of judging the statement that the implementation of earnings management practices always results in misleading the users of financial statements by respondents provided several other results worthy of comment (Figure 3). The conclusions drawn from the empirical analysis showed that in the population of individuals who declared implementing earnings management, a larger percentage of respondents definitely or rather agreed with the statement mentioned above than among the remaining research participants. This remark may indicate that finance specialists managing earnings are generally convinced that the techniques used in altering reported data have in view the deterioration of the information provided to the stakeholders. On the other hand, this finding could point out a dominant way of perceiving the earnings management phenomenon in a grey or black light, as activities that mostly deteriorate the quality of reporting data and distort the image of the economic achievements of public companies. However, the obtained conclusions allow for a positive verification of the second research hypothesis presented in the introduction to the article.

In-depth research results in Table 4 demonstrate that among participants hired in firms that manipulated or did not manipulate earnings, there were no statistical differences in perception of earnings management as accounting or operating practices that always mislead other users of financial statements.



**Figure 3. The share of participants who consider earnings management as a practice always results in misleading the users of the financial statements**

Source: own elaboration.

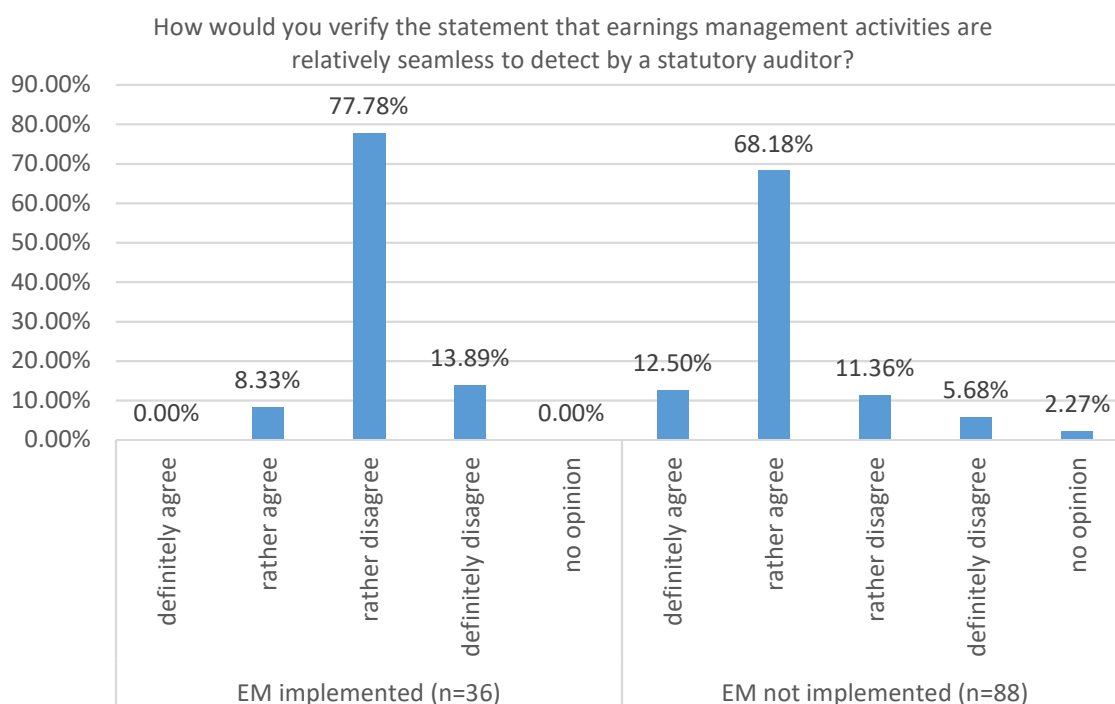
**Table 4. Results of the U Mann-Whitney test concerning the differences in perception of earnings management as a practice that always results in misleading the users of financial statements**

Comparison	N	Mean Rank	Sum of Ranks	Test statistics Mann-Whitney U	Z	p-value
Firms that implement earnings management	36	55.14	1985.00	1319.00	-0.587	0.557
Firms that do not implement earnings management	78	58.59	4570.00			

Source: own study.

The next step in the empirical analysis was to answer whether, in the respondents' opinion, earnings management activities are seamless to detect by a statutory auditor. The obtained responses presented in Figure 4 show that nearly 92% of individuals who declared earnings manipulating in companies they represent held the opposite opinion. This finding suggests that participants from the group of respondents who manage earnings believe that detecting the practices above is tricky. At the same time, respondents' opinions referred to both potential earnings manipulation strategies without distinguishing between accrual-based and real earnings management. This notice could be important because operational earnings management (as opposed to accounting earnings manipulation) constitutes activities that, in principle, are not subject to the jurisdiction of any external control system. Hence, the risk of detecting the 'intentionality' of low-level motives for undertaken actions was lower than for accrual-based earnings management behaviour.

Respondents who declared that earnings management did not occur in the companies they represent had a different position on whether earnings manipulation is seamless for auditors. Over 80% of participants from this subpopulation confirmed that they completely or rather agreed with the discussed statement. The results of the Mann-Whitney U test, presented in Table 5 confirmed the statistical differences in the perception of earnings manipulation towards potential detection by the auditor by representatives of both examined subpopulations. Thus, this outcome allowed for positive verification of the third research hypothesis.



**Figure 4. The share of participants who consider earnings management a relatively seamless practice to detect by a statutory auditor**

Source: own elaboration.

**Table 5. Results of the U Mann-Whitney test concerning the differences in perception of earnings management as a practice seamless to detect by a statutory auditor**

Comparison	N	Mean Rank	Sum of Ranks	Test statistics Mann-Whitney U	Z	p-value
Firms that implement earnings management	36	92.63	3334.50	427.50	-6.901	0.000
Firms that do not implement earnings management	86	48.47	4168.50			

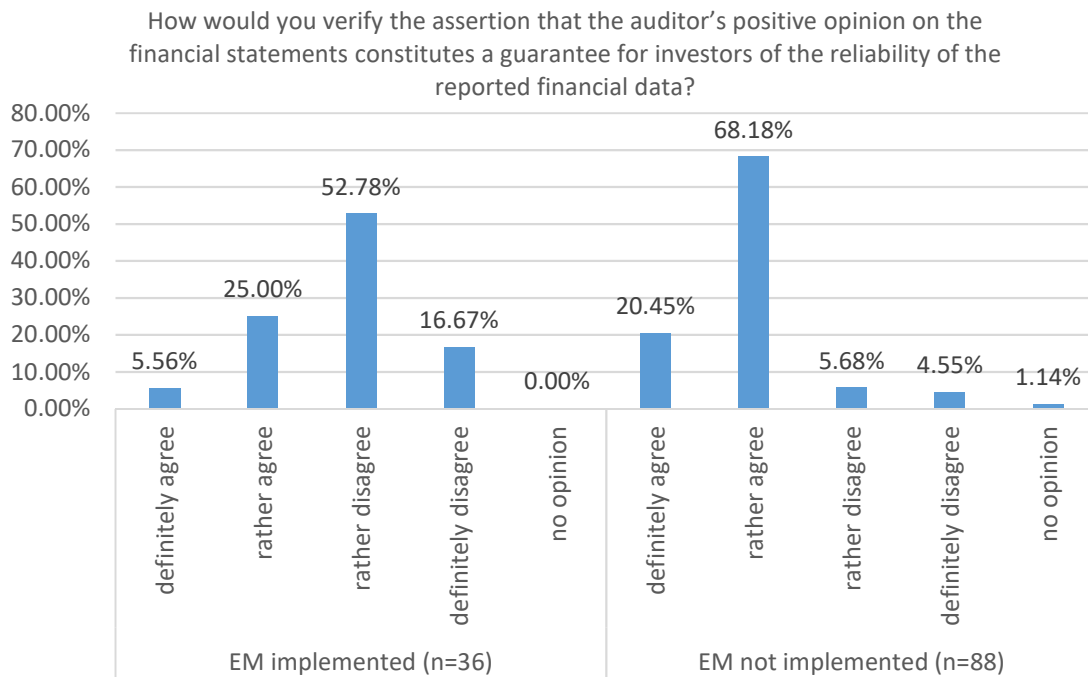
Source: own study.

In the last step of the questionnaire research, participants were asked to comment on the assertion that the auditor's positive opinion on the financial statements constitutes a guarantee for investors of the reliability of the reported financial data (Figure 5). The results proved that among individuals who confirmed the implementation of earnings management in companies they engaged, nearly 70% of respondents completely or rather disagreed with this statement. In the group of participants who did not admit to using earnings manipulation practices, nearly 90% of the respondents completely or almost agreed with the presumption that a positive opinion on the financial statements could be treated as a guarantee for the high quality of the reported data.

The results of the Mann-Whitney U test introduced in Table 6 confirmed that the comprehension of the assertion that the auditor's positive opinion on the financial statements constitutes a guarantee for investors of the reliability of the reported financial data differs statistically compared to respondents who admitted that managed earnings and participant who did not manipulate financial profits (losses).

The obtained results of empirical research highlight several findings that are worthy of comment. Firstly, they are consistent with the observations of Merchant (1989), who pointed out that managers usually have a poor opinion of the ability of auditors to detect earnings manipulation. Thus, this factor is not considered an important determinant of decision-making regarding managing reported data. There is also no answer as to whether the perception of the ease of detecting earnings management by statutory auditors among representatives of both surveyed subpopulations results mainly from their beliefs

or previous business experiences. The verification of the reliability of retrospective financial data by the auditor at the time earnings management is implemented will only deepen this insight. Secondly, it is impossible to clearly state which earnings management techniques are ethical and which are not. McNichols (2000) considers that a certain amount of conservatism characterizes every organization, and therefore, we should view every company as a potential manipulator. As indicated earlier, the diversified classification approach of earnings management does not exclude the occurrence of activities enhancing the quality of information communicated through earnings. Moreover, due to the research design constraint, respondents did not specify the magnitude of manipulation of reporting data that would qualify it as morally questionable. As a prior study indicates, in some cases, managers have strong beliefs that not managing earnings and missing the earnings benchmark could be unethical (Coram *et al.*, 2022).



**Figure 5. The share of participants who consider the auditor’s positive opinion on the financial statements constitutes a guarantee for investors of the reliability of the reported financial data**  
 Source: own elaboration.

**Table 6. Results of the U Mann-Whitney test concerning the differences in perception of the assertion that the auditor’s positive opinion on the financial statements constitutes a guarantee for investors of the reliability of the reported financial data**

Comparison	N	Mean Rank	Sum of Ranks	Test statistics Mann-Whitney U	Z	p-value
Firms that implement earnings management	36	87.65	3155.50	642.50	-5.699	0.000
Firms that do not implement earnings management	87	51.39	4470.50			

Source: own study.

Thirdly, the current study showed statistical differences in respondents’ attitudes towards the ethicality of earnings management operations in situations of confirmation or negation of their use. Conclusions from the study emphasize that contextual changes influence the way of perceiving the same object (phenomenon) and may cause different perceptual illusions. Implementing earnings manipulations contributes to a more liberal approach of individuals in their moral assessment of the undertaken actions. Managers’ perceptions of the earnings management phenomenon could depend on the premises of decisions regarding accounting and operational adjustments. Johnson *et al.* (2012) confirmed

this statement by examining managers' reactions to specific types of earnings management in cases where it led to benefits for the organization (individual stakeholder group) or personal gains. They proved that the ethical nature of an act had the greatest influence on the manager's ethical judgment. Considering further research the motives encouraging managers to take specific actions would provide empirical support for a better understanding of the ethics of earnings management issues.

## CONCLUSIONS

This article investigates the impact of earnings manipulation on the stakeholder's perception of earnings management in public enterprises from the Polish capital market. Consistent with research assumptions, this article provided evidence regarding the ethics of earnings management and the consequences of accounting or operational manipulations on the quality of reported data. The findings may contribute to raising the awareness of managers and financial officers on behavioural accounting issues.

This study proved that respondents who declared deploying earnings management in the companies they represent perceived the phenomenon of intentional manipulation of financial results less rigorously and more liberally than individuals engaged in firms that did not manipulate earnings. Utilizing the non-parametric Mann-Whitney U tests, this research showed statistically significant differences in the ethical perception of earnings manipulation between examined participant groups. Moreover, the conducted research allowed for the gathering of statistical evidence about the differences in the judgement of simplicity of detecting earnings management practices by a statutory auditor by individuals from both subpopulations. Finally, this study evidenced significant differences between the examined groups of respondents regarding the assessments of the assertion, claiming that the auditor's positive opinion on the financial statements constitutes a guarantee for investors of the reliability of the reported financial data.

The conclusions derived from the survey could be of interest to audit committees and regulators as they highlight that participants involved in earnings management practices perceive them as difficult to capture by auditors. The presented findings also serve as guidance in developing ethical standards by accounting associations. Although accounting codes of ethics do not cover COEs and CFOs, who are the real decision-makers in earnings altering in organizations, increasing ethical awareness and responsiveness among accountants can improve reporting data quality.

This study must be viewed with consideration of several limitations. Although the research conducted was anonymous, there is a likelihood of non-disclosure of the earnings manipulation practices by some respondents. Apart from the motives of undertaking managing earnings, participants sometimes do not want to admit engaging in questionable behaviour or consider it as the organization's secret. On the other hand, financial specialists and accountants frequently know earnings management tools but refrain from using them, which may result from attachment to previously used accounting solutions or fears about introducing changes. Despite this, the limited number of respondents willing to participate in the research means that this study did not fill the generalization conditions. Hence, we cannot directly apply the conclusions obtained to all public companies listed in the WSE.

This research leads to several future studies in the area of perception of earnings management in the Polish capital market. Future analysis can identify and summarize the main factors impacting ethical decisions in the process of earnings manipulation in the economic environment, taking into account the roles played by participants in the organization and identifying the initiators of earnings management activities. Since the study included domestic and foreign companies listed in the WSE, an interesting research thread is the comparative analysis of ethical earnings management attitudes among decision-makers from different countries and diversified regulatory regimes. Similarly, the perception of earnings management among representatives of concentrated forms of business cooperation, known for a high degree of economic and organizational integration, is worth further exploration.



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**Conflict of Interest**

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# Social strategies of emerging market multinationals in developing countries: The case of Polish firms in Sub-Saharan Africa

Aleksandra Wąsowska, Krzysztof Obłój

## ABSTRACT

**Objective:** The objective of the article is to explore the social strategies of Polish multinational enterprises (MNEs) entering Sub-Saharan Africa (SSA).

**Research Design & Methods:** We employed qualitative research methods and conducted a comparative case study of three Polish MNEs operating in SSA.

**Findings:** The social involvement of Polish companies in SSA is very limited. Forms of community involvement include knowledge-sharing and sporadic philanthropic activities, usually initiated by Polish stakeholders located in SSA. Polish companies engage socially because of market and relational reasons.

**Implications & Recommendations:** We developed a theoretical model explaining the low importance of social strategies in the activities of Polish firms in SSA. We argue that none of the companies surveyed felt strong stakeholder pressure in either the country of origin or the country of destination. We also explain the reasons for this.

**Contribution & Value Added:** We identified key factors shaping the social strategies of MNEs abroad and included them in a theoretical model to be tested in further research.

**Article type:** research article

**Keywords:** Poland; Sub-Saharan Africa; multinational enterprise; social strategy; stakeholder

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## INTRODUCTION

This article aims to address two important gaps in the literature. First, although the idea of corporate social responsibility (CSR) has attracted wide scholarly attention (e.g., Aguinis & Glavas, 2012; Frynas & Yamahaki, 2016), the social strategies of multinational enterprises (MNEs) operating in developing countries remain relatively underexplored (Park & Ghauri, 2015; Pisani *et al.*, 2017; Zhao *et al.*, 2014). This is a paradoxical situation as CSR research is particularly needed in regions suffering from poverty, environmental degradation, and institutional governance issues, as is the case in most developing countries (Egri & Ralston, 2008). In recent years, the transparency of corporate behaviour has risen (particularly due to the Internet), provoking civil society actions against socially irresponsible MNEs (Spar & La Mure, 2003) and increasing the role of CSR in the strategy of MNEs operating in developing countries (Vertigans *et al.*, 2016; Luo *et al.*, 2019). Given the growing social demands (Scherer *et al.*, 2013), there is an urgent need for more research into the social strategies of MNEs in developing countries, particularly in Sub-Saharan Africa (SSA).

Second, we know relatively little about the legitimacy strategies of the 'new breed' of MNEs from emerging markets that have recently populated the world's economy. These firms face particular

obstacles in their internationalisation path. Not only do they need to overcome the 'liability of foreignness' and the 'liability of origin' (widely discussed in International Business (IB) literature, but they also suffer from the 'liability of origin' (e.g., a poor reputation of the country of origin, lack of accumulated international experience) (Pant & Ramachandran, 2012). Despite a rich literature discussing how these firms overcome their resource limitations (e.g., Mathews, 2006; Bruton *et al.*, 2013; Obłój *et al.*, 2010), their stakeholder strategies remain much less explored. Given the fact that EMNEs are exposed to higher scrutiny and pressures to conform to host country societal rules (Cavusgil, 2021), our understanding of how stakeholder pressures influence the internationalisation choices of EMNEs is an important research gap (Bıçakcıoğlu-Peynirci, 2023).

We followed the call to widen the geographic reach of research on MNE stakeholder strategies (Pisani *et al.*, 2017) by focusing on infant multinationals from Poland venturing into the markets of Sub-Saharan Africa (SSA). While the classification of Poland and other Central and Eastern European (CEE) markets varies, with some reports considering Poland an advanced economy (e.g., UNCTAD, 2023), this article considers Poland an emerging market, following the classification of MSCI (2024). This classification is based on criteria such as openness to foreign ownership, ease of capital inflows and outflows, and stability of the institutional framework. Companies originating from Poland and other CEE countries have traditionally expanded into markets that shared geographical, cultural, and institutional proximity with their home markets, as noted by Trąpczyński *et al.* (2015) and Maciejewski and Wach (2019). However, there has been a shift in this trend with a growing number of CEE firms now starting to explore distant markets such as those in SSA. This global expansion has garnered significant attention from both the media and think tanks, as exemplified by Cibian (2017). Entries to SSA by companies from CEE represent an extreme case of the internationalisation of a complex, distant, and unknown environment by 'infant MNEs.' Our understanding of how these firms navigate such a difficult environment and whether they engage in social strategies is very limited. Possibly, in the 'infant' developmental phase, MNEs focus primarily on business strategies. However, if a rapid catching-up has occurred and these companies engage in social activities in these environments, the question arises as to how they do it and why. Against this backdrop, we asked the following exploratory research question:

**RQ:** Do Polish infant multinationals engage in social strategies during their expansion into Sub-Saharan Africa, and if so, how and why do they do it?

This question is addressed through a comparative case study of three Polish MNEs operating in SSA. The limited size of our sample results from the embryonic nature of the phenomenon, specifically the expansion of Polish companies into SSA markets, as well as the very restricted scale of investments by Polish firms in this region so far. The structure of this article is as follows. Firstly, we will present an overview of the theoretical framework. Then, we will discuss the research methods. Next, we will present the research findings. Finally, we will present conclusions discussing the theoretical and practical implications of the study.

## LITERATURE REVIEW

Two streams of International Business (IB) and strategy literature guide this study, *i.e.* MNEs' nonmarket strategy research and MNEs' legitimacy research. The mainstream strategy and IB literature focused on firms' behaviour serving the needs of 'market shareholders,' *i.e.*, customers and value chain partners (Baron, 1995). Only recently have these fields started to consider the power of 'nonmarket stakeholders,' *i.e.*, government regulators, NGOs, special interest groups, *etc.* A firm's actions to actively manage the institutional and societal context, composed of these 'nonmarket stakeholders,' have been referred to as a nonmarket strategy (Mellahi *et al.*, 2016). There are two different strands of literature on 'nonmarket strategies,' namely corporate political activity (CPA) and strategic corporate social responsibility (CSR) (Frynas *et al.*, 2017; Mellahi *et al.*, 2016). In this article, we focused on the latter, also exploring social strategies defined as 'the firm's plan[s] to allocate resources to achieve long-term social objectives and create a competitive advantage' (Husted & Allen, 2000, p. 25).

Luo (2006, p. 750) defines CSR of MNEs as a company's configuration of social responsibility, social responsiveness, policies, and programs, which promote its relationships with society (both at home and abroad). As they grow and globalize, MNEs need to consider the social, environmental, and economic demands of various stakeholder groups. Park and Ghauri (2015) argue that given the critical opinions portraying MNEs as exploiters of host countries' resources, the satisfaction of local society's expectations is crucial, especially in developing countries.

Studies on MNE legitimacy initiated by the seminal paper by Kostova and Zaheer (1999) focused on the problems raised by MNEs' multiple embeddedness (Meyer *et al.*, 2011). Since MNEs operate in many institutional contexts, they have to manage conflicting stakeholder pressures (Jackson & Deeg, 2008). Conflicts over MNEs' legitimacy are likely to be more intense if the home and host country institutions are dissimilar (Meyer *et al.*, 2014). Existing studies reveal several ways to establish and protect legitimacy in a foreign market such as cooperating with actors enjoying a higher level of legitimacy (Lu & Xu, 2006), imitating local practices and structures of other firms in the same field (Chan & Makino, 2007), CSR reporting (Marano *et al.*, 2017), listing on foreign stock markets, using quality certifications, pursuing collective actions (*e.g.*, trade associations) (Pant & Ramachandran, 2012), and using 'low-profile strategies' (Meyer & Thein, 2014). Tashman *et al.* (2019) reveal that while emerging market MNEs use CSR reporting as a legitimizing strategy, it is often disconnected from the actual CSR performance.

However, these studies typically address the issue of emerging market MNEs seeking legitimacy in developed countries and they are predominantly concerned with market stakeholders. Exceptions include a study of MNEs during the political turmoil in Libya, which revealed that social strategies (*e.g.*, maintaining strong ties with important social groups, providing socially valuable goods) complement, and sometimes substitute for, political strategies focused on government (Darendeli & Hill, 2016).

To gain and retain their 'license to operate' and achieve a competitive advantage, firms need to 'win the hearts and minds' of key stakeholders (Henisz, 2017). This may be particularly challenging in the complex, dynamic, and uncertain environment of SSA, where the crucial stakeholders are host country states (An *et al.*, 2024) and typically located in rural, poor areas, and preserving the land as a heritage from their ancestors (Olabisi *et al.*, 2019). Despite some evidence of increased sensitivity towards 'responsible investment' by MNEs in SSA (Freitas & White, 2018), we know little about the 'social' legitimizing strategies used by MNEs in this region. A recent exploratory study of MNEs from Western Europe operating in Cameroon revealed that these firms gain legitimacy and try to build competitive advantage by engaging with local stakeholders through CSR and political strategies (An *et al.*, 2024). Selmier *et al.* (2015) examined MNEs operating in East Africa and revealed that some of them employ local leadership practices and regional languages such as Swahili to build sustainable relationships with stakeholders. D'Amelio *et al.* (2016) noticed that MNEs' engagement in increasing access to electricity in SSA countries is, at least to some extent, motivated by legitimacy seeking. They also found that MNEs from institutionally weak countries (*i.e.*, those that generally suffer from a more acute lack of legitimacy), are more likely to use this legitimizing mechanism. Garrone *et al.* (2019) found that multinational enterprises (MNEs) are more successful in adopting electric infrastructure strategies if they come from countries with institutions similar to those in Africa.

## RESEARCH METHODOLOGY

We addressed a new and poorly recognized phenomenon and our research question was exploratory. Therefore, we used qualitative research methods, specifically employing a multiple-case study. To select case companies, we utilized purposeful sampling, focusing on Polish multinationals venturing into Sub-Saharan Africa, identified from publicly available data provided by the Ministry of Development and the Council of Investors in Africa. In 2016, when we were planning this research project, the Council of Investors in Africa comprised 10 firms. Contrary to the Council's name, most of its member enterprises were not actively involved in direct investment expansion into the African markets. However, some of the firms from the initial group that we originally wanted to include in our research project either withdrew from SSA (*e.g.*, Navimor), stopped exporting to SSA (*e.g.*, Ferrum), or went bankrupt (Ursus). In the final sample used in the study presented in this article, we

included three Polish MNEs that, as of 2023, had branches and subsidiaries registered in SSA countries and were actively selling their products and services in the region.

The primary source of data on the studied companies was semi-structured interviews conducted with key informants about the internationalisation strategy and social strategies used in SSA. Our interviewees were members of the management responsible for the internationalisation process and employees engaged in activities in African markets as indicated by them. All interviewees were males aged 40 to 55. In Company A, the largest in our sample and characterized by the greatest scale of operations in Sub-Saharan African countries, we conducted seven interviews, in Company B, the second-largest in size – five interviews, and in Company C – two interviews. We recorded and transcribed verbatim most interviews. In other cases, we took notes.

As our study is part of a larger research project: (Wąsowska *et al.*, 2024), data triangulation was possible by using diverse empirical material. Firstly, we utilized publicly available sources (financial reports and annual reports of the studied enterprises, newspaper articles, TV programs, and websites). Secondly, to better understand the context in which Polish enterprises operate, we conducted interviews with their stakeholders (diplomatic missions, non-governmental organisations, government agencies, and representatives of local communities) in Poland, Angola, and Nigeria. The latter two countries are among the largest economies in Sub-Saharan Africa and are important directions for the expansion of Polish enterprises. Thirdly, we used archival sources (gathered, among others, in the Archive of Modern Records in Warsaw), and we conducted interviews with eight diplomats with experience in African countries. In total, the study utilized interviews with 13 representatives of Polish enterprises (see Table 1). We used additional 40 interviews in triangulation (including eight with Polish diplomats in SSA countries and 32 with other stakeholders, including politicians, researchers, and NGO activists).

**Table 1. Firm characteristics**

Firm	Industry	Year of establishment	Employment	Sales revenues (in mln PLN)	Markets	Informants
A	IT services	1991	32 700	17400	SSA: Nigeria, Ethiopia, Angola	- Member of the supervisory board - Member of the management board - 3 middle-level managers - Managers of 2 subsidiaries in SSA
B	Semi-trailer production	1996	3100	3433	SSA: Cote d'Ivoire	- Member of the management board - Regional director - Legal counselor - Manager
C	Geosynthetic products and geotechnical services used in civil engineering	1960 (tannery) 1990 (PVC windows producer) 2010 (geosynthetic products and geotechnical services)	250	64	SSA: Rwanda, Nigeria	- Member of the management board - Communication Director

Source: own study.

We conducted the interviews between 2019 and 2020, and then, after the lifting of restrictions related to the COVID-19 pandemic, in 2022 and 2023. We conducted the first round of interviews in Poland, and the second round – mainly in Angola and Nigeria, in both English and Polish. We completed the data collection process in December 2023.

## RESULTS AND DISCUSSION

The studied companies had a diverse approach towards social strategies (Table 2).

**Table 2. Social strategies: Firm comparison**

Activity	Firm A	Firm B	Firm C
Transfer of know-how from HQ to local subsidiary	X		
Transfer of knowledge from home country to local business partners		X	
Corporate philanthropy initiated by the company	X		
Support of charity initiatives organized by Polish stakeholders in the SSA (embassies, religious communities)			X
Avoiding potential pressure from social stakeholders (low capital commitment)		X	

Source: own study.

When asked about their social strategies in SSA, managers of Company A provided three examples. Firstly, they emphasised the role of the transfer of know-how from Polish headquarters to subsidiaries in SSA as an example of ‘social value creation.’ For instance, the company created a team composed of Polish and local employees, who worked partially in Poland and partially in Ethiopia. Over the four years of the project’s realisation, approximately 50 Ethiopian employees visited Poland to learn and take this knowledge back to their home country. This attempt to create ‘social value’ in host societies constitutes a source of differentiation vis-à-vis developed markets MNEs, compared to which Company A – despite being one of the largest Polish MNEs – is considered ‘small.’ As one of our informants explained:

We believe that this is our attribute or something that we want to give to our partners in Africa, something which these big corporations do not give (...). We offer them the opportunity to work together and transfer know-how to them. In our strategy, we strongly emphasize the so-called local component, *i.e.*, we want to build skills on-site. We also aim to develop services through this social dimension based on the people we educate locally. This strategy has started to yield very good results. [A2]

Company A is one of the largest Polish MNEs. However, when compared to Western competitors, its scale is limited. The company’s founder is still present on the management board, the firm’s structure is flat, the decision-making process is flexible, and African operations are run mostly on an ‘entrepreneurial’ basis with a broad scope of autonomy for decision-makers responsible for the region. According to our informants, these are the reasons why Company A is more adaptive when it comes to formulating its social strategy. In contrast, Western competitors are unwilling to transfer their knowledge to African countries. As explained:

It is because of corporate rules. They do not share knowledge about their data sources. These companies are spread across Africa and have branches also in trade. They operate only in South Africa, Kenya, Nigeria, and Egypt. In four places. In other countries, they operate through local companies that represent them or, at best, have a single person that they hire as a representative. And they sell their licenses there, and that is all they care about. So, from that point of view, we are the ones who are attractive. We offer something more in Africa; we offer them on-site competence building and on-site service. [A1]

Secondly, besides the transfer of know-how, Company A engaged in corporate philanthropy, albeit to a limited extent. For example, they invited one of the best-known Ethiopian pianists to Poland and financed his recordings of an album with music composed by Chopin. Apart from being purely philanthropic, this initiative aimed at bridging the distance between Poland and Ethiopia. As our informant explains:



What we did was not well thought out, [but] somehow smart. We just agreed and did it. We walked around, gave away his albums to our local partners, etc. It was kind of maybe accidental, and the average Ethiopian did not get anything out of it. Besides, you cannot help 100 million Ethiopians. [A1]

Thirdly, Company A supported charity initiatives organized by Polish embassies in SSA. For example, it co-financed the so-called ‘diplomatic fairs’ organized on the occasion of national days, when the embassies buy sweets and other food from each other, and they offer their earnings to charity.

Company A resists pressure from host country stakeholders to offer its products on non-market terms. As one of our informants explains:

For example, in Nigeria, we were giving a presentation to energy companies in the presence of the Minister of Energy, and suddenly one of the directors of these energy companies asks, ‘If you want to do something here, then give it to us for free.’ And we keep hearing it over and over again—give something for free, provide subsidies, make donations. It is so obvious to them that it is really bad. That is how I see it because it should not be obvious. I believe that these countries should be helped, but not in such a way as to bring them more and more money. [A1]

Managers of Company B admit that they do not follow any specific social strategies in SSA, other than supporting their local partners so that they can develop their businesses. Other than that, the Company managers do not feel the need to engage in social initiatives. As explained by one of our respondents:

We do not have the scale, or the reach that would make us visible in the eyes of local communities. [B2]

The company limits its capital exposure to SSA markets to a minimum and its operations have a purely commercial nature. The regional manager of Company B has extensive experience in SSA, gained in other companies, and he is well aware of the social complexities involved in operating in SSA. As he explains:

Of course, ESG has a pragmatic dimension, *i.e.*, certain *strings attached* to specific projects, for example, in a situation where production activities run through areas where people live – actions are taken with the anticipation that they will make local stakeholders happy. I used to work in a cement plant and we had to build a wall for our business, which could potentially disturb people on site. We had two choices: either we go in the direction of confrontation, and someone breaks down this wall, or we try to prevent it, for example, by building a hospital or a school. [B2]

Although Company B is involved in large infrastructure projects, its business relies on delivering semi-trailers to the construction sites. The responsibility for legitimizing the construction projects in the eyes of local communities is in the hands of the partners of Company B. As the manager explains:

We are currently involved in a project in Guinea where one of the partners (the mine) is making efforts to please the local community (*e.g.*, by drilling for water). We provide transport equipment for the project. It is a significant project with a considerable environmental impact in an area where nothing has happened so far. However, the mine has to take responsibility for that. [B2]

For Company B, avoiding pressure from government and community stakeholders is an important factor in shaping the internationalisation strategy. One of the reasons why Company B decided to make a negligible capital commitment abroad is not to feel this pressure. As our interlocutor explains:

I avoid working on public projects. In fact, we have not had interaction with a public institution for a long time. Our model is ‘asset light.’ While these markets are quite numerous, they are small from our perspective. This model allows us to avoid getting involved in the long-estab-

lished, laborious, and complicated process that often generates corruption when building relations, especially with the administration. To a lesser extent, we have to consider complicated social dependencies and government interdependencies. [B2]

Company C focuses its CSR activities in SSA on supporting Polish missionaries and religious communities engaged in charitable activities in SSA. For example, it supports the Congregation of Franciscan Sisters Servants of the Cross from Poland, which operates a school for blind children in one of the poorest regions in Rwanda. As described by our informant:

We try to do our best to meet their needs—whether their car breaks down, they have an accident, or they need support in any other way. [C1]

Managers of Company C admit that cooperation with missionaries and religious communities gives them access to local knowledge and understanding of the society. As our informant explained:

The administration presents to a potential investor a very rosy picture, one that does not reveal the darker sides. On the other hand, the monks, some of whom were in Rwanda during the civil war and the genocide, know how these tensions in society were distributed then and how they are still prevalent. They are a valuable source of information about a potential investment but also about local people – their needs and shortcomings. [C1]

While the approach to social strategies of the studied companies differs, none of them encountered any specific pressures or threats from host country stakeholders. In the broader material gathered in the process of data triangulation, we found an example of a Polish company (which no longer operates in SSA) that engaged in 'reactive' CSR to mitigate dangers and establish legitimacy in the eyes of local stakeholders. A manager of this company declared in the Polish press:

We had a problem with fuel thefts. Every now and then our trucks or diggers had tanks totally emptied. Our managers started to visit the neighbouring villages, meeting important people. The company gifted some oxen, and some notebooks for the children. Then the thefts stopped. [Rzeczpospolita, 2013].

None of the studied firms encountered strong pressures from home country stakeholders either. One of our informants, a representative of the NGO sector, explained the lack of interest in the activities of Polish MNEs in SSA among the general public by the relatively early stage of development of civil society in Poland:

What I see is that in fact, in some countries, *e.g.*, in the Scandinavian countries, or in the United Kingdom, civil society is able to create social pressure on large corporations that, for example, violate human rights by investing somewhere far away at some other end of the world, and this is the difference, because, for example, in Poland, I do not see such possibilities. (...) That is just the way it is and we do not ask companies such questions, especially large companies, because the small ones usually just follow the lead of the larger ones. [T1]

Another reason is the relatively low interest in developing countries in general, and the region of SSA in particular, both in the government, the public, and NGOs. As explained by our informant:

Everything that appears in the media about poorer countries is a very stereotypical message. It is unfortunate but in my opinion, NGOs often contribute to the perpetuation of this stereotypical image of poorer countries, according to which they have nothing and people are unaware of anything which is obviously untrue. [T1]

One further reason is the lack of pressure from governmental institutions. Although some Polish firms receive state support in their internationalisation efforts (*e.g.*, by receiving export insurance), it is not used as leverage to put pressure on CSR, a fact that raises critical comments from activists:

There are those moments when the private sector uses public money, and then, in my opinion, this is the moment when we can say that this public support is followed by some

standards that should be met. (...) But in our country, all this is done in such a way as to make the life of our companies as miserable as possible, and, of course, the assumption is always that because they compete in this global market and do not have such a strong position, the Polish state must do everything to support them. We absolutely cannot do anything that could in any way discourage them from investing. [T1]

Activists do criticize the state's insufficient interest in the corporate responsibility of Polish MNEs operating in developing countries. However, they, or the NGO sector in general, do not exert pressure on any specific Polish firm operating in SSA. The only example of activists' criticism directed towards Polish MNEs was related to one MNE operating in the extractive industry (which, as of today, has almost entirely divested from SSA). The daughter of the founder (and sister of the family successor) runs a charity organisation active in SSA and is a public figure, hosting her own TV show about developing countries. One of our informants critically notes:

On the occasion of her TV show and her work with this foundation, [she] has kind of taken over the narrative about how [the company] does good in the world. It is very incomprehensible to me that it is so easy to adopt this narrative, and that basically, no one asks the question 'What about the core business?' [T1]

A critical article appeared in one of the leading Polish opinion magazines, in which activists criticized the 'hypocrisy' of the family and the discrepancy between 'signalling' CSR through philanthropic activity and low transparency regarding the social and environmental impact of the 'core business.' In response to this article, there have been other articles defending the activity of multinationals as actors 'implementing the market principles of the economy' and thus contributing to poverty reduction in host countries. This case illustrates ideological divisions, evident in the discourse on the activities of international corporations in developing countries. However, the existing research shows that the impact of MNEs is multifaceted and cannot be analysed in 'black' or 'white' terms. On the one hand, MNEs, the key actors of globalisation, play an important role in the development of both home and host economies and often become agents of positive changes in the institutional environment of the countries they operate in (Oetzel & Doh, 2009). However, they may also behave in a 'socially irresponsible' way, supporting corrupt regimes, and contributing to pollution and human rights violations (Giuliani *et al.*, 2023; Iborra & Riera, 2023). In summary, their socioeconomic value depends on specific actions they undertake in a given setting and the extent to which these actions are aligned with the ideas of CSR, responsible investment, and fair trade (*e.g.*, Rosińska-Bukowska, 2022; Zysk, 2016).

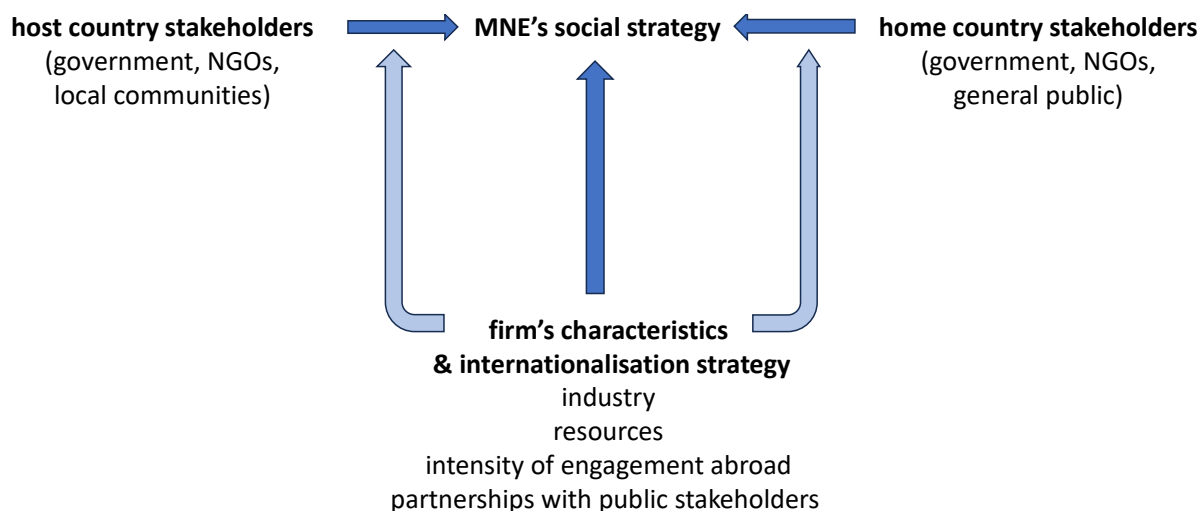
### Discussion

Our research question focused on if, how, and for what reasons Polish companies entering the Sub-Saharan Africa (SSA) markets undertake social strategies. From the theoretical and practical point of view, like many other corporate activities, social strategies can be accidental or systemic. Accidental strategies would consist of occasional moves addressing temporal pressures or opportunities, while systemic strategies would be elaborate, ongoing, and linked to the company's overall strategy and especially the need for legitimisation (Frynas *et al.*, 2017). At the same time, we can associate social strategies with low or high engagement in terms of resources and time devoted to these activities. Based on the conducted research, we can conclude that the social involvement of Polish companies in SSA is limited, as the social strategies of the studied companies are low-engagement and accidental.

Examples of forms of community involvement include knowledge transfer (Company A and, to a small extent, Company B) and sporadic philanthropic activities (Company A and Company C), usually initiated by Polish stakeholders located in SSA (*e.g.*, embassies and religious congregations). We can divide the reasons why Polish companies engage socially in the market and relational ones. The former includes knowledge transfer aimed at differentiating competitors from Western countries (Company A) and supporting the development of local business partners, thus contributing to the development of the company itself (Company B). To some extent, philanthropic activities seem to focus on creating relations with local partners and building a positive image of Poland, as the country of origin, in the

eyes of stakeholders. An example of this is the co-financing of an album with Chopin's music by Company A. At the same time, an important reason for undertaking philanthropic activities seems to be the desire to maintain friendly relations with stakeholders from Poland (Company A, Company C). None of the surveyed companies engaged in social activities aimed at mitigating potential threats posed by stakeholders (*e.g.*, local communities).

We propose the following explanation of the surprisingly limited and accidental engagement of Polish companies in SSA in their social strategies. Firstly, the limited social involvement of companies operating in SSA is linked to external conditions and the lack of pressure from both stakeholders in the home country and the target market. Secondly, it is associated with the characteristics of the examined companies, particularly the small scale of their operations. Model 1 illustrates the hypothetical relationships between these two answers, which should guide future research on this phenomenon.



**Figure 1. Drivers of MNE's social strategy**

Source: own elaboration.

Firstly, we propose that the social strategy of an MNE will depend on the firm's characteristics and its internationalisation strategy. This relationship reflects the internal drivers of MNEs' social strategies, grounded most probably in the firm's resources and its overall internationalisation strategy. Secondly, we argue that the MNE's social strategy will depend on external pressures from stakeholders in the destination country (including government, NGOs, and local communities) and in the country of origin (including government, NGOs, and the public). The strength of this pressure depends on stakeholders' values, needs, and organisation. At the same time, the strength of this pressure is moderated by company-specific factors (such as the size of the company and the industry in which it operates) and its internationalisation strategy, including the intensity of its involvement abroad and the extent to which the company benefits from the support of (and thus is dependent on) the public sector in its internationalisation. Companies that are larger and more endowed in resources (and, therefore, more visible) and operate in industries with a high environmental impact (*e.g.*, mining) will be more affected by stakeholder pressure. Similarly, firms that are more heavily involved in a particular market and more dependent on the government sector (acting as a customer in the target market or as a financing provider in the home country) will feel more pressure from stakeholders.

None of the companies included in our sample felt strong stakeholder pressure in either the country of origin or the country of destination. The lack of strong pressures in the host countries may be due to the fact that all the surveyed companies were relatively small (compared to their competitors from the West) and operated in industries that are relatively neutral for the environment and local communities. Company B was the only one participating in projects with potential environmental impact. It manages potential stakeholder pressure through a specific internationalisation strategy, which involves minimal asset involvement in the foreign market. On the other hand, the lack of pressure from stakeholders in

the country of origin may result from the relatively low interest in the SSA region as well as its rather stereotypical image in Polish society and among agencies overseeing this region. Moreover, the issue of social responsibility of Polish multinational corporations does not seem to be an important area of interest for Polish stakeholders. For example, for the Polish government, supporting the very presence of companies abroad (through the “Go Africa” program) seems to be more important than promoting ‘socially responsible’ activities or assessing the business or social effects of this program.

## CONCLUSIONS

We conclude that Polish infant MNEs undertake social strategies in SSA to gain legitimacy and build competitive advantage, which makes them similar to developed market MNEs, as recently studied by An *et al.* (2024). However, the strategies employed by Polish firms are characterized by low engagement and are often accidental. The limited social involvement of companies operating in SSA is due to external conditions (*i.e.*, lack of pressure from both stakeholders in the home country and the target market) and the characteristics of the examined companies, particularly the small scale of their operations. Unlike MNEs from developed countries or large developing economies, such as China (*e.g.*, Garrone *et al.*, 2019), Polish firms are in the early stages of their SSA expansion. Our study suggests that, at least at this stage, they do not engage in systemic social strategies in SSA markets.

The study allowed us to formulate some practical conclusions. Firstly, operating in a demanding institutional environment, such as Sub-Saharan Africa, requires managers to navigate often conflicting pressures from social and political stakeholders in the target market. Companies with limited resources, such as Polish infant multinationals, can address this challenge by avoiding stakeholder pressure (by limiting capital engagement) or by initially building relationships with stakeholders from their home country who are present in African markets (*e.g.*, religious communities or diplomats). Secondly, any institutional attempts to increase pressure for socially responsible activities (whether in the home country or in the target market) should be undertaken with caution, due to the risk of CSR decoupling or greenwashing.

Our findings have clear limitations which future research could address. Firstly, owing to the nascent stage of internationalisation among Polish firms in Africa, our sample is confined to three instances of MNEs in Sub-Saharan Africa. As more companies from Poland or CEE explore opportunities in Africa, a more comprehensive understanding should emerge to ascertain whether the observed patterns are widespread or if variations exist based on the characteristics of the studied companies. For instance, exploring how companies engaged in more ‘sensitive’ industries (*e.g.*, the extractive industry) navigate their relationships with stakeholders could provide valuable insights. Secondly, our model, developed on the basis of qualitative data, requires validation through quantitative data, preferably in diverse home and host country settings. Thirdly, our model contains three main independent constructs that are rather general: pressures of country-of-origin stakeholders, pressures of host country stakeholders, and firms’ characteristics and internationalisation strategy. Further research should make these variables more specific and allow for the evaluation of their dynamics. Finally, further comparative research should address the question of whether and how the social strategies of emerging market MNEs entering SSA differ from those of developed market MNEs.

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#### Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# Systematic literature review on the relation between export and economic growth

Karolina Kulińska

## ABSTRACT

**Objective:** The objective of the article is to determine the current state of scientific production and dominant research trends in the relation between export and economic growth through bibliometric analysis.

**Research Design & Methods:** The article is a systematic literature review. The research method is based on quantitative and qualitative character. I used Vosviewer to conduct a bibliometric analysis. I conducted the research based on the newest publications from the period 2010 to 2023 from the Scopus database.

**Findings:** The researchers from the USA constitute the largest group focusing on the relation between 'economic growth' and 'export'. Noteworthy, this topic is gaining increasing popularity across various countries, including China, Saudi Arabia, and Vietnam. Over the years, the increase in the number of publications has been steady. However, the most dynamic increase occurred between 2018 and 2019. The article that scholars appreciated the most discussed the relation between economic growth and export in the broader context. The scholars found a positive relationship between economic growth and variables such as energy use, financial development, capital, exports, imports, and international trade. The findings of the bibliometric analysis show that the relation between export and economic growth occurs in five main topic areas, i.e. 1) regionalization and globalization, 2) international trade, 3) 'green economy', 4) macroeconomics indicators and export, 5) export/import, economic growth and FDI. Evidently, over the years, scholars increasingly treated this relation in the context of 'green economy' and sustainable development.

**Implications & Recommendations:** Although the topic is not new and many scholars have analysed it, the systematic literature review with the use of the advanced bibliometric tool (Vosviewer) was missing. Such a review might be useful for adjusting international law and rules to adapt to the latest detected trend. It is especially important in the context of a 'green economy' and suitable development. For future research, it is visible that currently, such a systematic review is missing. It seems to be worth analysing the biggest database, e.g. adding the Web of Science or analysis not only articles but also monographies. To analyse the content, I recommend using new tools such as artificial intelligence (AI).

**Contribution & Value Added:** The article's added value consists of the updated and synthetic presentation of trends in the topics related to economic growth and export. The article enriched the current state of knowledge by including the latest articles which have been taking into consideration the most recent international trade conditions including the pandemic COVID-19 and Russia's aggression against Ukraine which influence both the export and economic growth worldwide. It was done thanks to the help of an advanced bibliometric tool (Vosviewer).

**Article type:** literature review

**Keywords:** economic growth; export; bibliometric analysis; systematic literature review; Scopus

**JEL codes:** F13, F43, O49

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## INTRODUCTION

Export influences economic growth according to many theories and researchers (Sultanuzzaman, 2019; Marjit & Ray 2017; Hagemeyer & Muck 2019; Yilmaz, 2022). The studies conducted prove that a country's

high export has a positive impact on the higher growth rate of country's output per capita (Chu *et al.*, 2023). Because of the globalization process, international trade, especially export has been treated as the main factor that impacts economic growth. There have been many discussions about whether export leads to economic growth or economic growth leads to export (Ali & Li, 2018; Kalaitzi & Cleeve, 2018; Odhiambo, 2022; Kim *et al.*, 2022). The opinion on this relation has transformed from the hypothesis that export leads to economic growth to the hypothesis that economic growth leads to higher export. Export-oriented policies might stimulate economic growth. This occurs as a result of more efficient allocation of resources and economies of scale (Awokuse, 2003). The first group focuses on studying the effects of export expansion on GDP for a chosen period (export-led growth). They usually use regression analysis as a method (Ekananda & Parlinggoman, 2017; Bajo-Rubio, 2022). They find that export growth increases economic growth for a certain time. However, it is neutral for long-term economic growth (Chu *et al.*, 2023). The second group seeks to analyse the long-term relationship that exists between economic growth and export from the opposite perspective. They focus on the impact of economic growth on export (export-led export). They assume that economic growth influences the rest of the economy and, as a result, increases export expansion (Dreger & Herzer, 2013; Yee, 2016).

Although many scholars have analyzed the topic and there exist both theoretical and empirical studies (Ekananda & Parlinggoman, 2017; Noura & Saaf, 2022), the recent international situation has changed due to the COVID-19 pandemic and Russia's aggression against Ukraine. As the pandemic rapidly spread, many countries have implemented precautions such as social isolation and border closures, resulting in a rise in unemployment rates in many countries leading, for example, to a decrease in exports and slowdown of economies (Liu & Chu, 2024). Regarding Russia's aggression against Ukraine, the consequences are still not widely investigated. However, it is already visible that the global export structure has undergone some changes since the war started (Steinbach, 2023). Consequently, international trade conditions have undergone transformation (Vidya & Prabheesh, 2020; Demir & Javorcik, 2020). Countries have faced problems with disruptions in supply chains (Meier & Pinto, 2020; Bonadio *et al.*, 2020). Governments are modifying international trade policies to adapt to the new international environment. It has already been noticed that the consequences of the measures taken by governments have harmed export (de Lucio *et al.*, 2022).

Having this in mind, this article has been created to determine the current state of scientific production and dominant research trends in the relation between export and economic growth through bibliometric analysis.

The main argument for this article is to supplement knowledge about the state, intensity, and research trends on this topic. The literature review is important not only as a base to show new directions in a subject field (Paul & Criado, 2020; Lopez-Morales, 2018; Christofi & Vrontis, 2022) but also might serve for new theory built (Christofi & Vrontis, 2022). Although this topic has been studied by many scholars in the literature, the international situation has diametrically changed, and it is important to identify if the literature reflects this change.

The article aims to answer the following research questions:

- RQ1:** What are the dynamics in publishing articles on export–economic growth relation in the period 2010-2023?
- RQ2:** How is the relation between export and economic growth presented in the most cited articles?
- RQ3:** Which countries are the most productive in terms of the number of published articles?
- RQ4:** What are the trends in the economic growth – export research?

To identify and recognize relevant literature on this topic, I used a systematic literature review (SLR). I chose the period 2010-2023 to identify the recent state of the knowledge. I used the Scopus data as the source of information. To present the data, I used VOSviewer. This tool provides the possibility to visualize bibliometric networks.

The article is divided into four sections. The first part will consist of a literature review, in which I will present the current state of the knowledge about the relation between export and economic growth. Moreover, I will show the results of theoretical and empirical studies. In the following parts, I

will describe the methodology for a systematic literature review and bibliometric analysis. Then, I will provide findings and scientific discussion. Finally, I will present the conclusions.

## MATERIAL AND METHODS

I based the research methodology on a systematic literature review. I chose this type of review, because it is the best method to answer research questions formulated in the introduction. Its objective is to aggregate, critically appraise, and summarize in one article all empirical evidence that aligns with selected criteria. In this method, scholars should use two different analyses: meta-analysis which is purely statistical, and qualitative analysis, which is based on content analysis (Wach, 2020).

Table 1 presents the research project design.

**Table 1. The research process employed in the article**

Phase 1: Design	Research questions	1. What are the dynamics in publishing articles on export-economic growth relation in the period 2010-2023? 2. How is the relation between export and economic growth presented in the most cited articles? 3. Which countries are the most productive in terms of the number of published articles? 4. What are the trends in the economic growth – export research?
	Data Source	Scopus Period: 2010-2023
	Selection Criteria:	Keywords: 'economic growth' and 'export' Subjects are filters: economics, econometrics and finance Document Type Reviewed: article Language: English
Phase 2: Progress	Records Diagnosis	1118 articles
	Reporting	Tool: VOSviewer software Forms: tables, figures, maps, descriptions
Phase 3: Description	Analysis & Presentation	Meta-Analysis: volume, scope, contribution Network-based analysis: authors, keywords Content-based analysis: topics, trends, impacts
	Synthesis	Discussion & confrontation Research niche identification Recommendation for future research

Source: own study based on Głodowska and Wach (2022).

The research process started with formulating research questions to ensure they aligned with the article's objective. I chose the Scopus database because other bibliometric analyses have shown that this database has a wider scope of articles and citations compared to Web of Science (Donthu *et al.*, 2021). I selected appropriate criteria. I chose the research period 2010-2023 to enable analysis of the most recent data after the financial crises of 2007-2009. To identify all documents related to the relation between export and economic growth, I used the keywords 'economic growth' and 'export.' To narrow down the research database, I applied other filters, for a subject, these were social science; economics, econometrics and finance, for document type – article, and for language – English.

Following the concept of material collection presented by Głodowska and Wach (2022), I analysed the scope and volume of the collected material. In the second stage, the identification of the most influential countries and the most cited article was done. In the third stage, content analysis was carried out to determine the current state of knowledge of the relation between export and economic growth.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

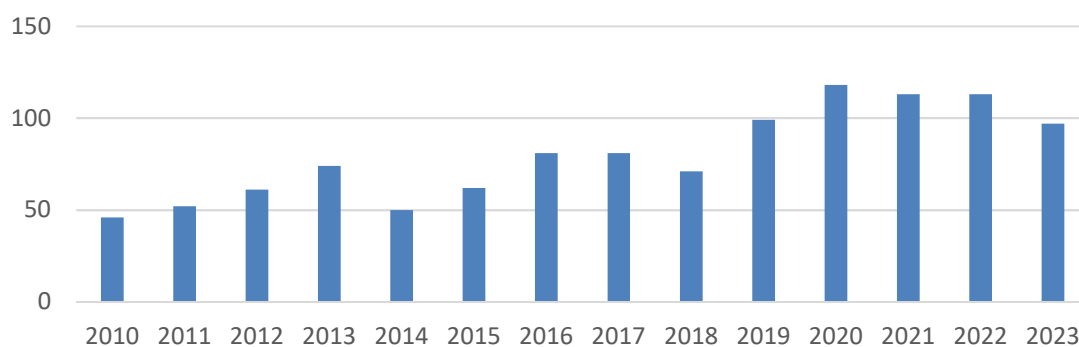
Economic literature widely explores the relation between economic growth and export and studies include various perspectives. Scholars conducted these studies with different objectives and the results contributed to state of knowledge with precious findings. The research on the relationship between exports and economic growth dates back to the Mercantilists. The theories about this relationship were developed by Adam Smith and David Ricardo, according to international trade theories. For Ampofo *et al.* (2020) who studied the example of Saudi Arabia, greater involvement in international trade, especially in export, stimulates economic growth. Scholars like Seok and Moon (2021) believe that agriculture export increases economic growth, but only when a common market exists among the countries. This was demonstrated by comparing developed countries with and without common markets in the period 1997-2016. To conduct this research, they created three subsamples (OECD, the European Union countries among OECD members, and the non-EU countries among OECD members). Moreover, the researchers studied the non-linear relationship between vertical and horizontal export diversification on economic growth. Horizontal export diversification refers to diversification among sectors, while vertical diversification is within the sector. The studies show a negative relationship between horizontal export diversification and economic growth and a positive but not relevant relationship between vertical export diversification and economic growth (Munir & Javed, 2018).

This article fills a research gap in the topic of the relation between economic growth and export. To my knowledge, there has been only one article recently that presents a systematic literature review on this relationship by dividing the findings into 'country-specific studies' and 'multi-countries studies' (Konya, 2020). The literature analysed in this article spans the period 1970-2012. According to Konya, there is no consensus on the existence of the causality as well as the direction of this relation. A systematic literature review of the newest articles is missing, which would summarize in one source the current state of knowledge. The article indicates that scholars should focus more on new approaches and perspectives to study the relation between export and economic growth.

## DISCUSSION

The recognition and analysis of the impact of exports on the volume, efficiency, and dynamics of economic growth are confirmed by theoretical frameworks shaped by both international trade theories and economic growth models. This relationship has been empirically verified for many years. However despite confirming the importance of international exchange for the economy, it has not been possible to characterize this impact. Nonetheless, a survey of the latest literature since 2010 provides interesting new insights describing the relationship between exports and economic growth.

Figure 1 presents the change in the number of published articles included in the search. Considering that I conducted the search on December 5, 2023, it may be assumed that the database from 2023 was mostly complete.



**Figure 1. The fluctuation in the number of published articles on the relationship between economic growth and exports from 2010 to 2023**

Source: own elaboration based on Scopus Database.

The number of articles issued with the keywords 'economic growth' and 'export' has increased from 46 in 2010 to 97 in 2023. Figure 1 illustrates that the topic has experienced significant growth throughout the study period. The most dynamic increase occurred in 2019. While it is not clear why the most significant growth happened in 2019, it is worth emphasizing that it was the last moment before the COVID-19 pandemic, which fundamentally altered economies.

**Table 2. The most cited article on the relation between economic growth and export in terms of number citations from 2010 to 2023**

Authors	Title	Year	Journal	Number of citation
Shahbaz; Khan; Tahir	The dynamic links between energy consumption, economic growth, financial development and trade in China: Fresh evidence from multivariate framework analysis	2013	<i>Energy Economics</i>	533
Manova	Credit constraints, heterogeneous firms, and international trade	2013	<i>Review of Economic Studies</i>	509
Shahbaz; Raghutla; Song; Zameer; Jiao	Public-private partnerships investment in energy as new determinant of CO2 emissions: The role of technological innovations in China	2020	<i>Energy Economics</i>	334
Hartmann; Guevara; Jara-Figueroa; Aristarán; Hidalgo	Linking Economic Complexity, Institutions, and Income Inequality	2017	<i>World Development</i>	325
Amiti; Weinstein	Exports and financial shocks	2011	<i>Quarterly Journal of Economics</i>	309
Kar; Nazlıoğlu; Ağır	Financial development and economic growth nexus in the MENA countries: Bootstrap panel granger causality analysis	2011	<i>Economic Modelling</i>	303
Berg; Ostry; Zettelmeyer	What makes growth sustained?	2012	<i>Journal of Development Economics</i>	223
Jarreau; Poncet	Export sophistication and economic growth: Evidence from China	2012	<i>Journal of Development Economics</i>	190
Balcilar; Ozdemir	The export-output growth nexus in Japan: A bootstrap rolling window approach	2013	<i>Empirical Economics</i>	178
Brückner; Ciccone	International commodity prices, growth and the outbreak of civil war in Sub-Saharan Africa	2010	<i>Economic Journal</i>	178
Shahbaz; Khan; Tahir	The role of extensive and intensive margins and export growth	2013	<i>Energy Economics</i>	170

Source: own study based on Scopus Database.

Many of the articles are co-authored with authors hailing from different universities and countries. Noteworthy, these articles cover a wide range of thematic categories. The most cited article is by Shahbaz *et al.* (2013). The authors come from different Universities. The article was published in 2013 and it has reached 533 citations. This article does not describe directly the relation between economic growth and export. Instead, it investigates the relation between energy use and economic growth, incorporating financial development, and international trade in the case of China. According to the results of the research process, any reduction in energy use due to energy conservation policies might decrease the potential benefits from international trade, especially export. Consequently, trade-led growth will be effective.

Manova (2013) wrote the second most cited article published in the *Review of Economic Studies*. It does not directly explain the relation between economic growth and export but it focuses on the effect of credit constraints on export flows. Empirical studies prove that weak financial institutions result in fewer destination markets, reduced export product variety, and lower aggregate trade volumes. The decrease in export has a significant negative impact on economic growth, especially for less developed countries whose economies rely on export.

The third most cited article examines the relation between public and private partnerships investment in the energy sector and carbon emission in the context of the role of technological innovations. The authors have found that carbon emissions and economic growth influence export in the long run.

Based on the most cited articles, it is worth noticing that the scholars analyse the relation between export and economic growth in the more complex context. They link it, especially to energy consumption and how it influences the export and economic growth. Another point to highlight is the importance of financial aid for export growth which consequence will lead to economic growth. Noteworthy, the articles from Table 2 are not the most recent ones. The most cited article was published in 2013 and the newest article from Table 2 was published in 2020. The articles related to the pandemic COVID-19 and Russia's aggression against Ukraine are not cited, the reason for this might be related to timing (the ones from 2013 have been available for over 10 years) or the fact that still, the relation between export and economic growth in the context of pandemic COVID-19 and Russia's aggression against Ukraine are not yet popular amongst the researchers.

Table 3 shows the most productive country as far as the keywords 'economic growth' and 'export' are concerned. The United States of America takes the first place with 171 articles, followed by China with 114 articles and the United Kingdom with 88 articles.

**Table 3. Productivity of countries in publishing articles with keywords 'economic growth' and 'export' from 2010 to 2023**

Country	United States	China	United Kingdom	Australia	India	Turkey	Pakistan	Malaysia	South Africa	Italy
Number of articles	171	114	88	64	57	57	42	41	39	36

Source: own study based on Scopus Database.

The next step was to analyze the most relevant topics in the published documents that were included in the search. I chose to set the threshold as the minimum number of occurrences of a term = 10. It has limited the database to 157 words (out of 3381). I excluded the keywords 'export' and 'economic growth.' I created five clusters:

1. Red – global economy – regionalization and globalization.
2. Green – international trade policies and performance.
3. Blue – 'green economy' – environmentally focused in export.
4. Yellow – macroeconomics indicators and export.
5. Violet – economic growth and FDI.

The above five main clusters concern mostly international trade relations with some particular differences. Graphical presentation of clusters are presented in figure 2.

Red cluster occurs in the field of globalization and regionalization. The main opinion is that globalization influences positively developing countries' economic growth by providing international trade opportunities. As a result of higher economic, political, and social integration, export growth is easier to achieve thanks to lowering trade barriers (Rao & Vadlamannati, 2011; Chang *et al.*, 2013). The example provided by Banga and Balchin (2023) elaborates on African regionalization which is expected to boost regional trade and investment and influence positively economic growth. It should be obtained by trade liberalization within a group of countries in the agricultural sector. The most important factor of globalization is the formation of a knowledge-based economy which is the main resource of the economies' growth that is achieved by high-technology exports (Zhylynska *et al.*, 2020).

The scholars also study the relationship between export competitiveness and economic growth. Studies conducted by Islam *et al.* (2021) prove that the long-run relationship between export competitiveness and economic growth across studied countries (Bangladesh, India, and Sri Lanka) does not exist. Importantly, these studies considered only tea export but for future researchers might be beneficial to study other major agricultural exporting products as it might bring different results since the tea sector is very particular.

The green cluster focuses on the relationship between economic growth and export from the perspective of international trade its policies and performance. The articles in this group study the impact

of trade liberalization on economic growth (Lora *et al.*, 2012; Manni *et al.*, 2012; Duru *et al.*, 2020). For most of them, they prove that trade liberalization increases economic growth. Moreover, Carballo *et al.* (2022) conclude that the impact of the trade agreement on exports is visible positive. According to Ponusamy (2022), export specialization matters in terms of benefits from trade liberalization. That is why manufacturing exports have experienced the highest benefits contrary to resource-rich economies which seem not to benefit much from it. The articles that concern COVID-19 usually occur in green clusters, describing the impact of the pandemic on international trade. It was proved by scholars that international trade, exports and imports of all countries have declined due to the increase in trade costs resulting from COVID-19 (Elyta *et al.*, 2022). Countries where export is characterized by lack of diversification were more affected by the pandemic than the countries where export was highly diversified (Elyta *et al.*, 2023). This is due to the fact that for countries with diversified exports some sectors have experienced negative effects and some positive effects during COVID-19 (Petryle, 2022).

Blue cluster emphasises the importance of environmental focus in export. An increasing number of articles concern the impact of economic growth and export on the environment and higher carbon emissions (Zhou & Zhang, 2023; Huang *et al.*, 2023). They prove a positive correlation between them. Studies also indicate that export and economic growth withhold resource sustainability (Qiao *et al.*, 2023).

Yellow cluster mainly describes the macroeconomics perspective, such as inflation, exchange rate impact, and monetary policy in relation to exports. The analysis of the relationship between inflation on economic growth, and export reveals findings that emphasise the importance of controlling inflation levels, as they negatively affect both economic growth and export (Ujkani & Gara, 2023; Azam & Khan, 2022).

The last cluster (violet) is related to the relation between export, economic, and foreign direct investment. Scholars have analysed the relation among these three determinants not only in a single country – Peru (Bazan Navarro & Alvarez-Quiroz, 2022) but also in a region – ECOWAS (Haini *et al.*, 2023). They have all shown that both export and FDI play a crucial role in economic growth. Diversification of export enhances economic growth gained from foreign direct investment. Therefore, the economic policy path should be directed towards attracting foreign capital to increase foreign direct investment.

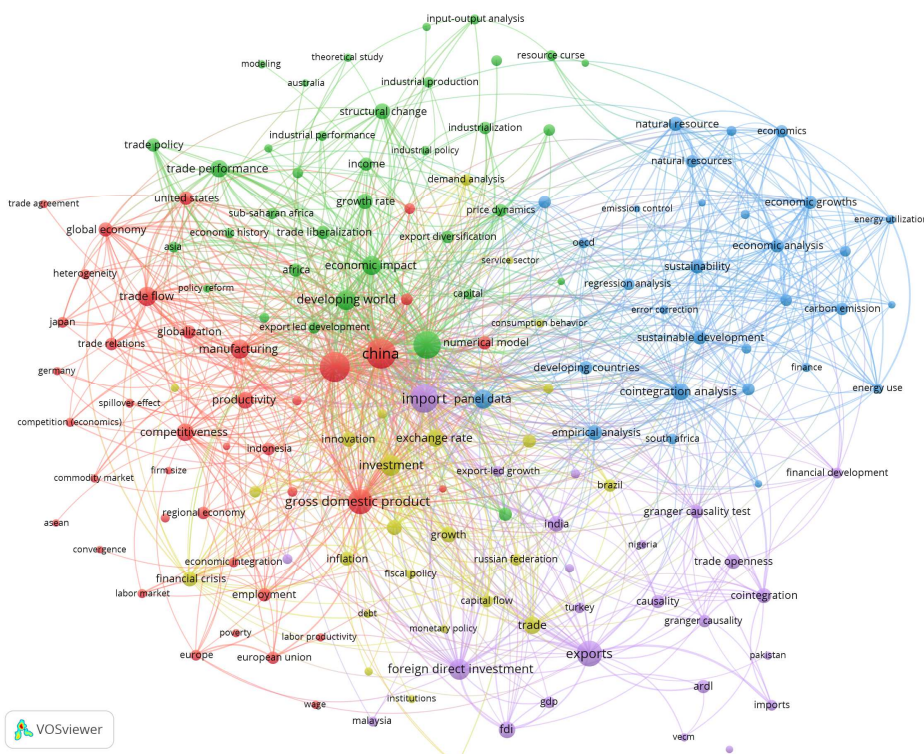
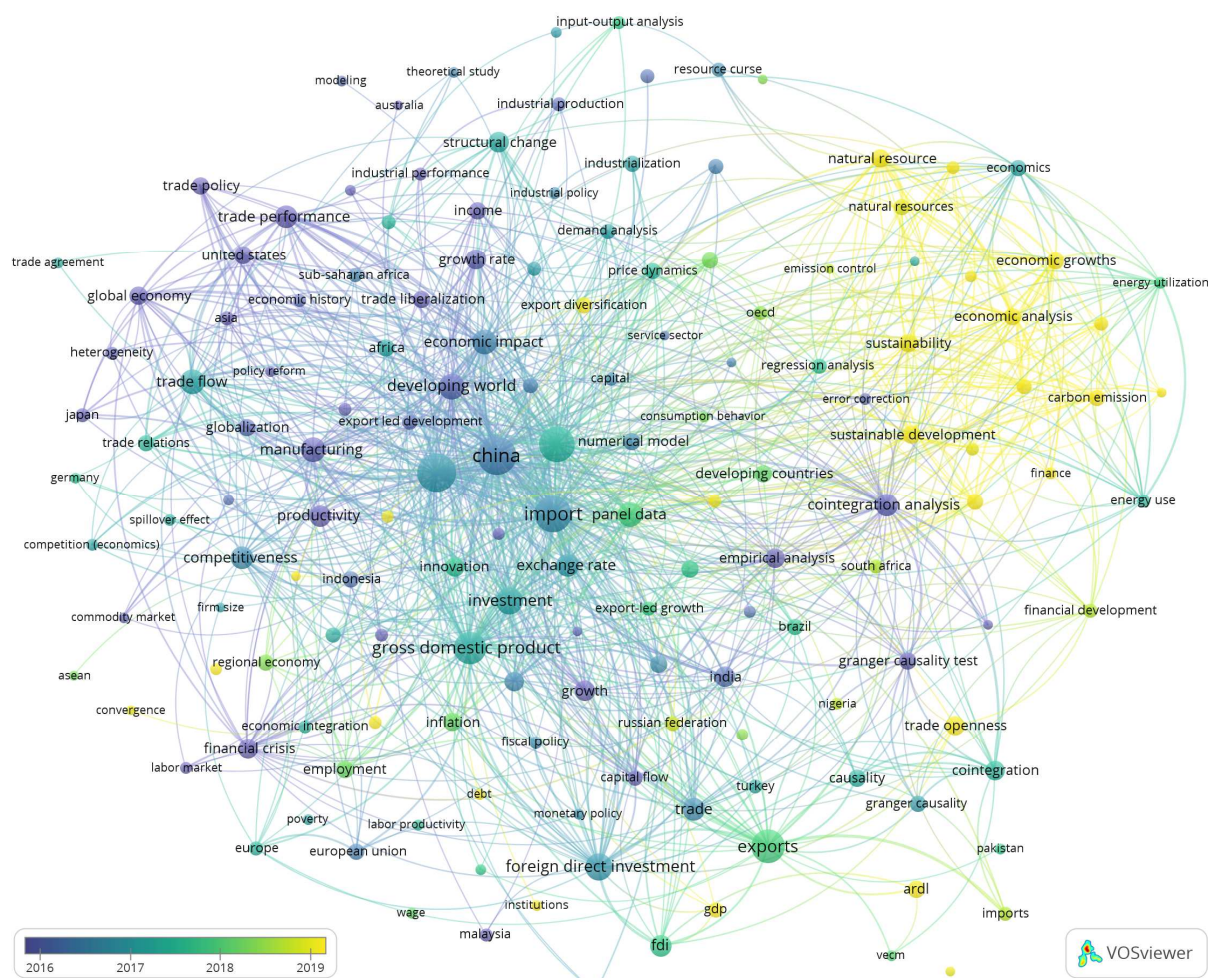


Figure 2. Terms co-occurrence map based on the text data (article keywords)

Source: own elaboration in VOSviewer based and Scopus database.





**Figure 3. Terms co-occurrence map based on the text data (article keywords) with timeline**

Source: own elaboration in VOSviewer based and Scopus database.

Figure 3 presents the trend of the keywords over the years within a chosen period. Dark blue colours show the keywords which appeared at the beginning of the studied period, mostly linked to the green cluster. At that time, the most common words related to international trade, its policies, and performance. The keyword 'financial crisis' does not belong to the green cluster but appeared around the year 2010. The next cluster that appears was the red one, which describes the keywords 'globalization' and 'regionalization'. In the most recent articles, keywords from the blue cluster, which focus on the importance of environmental focus in export, appear. Nowadays, scholars focus mostly on natural resources, carbon emissions, and sustainable development.

## CONCLUSIONS

The objective of this study was to review the last 13 years of research on the relation between economic growth and export.

This literature review allowed me to conclude the following:

1. The number of articles issued with the keywords 'economic growth' and 'export' has increased from 46 in 2010 to 97 in 2023. The most dynamic increase occurred in 2019.
2. The most cited article was published in 2013 and related not only to the relation between 'economic growth' and 'export' but also to the link between energy consumption, economic growth, financial development, and trade. The empirical studies were conducted using China as an example.
3. The most productive country was the United States of America. Noteworthy, this topic is gaining increasing popularity across various countries, including China, Saudi Arabia, and Vietnam.

4. The relation between economic growth and export occurs in five main areas of topics, *i.e.* global economy – regionalization and globalization, international trade policies, and performance, ‘green economy’ – environmental focused in export, macroeconomics indicators and export, export/import economic growth and FDI. We might observe that recently, researchers have focused on the ‘green economy’ – environmental perspective on this topic.
5. Scholars analysing the relation between economic growth and export mainly agree on the positive relation of trade liberalization on economic growth and export. Moreover, the impact of globalization is also positive on economic growth and export. They find a link between carbon emissions and economic growth. The formation of a knowledge-based economy is the main resource of the economies’ growth achieved by high-technology export.
6. In the context of COVID-19, scholars have proven that international trade, exports, and imports of all countries have declined due to the increase in trade costs resulting from the pandemic. Moreover, the authors of the articles prove that the economic growth of countries which lack export diversification has been more negatively affected.

The above results reflect the current economic and social situation. The analysis of the relation between economic growth and export in the context of environment protection and sustainable growth is becoming increasingly popular. This is the consequence not only of the implementation of environmental protection policies but also of raising awareness of society about environmental degradation. However, while the relation between economic growth and export is still the most popular in the United States of America, it is evident that scientists from developing countries notice the importance of this relation. While analysing the relation between economic growth and export during COVID-19 and just after the pandemic, the researchers have proven that it is essential for economies to have a diverse export portfolio.

The conclusions that we might draw based on the gathered material are not complete because the analysis covered only articles from the Scopus database. I did not include articles from Web of Science. It would be worthwhile to analyse the biggest database, *e.g.*, adding Web of Science or analyse not only articles but also monographs. For analysing the content, I recommend new tools based on artificial intelligence (AI).

As the articles about the relation between economic growth and export during COVID-19 are very limited and none concern this relation during Russia’s aggression against Ukraine, it is recommended to investigate again this relation under these conditions.

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# Factors shaping environmental awareness of young adults and its importance in market decision-making processes

Anita Proszowska, Mariola Mamcarczyk, Robert Lisowski

## ABSTRACT

**Objective:** This study aims to present the results of the analysis of factors influencing the ecological awareness of young adults and their importance in market decision-making.

**Research Design & Methods:** The study utilized an online survey sheet that constituted the basis for the conclusions. The survey covered selected students of two universities in Krakow who completed 540 questionnaires. We applied cross-tabulation analysis in various cross-sections was applied using Pearson's chi-square statistics, contingency coefficient, and Cramer's V coefficient. We based the analysis on the declarations of young adults about their selected behaviours that significantly impact the state of the natural environment and, at the same time, require organisational and/or financial commitment from them.

**Findings:** We established that the surveyed young adults had a relatively high awareness of the importance of pro-environmental behaviour for the general climate situation in the world and the related well-being of humanity. At the level of description of the surrounding reality, the responses included both concern for the planet's future and fear of the deterioration of the climate situation. At the same time, the young adults were not ready to increase their involvement in pro-environmental activities. They declared a lack of interest in the possibility of financial support for broadly perceived ecological activities. Pro-environmental aspects are not crucial for them in purchasing or employment decisions. The basic forms of commitment to the environment are promotional campaigns which they occasionally join, such as collecting plastic bottle caps.

**Implications & Recommendations:** Similarly to the research results described as part of the literature review, the results show that to increase the involvement of young adults in pro-environmental activities, they need to be offered simple activities that do not require their financial involvement. A further increase in involvement will only be possible after the implementation of further educational campaigns.

**Contribution & Value Added:** Further research proposed a generalised linear model (GLZ) that helped describe the relationship between market decisions made by young adults and their demographic characteristics. We considered the variable containing answers to the question 'Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?' as the dependent variable. The obtained research and analysis results allowed for evaluating the answers to the question about the respondents' gender and form of studies to be dependent variables.

**Article type:** research article

**Keywords:** ecological awareness; young adults; the Polish market; the generalised linear model (GLZ); environmental behaviour; making decisions; ecological habits

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## INTRODUCTION

The natural environment is now becoming an increasingly valuable asset for entire societies. It is becoming increasingly clear that caring for its safety requires knowledge, commitment, and large investments from all market participants (Akbar *et al.*, 2023). Therefore, scholars conduct more research on



the willingness of various social groups to engage in activities. The concept of a circular economy (CE) is becoming increasingly popular among scientists, but its implementation encounters many difficulties in practice. This is especially evident in countries such as Poland, where delays in the implementation of more ecological energy sources (other than fossil fuels) or lack of involvement in the sorting and management of industrial waste mean that the process of achieving a circular economy will probably spread over a long period (Malik & Janowska, 2019). Determining the level of awareness in society of the need to introduce pro-environmental solutions is especially important for the concept of process implementation. Knowledge on this subject will allow for clarifying information messages to support society in making purchasing decisions that benefit the environment (Prasad *et al.*, 2021).

The article aims to show the findings of analysing factors influencing the ecological awareness of young adults and its importance in the market decision-making process. The analysis is based on the declarations of young adults about their selected behaviours that significantly impact the state of the natural environment and, at the same time, require organisational and/or financial commitment from them. The indicated areas include the level of acceptance of incurring the costs of CO<sub>2</sub> production, willingness to engage in social campaigns for environmental protection (collecting bottle caps) and the approach to travelling in public space and using a private car for this purpose. The analysis of the attitudes mentioned above focused on searching for the demographic characteristics of young adults that influence them. The analysis covered mainly:

- place of residence (both in terms of the size of the place of origin and living with or without parents);
- gender;
- source of income;
- study mode.

Research conducted using an online survey sheet constituted the basis for the conclusions. The survey covered selected students of two universities in Krakow who completed 540 questionnaires. We applied cross-tabulation analysis in various cross-sections using Pearson's chi-square statistics, contingency coefficient, and Cramer's V coefficient.

Further research proposed a generalised linear model (GLZ) that helped describe the relationship between young adults' market decisions and their demographic parameters. We considered the variable containing answers to the question 'Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?' as the dependent variable. The answers to the question about the respondents' gender and form of studies were dependent variables.

## LITERATURE REVIEW

Intuitively, 'awareness' refers to having knowledge or orientation in a specific topic. Polish encyclopaedia by PWN supplements this definition with the state of wakefulness, or a particular ability of the mind to reflect objective reality. Furthermore, scholars pay attention to social consciousness as a set of ideas, beliefs, and views typical for entire groups, classes, and societies and determined by their social existence. It includes both the attitudes and opinions of individuals, as well as established forms of spiritual life: ideology, law, morality, science, *etc.* (Encyklopedia Popularna PWN, 1982; Altaher, 2013; Bernaciak *et al.*, 2021).

Similarly, we may indicate that a responsible attitude towards the environment, resulting from knowledge and determination to preserve it in its original state, represents ecological awareness. However, this connection is not evident for some researchers. For example, Boztepe (2013) begins his considerations on ecological awareness with the question of whether and to what extent it is part of general social awareness. Environmental awareness is challenging to explain unambiguously. Therefore, there is generally no single interpretation of this concept. The normative definitions include the proposed optimal model of the ecological element of awareness, the implementation of which will allow for relatively conflict-free coexistence of man and the environment. Descriptive definitions indicate parts of individual or social awareness concerning the relationship between man/society and the environment.

In general, ecological awareness represents all recognised values, ideas, and opinions on the environment as a place of life and human development (society), shared by particular social groups in a specific historical period (Bernaciak *et al.*, 2021). Knowledge that can be acquired formally and informally is one of their essential elements. For Orea-Giner and Fusté-Forné (2023), human ecological awareness expresses their understanding of the environment and the ability to perceive phenomena, their interrelationships, causes and consequences, and their willingness to initiate actions to preserve the natural environment. Concluding, we can consider ecological awareness as the sum of knowing this field, the ability to assess and adopt a specific attitude towards the actual situation. It is something subjective, *i.e.*, one's assessment and one's thoughts about the surrounding environment. People can express it, for example, by saving electricity and water, using public transport instead of a car, or segregating waste (Mehdikhani & Valmohammadi, 2022). Wierzbiński *et al.* (2007) write on the role of environmental awareness in shaping pro-environmental behaviour. According to Lonc (2001), modern societies already know and accept ecological norms, patterns, and ideals, but they do not implement them in activities undertaken in the social sphere (as part of their professional role). Therefore, there is a need to take deliberate and integrated actions aimed at deepening and consolidating knowledge and building and strengthening society's ecological awareness.

Increasing ecological awareness should be apparent in limiting the negative impact of humans on the environment, among others, and understood as the knowledge and interest that Polish residents have in the field of the natural environment and its protection. We may consider all actions that anyone can undertake to have a positive impact on the environment (gov.pl). Every third Pole does not segregate waste, and only 15% can do it correctly. Moreover, 31% of respondents declare that they feel the impact of their buying processes on the natural environment. The data indicate that there is still much more to be achieved in terms of developing the ecological awareness of Poles (Lisowski *et al.*, 2022).

Contemporary market participants are increasingly reducing their water consumption (over 90%). They also choose other ecological solutions even if they have to incur additional costs (82%). Furthermore, 61% of respondents can choose a bicycle or public transport instead of using a car and 95% of Poles save energy most often by turning off the lights in unused rooms, using energy-saving light sources, or purchasing household energy-saving appliances. A third of respondents wanted to take further action to reduce energy bills. Usually, they planned to use renewable energy sources (Badania Świadomości i zachowań ekologicznych mieszkańców Polski w 2020 r., 2020).

However, according to Kwiatek and Skiba (2017), most Poles are not ready to spend more of their income on pro-environmental solutions, *e.g.*, clean energy. Saving water or energy is driven more by economic considerations rather than by a conscious pro-ecological attitude.

Building ecological awareness also occurs during professional life, which is important in shaping the attitudes of adult recipients of all campaigns promoting environmentally friendly activities (Munaier *et al.*, 2022). The increase in ecological awareness is necessary for making decisions by central and local authorities, but also society, to take effective actions to protect the environment (Boztepe, 2013).

From the point of view of this study, publications on students' ecological awareness are of special importance. For example, we can indicate the work of Bernaciak *et al.* (2022), which describes the cross-cultural importance of environmental problems, of which both Polish and Arab students are aware. The differences are visible primarily in the assessment of the environment's present state and in the declared readiness to make sacrifices for it. In turn, compared to students from Ukraine, Polish students of the researched fields of study at agricultural universities are characterised by a higher level of environmental awareness and readiness to undertake professional pro-ecological activities. Moreover, lecturers at these universities are aware of the need for environmental education in the teaching process. They are convinced that they should expand and deepen environmental knowledge and develop the ability to supplement the content of the course with this knowledge (Tezel & Giritli, 2019).

Research shows that students with appropriate ecological knowledge are ready to act and improve the state of the natural environment (Lonc *et al.*, 2007). Those who lack appropriate knowledge and understanding of ecological problems believe that all natural resources and nature are indestructible. This is also consistent with the slogan 'subdue the Earth,' which is an attitude that traditional Catholi-

cism popularises. Therefore, there is a need for effective ecological education among a significant part of the student community at Wrocław universities.

The vast majority of students declare that they take actions to protect the environment in their everyday lives and accept, if necessary, a possible reduction in the quality of their lives, but, for example, they are not willing to sign a clear declaration of readiness to limit tourist trips to one in five years, due to environmental protection. Depending on the field of study, they vary, among others, in the approach to assessing the level of contemporary environmental threats (Bernaciak *et al.*, 2021).

Insufficient education at the earlier stages of education may lead to low environmental awareness of students. Moreover, Kapsa and Trempała (2020) also write about ecological awareness among young people.

Research shows that students blame mainly local governments and industry for the state of the natural environment and few of them point to ordinary citizens (Koszarek-Cyra & Piśniak, 2017). The survey research by Altaher (2016) also emphasises the importance of ecological awareness based on the willingness to protect the natural environment. Unfortunately, students' knowledge is declarative rather than real. Ecological education that is too superficial and fragmentary should be enhanced, especially in technical fields, so that awareness of climate change will translate into a readiness to use ecological solutions.

The research by Orea-Giner and Fusté-Forné confirms the growing interest in ecological awareness (2023). Prasad and Mkumbachi (2021) indicate that although the student organisations participating in the study differ in their perception of climate change and environmental protection, they believe that they are occurring and pose a serious threat to Fiji as well as neighbouring Pacific islands.

The rapid consumption of new electronic devices has increased the amount of used electronics and therefore waste (e-waste) and created a potential threat to the environment. Research conducted on 327 students shows that the greater the awareness of the consequences, the greater the involvement in e-cycling (Gonul Kochan *et al.*, 2015). The effective role of social media in creating an aware environment in higher education is a topic that requires further analysis (Hamid *et al.*, 2017). However, online media can lead to greater awareness of environmental issues and better protection of the surrounding environment at local and global levels because of its reach and speed of information transfer (Misra, 2021).

Generally, the publications emphasise the need to build consumer awareness for circularity and a greening education system (Anwar Abdou *et al.*, 2022; Byrd & Su, 2021). The World Bank (2023) publication presented it as one of the seven critical interventions to accelerate Poland's CE transition. The difficulty in assessing pro-environmental activities undertaken by all market participants is that they often contain deliberately misleading elements, which bear the hallmarks of greenwashing (De Freitas Netto *et al.*, 2020).

## RESEARCH METHODOLOGY

### Characteristics of the Research Process and the Studied Population

The research subject presented in this work is the purchasing behaviour of young adults. We considered the factors influencing buyers' ecological awareness and their role in making purchasing decisions to be a particularly interesting research area. We sought a relationship between the demographic profile of buyers and whether they consider information about the ecological approach of producers to the production process of the purchased goods in purchasing decisions. We conducted the research between December 15, 2021, and January 30, 2022 (online surveys; we sent a link to the questionnaire to respondents who filled it on their own).

When preparing the questionnaire, we prepared the results of previous research (including focus group interviews with selected groups of students) and available external reports and analyses. It helped to specify both the questions of the research questionnaire and clarify answers. Five hundred forty respondents participated in the study.

The research results presented here are a continuation of the research described in our earlier article (Lisowski *et al.*, 2022).

In the surveyed population (Table 1), women constituted 55.93% of the respondents. First-degree students were the majority of respondents. Engineering and bachelor's students amounted to 95.45% of respondents. Most of the respondents depended on their parents (70.93%). For others, their primary source of income was their work. Over half of the respondents (52.22%) were the residents of large cities (over 50 000 residents). The largest group lived in hired rooms or apartments (45.18%), a significant number of respondents lived with their parents (31.30%), considerably fewer people lived in dormitories (15.37%), and the smallest percentage lived in their flats (8.15%). More than three-quarters of respondents (76.11%) studied full-time.

**Table 1. Characteristics of the sample population (young adults answering questions in research provided in 2020-2021)**

<b>Respondents' gender</b>			
Woman		Man	
54.63%		45.37%	
<b>Level of studies of the surveyed respondents</b>			
First-cycle studies (bachelor's degree)	First-cycle studies (engineering)	Second-cycle studies (master's degree)	
51.30%	43.15%	5.55%	
<b>Respondents' source of income</b>			
Parents		Own gainful work	
70.93%		29.07%	
<b>Place of residence (city/town)</b>			
< 5000 residents	More than 5000 and less than 50 000 residents		> 50 000 residents
29.26%	18.52%		52.22%
<b>Place of residence (form of ownership)</b>			
Own flat	Living with parents	Dormitory	Rented flat (room)
8.15%	31.30%	15.37%	45.18
<b>Mode of study</b>			
Full-time program		Extramural program	
76.11%		23.89%	

Source: own study.

### Statistical Analysis

We chose cross-tabulation analysis for different segments. Cross tabulation is the grouping of several contingency tables put together in the following way. Each table cell represents only one arrangement of the quantities of the variable being tabulated. In this way, the contingency tables allow for the analysis of frequencies associated with classes determined by the single variable above (see also Wolnowska & Kasyk, 2022).

Contingency tables allow for identifying the relationships between variables. We tested the significance of the recognised relationships with the performance of several tests. Thus, we can indicate the following (TIBCO, 2017):

Pearson's chi-square. The Pearson chi-square test is the base of the highest frequent test of implication (or autonomy) for qualitative variables. This test is built on the skill to calculate the anticipated frequencies in a contingency table (that is, the number we would suppose if there was no relationship connecting the variables). The chi-square test turns meaningful as the difference from this anticipated model rises. The value of the chi-square statistic and its connotation is determined by the entire number of observations and the number of cells in the table. The expression to evaluate  $\chi^2$  is as follows:

$$\chi^2 = \sum_{j=1}^k \frac{(O_j - E_j)^2}{E_j^2} \quad (1)$$

In which:

$O_j$  - number detected for a specified group;

$E_j$  - expected values of intervals;  
 $k$  - amount of groups.

Thus, the values of degrees of freedom would be formed (df):

$$df = (p - 1)(r - 1) \quad (2)$$

In which:

$r, p$  - category size for the first and second variables.

Once we calculated the  $\chi^2$  and degrees of freedom, we read the critical value  $\chi^2$  for the confirmed significance level  $p$  ( $p$ -value is usually considered to be 0.05) from the table of values. If the evaluated  $\chi^2$  value was greater than the critical value, there was no basis for rejecting the null hypothesis of the neutrality of the variables under investigation; if the estimated value of  $\chi^2$  was less than the critical value, the null hypothesis is rejected and the proxy hypothesis of the existence of a relationship between the variables is supported.

Cramér's  $V$  coefficient is a measure of dependence, a coefficient that determines the level of independence between two nominal variables, at least one of which has more than one value. The creator of this coefficient is the Swedish statistician Harald Cramér. The coefficient ranges from 0 to +1 (inclusive); the closer the result is to 0, the weaker the relationship between the characteristics under investigation, and the closer to 1, the stronger the relationship. However, the size of the contingency table affects this value, so one should not draw too far-reaching conclusions based on this result. Cramer's  $V$  formula is as follows:

$$V = \sqrt{\frac{\chi^2}{n \min(p-1, r-1)}} \quad (3)$$

In which:

$r, p$  - category dimensions (contingency table sizes);

$n$  - number of observations;

$\min(p - 1, r - 1)$  - minimum value between  $p$  and  $r$ .

Cramer's  $V$  is based on the chi-square value. Therefore, one can use it only if the chi-square indicates the existence of a significant relationship between the variables.

### Test Power Analysis

To check whether the sample size was sufficient to identify the relationships under investigation, we performed tests from test groups that we generated based on  $\chi^2$ , in particular, goodness-of-fit tests against contingency tables. We chose a post hoc computational late-realised power test as a type of power analysis. This type of test requires a significance level  $\alpha$  (assumed to be 0.05), sample size, degrees of freedom (df) and effect size (assumed to be  $w = 0.3$ ), *i.e.* – for this type of test – a detectable level of association. We used the G\*Power 3.1 program (Faul, 2007; 2009) for calculations.

On this basis, we set a threshold of degrees of freedom that allowed us to meet the above constraints, assuming that the test power  $(1-\beta) > 0.95$ . The quantity  $\beta$  corresponds to the probability of making an error of the second kind, *i.e.* an error that does not reject the false null hypothesis. On the other hand, according to Cohen (1992), the effect size is small when  $w$  varies around 0.1, medium when  $w$  varies around 0.3, and large when  $w$  varies above 0.5.

**Table 2. Test power analysis (online research of young adults 2020-2021)**

$\chi^2$ tests – Goodness-of-fit tests: Contingency tables		
Analysis:	Post hoc: Compute achieved power	
Input:	Effect size	0.3
	$\alpha$ err prob.	0.05
	Total sample size	540
	Df	67
Output:	Noncentrality parameter $\lambda$	48.6
	Critical $\chi^2$	87.108
	Power (1- $\beta$ err prob)	0.9515

Source: own study based on calculations in G\*Power.

As Table 2 shows, test powers above 95% are reached to 67 degrees of freedom. None of the 14 contingency tables selected above for further analysis exceeded this limit.

## RESULTS AND DISCUSSION

The data collected during the survey created 14 variables, including seven dependent variables and seven grouping variables.

Dependent variables (questions about the environment):

- What do you think about pro-environmental/pro-ecological behaviour?
- Are you financially involved in environmental protection measures?
- Should countries emitting too much CO<sub>2</sub> into the atmosphere pay extra for it?
- Do you have your own car (or plan to buy one in the next few years)?
- Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?
- When looking for a job, will you pay attention to whether a potential employer has an environmentally friendly image?
- Do you collect plastic bottle caps?

Grouping variables, *i.e.* gender, level of education, year of birth, place of residence (town of less than 5 000 residents, town of between 5 000 and 50 000 residents, city of over 50 000 residents), mode of study, place of residence (dormitory, with parents, rented apartment, own apartment), and source of income.

The total number of observations was 540. All variables were qualitative (nominal) variables.

Based on this, we created 72 (8x9) two-way contingency tables, 14 of which showed a significant relationship between the dependent variable and the grouping variable. Below, we present the most interesting of the observed relationships.

The research aimed to isolate factors (mainly elements of respondents' demographic characteristics) influencing the ecological awareness of young adults and to determine its importance for this generation's market decision-making processes.

Online surveys implementing this goal began with a semi-closed question about the respondents' opinions on pro-environmental behaviour. It was a multiple-choice question intended to determine the general attitude of the respondents to the issue of pro-environmental behaviour.

**Table 3. Distribution of responses to the question: 'What is your opinion about pro-environmental/pro-ecological behaviour' (multiple choice question) (online research of young adults 2020-2021)**

Opinion on pro-environmental behaviour	Number of indications	Percentage of indications
It is necessary in today's climate situation	341	63.15
It results from concern for the future of the climate and the future generations	302	55.93
It is the result of the need to have a positive impact on the environment	272	50.37
It results from fear of deterioration of nature and climate conditions	264	48.89
It is a tool for improving the image of people and enterprises	229	42.41
It is primarily fashion, increasingly popular and overused by some people	136	25.18
It is the effect of the activities of the industry lobby	48	8.89
It is only a consequence of the introduction of pro-ecological regulations	39	7.22
Sometimes it may be useful, but it is a marginal phenomenon, there is no point in being interested in it	15	2.77
It is unnecessary, irrelevant to the surrounding reality	6	1.11
Different opinion	7	1.30

Source: own study.

A direct analysis of the obtained responses presents that the respondents are well aware of the role and significance of the behaviours mentioned above and the inevitability of their promotion

(Table 3). At this declarative level, they clearly confirm that pro-environmental activities result from the personal needs of the people implementing them and are a manifestation of concern for the environment and the well-being of future generations. We recorded only a few negative opinions about these behaviours. Only about 1% of the population considered the above-mentioned activities to be unnecessary. Later in the study, respondents answered the questions about their selected pro-environmental attitudes and behaviours.

**Table 4. Distribution of responses regarding pro-environmental attitudes and behaviour (online research of young adults 2020-2021)**

<b>Are you financially involved in environmental protection measures?</b>										
<b>No, I never contribute my money to such purposes.</b>		I seldom donate, during direct collections into boxes.		Yes, from time to time, I financially support actions that I consider important.		Yes, I very often (even regularly) donate to pro-environmental campaigns and activities.				
371	68.70%	106	19.63%	60	11.11%	3	0.55%			
<b>Should countries emitting too much CO<sub>2</sub> into the atmosphere pay extra for it?</b>										
They should not because it does not bother anyone.		They can if they can afford it.		They should pay high fees, because it is harmful to the environment.		There should be symbolic fees for this.		<b>There should be fees and absolute limits for CO<sub>2</sub> emissions.</b>		
13	2.41%	122	22.59%	139	25.74%	91	16.85%	75	32.41%	
<b>Do you have your own car (or plan to buy one in the next few years)?</b>										
I have a car and it is my main means of transport.		<b>I do not have a car, but I plan to buy one.</b>		I do not have one and I do not plan to have one because I cannot afford it.		I have a car but I only use it occasionally.		I do not have one and do not plan to buy one (I can perfectly manage without a car).		
95	17.59%	140	25.93%	77	14.26%	138	25.56%	90	16.67%	
<b>Do you collect plastic bottle caps?</b>										
I have not heard that they can be collected and that something can be done with them.			I have heard about this action, but I do not want to collect them.		<b>I try to collect them instead of just throwing them away.</b>			This is how I collect all used plastic bottle caps.		
10	1.85%	77	14.26%	241	44.63%		212	39.26%		
<b>Would you accept the provision prohibiting entry to the city centre for private cars in your city?</b>										
Never in my life will I accept this.			<b>It will be challenging for me, but somehow, I will accept it.</b>			Yes, I believe such a decision is necessary for the good of the residents.				
156	28.89%	264	48.89%		120	22.22%				
<b>When looking for a job, will you pay attention to whether a potential employer has an environmentally friendly image?</b>										
I'm not going to pay attention to it.		<b>I will pay attention to it, but I will not resign just because of the negative image of the employer.</b>				Yes, I do not want to work for a company that does not have a pro-environmental image.				
154	28.52%	338		62.59%		48	8.89%			
<b>Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?</b>										
I never pay attention to such information.		I notice such information and labels, but I do not care about them.		<b>I notice such information and I am pleased when I shop for 'organic' products, but it is not necessary.</b>		When buying food, because it directly influences my well-being.		Yes, I am always looking for such information and the lack of it makes me not make the purchase.		
88	16.30%	111	20.55%	218	40.37%		102	18.89%	21	3.89%

Note: Because of the table's size, we omitted some descriptions of the findings; the first numerical value provided for a given answer is the number of cases, and the second – the percentage of indications.

Source: own study.

In general, the respondents were not financially involved in pro-environmental activities. Nearly 70% of them never donated any money for such purposes. They accepted CO<sub>2</sub> emission limits and penalties for exceeding them. Over 30% of respondents stated that the penalties were necessary. A car was not a primary good for them, because a large group did not have one yet, but they planned to buy one. Those who had their own car most often used it occasionally. This behaviour is difficult to interpret in the context of pro-environmental behaviour, because we do not always have a form of transport that is an alternative to a car. Public transport is not fully available everywhere in Poland. The fact that the surveyed respondents collect used caps (over 80% of respondents often or always collect used caps) allowed us to assume that they notice pro-environmental initiatives in their surroundings and willingly join those that do not require too much involvement from them. They are moderately enthusiastic about restrictions on the use of private transport in the city centre. A negative ecological image of a potential employer will not prevent them from applying for employment in such a company. The fact that the product is 'organic' is an advantage, but not a necessary condition for wanting to buy it.

The next step of the analysis was relationships between variables. Below, we provide some examples of relationships that we considered significant for the topic.

Using the  $\chi^2$  test for multiple choice questions, we found a statistically significant relationship between the answer to the question of whether countries emitting too much CO<sub>2</sub> into the atmosphere should pay extra for it and the gender of the respondents ( $\chi^2=10.59$ ;  $p=0.03$ ,  $V=0.14$ ). Women were more radical in their assessments and they more often claimed that there should be fees and absolute limits on CO<sub>2</sub> emissions.

When analysing the respondents' attitude towards the decision to own a car, we found that there was a statistically significant relationship between this variable and the following variables:

- 'place of residence – city/town' ( $\chi^2=23.50$ ;  $p=0.00$ ;  $V=0.15$ );
- 'gender' ( $\chi^2=10.91$ ;  $p=0.03$ ;  $V=0.14$ );
- 'place of residence – form of ownership' ( $\chi^2=100.69$ ;  $p=0.00$ ;  $V=0.25$ );
- 'source of income' ( $\chi^2=33.45$ ;  $p=0.00$ ;  $V=0.25$ );
- 'mode of study' ( $\chi^2=81.27$ ;  $p=0.00$ ;  $V=0.41$ ).

Residents of large cities most often had cars, but they only used them occasionally. Residents of towns with populations of less than 5000 people were least likely to declare they have no plans to buy a car and can manage well without one. Women coped better without a car, and a larger group of men declared that they had a car which is their main means of transport. Most often, those who lived in rented apartments declared that they had no plans to buy a car, whereas for those who lived with their parents, it was the main means of transport. Respondents dependent on their parents usually had a car or planned to buy one, but they only used it occasionally (similarly to full-time students), while the largest group among self-dependent respondents were car owners, for whom it was the main means of transport (similarly to part-time students).

The analysis of the responses to the question whether they collect plastic caps showed a statistically significant relationship with the following variables: 'place of residence – city/town' ( $\chi^2 = 24.96$ ,  $df = 6$ ;  $p = 0.00$ ;  $V = 0.15$ ), 'place of residence – form of ownership' ( $\chi^2=19.53$ ,  $df=9$ ;  $p=0.02$ ;  $V=0.11$ ) and 'gender' ( $\chi^2=45.05$ ,  $df=6$ ;  $p=0.00$ ;  $V=0.20$ ). Residents of small towns were most likely to collect caps (44.93% of them) and residents of large cities most often declared that they did not feel like doing it (20.57% of them). Dividing the respondents by the form of ownership of the place of residence, we noticed that respondents living with their parents were most likely to collect bottle caps (48.52% of them), and those who lived in a dormitory were the least likely to collect them (33.19%). Women were more willing to collect used caps; 44.90% declared that they always did it, while this group constituted 32.79% among men.

There was a statistically significant relationship between the variable containing answers to the question of whether they were guided by the ecological approach of producers to the production process when making purchasing decisions and the following variables: 'gender' ( $\chi^2 = 40.76$ ;  $p = 0.00$ ;  $V = 0.27$ ) and 'mode of study' ( $\chi^2 = 18.31$ ;  $p=0.00$ ;  $V=0.18$ ). Women most often declared that they 'notice such information and are pleased when shopping for 'organic' products, but it is not necessary' (49.65%). In contrast, men noticed such labels, but did not consider them when shopping (29.51%). Full-time students



enjoyed the 'organic' label, but it was not necessary (44.28%), whereas for part-time students, the ecological nature of the offer was most important when purchasing food products (27.91%).

### Generalised Linear Model (glz) for Variables of Polynomial Distribution

The generalised linear model (GLZ) allows for the analysis of linear and nonlinear effects for any number and type of predictors and dependent variables, whether discrete or continuous. Patterns may include multi-degree-of-freedom systems for variables that are qualitative predictors, single degree-of-freedom systems for continuous predictors, or any combination of systems for qualitative or continuous predictors (TIBCO, 2017).

In a general linear model, the dependent variable  $Y$  is linearly related to the values of the variables in the set  $X$  through equality:

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_kX_k + e \quad (4)$$

in which  $e$  is the variation due to analyst unexplained errors and the expected value of  $e$  is assumed to be zero. However, in the generalised linear model, the relationship is expected to be as follows:

$$Y = g(b_0 + b_1X_1 + b_2X_2 + \dots + b_kX_k) + e \quad (5)$$

in which  $e$  represents the error and  $g(\dots)$  is a certain function. Correctly,  $g(\dots)$  is the opposite function of  $f(\dots)$  and  $f(\dots)$  is called the link function.

$$f(mi_y) = b_0 + b_1X_1 + b_2X_2 + \dots + b_kX_k \quad (6)$$

in which  $mi_y$  is the expected value of  $y$ .

Depending on the assumed distribution of the dependent variable, various link functions can be used (McCullagh & Nelder, 1989). For a variable with a polynomial distribution, the generalised logit is used as the link function:

$$f(z_1/z_2, \dots, z_c) = \log((z_1/z_2, \dots, z_c)) \quad (7)$$

in which the model has  $c+1$  categories.

'Odds ratio' (OR) can serve as a goodness-of-fit test for a model. For a polynomially distributed dependent variable, the odds ratio is calculated as the power-raised  $e$  of the 'score' that determines the models' significance. Therefore, the odds ratio reveals the change in the probability that the discriminant value of the dependent variable exists when the independent variable is increased by one unit. The other independent variables in the model are allowed to remain constant. We can also interpret the odds ratio as the percentage effect of an individual change in the quantity of the dependent variable on the odds ratio, which in the above case is calculated as the ratio of the probability of success to the probability of failure. Moskal *et al.* (2023) also used this model.

Moreover,  $OR=1$  indicates that the probability of an event occurring in both groups (*e.g.* in the form of group membership) is comparable;  $OR<1$ , it means that in the studied group (dependent variable) compared to the reference group (independent variable) there is a lower chance of the event occurrence; and  $OR>1$  means that the probability of an event occurring is higher in the group under study (compared to the reference group).

Therefore, the continuation of the analysis was an attempt to build a GLZ model. Due to the number of models that could be developed (we determined this by the number of variables and the number of response categories obtained during the survey), we selected two of several initial configurations for further analysis. We considered previously obtained results (significant two-way contingency table) and goodness of fit.

In the first selected configuration, we assumed that the dependent variable would be the answers to the question 'Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?' We selected gender and field of study as dependent variables. This type of analysis requires defining a reference category (one of the possible answers) for all nominal variables, both dependent and independent. In this specific example, we selected the most frequently occurring categories (responses) for each variable. The responses were as follows:

- ‘I notice such information and I am pleased when I shop for ‘organic’ products, but it is not necessary’ regarding the question ‘Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?’;
- Woman – question about gender;
- Full-time – question about the mode of study.

Since the variables are nominal polynomial variables, we chose the logit function as the link function (significant results for the first configuration – Table 5).

**Table 5. Summary of model results (first configuration one) (online research of young adults 2020-2021)**

<i>Effect</i>	<i>Level Effect</i>	<i>Level Response</i>	<i>Rating</i>	<i>Standard error</i>	<i>Wald Stat.</i>	<i>P</i>	<i>OR =exp (rating)</i>
Gender	man	When buying food, because it directly influences my wellness.	0.580	0.250	5.392	0.020	1.787
What is the mode of your study?	part-time	When buying food, because it directly influences my wellness.	1.048	0.278	14.189	0.000	2.854
Gender	man	I never pay attention to such information.	1.054	0.262	16.141	0.000	2.871
What is the mode of your study?	part-time	I never pay attention to such information.	0.666	0.309	4.633	0.031	1.947
Gender	man	I notice such information and labels, but I never take them into account.	1.375	0.248	30.599	0.000	3.955
What is the mode of your study?	part-time	I notice such information and labels, but I never take them into account.	0.808	0.287	7.904	0.004	2.245

Source: own study based on calculations in Statistica.

We selected six out of the eight possible models, for which the Wald statistic and confidence level ( $p < 0.05$ ) indicated significance. Table 5 shows that the answers to the question ‘Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?’ are significantly different depending on the adopted dependent variables. For example (line 2), men (in relation to women) chose the answer ‘When buying food, because it directly influences my wellness’ (in relation to the answer ‘I notice such information and I am pleased when I shop for ‘organic’ products,’ but this is not necessary’) significantly more often. The calculated OR in this case was approximately 1.8, which would mean that answering ‘man’ to the question about gender almost doubled the chance of answering ‘When buying food, because it directly influences my wellness’ to the question ‘Are your purchasing decisions guided by the producers’ ecological approach to the production process?’

We interpreted other models similarly. Noteworthy, the odds ratio (OR) was greater than 1 for all models.

Table 6 presents the measure of the goodness-of-fit of the models. We calculated it as the quotient of the relevant statistics and degrees of freedom of the model.

**Table 6. Goodness-of-fit (online research of young adults 2020-2021)**

<b>Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy? Measures of goodness of fit. Distribution: POLYNOMIAL Link function: LOGIT (Sample for analysis)</b>			
<b>Statistics</b>	<b>Df</b>	<b>Stat.</b>	<b>Stat/Df</b>
Deviation	2140	1476.311	0.689
Pearson Chi <sup>2</sup>	2140	2197.768	1.026

Source: own study based on calculations in Statistica.

Table 6 shows, that the model presents a good fit in terms of the Pearson chi<sup>2</sup> test (stat/df close to 1). In terms of deviation (statistics based on the logarithm of the maximum likelihood value for the

considered model and the logarithm of the likelihood value for the saturated model; Agresti, 1996), the fit was weaker. In any case, there was no over-dispersion ( $\text{stat}/\text{df} \gg 1$ ).

In the second configuration, we changed the reference categories (responses) for the dependent variables:

- Man – question about gender;
- Part-time – question about the mode of study.

Table 7 presents the results relevant for the second configuration.

**Table 7. Summary of model results (second configuration) (online research of young adults 2020-2021)**

<i>Effect</i>	<i>Level Effect</i>	<i>Level Response</i>	<i>Rating</i>	<i>Standard error</i>	<i>Wald Stat.</i>	<i>P</i>	<i>OR = exp (rating)</i>
Gender	woman	When buying food, because it directly influences my wellness;	-0.580	0.250	5.392	0.020	0.560
What is the mode of your study?	full-time	When buying food, because it directly influences my wellness;	-1.048	0.278	14.189	0.000	0.350
Gender	woman	I never pay attention to such information;	-1.054	0.262	16.141	0.000	0.348
What is the mode of your study?	full-time	I never pay attention to such information;	-0.666	0.309	4.633	0.031	0.514
Gender	woman	I notice such information and labels, but I never take them into account;	-1.375	0.248	30.599	0.000	0.253
What is the mode of your study?	full-time	I notice such information and labels, but I never take them into account;	-0.808	0.287	7.904	0.004	0.445

Source: own study based on calculations in *Statistica*.

As before, we selected six out of eight possible models for which the Wald statistic and confidence level ( $p < 0.05$ ) indicated significance. Analysing line 2 of Table 7 similarly, we can conclude that women (in relation to men) chose the answer ‘When buying food, because it directly influences my wellness’ (in relation to the answer ‘I notice such information and I am pleased when I shop for ‘organic’ products, but it is not necessary) significantly less often. The calculated OR in this case is 0.56, which would mean that answering ‘woman’ to the question about gender almost doubled the chance of answering ‘When buying food, because it directly influences my wellness’ to the question ‘Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?’

We interpreted other models in a similar way. Noteworthy, for all models the odds ratio (OR) was less than 1.

Since the first and second configurations were complementary to each other and differed only in reference categories for dependent variables, the fit of the models created for the second combination was almost identical to that for models based on the first configuration.

Summing up the entire statistical analysis, we can state that it brought interesting results. In the context of producers’ ecological approach to the production process, The respondents’ purchasing decisions proved to be significantly diversified. Contingency tables showed that gender, mode of study, and field of study are differentiating factors. We developed the analysis in the form of GLZ models. We omitted the field of study, because this variable had a polynomial distribution with the number of possible answers equal to 8. Considering all possible answers in the analysis would result in an excessive extension of this study. Interpreting Table 6, we see that of the four possible answers to the question regarding purchasing decisions, three are significantly determined by the gender and respondents’ mode of study. The odds ratio was highest for the answer ‘I do not notice such labels and never take them into account’ if the respondents were men and were approximately 4 (line 6). Table 7 completes Table 6 as it shows that the lowest odds ratio belongs to the above-mentioned responses when women are the responders. The chance of obtaining the above-mentioned response is then approximately four times smaller.

As mentioned before, the above analysis is only an example. The collected data set contains a number of important information and further research based on it is possible.

## CONCLUSIONS

As part of the ongoing research process, we established that the surveyed young adults had a relatively high awareness of the importance of pro-environmental behaviour for the general climate situation in the world and the related well-being of humanity. At the level of description of the surrounding reality, the responses included both concern for the future of the planet and fear of the deterioration of the climate situation. However, at the same time, they were not ready to increase their involvement in pro-environmental activities. They declared a lack of interest in the possibility of financial support for broadly perceived ecological activities. Pro-environmental aspects were not crucial for them either in purchasing decisions or in employment decisions. The basic forms of commitment to the environment were promotional campaigns which they occasionally joined, such as collecting plastic bottle caps.

Similarly to the research results described as part of the literature review, our research results allow us to conclude that to increase the involvement of young adults in pro-environmental activities, they need to be offered simple activities that do not require their financial involvement. A further increase in the involvement level will only be possible after the introduction of further educational campaigns.

In the process of developing the GLZ model, we determined that gender and mode of study of the respondents were the variables determining the answers to the question 'Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?'

Within the obtained GLZ models, we selected the most numerous categories (responses) for individual variables. They included the following answers: 'I notice such information and I am pleased when I shop for 'organic' products, but it is not necessary' to the question 'Are your purchasing decisions influenced by the environmental orientation of the producers of the goods you buy?,' woman (question about gender), full-time (question about the mode of study).

When analysing the impact of producers' environmental orientation on young adults' purchasing decisions, we found that it would be most important to female full-time students. Men pay less attention to this information. Even if they notice it, it does not influence the purchase decision.

An important limitation of the described research process is the purposive sampling and the selective (and relatively narrow) selection of manifestations of environmental awareness (discretionary selected areas of young adults' lives). The respondents were mainly students, which means that this research cannot be considered representative of the entire young adult population. However, the reason behind this sample selection was the assumption that management students would be characterised by a higher level of environmental awareness than the general population as a whole. Therefore, it was considered that the analysis of the importance of environmental awareness in the purchasing process should start with students. The next step will be to verify the results obtained in the study described above by surveying the entire young adult population.

At the same time, an important research direction will be to analyse the manifestations of environmental awareness in the areas of life that we did not analyse in our research.

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The contribution share of authors is equal and amounted to  $\frac{1}{3}$  for each of them. AP – abstract, conceptualisation, methodology, discussion, conclusions, MM – conceptualisation, methodology, literature review, RL – conceptualisation, methodology, statistical analysis.

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# From uncertainty to assurance: A retrospective analysis of Colombia's path to emerging market status

Maria Alejandra Gonzalez-Perez, Juan Velez-Ocampo, Ana Maria Gomez-Trujillo

## ABSTRACT

**Objective:** The objective of this article is to present an in-depth exploration of a transition into an emerging market, a phenomenon that is increasingly relevant in international business scholarship. We scrutinised the transformation of Colombia's status in the global economic landscape, particularly focusing on the pivotal role of foreign direct investment (FDI) and the interplay of various economic, political, and social factors that have influenced this journey. The study uniquely positions Colombia within the broader context of emerging markets, comparing similar transitions in other countries and analysing how global economic trends, such as commodity price fluctuations and financial crises, have shaped its trajectory.

**Research Design & Methods:** Utilising a qualitative research approach, we delved into a comprehensive literature review, expert interviews, and analysis of historical and mass media data to provide a nuanced understanding of the evolution of FDI in Colombia.

**Findings:** The findings revealed a complex and multifaceted narrative, highlighting Colombia's initial challenges and subsequent strides towards becoming an attractive destination for international investors. We discussed the correlation between FDI, exports, and GDP growth, offering insights into the country's economic development and positioning within the global economy. Thus, the study contributes to the field of emerging markets by analysing a nation's transformation towards becoming an attractive destination for investment considering different internal and external factors.

**Implications & Recommendations:** This article contributes to the international entrepreneurship literature by providing a detailed case study of Colombia's transformation, underscoring the importance of a holistic approach to understanding the process of becoming an emerging market.

**Contribution & Value Added:** It offers valuable perspectives for policymakers, investors, and scholars interested in the dynamics of emerging economies and their integration into the global economic system.

**Article type:** research article

**Keywords:** multilaterals; M&As; emerging markets; VUCA; Colombia

**JEL codes:** F23, F21, O1, O54

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## INTRODUCTION

Although investors, regulators, and researchers frequently employ the term 'emerging markets' and use it as a focal point, reliable criteria for measuring and evaluating such markets' dynamic processes of emergence and consolidation remain elusive.

Interestingly, as of 2023's data, the International Monetary Fund (IMF) still classified roughly 150 countries as emerging and developing economies. In 2001, Goldman Sachs introduced the term to describe the rapidly growing economies of Brazil, Russia, India, and China (BRIC), projecting them as the most dynamic by 2050. By the end of 2005, they expanded this list by identifying the 'Next-1' or 'N-11' (a group of economies poised for outstanding growth in energy, infrastructure, urbanisation,



human capital, and technology) adding Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, Turkey, South Korea, and Vietnam to the list (Gonzalez-Perez, 2019).

Fast forward to 2009, Robert Ward of the Economist Intelligence Unit (EIU) hailed Colombia as a dynamic market attractive to investors. Following suit in 2010, Michael Geoghegan, then president of HSBC, included Colombia in the CIVETS group, alongside Indonesia, Vietnam, Egypt, Turkey, and South Africa.

Recognising the imperative to define emerging markets more succinctly, the Centre for Emerging Markets at Nanyang Technological University in Singapore classified 95 emerging economies into five pyramidal categories: advanced, accelerating, intermediate, early, and latent. By their metrics, they tagged nine countries as advanced emerging economies Costa Rica, Georgia, Romania, Mongolia, Malaysia, Bulgaria, Peru, Serbia, and Thailand. The hallmark of these nations' stability in their institutions is attributed to consistent, sensible policies rather than fleeting interventions.

Meanwhile, Colombia is ranked 14th in the accelerating emerging market category, sharing its position with other countries such as Turkey, China, Albania, the Dominican Republic, Botswana, Argentina, El Salvador, Mexico, India, Brazil, Indonesia, Ecuador, and Armenia.

In the dynamic landscape of the global economy, Colombia's transformation into an emerging market offers a compelling case study, especially when juxtaposed against similar transitions in other nations. This South American nation's journey mirrors the experiences of Eastern European countries that navigated the post-Cold War era, transitioning from centrally planned to market-driven economies. Like many Eastern European states, Colombia faced the challenge of restructuring its economic framework, moving from a predominantly agriculture-based economy towards a more diversified one, emphasizing services and manufacturing. The critical role played by foreign direct investment (FDI) in Colombia is reminiscent of the influx of capital that Eastern European countries experienced, which significantly contributed to their economic revitalization. However, unlike the rapid integration of Eastern European economies into the European Union, Colombia's path has been more gradual, with its strategic focus on strengthening regional ties within Latin America and forging trade agreements with North American and Asian markets.

Colombia's economic trajectory has been significantly influenced by global economic trends, akin to the experiences of many Eastern European nations. The fluctuation in commodity prices, particularly in oil, coffee, and coal, has notably impacted Colombia's economy, given its heavy reliance on these exports. This dependency mirrors the challenges that resource-rich Eastern European countries face, which have also had to contend with volatile global commodity markets. Moreover, global financial crises, such as the 2008 recession, presented similar hurdles for both regions, testing the resilience and adaptability of their economies. Colombia's response, characterized by a mix of monetary policy adjustments and economic reforms aimed at diversifying its export base and attracting sustainable FDI, offers valuable insights into managing economic shocks.

In the ensuing sections of this article, we will embark on a detailed exploration of Colombia's transformative journey into an emerging market. We will begin with a comprehensive literature review, dissecting various perspectives on emerging markets, and their defining characteristics as applied in the context of Colombia. This sets the stage for our core research question: How has a country transitioned from a state of economic uncertainty to becoming a globally recognised emerging market? Following this, we will delve into the methodology, employing a qualitative approach and synthesizing expert interviews, historical data, and mass media publications to offer a nuanced understanding of Colombia's FDI landscape. Our findings section will present a chronological narrative of Colombia's FDI influx, correlating it with key economic indicators such as exports and GDP growth, to provide insights into the country's economic evolution. The discussion section will then critically examine these findings aligning them with our initial propositions about the shift in FDI conditions and emerging market status. Finally, we will conclude by synthesizing our insights into Colombia's journey, highlighting its unique position in the global economic arena, and suggesting future research avenues. This article contributes to the broader understanding of emerging markets and offers practical implications for policymakers and international investors interested in such dynamic economies.

Therefore, this article contributes to the field of emerging markets as it analyses the factors of a nation's transformation towards becoming an attractive destination for investment due to different factors such as economic indicators, inward investment opportunities, and the political landscape.

## LITERATURE REVIEW

United Nations introduced the distinction between 'developed' and 'developing' countries in their System's Standard country or area codes for statistical use, known as M49. Since then, various definitions and classifications of these economies have emerged. Morris *et al.* (2023) define an emerging market as 'countries that lack strong formal institutions around business development but possess strong informal institutions that allow for unique forms of business development' (p. 1). This definition highlights the role of institutions in shaping business development in emerging markets.

Hoskisson *et al.* (2000) offer a consumption and income-based approach, describing emerging economies as 'low-income, rapid-growth countries using economic liberalisation as their primary growth engine' (p. 249). They categorise these economies into developing countries in Asia, Latin America, Africa, and the Middle East, and transition economies in the former Soviet Union and China. While this definition captures the economic growth aspect, it may oversimplify the complex nature of emerging markets.

From a foreign direct investment (FDI) perspective, emerging markets are characterised by high volatility and a transitional character (Appiah *et al.*, 2019). Volatility can arise from various sources, such as external price shocks, natural disasters, and domestic instability, while transitions occur in social, political, economic, and demographic dimensions. These conditions pose challenges for long-term investments that require stability and predictability (Mody, 2004). Governments in these economies often offer incentive packages to attract foreign investors, aiming to understand how FDI influences national welfare and economic development (Meyer, 2004).

Several institutions have developed their classifications of emerging markets. Morgan Stanley Capital Investment (MSCI) assesses economic development, equity market size and liquidity, and market accessibility for foreign investors (MSCI Investor Insight, 2012). The UNCTAD's classification is based on per capita income (UNCTAD, 2023a), while the World Bank categorises economies based on GNI per capita (World Bank, 2023). The International Monetary Fund's classification considers per capita income, export diversification, and integration into the global financial system (International Monetary Fund, 2021). The World Trade Organization allows members to self-declare as 'developed' or 'developing' countries, with the latter enjoying certain rights and provisions (World Trade Organization, 2023).

These varying approaches demonstrate that income is not the sole characteristic of categorising an emerging market. Factors such as population, share of exports in global trade, external debt, and inclusion in global indices also require consideration (International Monetary Fund, 2021). Table 1 provides an overview of the different approaches used by key institutions to classify emerging markets. Table 1 provides a concise overview of the different approaches used by key institutions to classify emerging markets.

Kearney (2012) identified nine prominent research avenues within emerging markets, highlighting the need for further research to uncover in-depth knowledge about their evolution and prosperity. Cavusgil (2021) recognises the influential nature of studying emerging markets within international business research and calls for a more balanced perspective and examining both the positive and negative aspects of these markets.

Studies on emerging market multinationals have revealed unique advantages, such as targeting diaspora markets, catering to diverse segments, robust distribution systems, and technological prowess (Grosse, 2016). Luo and Zhang (2016) emphasise the importance of exploring ownership advantages and disadvantages, internationalisation processes, catch-up strategies, institutional roles, heterogeneity, and global orchestration when studying these multinationals.

Hernandez and Guillen (2018) suggest moving beyond comparing emerging market multinationals to their developed-market counterparts and instead focusing on understanding their inherent capabilities and the institutional ecosystem supporting their internationalisation. They argue that examining

the early stages of multinationals and the nuances of their home countries can expand and enhance existing literature and theories.

**Table 1. Selected approaches to Emerging Markets' classification**

Source	Emerging markets approach
World Economic Outlook 2023 (International Monetary Fund)	The World Economic Outlook (WEO) refrains from giving a specific definition of emerging markets. Instead, the WEO's country classification divides the global landscape into two primary categories: advanced economies and emerging markets and developing economies. This categorisation entails that the 155 nations grouped under emerging market and developing economies are essentially those not labelled as advanced economies. As per the report, there are a total of 41 advanced economies contrasted with 155 emerging markets and developing economies.
FTSE (Financial Times Stock Exchange Group)	The FTSE group organises countries into four distinct categories: developed (25 countries), advanced emerging (10), secondary emerging (14), and frontier (29). Their classification methodology hinges on six fundamental principles: market quality, materiality, consistency and predictability, cost limitation, stability, and market access. This categorisation process is grounded in consultations with clients and comparisons of objective criteria and is overseen by a dedicated classification committee.
MSCI (Morgan Stanley Capital International) Emerging Markets Index	The MSCI Market Classification Framework is grounded in three core criteria: economic development, size and liquidity, and market accessibility. This framework delineates countries into three categories: frontier, emerging, and developed. To be recognised as an emerging market, a country must meet certain specifications such as market capitalisation, security liquidity, openness to foreign ownership, ease of capital inflows, an efficient operational framework, availability of investment instruments, and a stable institutional structure. Presently, 21 countries fall under the emerging market classification.
S&P Dow Jones	Countries are sorted into four distinct categories: standalone (2 countries), frontier (30), emerging (23), and developed (25), using a combination of quantitative metrics and qualitative factors, even considering perspectives from global investors. The criteria for market classification revolve around three primary domains: economic measures coupled with institutional stability, market structure and accessibility, and size in conjunction with liquidity. Emerging markets are described as those that exhibit specific traits of a developed market but fall short of fully satisfying the necessary criteria. Such markets have the potential to achieve developed market status in the future, or they might have held that designation previously.

Source: own study based on multiple sources, 2024.

Mergers and acquisitions (M&As) in and out of emerging economies have been increasing, with cross-border acquisitions representing the primary entry mode for many emerging market multinational enterprises (EMNEs) due to their latecomer disadvantage in technological and managerial capabilities (Lebedev *et al.*, 2015). Developed economies firms acquiring EMNEs may employ different target choice criteria and post-acquisition restructuring strategies compared to their acquisitions in developed economies (Meyer & Estrin, 2001). Mergers and acquisitions in and out of emerging economies are motivated by various factors, including market power, synergy gains, diversification, transaction costs, environmental uncertainty, resource dependency, firm characteristics, institutional development, corporate governance quality, and government involvement (Lebedev *et al.*, 2015).

Emerging economies can become receptors of FDI flows as they increasingly comply with FDI driving forces, such as increasing GDP levels, legal and political systems, business environment, and infrastructure (Groh & Wich, 2012). In 2022, 70% of global FDI went to developing countries, indicating a positive sign for investments in industry and infrastructure (UNCTAD, 2023b). From an outward perspective, FDI flows from emerging economies have increased from 1990 to 2022, with determinants related to market size, skilled labour, trade, and investment costs, and geographical distance between home and host countries (Cieřlik & Tran, 2019). Government involvement can also influence the level, location, and type of overseas investments in emerging economies (Wang *et al.*, 2012).

In the context of Colombia's transition to the emerging market status, this literature review reveals the complexity and multifaceted nature of emerging markets. The various definitions and classifications highlight the importance of considering not only economic factors but also institu-

tional, social, and political aspects when assessing a country's emerging market status. The literature on emerging market multinationals and M&As provides valuable insights into the strategies and challenges faced by firms operating in these markets.

However, the existing literature has some limitations. Many studies focus on the positive aspects of emerging markets, potentially overlooking the negative aspects and challenges. Furthermore, there is a need for more research on Colombia's specific context and its transition process. Future research could explore the unique institutional, economic, and social factors influencing Colombia's emerging market status and the strategies Colombian firms employed to navigate this transition.

In conclusion, this literature review provides a foundation for understanding the concept of emerging markets and the various factors influencing their development. It highlights the need for a comprehensive and nuanced approach when studying Colombia's transition to emerging market status, considering the country's specific context and the experiences of other emerging markets. This review sets the stage for further investigation into Colombia's emerging market journey by critically analysing the existing literature and identifying research gaps.

## RESEARCH METHODOLOGY

We adopted a qualitative approach to understand Colombia's trajectory as a destination for foreign direct investment (FDI). By examining the Colombian case within the framework of existing theory on emerging markets and FDI, we could deepen the understanding of the factors driving FDI, the implications for economic development, and the strategies of multinational companies operating in Colombia.

We grounded the qualitative methodology in various data sources and information collection techniques, allowing for a comprehensive and enriched perspective on the matter at hand. Below, we detail the steps and methods:

- Formulation of the research question and propositions: The first step involved formulating the research question focused on Colombia's trajectory as an FDI destination. As an emerging market, we selected Colombia following the theoretical sampling principles as an iterative process of data collection and analysis in which new data or participants are added until reaching theoretical saturation, and they are purposefully selected to test and refine theoretical concepts as they emerge from the data (Eisenhardt, 1989; Sinkovics *et al.*, 2008). This stage was pivotal in outlining the scope and purpose of the study, ensuring all subsequent efforts aligned with the primary objective.
- Review of documentary sources: Before primary data collection, we conducted an exhaustive review of existing literature and documents related to FDI in Colombia. This review helped identify previous trends and key players and establish a contextual framework for analysis.
- Data collection methods:
  1. Expert interviews: We conducted 11 Semi-structured interviews with experts in the field of FDI and within the Colombian context. We based the quantity of interviews on the principles of theoretical sampling in which, we added each new participant until reaching theoretical saturation (Eisenhardt, 1989; Sinkovics *et al.*, 2008) These interviews provided valuable insights and enriched the analysis with perspectives from those directly involved or deeply knowledgeable.
  2. Annual company reports: We examined annual reports from 13 companies of non-extractive industries in Colombia that were acquired from foreign investors. These documents provided a corporate standpoint on the motivations, challenges, and outcomes of investing in the country.
  3. Historical research in heritage archives: We consulted historical archives to understand the evolution of FDI in Colombia over time. This historical research offered context and a timeline that facilitated the analysis of significant trends and events.
  4. Analysis of mass media publications: We analysed publications in newspapers, magazines, and other mass media to discern how FDI in Colombia has been perceived and reported over the years. This analysis helped us understand the public narrative and the perceptions associated with foreign investment in the country.

Although we adopted a qualitative approach, we also utilised a combination of data collection techniques to provide a holistic and enriched view of Colombia's trajectory as a direct foreign investment destination. We followed several procedures to increase the credibility and confirmability of our analysis. Consistent with Welch and Piekkari (2017), we followed peer debriefing and prolonged engagement to enhance the credibility of our research, while triangulation of sources and reflexivity in different stages of data collection and analysis improved the study confirmability.

This methodology ensured a thorough and contextualised analysis of the phenomenon under examination.

## RESULTS AND DISCUSSION

The case of inward investment in Colombia makes us think about the arrival of capital to the country and the acquisition of traditional Colombian companies by international investors that see an opportunity in this emerging market. This inward investment obtained by the sale of companies such as Grupo Familia, Grupo Nutresa, or Grupo Orbis is also influenced by different factors such as the country's political instability, the arrival of migrants, and the interest of Colombian businesspeople to have international capital and the diversify their investments. Moreover, compared to other countries, Colombia has shown to have delayed globalisation in terms of investment. However, this reveals the natural character of being an emerging country and the country's potential in the international scenario.



**Figure 1. Inward FDI to Colombia 1994-2022**

Source: own elaboration based on Banco de la República (2023).

Figure 1 represents the official Inward Foreign Direct Investment (IFDI) to Colombia. Inward FDI gained gain momentum after 2005. In this year, of the 10.192 million dollars invested in the country, 53% went to businesses in the manufacturing sector, which was the champion in investments during the year, with 5.433 million dollars, compared to 256 million dollars the previous year.

From a cursory glance, we notice a general increasing trend in FDI over almost three decades, especially noticeable from the early 2000s onwards.

There were possible external factors that could explain the behaviour of inward FDI to Colombia:

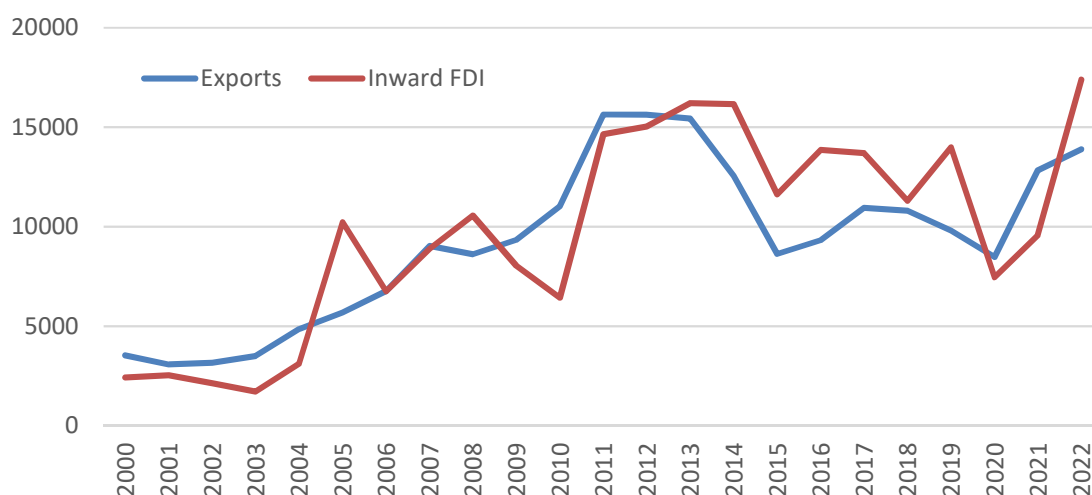
- Global Financial Crisis (2008-2009). This could be a reason for the dip in FDI in 2009 and 2010.
- Macroeconomic factors: Global oil prices, commodities boom, global economic health, and regional politics can influence FDI.

Figure 2 below visually represents inward FDI and exports between 2000 and 2022. The graphic indicates a moderate to strong positive relationship between inward FDI and exports in Colombia from 2000 to 2022, suggesting that these two economic indicators moved in the same direction during this period.

We calculated the correlation coefficient between inward FDI to Colombia and exports from Colombia, and the result was 0.6531. That is, inward FDI increased in Colombia, exports also tended to increase, and vice versa. While not perfect, this indicates a reasonably strong association between

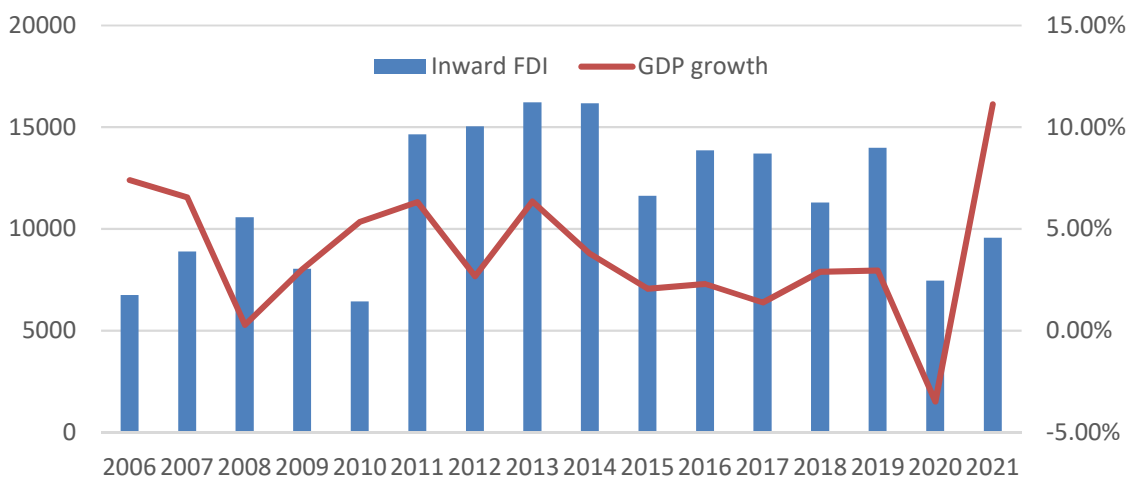
inward FDI and exports in Colombia during the specified period. The positive correlation suggests that years when Colombia saw higher inward FDI also tended to be years when exports were higher. This could be because FDI might lead to more production and, subsequently, more exports, or it could be that increased exports attract more FDI.

On the other hand, as seen in Figure 3, the correlation coefficient calculation between inward FDI and Colombia’s annual GDP growth (4th quarter) from 2006 to 2021 was -0.035519912. This indicates a fragile negative linear relationship between inward FDI and Colombia’s annual GDP growth for the given period. However, it is essential to recognise the strategic motivations behind the acquisitions of Colombian companies, such as access to valuable resources like oil, minerals, or agricultural products. Furthermore, investing in Colombian companies might serve as a means of expanding market presence in the region, tapping into new consumers, or accessing regional trade agreements.



**Figure 2. Inward FDI to Colombia and Colombian exports 2000-2022 (in millions of USD)**  
 Source: own elaboration based on Banco de la República (2023).

The practical implication of such a low correlation coefficient was that as inward FDI increased, there was a slight tendency for the GDP growth to decrease, and vice versa. However, given the fragile nature of the correlation, this relationship was almost negligible. Noteworthy, this correlation does not imply causation (See Figure 3).



**Figure 3. Inward FDI and GDP growth 2006- 2021 (in millions of USD)**  
 Source: own elaboration based on Banco de la República (2023).

As observed, the country reached maximum momentum of inward investment in 2022, with a growth rate of 81.7% compared to 2021, going from USD 7.666 million to USD 17.048 million. Financial and business services and the mining-energy industry were the two sectors with the most significant investments – transportation and communications (11%), manufacturing industry (9%), commerce and hotels (9%) and electricity (6%) (Forbes, 2023).

Thus, we could deduce that different Colombian companies have been sold to foreigners in the last two decades, as seen in Table 2.

In Table 2, we can observe the names of the companies, the sector to which they belong, the year of establishment, their condition as a multinational company, and the change in ownership (year, nationality of the acquirer).

**Table 2. Main acquisitions from foreign investors of non-extractive industries' Colombia companies**

Year of acquisition	Year of creation	Company	Outward FDI prior to its foreign acquisition	Sector(s)	Acquirer	Foreign investor's nationality
2003	1948	Caracol Radio	No	Broadcasting & media	Grupo Prisa	Spain
2004	1919	Avianca	Yes	Aviation	Germán Efromovich / Synergy Group	Brazil
2005	1972	Banco Grana-horrar	No	Banking & Finance	Banco Bilbao Vizcaya Argentaria (BBVA)	Spain
2005	1919	Coltabaco	No	Tobacco	Philip Morris International	United States
2005	1889	Bavaria	No	Beverage (Brewery)	SABMiller	Belgium
2008	1907	Coltejer	No	Textile	Mexican consortium Kaltex (partial acquisition but controlling stake)	Mexico
2011	1934	Imusa	Yes	Kitchen Appliances	Groupe SEB	France
2012	2012	Banco Colpatria	No	Banking & Finance	Scotiabank	Canada
2015	1949	Grupo Éxito	Yes	Retail	Groupe Casino	France
2016	1985	ISAGEN	No	Energy generation	Brookfield Asset Management	Canada
2021	1958	Grupo Familia	Yes	Personal care	Essity	Sweden
2022	1945	Grupo Orbis (before Grupo Mundial)	Yes	Chemicals	AkzoNobel	Belgium
2023	1920	Grupo Nutresa	Yes	Food	International Holding Company and Gilinski Group	United Arab Emirates

Source: own study based on MásColombia (2021), Banco de la Republica (2023) and companies' reports.

### Discussion

As evidenced by empirical data and qualitative analyses, the evolution of FDI conditions in Colombia represents a change from initial instability to a clearer ROI predictability. This transformation has been influenced by a combination of governmental efforts to improve structural conditions and a set of market liberalizations that have significantly signalled to foreign investors about the maturing of Colombia's economic policies. This progression from a high-risk investment territory to one that provides

clear financial guidance and protection is supported by the rising trend in inward FDI flow, with a notable increase after the policy reforms in the early 2000s. This change supports the investor confidence perspective and its relevant role in the FDI attraction (Buckley, 2011; Xie *et al.*, 2017).

A nuanced examination of the Colombian inward FDI flows reveals a multifaceted narrative that challenges the traditional view of stable FDI determinants (Brenes *et al.*, 2016; Gammeltoft *et al.*, 2010). While economic stability and growth are key to attracting FDI, our analysis suggests that FDI is also substantially influenced by advancements in infrastructure, improvements in labour skills, and the development of technology-related industries. These elements collectively contribute to the attractiveness of the investment climate beyond merely relying on macroeconomic indicators (Thomas & Grosse, 2001). For instance, the transformation from an agrarian economy to one that invites investment in technology and services indicates a shift towards a knowledge-based economy, a phenomenon not fully captured by FDI theories that focus predominantly on resources and market-seeking investment behaviours.

The correlation between inward FDI and export performance further highlights the transition of the Colombian market. This positive relationship indicates a situation where FDI acts as a catalyst for export growth, suggesting a mutually reinforcing cycle of foreign investment and market expansion. However, we may attribute the increase in exports not only to inward FDI but also to a broader set of economic reforms, diversification strategies, and integration into global value chains. These insights indicate a complex interplay between FDI and Colombia's economic dynamics, challenging simplified economic models that fail to consider the broader developmental context within which FDI operates. In light of the above, Proposition 1 summarizes these ideas:

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**Proposition 1:** In retrospect, there seems to have been a potential shift in the conditions for foreign direct investment (FDI). This shift may have evolved from instability and lack of knowledge to clear indications of return-on-investment predictability.

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We may attribute Colombia's emergence as an attractive investment destination to various factors:

- Economic indicators: Despite being fourth in terms of GDP in Latin America, the limited presence of foreign multinationals suggests untapped potential.
- Comparative analysis: Compared to its peers, Colombia's delayed globalisation of investment underscores the country's late bloomer status. This delay has given it a unique positioning of showcasing its true potential as an emerging market.
- Inward investment opportunities: The acquisition of traditional Colombian companies by international investors demonstrates the perceived value of the Colombian market. The sale of major companies like ISAGEN, Grupo Exito, Bavaria, Grupo Orbis and Grupo Nutresa proves this.
- External factors: Issues like political instability and the interest of local businesspeople in international capital have played a pivotal role in shaping Colombia's FDI landscape.
- Government policies: Government policies can influence FDI inflows due to their potential role in infrastructure development, investment initiatives creation, development of trade and investment agreements, and shaping of the regulatory environment.

Emerging status is often characterized by a trajectory from conditions of uncertainty to those of stability and predictability, creating a more friendly environment for FDI. This shift implies a significant reduction in the liabilities associated with investing in a nation, which, in turn, reflects an enhancement of the nation's investment attractiveness. It is crucial to acknowledge that this transition is multifaceted, encompassing more than just the strategic changes in governmental policy. While the role of the national government in enacting reforms, improving regulatory frameworks, and offering incentives are undeniably important, it constitutes only one part of a much broader set of factors that collectively boost a country's attractiveness to foreign investors.

The journey towards an emerging market status involves the evolution of several interrelated elements that contribute to establishing stable conditions. Economic indicators such as GDP growth, low inflation rates, and a stable currency serve as initial signals of reduced investment risk. Furthermore, the development of a robust and transparent legal system that protects investment and property rights, alongside the presence of a reliable financial sector capable of supporting international transactions, also



plays a central role. These elements function simultaneously to enhance investor confidence, signalling that the host country is committed to fostering a safe and profitable business environment.

Therefore, this multifaceted transition towards emerging market status is not an outcome of a unidimensional approach centred around governmental policy-making alone. It represents a holistic evolution of the nation's economic, legal, socio-political, and technological spheres, which, when combined, present a compelling case to foreign investors seeking to capitalize on the new opportunities afforded by the market's maturity. By acknowledging the complexity and the collective impact of these factors, we gain a comprehensive understanding of how a nation like Colombia can progress to an emerging market status and attract sustained FDI. Therefore, we summarized these implications in the next proposition:

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**Proposition 2:** Emerging status may be determined by a changing trend from uncertainty for foreign capital to more stable conditions. This denotes a nation where the liabilities for foreign capital are diminished. This reduction in liability is not solely due to the policies implemented by a national government to attract foreign investment. In-stead, it is a blend of elements that render the country an attractive investment destination.

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Correlation insights:

1. Inward FDI & exports: A correlation coefficient of 0.6531 between FDI and exports suggests that foreign investments benefit the domestic economy and contribute significantly to the export landscape. The symbiotic relationship between FDI and exports showcases Colombia's evolving market dynamics.
2. Inward FDI & GDP growth: The almost negligible negative correlation between FDI and GDP growth is fascinating. It suggests that while FDI might be linked to exports, its direct impact on annual GDP growth is insignificant. This could be because while FDI boosts specific sectors, many other internal and external factors might influence the overall GDP growth.

Indeed, examining Colombia's case as a latecomer in attracting FDI presents a unique opportunity for novel research. By applying different theories of FDI and emerging markets to the Colombian context, new insights can potentially contribute to these fields. For instance, a combination of theories such as latecomer advantage, institutional theory, resource-based view, comparative advantage, and trade openness and economic growth, are evident in the transition of Colombian as an emerging market and also in the relationship between its economic indicators such as FDI, exports and GDP growth.

## CONCLUSIONS

Colombia's journey from an unstable FDI environment to an emerging market with more explicit return indications is evident. While there is a strong association between FDI and exports, its direct relationship with GDP growth remains weak. This complex interplay of factors showcases the multifaceted nature of emerging economies and emphasises the need for holistic analysis beyond just numerical correlations.

Emerging economies often exhibit higher growth rates compared to mature or industrialised economies. Recognising the factors driving this growth can provide valuable insights for investors and businesses. Inward foreign direct investment (IFDI) represents several benefits for host markets, including employment opportunities, infrastructure development, technology and knowledge transfer, and business sophistication. However, only some emerging markets have exhibited homogenous trends in attracting foreign investment. Some, such as Colombia, have been latecomers in attracting foreign investment.

Some areas that scholars could further analyse to better understand this phenomenon include:

- The role of the political and regulatory environment in attracting FDI.
- Cultural factors as elements that explain IFDI.
- The impact of currency and exchange rate stability in attracting FDI.
- Regional dynamics, such as trade agreements and political tensions.
- The sophistication of local talent.
- Effectiveness of legal protection for international investors.

This article has intricately explored the transformation of Colombia into an emerging market, providing valuable insights for the academic community, particularly those in international business

and related fields. Our study focused on analysing the role of foreign direct investment (FDI) in Colombia's economic evolution, highlighting the interplay between FDI, export growth, and GDP development. Through a qualitative analysis encompassing expert interviews, historical data, and mass media sources, we have provided a comprehensive narrative of Colombia's transition.

The journey of Colombia, as elucidated in our research, mirrors the path many emerging markets have embarked upon. The correlation between FDI and export growth in Colombia underscores the significant role of international investment in the development of a country's market and economic infrastructure. However, the nuanced relationship between FDI and GDP growth suggests the complexity of factors influencing an emerging market's economy. This observation is particularly relevant to policymakers and investors in emerging markets, emphasizing the importance of a multifaceted approach to understanding and fostering economic development.

Our study contributes to the broader discourse on international entrepreneurship by offering a case study of Colombia's economic transformation. It highlights how an emerging market can evolve from a state of economic uncertainty to one with greater predictability and attractiveness for foreign investment. This evolution is not solely the result of governmental policies but a blend of various economic, political, and social factors.

Despite the comprehensive analysis provided in this study, we must acknowledge some limitations, which may affect the finding's generalizability. Firstly, the study's retrospective nature meant we relied on historical data, which might not fully capture the future dynamics of foreign direct investment (FDI) trends. Moreover, the specific geopolitical and socio-economic context of Colombia, while meticulously examined, may not reflect the conditions present in other emerging markets, limiting the applicability of our findings across different global regions. Furthermore, the rapidly changing global economic landscape, influenced by technological advancements and shifting political alliances, may alter the factors contributing to FDI attraction, rendering some conclusions less predictive over time. These limitations suggest a need for caution when applying this study's insights to other nations or in predicting future trends and they highlight the importance of ongoing research to continually update our understanding of FDI determinants in the evolving global economy.

In light of our findings, future research should focus on exploring the impact of cultural, political, and regulatory environments on attracting FDI in emerging markets.

Furthermore, the role of currency stability, regional dynamics like trade agreements, the sophistication of local talent, and legal protections for international investors are vital areas to explore. These factors collectively contribute to the attractiveness of emerging markets for foreign investment and are crucial in understanding their global economic integration.

In conclusion, Colombia's example provides a unique lens through which we can view the dynamics of emerging markets in the global economy. It serves as a valuable model for other countries striving to attract foreign investment and achieve economic growth, offering lessons on the importance of stability, policy, and market diversification to become an emerging market.

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# Entrepreneurial intention and entrepreneurial attitudes among rural Tunisian women

Dorsaf Maayoufi, Emese Prihoda, Viktória Kútvölgyi

## ABSTRACT

**Objective:** The objective of the article was to assess the entrepreneurial intentions (EI) of rural women entrepreneurs of Tunisia and the factors affecting them.

**Research Design & Methods:** The study included a final sample of 308 women entrepreneurs belonging to rural Tunisia. Attitude towards entrepreneurship (ATE), family support (FS), subjective norms (SN), perceived behavioural control (PBC), government effectiveness (GE), and risk taking (RT) were the variables studied for their possible effects on EI. We designed a structured questionnaire was designed to collect data on the variables of interest. We used a 7-point hedonic scale to collect the opinion of a respondent regarding the selected variables. We Applied a-PLS-SEM model using smart PLS 3.2 to the collected data.

**Findings:** Following a basic analysis-pattern, we confirmed the validity and reliability of the model using convergent validity and discriminant validity. Assessment of data revealed average value extracted score above 0.5 with a CR score above 0.7 for the fitted model which confirmed the convergent validity and composite reliability of the model. Further, analysis of discriminant validity using the Fornell-Larcker criterion revealed a greater factor loading at the own construct of an item as compared to its value on another construct which confirmed the discriminant validity of data. Structural model analysis showed a significant effect of ATE ( $\beta=0.31$ ,  $T=3.2$ ,  $p<0.01$ ), GE ( $\beta=0.22$ ,  $T=3.82$ ,  $p<0.01$ ) and RT ( $\beta=0.40$ ,  $T=5.44$ ,  $p<0.01$ ) on the development of entrepreneurial intentions among rural Tunisian women. PBC ( $\beta=0.08$ ,  $T=1.69$ ,  $p>0.05$ ) and SN ( $\beta=0.07$ ,  $T=1.20$ ,  $p>0.05$ ) showed a non-significant association with the development of EI among rural Tunisian women. Although SN was non-significantly associated with a change in the EI of the respondents, it was significantly associated with family support and was affected positively by it ( $\beta=0.29$ ,  $T=3.5$ ,  $p<0.01$ ).

**Implications & Recommendations:** The most important step for the development of successful entrepreneurs in rural Tunisia requires government support through effective entrepreneurial policies and programmes which will not only affect the development of positive entrepreneurial intentions but also will lead to the development of a better entrepreneurial environment for rural women of Tunisia.

**Contribution & Value Added:** This article contributes to the available body of literature on the subject of entrepreneurial intentions. Targeting a specific population of rural women in Tunisia, the novelty of current research provides new findings about the EI of those women who are rarely studied for entrepreneurship.

**Article type:** research article

**Keywords:** entrepreneurial intentions; subjective norms; attitude; entrepreneurship; risk-taking; theory of planned behaviour

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## INTRODUCTION

Entrepreneurship has long been acknowledged as a critical contribution to long-term economic growth and development, employment, and innovation. Researchers have investigated a wide range of issues ranging from opportunity recognition to entrepreneurial intentions to starting, managing, and growing

a new enterprise, as well as the factors (e.g. personal characteristics, social-cultural norms, and institutions) that influence the survival, growth, competitiveness, and sustainability of these enterprises (Audretsch *et al.*, 2006). Women's entrepreneurship is one field of research that has recently caught the interest of both academics and politicians, since some researchers have discovered that many of the obstacles that hinder entrepreneurship have a gender component to them (Pathak *et al.*, 2013). For example, conventional notions of entrepreneurs favour men, whereas women are less likely to be entrepreneurs. Furthermore, women entrepreneurs have extra social identities such as wives and moms, which may contribute to the perception that women's duties are to be caregivers or housewives rather than company owners. Multiple identity links can either hinder or aid women's commercial attempts (Chasserio *et al.*, 2014).

Most scholars now believe that the number of female entrepreneurs has increased dramatically in recent years (Chapelle *et al.*, 2010). Women company owner's contributions to economic development include employment creation as well as economic growth as a result of their increased active participation in corporate life. They also contribute to corporate operations because of the disparities in how they act and conduct themselves as compared to their male colleagues (Reed *et al.*, 2012). Specifically concentrating on how certain traits influence women's businesses may reveal insights that may help us better understand not only women's entrepreneurship but entrepreneurship in general (De Bruin *et al.*, 2007). Several studies have been undertaken to investigate how institutional and individual-level factors influence nascent entrepreneurship. Some studies even use the words early entrepreneurship and entrepreneurial intention interchangeably. Being an entrepreneur is frequently the result of a personal decision-making process that involves assessments of possibilities and costs (being employed, jobless, or self-employed), risk-reward linkages (what is at stake), and other factors. This decision is impacted by beliefs, attitudes, and behaviours that are ingrained in a country's and location's culture.

Tunisia, lies in the Northernmost Africa. It contains a great number of men and women entrepreneurs who are driven by a variety of reasons. According to data presented by the World Bank (2022), labour force participation among Tunisian youth reached 18.4% by the end of 2021 due to higher unemployment (especially among young people and women). This data shows that women are among the most affected by unemployment, but they are also among the most important assets in terms of developing the country's economy through entrepreneurship. Moreover, rural women usually suffer the most due to the lack of resources in the backward rural areas. Kassai and Farkas (2007, 2012, 2016) analyse in detail the different aspects of rural women's disadvantage in their works. We conducted this research to identify factors associated with entrepreneurship and to assess the role of these factors in affecting entrepreneurial intentions among women of rural Tunisia in comparison to urban Tunisian women. We constructed relevant research questions based on the set objectives followed by a thorough literature review for the hypotheses construction.

- RQ1:** What is the influence of entrepreneurial attitudes on entrepreneurial intentions?
- RQ2:** How does family support affect subjective norms?
- RQ3:** How does government effectiveness affect the development of entrepreneurial intention?
- RQ4:** What is the role of perceived behavioural control in effecting entrepreneurial intentions?
- RQ5:** How is risk-taking way of behaving associated with entrepreneurial intention?
- RQ6:** How do subjective norms affect entrepreneurial intention?

Each of the constructed research question was thoroughly searched in the available literature for the development of a hypothesis. A total of 6 hypothesis based on the available questions were developed followed by hypothesis testing and result construction. The paper further illustrated the comparison of current results with literature to discuss the outcomes and novelty of obtained results.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Since the Arab Spring in 2011, Tunisia has made great progress towards an open and democratic administration. Following in the footsteps of colonial powers, modern Arab governments have prioritized

socioeconomic development in cities, particularly the capital, while ignoring the trajectories. Peasants are frequently viewed as backward and locked in ‘tradition’ by rulers and nationalist intellectuals, obstructing the elites’ progress towards modernity. Agriculture is vital to Tunisia’s food security and is a significant contributor to the Tunisian economy. According to the Global Entrepreneurship Monitor, an estimated 329 million women established or operated businesses in 83 economies worldwide (GEM) including Tunisia. While the majority of these countries have lower female start up rates than men (Kelley *et al.*, 2014). Despite gender equality legislation in Tunisia, few a small number of young Tunisian women actually work. In rural Tunisia, less than one in every five young women (18.5%) works, and less than two in every five in urban Tunisia (39.8%) (Bank, 2013). Despite this fact, very few researches focused on the factors responsible for such drastic situations of entrepreneurship especially among Tunisian women (Drine & Grach, 2012; Sidrat *et al.*, 2016). The data is scarce if we narrow it down to the number of research which focused on these factors among rural Tunisian women. Therefore, by developing a practical model based on human psychology (Ajzen, 1991), this study investigated the effects of different factors associated with the development of entrepreneurial intentions among women of rural Tunisia.

### Theory of Planned Behaviour

Entrepreneurial intentions are critical to the process of entrepreneurship, as they are the first in a sequence of steps leading to the formation of ideas and thoughts which can set the tone for future endeavours. Furthermore, intentions towards an action can be powerful predictors of that behaviour (Ajzen, 1991). Martian Fishbein and Icek Azjien developed the theory of reasoned action (TRA) in 1975. According to the theory, an individual’s behavioural intention is governed by subjective standards and personal attitude towards action (Fishbein, 1980). They divided the theory into four key constructs attitude, subjective norm, behavioural goals, and conduct (Vallerand *et al.*, 1992). Ajzen first proposed the concept of planned conduct in 1985 (Ajzen, 1985). It is a theory of reasoned action extension that tackles the limitation of the theory’s original work when an individual lacks the pure volitional control that the theory of reasoned action assumes. The theory of planned behaviour (TPB) supposes that all behaviour needs some preparation and may be anticipated by the intention to engage in that behaviour. Behaviour is a direct result of intention, which is a product of attitude and subjective norms. Attitude is also seen to be the result of an individual’s beliefs and their judgement of those ideas. Scholars Find subjective perceptions of normative influences to be a ‘product of people’s judgments that important others believe they should or should not execute the behaviour in issue, as well as their incentive to comply with these other’s (Shaw & Shiu, 2003). Ajzen (1985) further expanded the model to include a measure of ‘perceived behavioural control’ resulting in the TPB. This is a direct measure that is the outcome of antecedents in the form of control beliefs. The theory of planned behaviour also included a new construct, perceived behavioural control, making the theory of planned behaviour five components in total, i.e. attitude, subjective norms (SN), perceived behavioural control, behavioural intention, and behaviour.

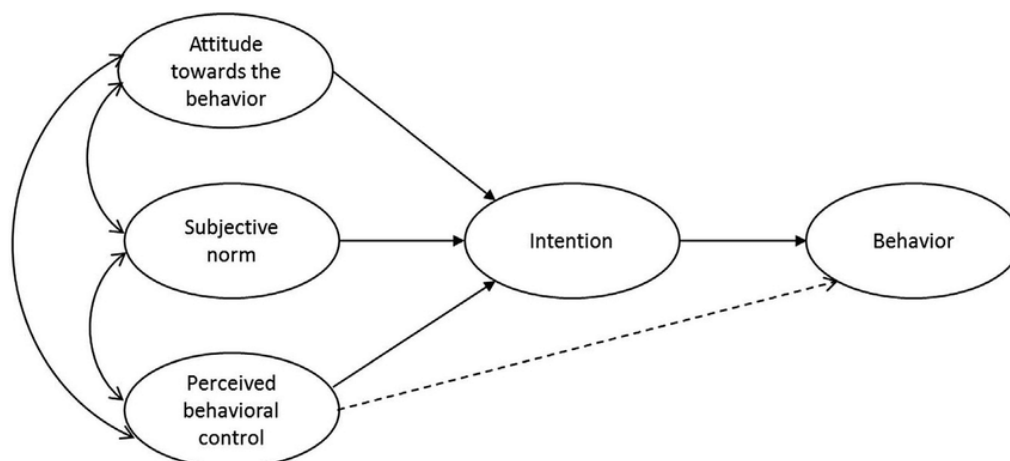


Figure 1. Factors involved in the theory of planned behaviour

Source: Ajzen, 1991.



The intention to adopt entrepreneurial behaviour, according to the TPB, can predict behaviour that involves planning. Miller *et al.*, (2009) define the TPB as having three components that predict behavioural intentions: (1) attitude or desire for the suggested behaviour, as well as overall favourable or negative assessments of executing a specific behaviour; (2) social and subjective norms that consider other people's judgments of the proposed behaviour; and (3) perceived control or feasibility of the proposed behaviour. Individual attitudes, according to TPB, have an influence on behaviour via intention, according to (Schwarz *et al.*, 2009). Based on this, there are three main attitudinal antecedents of intentions including (1) personal attitude towards behaviour outcomes; (2) perceived societal norm; and (3) perceived behavioural control (self-efficacy).

Moreover, the study of entrepreneurship focused on certain other factors which play their part in the development of entrepreneurial intentions and making a successful venture. The two most important among these additional factors were risk-taking (RT) and government effectiveness (GE). Risk-taking was regarded as an important attribute of entrepreneurs by Brockhaus (1982). According to De Vries (1977), risk-taking is one of several distinguishing characteristics of an entrepreneurial personality, which also include moderate risk-taking, anxiousness, need for autonomy and independence, need for achievement, internal locus of control, neglectfulness of interpersonal relations, self-reliance, nonconformity, and aesthetic sense. Some studies confirmed these e.g. Antoncic *et al.* (2018) and Gorostiaga *et al.* (2019) who associated RT with EI and found a significant influence of RT on the development of entrepreneurial intentions.

Good corporate governance standards are critical for reducing investor risk, attracting investment money, and even boosting company performance (Wakaisuka-Isingoma *et al.*, 2016). According to Lee *et al.* (2020), governments or authorities will attempt to highlight the positive role of government efficiency in encouraging innovation in a corrupt environment. Furthermore, Chambers and Munemo (2017) show that the cost of launching a firm is much cheaper in countries with poor governmental institutions. On the other hand, Hung *et al.* (2020) argued that economic development, will increase government efficiency while decreasing income equality. These findings encouraged us to incorporate GE as an important contributor to the development of EI. Based on the identified study variables, we developed the following hypotheses:

#### **Attitude**

Individuals evaluate items, people, institutions, events, behaviours, or particular intents to determine if they are good or bad (Ajzen, 2005). Personal attitude is formed by ideas about the implications of one's behaviour, which are known as behavioural beliefs. In other words, if a person feels that a certain behaviour will result in a positive outcome that person will have a positive attitude, and vice versa. According to research, entrepreneurial attitudes at both the personal and societal levels explain how entrepreneurial intention develops. These attitudes and intents are linked to individual perception and may be learned (Law & Breznik, 2017; Maio *et al.*, 2018). Attitudes impact the creation of women's entrepreneurial intentions and are measured as inner characteristics of an individual's willingness to engage in a behaviour. This led to our first hypothesis described below.

#### **Subjective Norms**

Subjective norms are the belief that a significant individual or group of people would accept and support a specific behaviour. Subjective norms are established by an individual's perceived social pressure from others to behave in a specific way, as well as their incentive to conform to those people's beliefs (Krueger Jr *et al.*, 2000). Attitudes impact individuals' entrepreneurial interest as a reflection of positive or negative confidence in SN and behaviour (Indrawati *et al.*, 2017). Such an interest may be fostered at a young age and throughout one's education in school, family, and surroundings. Entrepreneurship knowledge may be gained through education and then supplemented with ideas and help from experts in the field (SN). Such norms are among the elements influencing entrepreneurial interest in the (TPB), which implies having the belief to follow someone's recommendations to participate in entrepreneurial activities (Wijaya, 2008). Therefore, we based the next hypothesis on the effects of familial support (social support) on the development of SN among study participants.

### Government Effectiveness

In addition to the factors presented in TPB, we considered certain additional factors such as GE for this study. The role of a government in this regard is quite important, because it is the primary body with the power to make things happen. Almost all (Middle Eastern and North African (MENA)) nations have pledged to follow international norms to achieve better development for women and many have signed on to the Millennium Development Goals. At the macro level, governments in the region are gradually playing a vital role in fostering women's entrepreneurship. The government of the Kingdom of Saudi Arabia permits women to seek a business license without the agreement of their spouses (Ahmad, 2011). The UAE legitimizes female entrepreneurship through law, educational programmes, and different efforts that attempt to provide women with the tools they need to establish their own enterprises (Van Horne *et al.*, 2011). In one of our earlier articles we addressed the absence of official assistance for Tunisian women in the registration of businesses. We identified an obstacle which is a lack of awareness of company practices. The government made no special attempt to educate women about the registration process. Therefore, we included the effects of GE on the development of EI among the study participants with the following hypothesis.

### Perceived Behavioural Control

Perceived behavioural control (PBC) is an individual's assessment of the ease or complexity of beginning and operating a business. It constitutes an important component of the theory of planned behaviour. The theory of planned behaviour differs from the earlier theory of reasoned action in that it incorporates PBC. According to the theory of planned behaviour, PBC, coupled with behavioural intention, may be a good predictor of an individual's success in a certain subject (Ajzen, 1991). Because entrepreneurship is such a deeply ingrained phenomenon, subjective perceptions of one's surroundings and one's relative position within that environment are crucial (Jack & Anderson, 2002). Thus, personal perceptions of a society's supportiveness, the business environment, and one's own abilities are linked to individuals' EI. This led to our next hypothesis.

### Risk-taking

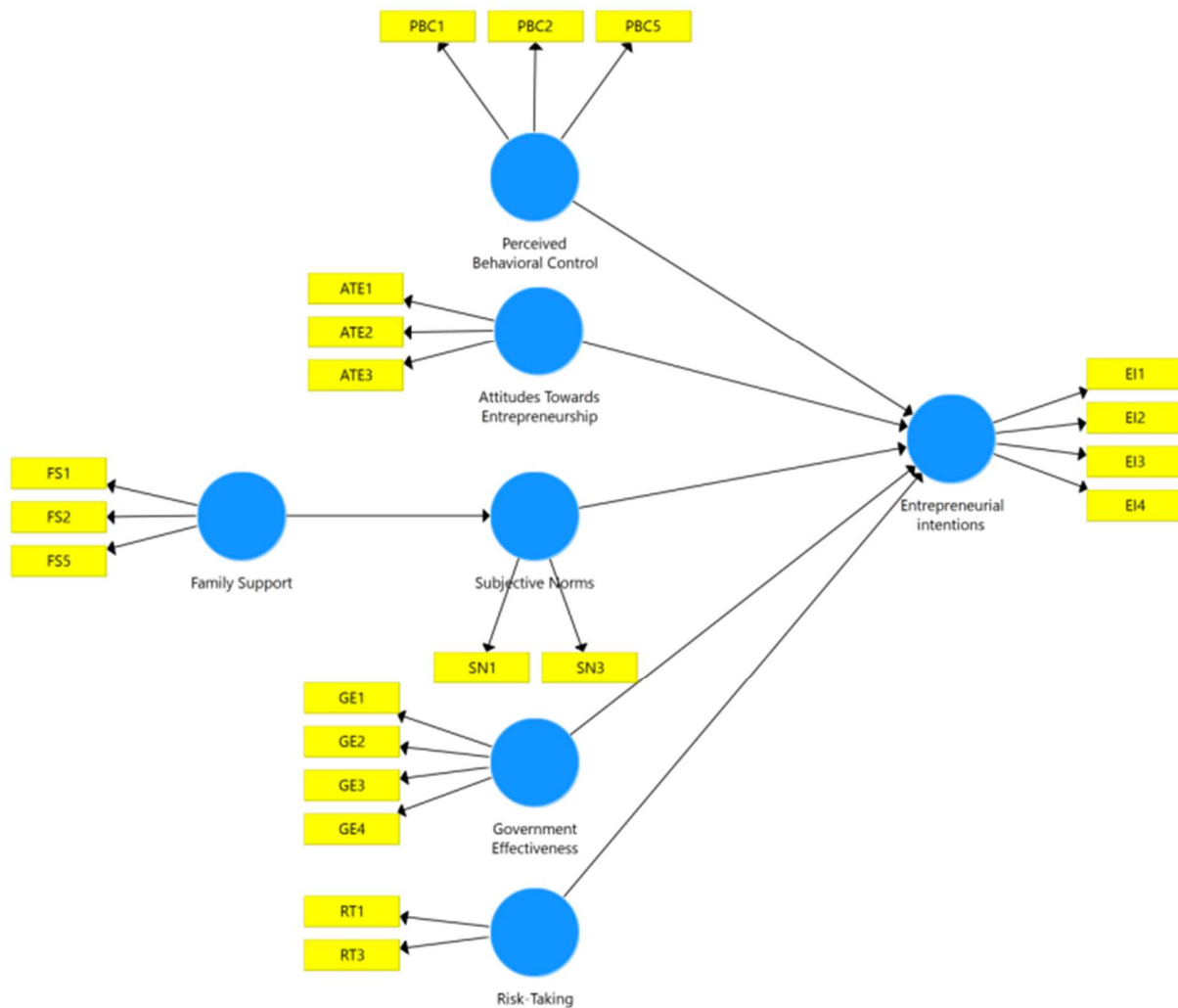
Risk-taking is involved in a project or a task when the conclusion is uncertain and there is a chance of failure. The risk-taking characteristics indicated entrepreneurs' willingness to participate in dangerous work or face no bail. It also refers to the capacity to cover potential losses resulting from business decisions or initiatives (Wiklund & Shepherd, 2005). A positive attitude towards risk will enable the entrepreneur to succeed and endure in business. Thus, entrepreneurs should regard the bravery to take risks as the first step (Tracy, 2007). Given the risky external environment and high project failure rate, a greater awareness of risk might potentially boost the efficiency of entrepreneurial decision-making (Forlani & Mullins, 2000). Therefore, our next hypothesis related to RT behaviour of the study respondents which we described below.

### Subjective Norms

The TPB model outlines that an individual's attitude towards a behaviour, together with existing SN and perceptions of behavioural control elements, all impact an individual's intention to follow a particular behaviour (Ajzen, 1991). According to the planned behaviour approach, individuals decide to start a new business based solely on the three motivating elements: attitudes towards behaviour, PBC, and subjective standards that directly predict behavioural intentions (Liñán *et al.*, 2011). The factor of SN in TPB literature has to do with the individual's perceived social pressure either to do or not do a specific behaviour which can be the decisive point for EI development among an individual. Therefore, we constructed our final hypothesis:

- H1:** Positive entrepreneurial attitudes will positively affect respondent's entrepreneurial intentions.
- H2:** Respondent's family support will have a positive effect on subjective norms.

- H3:** Government effectiveness will positively affect respondents' entrepreneurial intention of the respondents.
- H4:** Perceived behavioural control of the respondents' will positively affect their entrepreneurial intention.
- H5:** Respondent's risk-taking will positively affect their entrepreneurial intention.
- H6:** Positive subjective norms of the respondents will have a positive impact on their entrepreneurial intention.



**Figure 2. Research model**

Source: own elaboration.

## RESEARCH METHODOLOGY

This study was exploratory in nature. We used a causal study design based on the research question. We evaluated various factors and quantified their impact on rural Tunisian women's entrepreneurship. We estimated a variance-based structural equation model with partial least squares (PLS) that primarily targeted predicting the causal link in the complicated model (Urbach & Ahlemann, 2010). We employed PLS to investigate and interpret predicted causal linkages for which we used Smart PLS 3.2. Because the PLS technique minimizes the variance of the model's dependent variables, PLS-SEM performs well with small sample numbers (Hair Jr *et al.*, 2016). This field study gathered 330 responses from female entrepreneurs working in rural and urban Tunisia. However, after computing the missing values, the final number of respondents was 308. Figure 2 presents the model used for this study.

### Sample and Data Collection

For sample collection, we used simple random sampling (SRS), which ensured an equal probability of selection for every individual in the selected area. The area involved different regions of Tunisia. Respondents had to fulfil selection criteria according to which they needed to be Tunisian nationals and run some type of business. We performed fieldwork in several locations in Tunisia to gather data from random respondents who met the study's selection criteria. After the initial literature review and identification of key factors, we conducted five interviews with users who understood well the various features to confirm that the items accurately reflected the constructs and to determine which items were to be removed from the deeper investigation of the constructs. We conducted the interviews with the explicit objective of validating the initial set of constructs and screening out duplicate or insufficient items as well as producing new ones to assure completeness (*i.e.*- that no crucial elements were omitted) and content validity of the scales.

### Measurement Scales

We used a well-structured questionnaire containing a 7-point Likert Scale ranging from strongly disagree to strongly agree to assess survey respondents' sentiments. The 'No' opinion is a discrete value which we replaced throughout the data analysis to attain appropriate results. The studied variables were perceived behavioural control (PBC), attitude towards entrepreneurship (ATE), subjective norms (SN), risk-taking (RT), family support (FS), government effectiveness (GE) and entrepreneurial intentions (EI).

- PBC is indicated by five items adopted from the scale of Karimi *et al.* (2017).
- ATE is indicated by three items adapted and modified based on the scale of Karimi *et al.* (2017).
- SN is also indicated by three items adopted from the study of Ahmad *et al.* (2014).
- RT used four items for its indication (Gorostiaga *et al.*, 2019).
- FS used five items which were identified in the study of Kim and Branzei (2017).
- GE is indicated by four items (Al Maqtari & Farhan *et al.*, 2020).
- EI is indicated by four items (Karimi *et al.*, 2017).

## RESULTS AND DISCUSSION

### Participants' demographic profile

This study focused on rural Tunisian women, thus, all of the respondents (308) were women, with a mean age score of  $32.48 \pm 6.79$ . We included respondents from all six geographical regions of Tunisia (Table 1) =resulting in 14.61% respondents from North East Tunisia, 13.31% respondents from Greater Tunis, 15.26% respondents from North West Tunisia, 21.75% respondents from Center West Tunisia, 18.51% respondents from Center East Tunisia, and 16.56% respondents from South Tunisia. The majority of the rural women entrepreneurs either had a bachelor's degree (37.99%) or attained a secondary school education (35.06%). Data on the marital status was mixed with 48.38% married followed by 46.43% single respondents. Entrepreneurial status data showed various fields of enterprises including handicraft (22.08%), grocery stores (18.83%), fruits and vegetable stalls (21.1%), fertilizers and seeds businesses (13.31%), tailor shops (10.39%), and other enterprises (14.29%). Most of the respondents (44.16%) reported to have moderate experience as an entrepreneur followed by 36.36% of respondents who reported little entrepreneurial experience. Only 19.48% of rural Tunisian entrepreneurial women reported to be having a significant working experience (Table 1).

### Partial Least Square Design

We subjected the collected data to PLS 3.2 for statistical analysis which helped construct a suitable model based on the requirements of the study and it used a basic model considering several latent variables (Henseler & Sarstedt, 2013). Following the algorithms of PLS, the first step in the analysis was the assessment of validity and reliability of the model (Ramayah *et al.*, 2011). The validity test determines how correctly an instrument measures a certain concept that it is intended to assess. Meanwhile, the reliability test assesses the measurement instrument's stability and consistency (Sekaran & Bougie, 2016).

**Table 1. Respondents' socio-demographic profile**

Variable	Category	f (%) / Mean $\pm$ SD
Gender	Female	308 (100%)
Age	–	32.48 $\pm$ 6.79
Residence	North East Tunisia	45 (14.61%)
	Greater Tunis	41 (13.31%)
	North West Tunisia	47 (15.26%)
	Center West Tunisia	67 (21.75%)
	Center East Tunisia	57 (18.51%)
	South Tunisia	51 (16.56%)
Education	Doctor of philosophy	18 (5.84%)
	Master's	32 (10.39%)
	Bachelor	117 (37.99%)
	Secondary	108 (35.06%)
	Vocation	33 (10.71%)
Marital Status	Divorced	11 (3.57%)
	Married	149 (48.38%)
	Single	143 (46.43%)
	Widowed	5 (1.62%)
Enterprise	Handicraft	68 (22.08%)
	Grocery/general stores	58 (18.83%)
	Vegetable/fruit stall	65 (21.1%)
	Fertilizer/seeds	41 (13.31%)
	Tailor shop	32 (10.39%)
	Others	44 (14.29%)
Expertise	Little experience (<1 year)	112 (36.36%)
	Moderate experience (1–5 years)	136 (44.16%)
	Significant experience (More than 5 years)	60 (19.48%)

Source: own study.

### Validity and Reliability Assessment of the Constructed Model

Usually, scholars the validity of a model in PLS using two types of validity tests, *i.e.* convergent validity and discriminant validity (Sekaran & Bougie, 2016). Convergent validity is the degree to which a measure correlates favourably with another measure both of which exist in the same construct. Average variance extracted and item loading are the two measurements used to assess the convergent validity of a statistical model (Hair *et al.*, 2012). Ideal threshold value for AVE is  $\geq 0.5$  (Hair *et al.*, 2012); a factor item loading  $\geq 0.5$  is considered good while  $\geq 0.7$  is considered ideal with a T-value  $\geq 1.96$  (Hair, 2009). Results from the data showed most values above the recommended thresholds for items. However, there were a few items which not only had a lower factor loading but also dragged AVE down below 0.5 in which case, we removed these items. According to Hair *et al.* (2014), items with a factor loading value between 0.4-0.7 should be considered for removal if they drag down the value of AVE below 0.5 which was the case in this study. With the removal of PBC3, PBC4, SN2, RT2, RT4, FS3 and FS4, the obtained factor loading values were above the threshold (0.7) with AVE values  $\geq 0.5$  (Table 1). Discriminant validity refers to a construct's uniqueness, whereas the phenomena recorded by a construct are unique. Hence, it is not represented by other constructs in the model (Hair *et al.*, 2013). Discriminant validity is assessed by the item loading at the construct of an item's own variable as compared to its loading on the construct of another variable using the fornell-Larcker criterion (Fornell & Larcker, 1981). A higher loading at a variable's own construct indicates the fulfilment of criteria for discriminant validity (Vinzi *et al.*, 2010). Data from our study meets the standards set for discriminant validity (Table 2).

**Table 2. Measurement model (convergent validity)**

Constructs	Items	F.L	CR	AVE
Perceived Behavioural Control	PBC1	0.894	0.872	0.696
	PBC2	0.866		
	PBC3	0.735		
Attitudes Towards Entrepreneurship	ATE1	0.756	0.815	0.595
	ATE2	0.742		
	ATE3	0.814		
Subjective Norms	SN1	0.905	0.758	0.617
	SN2	–		
	SN3	0.645		
Risk-Taking	RT1	0.669	0.745	0.598
	RT2	0.865		
Family Support	FS1	0.472	0.817	0.615
	FS2	0.942		
	Ff S3	0.858		
Entrepreneurial Intentions	EI1	0.845	0.887	0.662
	EI2	0.782		
	EI3	0.859		
	EI4	0.765		
Government Effectiveness	GE1	0.456	0.821	0.548
	GE2	0.859		
	GE3	0.88		
	GE4	0.686		

Note: F.L, factor loading; CR, composite reliability; AVE, average variance extracted. Source: own study.

**Table 3. Measurement model (discriminant validity)**

Variables	Attitudes towards entrepreneurship	Entrepreneurial intentions	Family support	Government effectiveness	Perceived behavioural control	Risk-taking	Subjective norms
<b>Attitudes towards entrepreneurship</b>	<b>0.771</b>	–	–	–	–	–	–
<b>Entrepreneurial intentions</b>	0.670	<b>0.814</b>	–	–	–	–	–
<b>Family support</b>	0.386	0.455	<b>0.785</b>	–	–	–	–
<b>Government effectiveness</b>	0.247	0.356	0.303	<b>0.740</b>	–	–	–
<b>Perceived behavioural control</b>	0.401	0.443	0.331	0.26	<b>0.834</b>	–	–
<b>Risk-taking</b>	0.592	0.676	0.301	0.047	0.352	<b>0.773</b>	–
<b>Subjective norms</b>	0.35	0.499	0.292	0.216	0.398	0.569	<b>0.786</b>

Source: own study.

**Structural Model Assessment**

A significant association between two variables in a hypothesis are determined by its p-value and t-value. We considered a CI of 95%, therefore, we considered significant a p-value below 0.05 with a critical t-value above 1.96 (Hair *et al.*, 2014). Noteworthy, four out of six hypotheses were supported including H1, H2, H3 and H5 (Table 4). Two of the hypotheses (H4 and H6) were not supported due to their lower p-value (>0.05) and t-value (<1.96). H1 which tested the effects of (ATE) on EI revealed a significant association ( $\beta=0.31$ ,  $T=3.2$ ,  $p<0.01$ ). Further, FS affected a positive development of SN among study respondents ( $\beta=0.29$ ,  $T=3.5$ ,  $p<0.01$ ). Government support also showed a significant positive association with the development of EI among Tunisian women ( $\beta=0.22$ ,  $T=3.82$ ,  $p<0.01$ ). Note-

worthy Risk Taking was a strong predictor of EI as compared to the other tested variables ( $\beta=0.40$ , greater than others). Subjective norms ( $\beta=0.07$ ,  $T=1.20$ ,  $p>0.05$ ) and perceived behavioural control ( $\beta=0.40$ ,  $T=5.44$ ,  $p<0.01$ ) had a non-significant link with the development of EI. This showed that PBC and SN had non-significant positive effects on the development of EI among rural Tunisian women.

**Table 4. Structural model and hypothesis testing**

Relationship	$\beta$	Std. Error	T-value	P-Value
Attitudes towards entrepreneurship -> Entrepreneurial intentions	0.313	0.32	3.214	0.001***
Family support -> subjective norms	0.292	0.311	3.555	0.00***
Government effectiveness -> Entrepreneurial intentions	0.22	0.212	3.826	0.00***
Perceived behavioural control -> Entrepreneurial intentions	0.087	0.086	1.69	0.091 <sup>NS</sup>
Risk-taking -> Entrepreneurial intentions	0.406	0.404	5.441	0.00***
Subjective norms -> Entrepreneurial intentions	0.076	0.076	1.204	0.229 <sup>NS</sup>

Source: own study.

### Discussions

The first major finding of the study indicated the positive effect of EI on the development of ATE among Tunisian women living in rural areas. Several researchers discussed this association between the two factors and most of them came to a similar conclusion. A study conducted on 376 economic students in Indonesia revealed that ATE affected the EI of the study participants. The study findings for the tested hypothesis on ATE yield a p-value of 0.00, indicating that there was a highly significant association between ATE and EI (Wardana *et al.*, 2021). In another study, Ayalew and Zeleke (2018) confirmed the effect of entrepreneurial attitude on the EI of Ethiopian university students using component factor analysis and binary logistic regression. Several other studies identified and reported similar effects of attitude towards entrepreneurship and the development of ATE (Fayolle & Gailly, 2015; Potishuk & Kratzer, 2017; Schwarz *et al.*, 2009; Zampetakis *et al.*, 2009).

The second important finding was associated with H2 of the study which tested the effect of FS on SN and found a positive significant association between the two factors ( $\beta=0.29$ ,  $T=3.5$ ,  $p<0.01$ ). Family member's emotional support was the most essential asset that entrepreneurs may have. The concurrent and frequently competing duties of family and profession limit women's mobility and higher labour-force involvement. Social conventions and preconceptions about women's roles and standing in society and the job market limit their participation in economic activities. Moreover, women with children who are financially reliant on their husbands are more vulnerable in situations of domestic abuse (Ariffin *et al.*, 2020). Thus, the FS becomes valuably important for a woman to have SN especially associated with entrepreneurship. Rostami, Hassan, and Yaghmaei (2018) confirmed this association by finding a direct influence of FS on the SN of women workers in Malaysia.

The third finding of this article inflicted that governmental support had a positive effect on the development of EI among rural women entrepreneurs ( $\beta=0.22$ ,  $T=3.82$ ,  $p<0.01$ ). Malebana (2014) performed a research study in South African rural communities to examine the impact of government initiatives in promoting entrepreneurship. The study examined the South African government's various kinds of entrepreneurial assistance and, the findings indicated that the supportiveness of the entrepreneurial environment promotes the formation of EI among respondents. Moreover, several studies discussed the effectiveness of government through entrepreneurial policies and programmes which affected the development of intentions towards entrepreneurship (Etzkowitz, 2002; Lüthje & Franke, 2003; Pals, 2006; Salem, 2014). This presents a clear picture that the government itself is among the greatest motivators of EI among women entrepreneurs. The issues faced by women entrepreneurs in Tunisia (especially in rural regions) which serve as obstacles to EI (Salem *et al.*, 2020) can be minimized or eradicated with development of sufficient government policies and implementation of those policies with a greater efficiency.

Interestingly, our study resulted in a non-significant association between PBC and EI which is the fourth finding ( $\beta=0.08$ ,  $T=1.69$ ,  $p>0.05$ ). Various researchers studied the relation between PBC and EI

in various researches due to the importance of PBC in TPB. Cynthia *et al.* (2020) discovered a relationship between PBC and EI. Using linear regression analysis, the correlation of PBC was shown to be positive ( $b=.251$ ). Furthermore, Dinc and Budic (2016) reported a significantly positive association of PBC and EI. Alternatively, Fayolle, Gailly, and Lassas-Clerc (2006) also studied the association between the two and found that PBC was negatively associated with the development of EI. We can link these findings with Jack and Anderson's (2002) ideology who believed that the development of PBC requires great support from the environment. A supportive environment for entrepreneurship will build stronger PBC and hence lead to EI development and vice versa.

The fifth finding which associated RT behaviour with EI showed that RT was associated positively with the development of EI among Tunisian women. This association was statistically significant ( $\beta=0.40$ ,  $T=5.44$ ,  $p<0.01$ ). Chipeta and Surujlal (2017) confirmed this association. They found a highly significant association of RT with the development of EI among South African students ( $\beta =9.540$ ,  $p=0.000$ ). Several other researches also showed similar association between RT and EI which confirms the findings of our study (Fernandes *et al.*, 2018; Mujahid *et al.*, 2020; Zhang *et al.*, 2015).

The sixth and final finding associated with H6 of the article revealed a non-association between SN and EI among the rural Tunisian women entrepreneurs ( $\beta=0.08$ ,  $T=1.69$ ,  $p>0.05$ ). Previous research linked the effects of SN on EI through other variables among which the most important is parental support (Verheul *et al.*, 2012). In our study, H2 confirmed this finding. We found that FS had a highly significant effect on SN development among rural entrepreneurial women of Tunisia. A family supporting entrepreneurship can help develop SN which will develop EI among individuals. A number of researchers found this positive association (Solesvik, 2013; Utami, 2017; Yousaf *et al.*, 2015). However, our study findings revealed a non-significant association between the two factors which can be explained by a non-entrepreneurial family background or man-dominant society of Tunisia which does not promote entrepreneurial SN among the study respondents. For this reason, the FS' influence on subjective norm development was significant but it did not lead to a significant EI development- among rural Tunisian women.

## CONCLUSIONS

Entrepreneurial intentions are an important element of becoming a successful entrepreneur. These intentions studied in the rural Tunisian society are affected by a number of variables among women entrepreneurs. Entrepreneurial attitude (EA), subjective norms (SN), risk-taking (RT), and government effectiveness (GE) are a few of the most important variables that influence the development of EI among rural Tunisian women. All the variables showed a positive association with the development of EI. We found the tested effects of RT were the greatest regarding the development of EI. Meanwhile, GE showed comparatively the lowest effect on EI among the tested variables. Although, SN posed a non-significant effect on EI, the development of SN strongly related to respondents' FS. Moreover perceived behavioural control (PBC) also showed a non-significant association with the development of EI in our study. With this, the most important step for the development of successful entrepreneurs in rural Tunisia requires government support through effective entrepreneurial policies and programmes. Moreover, the development of EA and RT required entrepreneurial education which can help these women understand the importance of these two variables and their roles in becoming successful entrepreneurs. These things will not only help the rural women directly but also facilitate them indirectly by advocating the importance of entrepreneurial FS through family members which will lead to the development of a better entrepreneurial environment for rural women of Tunisia.

## Limitations

Although this research contributed greatly to the field of entrepreneurship in relation to the psychological factors influencing it, there are some limitations to it.

- We' considered limited factors that affected the development of EI among study respondents. Additional factors were also present but they were in negligible amount which is why we did not consider them. Future studies can focus on increasing the number of variables to attain more efficient results.



- The study involved the Tunisian population as a whole. However, our number of respondents was limited to 500 due to the nature of the research and the limitation of resources which researchers can increase in future studies.
- Although little, the use of online resources for data collection sometimes leads to exaggeration by the participants which can affect the overall study results.

### Implications

This was the first research study to evaluate the effects of the behavioural factors identified by TBP with the addition of GE and RT on the development of entrepreneurial intentions among rural Tunisian women. Findings of this study will not only contribute to the body of research but can also be used to improve the managerial aspects of government and NGO-based activities directed towards EI among rural Tunisian population. The addition of FS as an important predictor of (SN) can also play its part in future programme development.

### Theoretical Implications

The theoretical contributions of this research are as follows:

- It is the first study to provide the basis for future research in this field in the Tunisian context.
- It will allow the researchers to look for more factors to consider and conduct an in-depth analysis in future research.
- It will add up to already present body of literature on the topic of women entrepreneurs.
- Entrepreneurial intentions set the basic ideology of an entrepreneur. Therefore, our results will guide future researchers to adopt appropriate models and select more versatile variables in future researches.

### Managerial Implications

Managerial/practical implementations of this research are as follows:

- This study can serve as the cornerstone in the development of governmental policies to promote entrepreneurship among women of Tunisia, especially, the marginal rural women.
- Project development can consider the results of the study to focus on the factors of interest which can facilitate the promotion of EI among rural Tunisian women.
- Government and private interventions targeting an improvement entrepreneurship among rural Tunisian women can adopt effective plans of actions by considering the factorial response of different variables involved in this study.
- Other countries which follow a similar tradition and culture to Tunisia can also adopt the results of this study and either consider managerial changes or conduct regional research set by our model to promote entrepreneurship among the marginal population.

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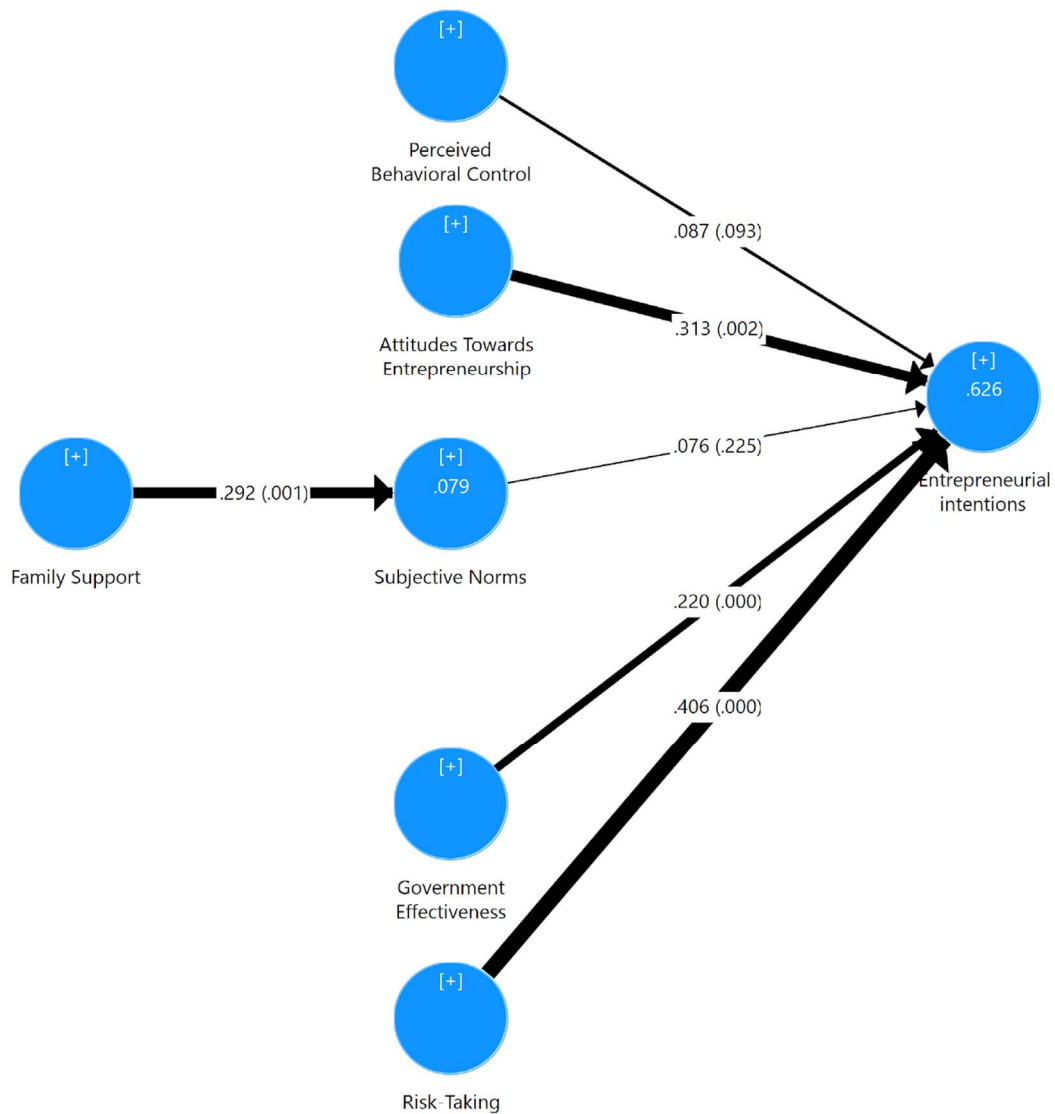
**Appendix A: Questionnaire**

No.	Factor	Item	Description
1	Perceived behavioural control	PBC1	I think that starting a firm and keeping it viable would be easy for rural women.
		PBC2	I believe rural women would be completely able to start their own businesses.
		PBC3	I think rural women can control the creation process of their new own businesses.
		PBC4	I think it would be very easy for rural women to develop their businesses ideas.
		PBC5	I think that rural women know all about the practical details needed to start their own businesses.
2	Attitudes towards entrepreneurship	ATE1	I think that the career as an entrepreneur is totally attractive to rural women.
		ATE2	I think that if rural women had the opportunity and resources they would love to start their own businesses.
		ATE3	I think that being an entrepreneur would give rural women great satisfaction.
3	Subjective norms	SN1	I think that that people close to the rural women believe, hope and encourage the rural women to participate in business.
		SN2	I think that that friends of the rural women influence the rural women willingness to start a new business.
		SN3	I think that the surroundings of the rural women influence the rural women decision to start a new business.
4	Risk-taking	RT1	I think that rural women must take risks at times to be successful in their own businesses.
		RT2	I think that rural women can take risky decisions about their own businesses.
		RT3	I think that to create something of value of their own businesses, rural women need to take risks.
		RT4	I think that the risk of COVID-19 will be a barrier for rural women to start and operate their business.
5	Family support	FS1	I think that the members of the rural women’s families will approve their actions.
		FS2	I think that the members of the rural women’s families will encourage them to start their business.
		FS3	I think that if necessary, the members of the rural women’s will loan them money to help them start their own business.
		FS4	I think that if necessary, the members of the rural women’s families will provide them materials and equipment to help them start their own business.
		FS5	I think that the members of the rural women’s families will give them advice to start their own business.
6	Entrepreneurial education	EE1	I think that the entrepreneurship education at basic school (primary and secondary) will motivate the rural women to start their own business.
		EE2	I think that the entrepreneurship education at post-secondary levels (higher education such as vocational, college, business schools, etc.) will help the rural women to start their own business.
		EE3	I think that entrepreneurship education is a necessary part for rural women to become successful in entrepreneurship.
		EE4	I think that entrepreneurship education will promote the entrepreneurship among the rural women.
7	Government effectiveness	GE1	I think that the quality of public services will help the rural women to start or operate their own businesses.
		GE2	I think that the quality of policy formulation will help the rural women to start or operate their own businesses.
		GE3	I think that the quality of policy implementation will help the rural women to start or operate their own businesses.
		GE4	I think that the credibility of the government’s commitment to the public services and policies will help the rural women to start or operate their own businesses.
8		EI1	I think that rural women professional goal is to become an entrepreneur.
		EI2	I think that rural women will make every effort to start and run their own businesses.

No.	Factor	Item	Description
	Entrepreneurial intentions	EI3	I think that rural women are determined to create a firm in the future.
		EI4	I think that rural women have very seriously thought about starting a business.
9	Source of data collection	SDC1	In the selection of samples, we used simple random sampling known as SRS. We made field visits to different regions of Tunisia to collect data from random respondents falling within the selection criteria for this study. Apart from this, we also used online questionnaire forms to collect data from random respondents without any referral. For ensuring the validity of sampling technique and data, we informed all of the respondents regarding the purpose of study prior to filling the questionnaire.

Source: own study

### Appendix B: Overview of the structural model



Source: own elaboration.


### Authors

Dorsaf Maayoufi (60%): Description of contribution of authors (concepts, design, analysis and interpretation of data, methods etc.), Emese Bruder (20%): Methodology, Viktória Kutvolgyi (20%): Literature analysis.

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### Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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