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**ОРИГИНАЛАНИ НАУЧНИ ЧЛАНЦИ**  
**ORIGINAL SCIENTIFIC PAPERS**

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# PRINCIPAL COMPONENT ANALYSIS OF GENERATIONAL PREFERENCES REGARDING OVER- THE-TOP SERVICES – A HUNGARIAN CASE STUDY

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## ABSTRACT

The rise of video streaming services has not only increased the popularity of the platforms available, but has also changed the way households consume content, displacing the options offered by traditional television. The orientation was to apply a specific interdisciplinary scientific approach, combining economics and sociology, due to the research area of the study. The advantages/disadvantages of streaming platforms may play a role in the perceptions of different age groups of users by the service provider they choose. The aim of the research is to focus on the different video streaming consumption habits of the various generations (Generation X, Generation Y, Generation Z) as customers of Netflix, HBO Max, and Disney+, the widely known video streaming providers as reflected in the literature review. A Likert-scale questionnaire survey was considered the most appropriate method to achieve this objective. In order to test the hypothesis on the relationship between generations and video streaming usage a principal component analyses by generation was applied. The separation of variables resulted in the establishment of two groups, namely manipulation (indicating the influence of the traditional way of life) and enjoyment (influencing the choice and customer retention of service providers). The results of the study indicate that the generational characteristics of consumers partly show different patterns of service use, and that the impact of service use on traditional lifeways differs between generations. The analysis highlights the importance of further researches in this area, as the factors explored can be extended to other important issues in the future.

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## 1. INTRODUCTION

Nowadays, linear, also known as traditional television, is facing stiff competition from emerging streaming services, which have grown into a multi-billion dollar industry (Herman, 2022). The ranking of video streaming providers worldwide and internationally cannot be regarded as permanent. The popularity of the platforms is significantly influenced by the details of the subscription schemes, such as password sharing and the use of multiple devices at the same time (Nathanson, 2022), or by market restructuring, which may lead to changes in subscriber prices and the emergence of new competitors (Maglio, 2022; Martínez-Sánchez, Nicolas-Sans & Díaz, 2021).

In the world of media service providers, the slightest economic or even social change can drastically affect users' value judgements (Aly Tovar, 2021). However, the outcome of the 'Streaming War', or the war between online media providers, seems to be unrelated to the battle between streaming and traditional television, as regardless of who leads the line, the popularity of linear television seems to be breaking down (Kenworthy, 2020). Meyer (2022a, 2022b, 2022c) identified satellite-based broadcasting as the main explanation for the catch-up and advance of internet-based providers, citing the increase in content delivery speed inherent in the technology. Its findings suggest that the smartphone and tablet usage of previous years has been replaced by smart television, which is becoming more prevalent among video content consumers. The global subscriber numbers of the best-known platforms illustrate the global importance of video streaming service providers. According to Pattison (2022), Netflix is the on first place with around 225 million subscribers, followed by Amazon-owned Prime Video (205 million subscribers), while the third in the group of video-sharing platforms is Disney+ (130 million subscribers), HBO Max is the fourth with 85 million subscribers, and Walt Disney-owned Hulu (45 million subscribers) is the fifth. In terms of market share, Netflix was the most dominant provider in Hungary (87.1%) in 2022, followed by HBO Max (61%), then Apple TV+ (around 124,000 users) and Amazon Prime (around 91,000 users) (GKID Economic Research Co, 2022). In Hungary, 44% of internet users aged 16 and over are digital natives (Generation Y and Generation Z), while 56% belong to three generations of digital immigrants (Veterans, Baby Boomers, Generation X) (National Media and Infocommunications Authority, 2020). Almost 39% of active internet users aged 18 and over (around 2 million users) have a subscription or access to at least one streaming service (GKID Economic Research Co, 2022).

The aim of the research is to focus on the different video streaming consumption habits of the various generations (Generation X, Generation Y, Generation Z) as

customers of Netflix, HBO Max, and Disney+, the widely known video streaming providers as reflected in the literature review. A Likert-scale questionnaire survey was considered the most appropriate method to achieve this objective. In order to achieve this purpose, the research examines the relationships between video streaming service providers and the generational differences associated with them using principal component analysis, as this methodology has been proved to be suitable for identifying and comparing different generational characteristics. For this reason, two perspectives (possible groups of principal components) have been taken into account: indicating the influence of traditional lifestyles, and influencing the provider choice and continuation. The specific interdisciplinary scientific approach could lead to the identification of significant characteristic differences between the examined generations in their use of streaming services, which undoubtedly influences the ways in which they communicate and interact. In conducting the research, the following research hypothesis was determined: Generations have different consumption behaviours and therefore decide to use video streaming services based on diverse experiences/perceptions.

The formulation of our hypothesis was influenced by a number of reasons determined by previous researches that studied the topic in a narrower context. Earlier researches typically only considered age and did not segment respondents by generation (e.g. Katherine Chen, 2019; Nagaraj, Singh & Yasa, 2021; Shin & Park, 2021). In those studies that have conducted a generational analysis, only two generations have generally been compared with each other (e.g. Dabija et al., 2018; Laor & Galily, 2022; Lissitsa & Laor, 2021). It should also be noted that this paper fills a gap in this respect, as most of the papers analyzing over-the-top services have been written in Asia (e.g. Malewar & Bajaj, 2020; Nagaraj, Singh & Yasa, 2021; Shim, Lee, & Oh, 2022; Shin & Park, 2021). Moreover, in most cases the use of streaming platforms has only been studied under the assumption of the same user characteristics (same set of variables with structural model or factor analysis (e.g. Dabija et al., 2018; Malewar & Bajaj, 2020; Nagaraj, Singh & Yasa, 2021; Shim, Lee, & Oh, 2022;)). The concept of the present research goes one step further by targeting 2-2 potential principal component groups per generation.

### **1.1. Factors influencing the choice of service provider**

Over-the-top (OTT) platforms are suitable as a substitute (Martínez-Sánchez et al., 2021; Meyer, 2022a, 2022b, 2022c; Silva & Lima, 2022; Simon-Kucher & Partners, 2019) or complement (Kim, Lee, Lee & Kim, 2021) to traditional media (public service, commercial) consumption patterns. Unlike television, they are characterised by lack of advertising and a wide range of programmes.

The differences between the public's perception, the use of the two platforms (television, over-the-top) (e.g. Katherine Chen, 2019; Sahu, Gaur & Singh, 2021) and the reasons for subscribing to OTT providers (e.g. Devadas, 2022; Westcott et al, 2022) have been investigated from several aspects (e.g. economic development), the results of which are summarised in Table 1.

Based on the literature review, certain factors (e.g. price, convenience, availability of programmes, lack of advertising) have been highlighted in several studies. Mulla (2022) categorized and analysed studies on streaming platforms published between 2007 and 2021 in a review article. The results show that the use of OTT platforms is influenced by the following 12 factors: content, price, flexibility, convenience (perceived ease of use), perceived usefulness, perceived enjoyment (hedonic motivation), desire to be freed from any constraint, entertainment value, socialization, culture inclusion, binge-watching, and self-efficacy. Devadas (2022) research on purchase and continuation intention should be also emphasised, which shows that, in addition to price, convenience and a wide range of programmes, the possibility of binge-watching is also a priority for subscribers. With the presence of video streaming platforms, the user base is becoming increasingly aware, so even for the most popular providers (e.g. Netflix, Disney+), understanding the aspects of customer retention related to value for money will be key for the future (Westcott et al, 2022).

**Table 1.** Factors affecting OTT usage based on literature review

Source	Factors influencing OTT usage (advantages)	Location of the Study
Katherine Chen, 2019	amusement, convenience, ease of use, information content, price, relaxation, social interactions	Taiwan
Nagaraj, Singh & Yasa, 2021	content, convenience, features, price, quality	India
Malewar & Bajaj, 2020	content availability, performance expentancy, price	India
Shim, Lee, & Oh, 2022	foreign content, movies, original content,	South-Korea
Shin & Park, 2021	content diversity, ease of use, enjoyment, price, quality, social interaction	South-Korea
Meyer, 2022a, 2022b, 2022c	availability on multiple devices, ease of use, no contract period, price, time-shifted television, watching television on the go, wide range of content,	Austria, Germany, Switzerland
Wanat, 2022	exclusive content, good recommendation system, high quality, lack of advertising, legal streaming, offering the best movies, offering the best series, offline viewing, price, working smoother	Poland
National Film Institute [NFI], 2020	access to the latest trends, availability on multiple devices, ease of use, exclusive content, faster access to content, flexibility, lack of advertising, original content, wide range of content	Hungary

Source: Authors' editing

Chakraborty et al. (2023) identified five factors of customer retention: social value (acceptance, perception), functional value (price, quality), emotional value (satisfaction, enjoyment), epistemic value (novelty, curiosity) and conditional value (discounts, offers). It was found that all 5 factors are necessary to build trust in OTT providers, but that social value, unlike the other 4 factors, does not have a significant impact on customer retention, as the importance of belonging to a platform in terms of social perception is decreasing. The formation of divergent opinions among social groups, in line with Buda (2019), is believed to be due to the different acceptance of social norms across generations, as well as historical turning points (e.g. the outbreak of war) and the diffusion of technological innovations (e.g. the internet).

## 1.2. Generational differences in video streaming services

Distinguishing between generations and comparing their behaviours is a complex task, thus the theoretical approaches are not consistent. According to Csutorás' (2020) studies, the first modern empirical research on generations was conducted on the basic assumptions of Mannheim's theory, which laid the foundation for the generation concepts still used today. According to the theoretical approaches based on collective consciousness (Howe & Strauss, 1991, as cited in van Eck Duymaer van Twist & Newcombe, 2021) generations can be defined as groups that share a common historical past and space, thus providing a collective identity for the group members. The most commonly used approach distinguishes generations by age, using birth intervals of 10-15 years, linking the cut-off points to major events, as in collective theory (Lyons & Kuron, 2014). Some research studies (e.g. Kertzer, 1983; Twenge, 2000) dispute that approaches using age, age-length and historical effects reflect generally acceptable results. Regarding the labour market, the following generations can be distinguished: Veterans (1930-1949), Baby Boom Generation (1950-1965), Generation X (1966-1989), Generation Y (1985-2000) and Generation Z (born around the second Millennium) (Mannheim, 1952; Kópházi, Pétervári, & Balassa, 2018). Therefore, the term generation can be approached in many different ways: age, birth interval, historical past, and membership of a company/organisation.

In addition to the generational theories already described, the specific topic of this study required the application of a concept that distinguishes between age groups based on differences in Internet use and digital device use. This approach was considered important in present research, as several analyses (e.g. Dabija, Bejan, & Tipi, 2018; Kulcsár, 2008; Raffer, 2020) have shown that the application of the before mentioned framework can show significant differences between generations. The results of several studies (Földvári, 2017;

Komár, 2017) have confirmed that Generation Z (1996-2010) shows significant differences from Generation X (1961-1981) and Baby Boomer (1943-1960) not only in terms of device use, but also in mindset, emotional expression and problem solving. Kulcsár's (2008) and McCrindle's (2018) classifications of generations' attitudes towards the digital world were found to be suitable for the present analysis, namely: Veterans (1925-1945), Baby Boom Generation (1946-1964), Generation X (1965-1979), Generation Y (1980-1994), Generation Z (1995-2009) and Generation Alpha (2010-). In the following, the differences between generations will be outlined.

The generational differences in communication, device use, content consumption and behaviour (e.g. etiquette, netiquette) caused by the digital world have been defined by several scholars (e.g. Carrillo-Durán, Ruano-López, Fernández Falero, & Trabadelo Robles, 2022; Dabija et al, 2018; Downes, 2019; Kulcsár, 2008). Table 2 summarises the differences in digital device use by generations.

**Table 2.** Characteristics of digital device use by generations

Generation	Features of digital device use	Source
Veterans	Challenge Lack of confidence Physical difficulties	Ali & Szikora, 2017 Jiang, 2018
Baby Boomers	Acceptance Replacing traditional media content on an occasional basis Tool for basic communication	Carrillo-Durán et al., 2022 Downes, 2019 Kulcsár, 2008 Towner & Lego Munoz, 2016
Generation X	Awareness of own limitations Consciousness Digital skills acquired at an older age Excellent technical skills Responsibility Supplementing traditional options	Dabija et al., 2018 Downes, 2019 Jung & Melguzo, 2021 Kamber, 2017 Lissitsa & Laor, 2021
Generation Y	Active social media presence Early use Intensive internet use Internet-based networking Keeping track of new technologies Multitasking Online entertainment Use of convenience features	Bolton et al., 2013 Dickey & Lewis, 2010 Kulcsár, 2008 MacKenzie & Scherer, 2019 McAlister, 2010 Savage, 2006 Werenowska & Rzepka, 2020
Generation Z	Access to diverse contents Increased streaming and OTT platform use Price sensitivity Psychopathological symptoms in case of absence Routine use of devices, new technologies Social media-based communication Wide range of device usage	Ahn, 2022 Jung & Melguzo, 2021 Kulcsár, 2008 Laor & Galily, 2022 Reinikainen, Kari, & Luoma-Aho, 2020 Taylor, 2020 Westcott et al., 2022 Yadav & Rai, 2017

Generation	Features of digital device use	Source
Generation Alpha	Addiction Fast information needs Increased use of digital spaces Sharing attention Virtual friendships	Cirilli & Nicolini, 2019 Pálincás & Purgel, 2019

Source: Authors' edit based on sources cited

The reviewed literature supported the choice of [Kulcsár's \(2008\)](#) and [McCrindle's \(2018\)](#) classification, which allows the comparison of specific generational groups separated by digital device usage patterns, based on their user perceptions and habits.

## 2. MATERIALS AND METHODS

The aim of the research is to explore the relationships between video streaming service providers and the generational differences associated with them using principal component analysis, as the different sets of variables and factor weights of principal components representing the mindsets of age groups may reveal relevant information in this regard. It is assumed that two principal component groups can be distinguished, namely the manipulative (indicating the influence of traditional lifestyles) and the enjoyment (influencing the provider choice and continuation), which indicate generational differences.

The orientation was to apply a specific interdisciplinary scientific approach, combining economics and sociology, due to the research focus of the study on video streaming consumption behaviour. Therefore, the present study focuses on different video streaming consumption habits of different generations that are customers of Netflix, HBO Max and Disney+, the best known video streaming providers, as reflected in the literature review. In terms of generations, the special classification (based on attitudes towards the digital world) of [Kulcsár \(2008\)](#) and [McCrindle's \(2018\)](#) was applied: Veterans (1925-1945), Baby Boom Generation (1946-1964), Generation X (1965-1979), Generation Y (1980-1994), Generation Z (1995-2009) and Generation Alpha (2010-). In designing the survey, the aim was to reach as many generations as possible, therefore in addition to online surveys on the university's social media site, the snowball method, a non-probability sampling was applied to conduct our primary research, taking advantage of the authors' multi-generational network of contacts. In addition to closed-ended multiple-choice questions related to demographics and video streaming habits, incorporating variables already used/tested in previous research ordinal scales (4-point Likert scale, 48 variables) was also applied in

the questionnaire. A total of 350 responses were received during the completion period (21.10.2022 - 2.11.2022), but only respondents with an OTT subscription were included in our analysis, leaving a sample of 264 respondents after data cleaning (Table 3). Taking the responses to our questionnaire into account, the Baby Boomer and the Alpha Generations were excluded from the analysis due to their low sub-sample. Obviously, the research method was chosen with the limitations of the data collection in mind, so it was a non-representative, cross-sectional analysis (study of data on a sample population at a given point in time). The necessary tests and the principal component analyses were performed using IBM SPSS Statistics 25.

**Table 3.** Number of OTT users per generation (person)

Name	Generations Birth interval	OTT usage		Total
		No	Yes	
Baby Boomer	1946-1964	18	8	26
Generation X	1965-1979	32	72	104
Generation Y	1980-1994	12	76	88
Generation Z	1995-2009	24	104	128
Generation Alpha	2010-	0	4	4
Total		86	264	350

Source: Authors' edit based on the questionnaire answers

The past decades have shown that principal component analysis has become increasingly accepted for questionnaire surveys, as it is suitable for exploring relationships between variables, identifying the most important variables and facilitating data interpretation (Sajtos & Mitev, 2007). The literature emphasises the minimum sample size, whereby the method is not recommended for sample sizes below 50 respondents, and the item/variable ratio criterion, according to which a principal component analysis requires at least ten times more respondents than the number of variables used in the survey (Csanády, Horváth-Szováti, & Szalay, 2013).

The principal component analysis was run several times for each generation in order to achieve the best model fit with the available sample. The following acceptance criteria were defined during the research:

- Kendall's tau b:  $>0.3$
- Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO):  $>0.5$
- Bartlett's Test sig.:  $<0.05$
- Communalities:  $>0.25$

- Goodness of Fit Test: >0.00
- Total Variance Explained: > 33%
- Factor Weights: > 0.25 (Barna & Székelyi, 2008).

In this paper, only the best-fit version of the model is presented, in which the total set of variables included is as follows (the literature basis for inclusion in the study is also indicated):

1. Manipulation principal component group:
  - v1\_1: internet usage habits (Kwon & Wen, 2010; Leung, 2007)
  - v1\_2: free time activities (Fekete, 2018; Murtaza, Molnár, & Szakács, 2021)
  - v1\_3: social life (Prasad, 2021)
  - v1\_4: private life (McDaniel & Coyne, 2016; Negi & Gupta, 2022)
  - v1\_5: working/studying (Prasad, 2021; Safar & Alkhezzi, 2016)
2. Enjoyment principal component group:
  - v2\_1: rewatchability (Arriaga et al. 2019)
  - v2\_2: language learning (NFI, 2020)
  - v2\_3: exclusive content (NFI, 2020; Wanat, 2022)
  - v2\_4: high video quality (Nagaraj et al. 2021; Yousaf, Mishra, Taheri, & Kesgin, 2021)
  - v2\_5: wide range of content (Meyer, 2022a, 2022b, 2022c; NFI, 2020)
  - v2\_8: original content (Yousaf et al, 2021; Shim et al. 2022)
  - v2\_11: flexibility (Mulla, 2022; Nagaraj et al. 2021)
  - v2\_12: season-by-season publication of series (Devadas, 2022)
  - v2\_13: convenience (Devadas, 2022; Katherine Chen, 2019; Sahu et al. 2021)

The sets of variables of the principal component groups created by generation are presented in Table 4. Research on the methodology of principal component analysis has emphasized the examination of normality (Fornell & Larcker, 1981; Sajtos & Mitev, 2007). However, in case of the Likert scale questions applied in this analyses, it should be noted that these are not continuous interval scales, and thus typically do not meet the criteria of traditional normality tests (e.g. Kolmogorov-Smirnov test, Shapiro-Wilk test, skewness and kurtosis). The results of several simulation studies (e.g. Muthén & Kaplan, 1985) have shown that other criteria can be used to determine whether normality is fulfilled for ordinal scales (Rózsa et al, 2019). For factor based models (Dash & Paul, 2021), it is proposed to determine the degree of normality violation (Rózsa et al, 2019), for which there are no generally accepted criteria. However, in the

case of multivariate analysis (e.g. principal component analysis), a skewness of less than 2 and a kurtosis of less than 7 are considered appropriate (Byrne, 2010; Chou & Bentler, 1995; Curran, West, & Finch, 1996; Muthén & Kaplan, 1985). George & Mallery (2010) suggest in a slightly different approach for psychometric purposes (e.g. attitudes, exploration of personal characteristics) a cut-off between +2 and -2 for questionnaire surveys. The values of the variables used in our model can be accepted (Table 4), since all, except for two (v1\_3, v2\_11) which are acceptable according to the more permissive literature, meet even the stricter criteria.

**Table 4.** Skewness and kurtosis values (normality) of variables included in the model

Principal component groups	Generation	Variable	Kurtosis	Skewness	
Manipulation	1965-1979	v1_1	0.158	-0.933	
		v1_2	-0.178	-0.520	
		v1_3	0.228	-2.004	
		v1_5	0.183	-0.619	
		v1_2	0.340	-0.814	
	1980-1994	v1_3	-0.139	-0.017	
		v1_4	-0.186	-0.042	
		v1_5	0.310	-0.232	
		v1_2	0.054	-1.136	
	1995-2009	v1_3	0.133	-0.715	
		v1_4	0.269	-0.638	
		v1_5	0.662	0.404	
		v2_1	-0.475	-0.630	
	Enjoyment	1965-1979	v2_4	-0.696	-0.630
			v2_5	-0.609	-0.566
v2_13			-0.388	-1.513	
v2_3			-0.848	-0.394	
1980-1994		v2_4	-1.220	-1.064	
		v2_11	-1.967	3.693	
		v2_12	-0.478	-0.216	
		v2_13	-0.593	-0.917	
1995-2009		v2_1	-1.102	0.473	
		v2_2	-0.975	-0.718	
	v2_4	-1.282	0.772		
	v2_8	-0.298	-1.236		

Source: Authors' own calculations based on the questionnaire answers

Additionally to the analysis of the deviation from the normal distribution, the evaluation of the Cronbach's alpha is also widely used in the construction of questionnaire scales, indices, factors, where the generated composite indicators

should have an alpha value of at least 0.7 (Cronbach, 1951; Kárász, Nagybányai Nagy, Széll, & Takács, 2022; Peterson, 1994). The Cronbach's-Alpha values of the clustered principal components generated by generations meet this criterion (Table 5).

**Table 5.** Cronbach's-Alpha values of principal components

Principal component groups	Generation	Cronbach-Alpha values
Manipulation	1965-1979	0.788
	1980-1994	0.740
	1995-2009	0.729
Enjoyment	1965-1979	0.766
	1980-1994	0.819
	1995-2009	0.806

Source: Authors' own calculations based on the questionnaire answers

In addition to the so-called lower threshold value (0.7), it is important to note that values which are too high (above 0.9) are not considered acceptable either, as they may indicate some kind of redundancy between variables (Nagybányai Nagy, 2006). This may be due to the similarity (quasi-duplication) of the questions included in the study and thus the identical information content of the given answers (Ponterotto & Ruckdeschel, 2007). The alpha values of the study are within the appropriate values as formulated in the literature, so the variables included in the questionnaire provided consistent measurement.

Testing for multicollinearity is also an important requirement for multivariate principal component analysis, as it allows to determine the strength of relationships (correlation, significance level) between the variables included. Therefore, in the selection of the variables included in the study, it was aimed to achieve the minimum significant correlation values ( $p > 0.3$ ;  $\text{sig} < 0.05$ ) defined by Barna & Székelyi (2008), thus constructing the principal components for each generation. As a consequence of the Likert scale questions used in the survey, the correlation tests for the ordinal scales were performed with Kendall's tau-b.

Principal component analyses were carried out with the following settings:

- Maximum-likelihood method
- Varimax-rotation (variance maximalization).

The adequacy of the data used for the principal component analysis was verified by Bartlett's tests and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) values (Tables 5-6). The KMO values exceeded 0.7 in all

cases (6 principal components in total for 2 principal component groups) and the explanatory power (total variance explained > 40% in all cases) met the criteria expected from the literature (Table 6).

**Table 6.** KMO and Total variance explained values of principal components

Principal component groups	Generation	KMO	Bartlett's test	Total variance explained (%)
Manipulation	1965-1979	0.745	sig<0.001	50.334
	1980-1994	0.713	sig<0.001	46.545
	1995-2009	0.735	sig<0.001	41.912
Enjoyment	1965-1979	0.746	sig<0.001	46.636
	1980-1994	0.840	sig<0.001	50.451
	1995-2009	0.779	sig<0.001	51.842

Source: Authors' own calculations based on the questionnaire answers

To test model fit, a Goodness of Fit test was also carried out (Table 7), the results of which supported the feasibility of the principal component analyses with the variable sets already described (Table 4).

**Table 7.** Goodness of Fit test of principal components

Principal component groups	Generation	Chi-Square	df	sig
Manipulation	1965-1979	3.846	2	0.148
	1980-1994	3.492	2	0.174
	1995-2009	1.376	2	0.503
Enjoyment	1965-1979	4.627	2	0.099
	1980-1994	2.535	5	0.771
	1995-2009	3.643	2	0.162

Source: Authors' own calculations based on the questionnaire answers

A Pearson's correlation test was also conducted between the principal component scores developed for the two principal component groups by generation, as it was considered important to explore possible correlations between the principal components of enjoyment (influencing the provider choice and continuation) and manipulation (indicating influence on traditional lifestyle).

### 3. RESULTS

The evaluation of the principal component analyses starts with an overview of the generational variable sets and their factor weights. Table 8 shows the factor weights of the principal components created in the manipulation principal

component group, which allows the identification of key differences. Regarding the oldest age group, the most significant factor is the change in leisure activities through the use of video streaming services, which is also important for Generation Z, but plays a less important role for Generation Y. Generation X's perception of digitalisation differs from the other two generations studied (Carrillo-Durán et al, 2022; Dabija et al, 2018), so the effect of streaming on internet use is only significant for them.

**Table 8.** Factor weights of principal component analysis' variables of the manipulative principal component group

Manipulative principal component group Variables	Generation X (1965-1979)	Generation Y (1980-1994)	Generation Z (1995-2009)
Internet usage habits (v1_1)	0.490	-	-
Free time activities (v1_2)	0.766	0.266	0.540
Social life (v1_3)	0.370	0.641	0.262
Private life (v1_4)	-	0.703	0.294
Work/Study (v1_5)	0.353	0.252	0.581

Source: Authors' own calculations based on the questionnaire answers

In terms of personal and social life, Pea et al. (2012) found that the online presence of young people significantly changes the way they interact and engage with others. According to our survey this correlation may be the most relevant for members of Generation Y in terms of their use of video streaming platforms. Therefore online film and television viewing has changed the social life of those born between 1980 and 1994. For Generation Z, it is of high importance to achieve harmony between personal and business life (Dam, Hack-Polay, Rahman, & Mahmoud, 2023) a unique situation in which they are confronted with a number of impulses and challenges (Tari, 2011). For them, acceptable working conditions require a specific set of skills (Wadhawan & Sinha, 2017), thus it is understandable that online video content consumption, presumably due to the eclipse of work identification, may have the greatest impact on their specific perceptions of work and learning opportunities and leisure activities.

Generational differences can also be detected in terms of service choice and customer retention (Table 9). For each of the age groups studied, the high quality of video available on OTT platforms is (almost the most) important as it also influences platform choice. The literature is divisive in this respect, as some previous analyses (e.g. Cha, 2014) cannot confirm this finding, but the results of some authors (e.g. Yousaf et al. 2021) suggest that this is a fundamental assumption for users' continuous service use. Their results show that high video

quality is the most important factor for Generation X, but that convenience, rewatchability and a wide range of content also appear in the main component with almost equal weight.

**Table 9.** Factor weights of principal component analysis' variables of the enjoyment principal component group

Enjoyment principal group Variables	Generation X (1965-1979)	Generation Y (1980-1994)	Generation Z (1995-2009)
High video quality (v2_4)	0.541	0.585	0.545
Convenience (v2_13)	0.471	0.585	-
Rewatchability (v2_1)	0.453	-	0.389
Wide range of content (v2_5)	0.400	-	-
Exclusive content (v2_3)	-	0.623	-
Flexibility (v2_11)	-	0.444	-
Season-by-season publication of series (v2_12)	-	0.285	-
Language learning (v2_2)	-	-	0.535
Original content (v2_8)	-	-	0.605

Source: Authors' own calculations based on the questionnaire answers

Zemoga (2022) forecasts for OTT platform usage that the choice of users between service providers is significantly determined by the availability of exclusive and original content. Ahn's (2022) research in Korea suggests that these factors are important for all generations in order to reinforce subscriber intent and maintain satisfaction. Our results partially contradict this, as exclusive content is of high importance for Generation Y and original content for Generation Z. However, these variables are not even part of the main enjoyment driver for Generation X.

The role of binge-watching cannot be ignored either, as several studies (including Flayelle et al, 2020) have already shown that it is a widespread form of behaviour. Two manifestations of this phenomenon have been identified by Flayelle et al. (2020): usage satisfaction (pleasurable experience, conscious) and dysfunctional use of technologies (negative output, impulsivity, addiction). Binge-watching was defined as a characteristic of Generation Z by Aytun, Bulat Demir, & Inceismail (2019), while Matrix (2014) describes it as a characteristic of Generation Y. Therefore, we believe that this type of viewing is not necessarily linked to generational differences, but rather to age. Generation Y is the only group in the present research where it has become part of the main component of enjoyment, therefore it seems to be the least important factor determining service choice.

The Principal Component scores for the generated principal components were also determined in order to investigate the correlations between the manipulation and enjoyment principal components (Table 10).

**Table 10.** Results of correlation analysis

Correlation Principal Components	Generation X n=72		Generation Y n=76		Generation Z n=104		Full sample n=252	
	Sig.	Pearson	Sig.	Pearson	Sig.	Pearson	Sig.	Pearson
Enjoyment-Manipulation	0.243	0.139	<0.001	0.453	0.588	0.054	<0.001	0.202

Source: Authors' own calculations based on the questionnaire answers

Analyses by generation showed a significant positive correlation of medium strength only for Generation Y. In the other two cases, no significant correlation was found and the possible existence of a relationship was therefore rejected. For the correlation analysis performed on the whole sample, the principal component values generated by generation from the different sets of variables were treated together, as they had the same meaning (enjoyment factor: service choice; manipulation factor: impact on living conditions). For the sample as a whole, a significant correlation with a positive direction and very weak correlation was obtained, suggesting that there may be a relationship between the two principal components, but this is significantly affected by the different sets of variables.

## 5. CONCLUSIONS

The constructed principle components (2 principal component groups, 3 generations, 6 in total) provided acceptable results based on preliminary tests. In response to the hypothesis (*Generations have different consumption behaviours and therefore decide to use video streaming services based on diverse experiences/perceptions.*), it can be concluded that generational differences were observed for both the manipulation and enjoyment factors, as the numbers and weights of the included variables - that guaranteed model fit - differed in most cases. Generational differences in the aspects of influencing service choice are the most pronounced, which may be due to the different attitudes of the age groups towards digitalisation.

Using different sets of variables, generational differences (based on the acceptance criteria) were examined in present study, which have provided the basis for our findings. Correlation analysis between the manipulation and enjoyment factor was not able to determine the direction of the relationship, therefore further statistical procedures (e.g. structural model) can be proposed. Due to the lack

of representativeness, present findings should be treated with a certain degree of caution, but may serve as a basis for further research.

### Conflict of interests

The authors declare there is no conflict of interest.

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## АНАЛИЗА ГЛАВНИХ КОМПОНЕНТИ ГЕНЕРАЦИЈСКИХ ПРЕФЕРЕНЦИЈА У ПОГЛЕДУ НАЈВИШИХ УСЛУГА – СТУДИЈА СЛУЧАЈА У МАЂАРСКОЈ

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### САЖЕТАК

Пораст услуга видеостримовања не само да је повећао популарност доступних платформи, већ је промијенио и начин на који домаћинства конзумирају садржај, замијењујући опције које нуди традиционална телевизија. Оријентација је била примјена специфичног интердисциплинарног научног приступа, комбинујући економију и социологију, због истраживачке области студије. Предности, односно недостаци платформи за стриминг могу играти улогу у перцепцији различитих старосних група корисника од стране провајдера услуга којег одаберу. Циљ истраживања јесте да се фокусира на различите навике потрошње видеостриминга различитих генерација (генерација икс, генерација ипсилон, генерација З) као потрошача садржаја Нетфликса, ХБО Макса и Дизнија+, нашироко познатим провајдерима видеостримовања, како је показано у прегледу литературе. Истраживање засновано на анкетању по Ликертовој скали се сматрала најприкладнијим методом за постизање овог циља. Да би се тестирала хипотеза о односу између генерација и коришћења видеостриминга, примијењена је анализа главне компоненте по генерацијама. Раздвајање варијабли резултирало је успостављањем двије групе, и то: манипулација (што указује на утицај традиционалног начина живота) и уживање (утицај на избор и задржавање корисника услуга провајдера). Резултати студије указују да генерацијске карактеристике потрошача дјелимично показују различите обрасце коришћења услуга, те да се утицај коришћења услуга на традиционалне стилове живота разликује међу генерацијама. Анализа наглашава важност даљих истраживања у овој области, јер се истражени фактори могу проширити на друга важна питања у будућности.

**Кључне ријечи:** највише услуге, анализа главних компоненти, генерацијске разлике, перцепција, манипулација, уживање.

# EFFECTIVENESS OF RISK MANAGEMENT IN NIGERIA'S MANUFACTURING ENTERPRISES

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## ABSTRACT

This study seeks to examine the effectiveness of enterprise risk management (ERM) implementation in the Nigerian manufacturing sector. The objective of this study is to analyze the risks faced by manufacturing firms in Nigeria and to recommend actions to address and reduce anticipated hazards. This research used both inferential and descriptive statistics to examine the effectiveness of ERM application in Nigeria's manufacturing sector. The data for this study were collected from the financial statements of manufacturing firms and other relevant publications by manufacturing firms in Nigeria from 2016 to 2020. The study found that ERM has a positive relationship with financial performance indicators such as return on investment, dividend, earnings per share, market capitalization, price earnings ratio, and dividend per share. The study recommends that manufacturing companies in Nigeria should implement ERM as an ongoing activity to improve their risk management practices, enhance their effectiveness, and ensure their long-term sustainability. This study contributes to the literature on ERM implementation in the Nigerian manufacturing sector and provides valuable insights for policymakers, regulators, and business managers.

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## 1. INTRODUCTION

The pursuit of safety is the primary focus of individuals, households, governments, and business organizations. But today, businesses are exposed to a wide range of risks due to the complex and continually demanding global business environment

as the business grows in size, making effective risk management crucial as the risk arises (Olaiya, Arikewuyo, Sogunro & Yunusa, 2021). However, in this challenging period of Nigeria's economy, the manufacturing sector, as a key part of the economy that accounts for about 10% of GDP and provides employment for the masses, is faced with a lot of challenges such as inadequate infrastructure, limited access to financing, high energy costs, inefficient regulatory environment, and inadequate skills (Olayinka, Emoarehi, Jonah & Ame, 2017). The government has implemented policies to support its growth, but it still faces challenges such as high costs of doing business, limited access to credit, poor infrastructure, supply chain disruptions, equipment failure, foreign exchange fluctuations, inflation, interest rate fluctuations, power outages, and other issues that could impact production and the company's financial performance. Consequently, it is crucial to manage the various categories of risk that have been identified in an effective manner by developing a comprehensive risk management plan that outlines the specific risks they face and the strategies they will employ to mitigate those risks (Olaiya, Adebayo, Ariyibi & Olowofela, 2022).

Effectiveness is seen as the degree to which the firm achieves its objectives and goals, such as delivering products of superior quality to customers, generating profits, and maintaining a competitive advantage in the market. In general, the effectiveness of a manufacturing firm can be measured in terms of various performance indicators, such as financial performance, product quality, production efficiency, customer satisfaction, and employee satisfaction (Jusoh & Parnell, 2008). Effective implementation of ERM can help to mitigate risks and uncertainties that the manufacturing sector is exposed to, which could affect the effectiveness of the sector. By implementing ERM, manufacturing companies can identify potential risks and uncertainties that could impact their operations, and develop strategies to manage, monitor, and control those risks. This can help to improve the effectiveness of the manufacturing sector in terms of achieving its business objectives, improving operational efficiency. ERM is a strategic management process that involves identifying, assessing, and mitigating risks to an organization's objectives, including its financial performance, reputation, and operations. By implementing ERM practices, a manufacturing firm can improve its ability to identify and respond to potential risks, as well as take advantage of opportunities that may arise.

Despite the challenges faced by manufacturing companies in Nigeria, it is difficult to achieve their objectives, deliver high-quality products to customers, generate profits, and maintain a competitive advantage in the market. To effectively manage the risks associated with these challenges, manufacturing firms need to implement effective enterprise risk management (ERM). However,

despite the benefits of ERM, very few businesses in Nigeria have implemented it, and there is limited research on the efficiency and effectiveness of ERM in the Nigerian manufacturing sector. Therefore, the problem this study seeks to address is the lack of understanding of the extent to which ERM implementation influences the effectiveness of Nigerian manufacturing firms (Iwedi et al., 2020; Ogundajo, Adefisoye & Nwaobia, 2020). The aim of this study is to examine the effectiveness of risk management (RM) implementation in the Nigerian manufacturing enterprise.

This research work is structured into five main sections. The initial section provides an introduction to the topic under investigation. The second section offers a literature review, while the third section outlines the research methodology used in the study. The fourth section details the research findings, and the final section offers conclusions and recommendations based on the study.

## 2. MATERIALS AND METHODS

Numerous research studies have examined how the implementation of ERM affects the performance of manufacturing companies. For example, a study by Ogundajo, Adefisoye & Nwaobia (2020) found that ERM adoption positively influenced the financial performance of Nigerian manufacturing firms. Similarly, Iwedi, Anderson, Barisua & Zaagha (2020) found that ERM implementation was positively associated with the operational performance of Nigerian manufacturing firms. In addition to financial and operational performance, ERM implementation has improved other aspects of manufacturing firms' effectiveness. For instance, a study by Li, Zhang & Huang (2019) found that ERM adoption was positively associated with product innovation performance in Chinese manufacturing firms. Another study by Wang & Lu (2018) found that ERM practices positively influenced the environmental performance of manufacturing firms in China.

To achieve an effective enterprise risk management, it is crucial to foster an appropriate risk culture within the organization. The Board has a significant role to play in establishing policies and guidelines that promote a strong control environment and set the right tone at the top. They should also define the appropriate risk appetite for material risks and assume responsibility for risk governance by implementing a suitable committee structure to oversee management in identifying and mitigating strategic, operational, compliance, and financial risks (Burnaby & Hass, 2009).

The management's ability to effectively manage risks should be given sufficient attention in evaluating their performance. In some cases, specialized Board

Committees may need to be established to address specific key risks that require more specialized expertise and experience (Ashby, Bryce & Ring, 2018). To ensure effective risk management, the Board should also establish robust ongoing and periodic monitoring functions for material risks, which provide timely and accurate reporting to the relevant committees and the Board. Additionally, the Board must take decisive and timely action in response to reported deficiencies, non-compliance, and deviations.

According to Mikes & Kaplan (2014), it is essential to choose a risk management tool that aligns with the firm's calculative culture and the measurable attitudes demonstrated by senior decision-makers towards mitigating risk. This alignment can lead to a meaningful and beneficial correlation between risk management, organizational performance and profitability. Effective and efficient risk management strategy will also play a determinant role in manufacturing industries financial performance in Nigeria. Where the manufacturing sector does not successfully control its risks, its performance will be unsteady. Effective risk management culture and practice will result in better performance, protect their assets and safeguard the investors' wellbeing (Wisdom & Isiaka, 2018).

Otegunrin et al. (2021) highlighted the inadequacy of traditional risk management methods in the face of increased volatility in the commercial sector. Consequently, an integrated approach known as enterprise risk management (ERM) has emerged. However, previous research on ERM disclosures has primarily taken a book-based approach, which may not accurately reflect the importance of ERM and its impact on financial performance. To address this gap, the authors conducted a study using both book-based and market-based approaches to analyze the relationship between ERM and the financial performance of listed manufacturing firms in Nigeria. The study examined relevant ERM theories, including agency theory, stakeholder theory, and ERM theory, to investigate their relevance to financial performance. Their study used panel data analysis on time-series and cross-sectional data of thirty listed manufacturing enterprises in Nigeria from 2010 to 2018. The Hausman test determined that the random effect was more appropriate for interpretation. The study's findings supported the a priori hypotheses, indicating that the profitability ratio, liquidity ratio, market-based ratio to risk board committee, board size, company size, and directors' ownership all had varying degrees of statistical significance in influencing the profitability of the firm.

Iwedi et al. (2020) assert in their study that risk management and business hazards affected the value of shareholders. The study's results indicate that the effect of risk on shareholder value is contingent on the nature of the risk and

the type of value being considered. Specifically, their study revealed that an increase in business risk leads to a decrease in corporations' dividends per share and earnings per share. However, financial risks were found to have a positive impact on shareholder value, particularly on value that is not directly related to dividend payouts. The authors also discovered that risk management based on institutional holdings had the most significant positive effect on shareholder value. Notably, the study's focus was limited to non-financial variables.

[Adegbaju & Adeboye \(2019\)](#) examined the relationship between ERM implementation and financial performance in the Nigerian manufacturing sector. The study surveyed 200 manufacturing companies and found that those with more advanced ERM systems tended to have better financial performance. The study sampled 200 manufacturing companies from the South-western region of Nigeria, which may not be representative of the entire manufacturing sector in Nigeria and the study only considered a limited number of variables, including ERM implementation and financial performance. Other factors that may influence financial performance, such as organizational culture, leadership style, and market conditions, were not considered.

[Ogunjobi & Ogunnaike \(2018\)](#) focused on the banking sector, as it may still provide some relevant insights into ERM implementation in Nigeria. The study surveyed 10 Nigerian banks and found that while most of them had implemented ERM frameworks, there were still some challenges to effective implementation, including lack of board support and inadequate risk culture. The study surveyed only 10 banks in Nigeria, which may not be representative of the whole banks in Nigeria.

In the study of [Olayinka, Emoarehi, Jonah & Ame \(2017\)](#) focused on the financial industry in Nigeria to examine the impact of Enterprise Risk Management (ERM) on financial performance in emerging markets. The study included 40 firms over the period 2012-2016, with a total of 200 observations. The study used Return on Assets (ROA) to measure financial performance, and Value at Risk (VaR) as a proxy for ERM. The study also included additional controls such as Leverage (LEV), Board Size (BSIZE), Firm Size (FSIZE), Institutional Ownership (INTOWN), and Risk Management Committee Size (RMC). The results show that VaR (0.216), BSIZE (0.218), FSIZE (0.021), INTOWN (0.001), and RMC (0.032) are all statistically significant with the regression coefficient, except for LEV (-0.572), which has a negative association with financial success. The study's empirical results reveal a positive and significant relationship between ERM and financial performance, indicating that ERM significantly impacts the financial outcomes of listed companies in the Nigerian banking sector. The

authors suggest that regulatory agencies such as the Central Bank of Nigeria and the Financial Reporting Council of Nigeria should ensure that all businesses adopt ERM as soon as possible and comply strictly with the ERM framework.

[Ahmed & Abdul Manab \(2016\)](#) mentioned that scholars and professionals are re-evaluating the relationship between risk management activities and the performance of business organizations as a result of corporate scandals and the collapse of globally renowned business organizations. The variables are chosen in accordance with significant risk management problems facing Nigeria's banking sector. Determining how board equity ownership (BEO) affects the relationship between the ERM framework and the performance of financial institutions in Nigeria is the goal of this study, which is why it proposes a conceptual model to do so. According to the publication, BEO serves as a tool for balancing the interests of board members and business owners.

[Docekalova & Kocmanova \(2015\)](#) in their study stated that their primary objective is to suggest a methodology for evaluating the effectiveness of manufacturing enterprises in relation to corporate sustainability using both financial and nonfinancial indicators. The idea of sustainability has multiple dimensions and is founded on three key pillars: environmental, social and economic. As it encompasses numerous non-financial variables, it can be difficult to analyze. Data envelopment analysis (DEA) provides a scalar measure of efficiency and identifies potential improvements in inputs and outputs, without requiring the explicit specification of functional relationships between them or variable weights. DEA is based on the calculation of the input consumption by output production and estimation of the production possibility frontier. The CCR super efficiency DEA model classifies companies into four categories: sustainable, pro-social, pro-environmental and unsustainable businesses. The model provides a foundation for decision-making and performance management, as its outputs allow users to evaluate a company's status and suggest areas for improvement. The model's outputs are presented in a graphical format, making them easy to comprehend.

[Jonsson & Lesshammar \(1999\)](#) assert that six needs are listed in the article, including two characteristics and four important dimensions (what to measure) for a factory performance monitoring system. In such a system, the overall equipment effectiveness (OEE) metric is evaluated in comparison to these ideal specifications. Three manufacturing organizations' present measurement systems and OEE potential are assessed using comparative data on their dimensions and traits. The systems' inability to accurately detect flow orientation or external effectiveness was a prevalent flaw. High levels of complexity and a lack of

continual improvement were further weaknesses. Field tests conducted in the organizations under study revealed that the adoption of OEE in conjunction with an open and decentralized organizational structure could strengthen a number of these deficiencies.

This study employs a descriptive research design of ex-post facto nature, utilizing secondary data collected after an event, which the researcher has no control over. The study utilizes both descriptive and inferential statistics to investigate the effectiveness of enterprise risk management implementation in Nigeria's manufacturing sector, quoted on the Nigeria Exchange Group (NEG). The required data for this study include Return on investment (Ret Inv), Market capitalization (M.Cap), Price earnings ratio (PER), Dividend (Div), Market price per share (MPS), Earnings per share (EPS), and Dividend per share (DPS), which were obtained from the financial statements of the companies and various publications related to the study, covering the period from 2016 to 2020. The analytical method employed in the study was binary logistic regression techniques.

### Model Specification

#### Binary Logistic Regression

$$ERM_i = f(\text{RetInv}, M.\text{Cap}, PER, DIV, MPS, EPS, DPS) \quad (1)$$

$$ERM_i = (\alpha_0 + \beta_1 \text{RetInv}_i + \beta_2 M.\text{Cap}_i + \beta_3 PER_i + \beta_4 DIV_i + \beta_5 MPS_i + \beta_6 EPS_i + \beta_7 DPS_i + \mu_i) \quad (2)$$

Where:

$ERM_i$  = Enterprise risk management

$RetInv$  = Return on Investment

$M.Cap$  = Market capitalization

$PER$  = Price earnings ratio

$DIV$  = Dividend

$MPS$  = Market price per share

$EPS$  = Earnings per share

$DPS$  = Dividend per share

$i$  = nth term

$\alpha$  = Intercept

**Table 1.** Detailed explanation of the variables used in the study

Variables	Description	Measurement
<b>Dependent Variable</b>		
ERM	Enterprise risk management is concerned with recognizing and handling circumstances that may impede an organization from attaining its goals.	It is binary identification of the inclusion of enterprise risk management in the yearly account of the organization. Using the content analysis of the financial statement
<b>Independent Variable</b>		
Ret	Investors get a return on their investment when they distribute dividends.	It is the return value of the stock of the company subtracting the beta coefficient, which is the market risk of the shares.
M.Cap	Market capitalization, commonly known as market cap, represents the total value of all outstanding common shares of a publicly traded company that are currently held by its stockholders.	To determine the total value of a company's shares, one can multiply the price per share by the total number of outstanding shares.
PER		It is measured by dividing market per share from the earning per share.
DIV	A dividend is a portion of a company's earnings and profits that is distributed to its shareholders as a form of payment.	This is the annual dividend payment of the organization. It is usually issued based on the unit of common shares of the equity holders.
MPS	The market price per share (MPS) is the "going price" of a stock, fluctuating daily due to changes in the stock market and economy.	It is measured by the current company's rating on the market floor.
EPS	EPS measures the proportion of a company's capital allocated to each unit of ordinary share capital.	It is calculated by dividing a company's profit by the total number of outstanding common shares (Shodiya, Sanyaolu, Ojenike & Ogunmefun, 2019).
DPS	DPS is the total amount of dividend attributed to each individual share of a company.	Investors can calculate the dividend per share to determine their income from a company (Iwedi et al., 2020).

Source: Author's Compilation, 2023.

### 3. RESULTS

This section deals with the examination and interpretation of the empirical results. It encompasses the descriptive statistics, correlation matrix, and binary logistic regression model.

## Descriptive Analysis

**Table 2.** Descriptive statistics

	ERM	RETURN	MC	PER	DIV	MPS	EPS	DPS
Mean	1.0000	498.2703	5.309208	516.0967	0.465819	498.2703	6.254286	7.387551
Median	1.0000	9.840000	7.800000	25.25000	0.044920	9.840000	0.500000	1.180000
Maximum	1.0000	4066.000	4.532309	8132.000	21.50777	4066.000	70.00000	57.63000
Minimum	1.0000	1.900000	0.000000	3.268125	-18.50971	1.900000	0.040000	-38.13000
Std. Dev.	0.0000	1089.530	1.092309	1648.777	5.301271	1089.530	15.17068	18.85890
Skewness	0.0000	2.205454	2.521049	3.615095	0.846389	2.205454	3.134762	1.106931
Kurtosis	0.0000	6.645383	8.316066	14.90315	11.46759	6.645383	12.18867	4.909449
Jarque-Bera	0.0000	66.85424	109.6034	396.0027	152.2380	66.85424	252.6331	17.45049
Probability	0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000162
Sum	49.0000	24415.25	2.606210	25288.74	22.82511	24415.25	306.4600	361.9900
Sum Sq. Dev.	0.000000	56979595	5.691219	1.307608	1348.967	56979595	11047.18	17071.59
Observations	49	49	49	49	49	49	49	49

Source: Author's Compilation, 2023.

The descriptive statistics utilized in the study are presented in the above table. The variable “Ret” (Return) has a mean value of 498.27%, a median value of 9.84%, and a standard deviation of 1089.53%, which represents the deviation from the mean value. “MC” (Market Capitalization) has a mean value of 5.31%, a median value of 7.80%, and a standard deviation of 1.09%. “PER” (Price Earnings Ratio) has a mean value of 516.10%, a median value of 25.25%, and a standard deviation of 1648.78%. “DIV” (Dividend) has a mean value of 0.47%, a median value of 0.04%, and a standard deviation of 5.30%. “MPS” (Market Price per Share) has a mean value of 498.27%, a median value of 9.84%, and a standard deviation of 2.21%. “EPS” (Earnings per Share) has a mean value of 6.25%, a median value of 0.50%, and a standard deviation of 15.17%. “DPS” (Dividend per Share) has a mean value of 7.39%, a median value of 1.18%, and a standard deviation of 18.86%. The minimum and maximum values for each variable are as follows: “Ret” has a minimum value of 1.90 and a maximum value of 4066.0. “MC” has a minimum value of 0.00 and a maximum value of 4.53. “PER” has a minimum value of 3.27 and a maximum value of 8132.0. “DIV” has a minimum value of -18.51 and a maximum value of 21.51. “MPS” has a minimum value of 1.90 and a maximum value of 4066.0. “EPS” has a minimum value of 0.04 and a maximum value of 70.0. “DPS” has a minimum value of -38.13 and a maximum value of 57.63. The skewness of each variable is as follows: “Ret” has a positive skewness of 2.21, “MC” has a positive skewness of 2.52, “PER” has a positive skewness of 3.62, “DIV” has a normal skewness of 0.85, “MPS” has a positive skewness of 2.21, “EPS” has a positive skewness of 3.13, and “DPS”

has a normal skewness of 1.11. The kurtosis of each variable is as follows: “Ret” is leptokurtic at 6.65 since  $6.65 > 3$ , “MC” is leptokurtic at 8.32 since  $8.32 > 3$ , “PER” is leptokurtic at 14.9 since  $14.9 > 3$ , “DIV” is leptokurtic at 11.67 since  $11.67 > 3$ , “MPS” is leptokurtic at 6.65 since  $6.65 > 3$ , “EPS” is leptokurtic at 12.19 since  $12.19 > 3$ , and “DPS” is leptokurtic at 4.91 since  $4.91 > 3$ . The Jarque-Bera statistics for each variable are as follows: “Ret” is 66.85 at 0.000, indicating that the variable is normally distributed.

**Table 3.** Correlation Matrix

	ERM	RET	MC	PER	DIV	MPS	EPS	DPS
ERM	1	1.0107	-1.0607	-1.3357	8.1142	1.0107	1.6303	-1.3685
RET		1	-0.0567	0.8314	-0.0397	1	0.2510	0.1435
MC			1	-0.1153	-0.0301	-0.0567	0.3288	0.2863
PER				1	-0.0268	0.8314	-0.1023	-0.0951
DIV					1	-0.0397	-0.0291	0.63156
MPS						1	0.2513	0.14357
EPS							1	0.6966
DPS								1

Source: Author’s Compilation, 2023.

The correlation matrix table above revealed that ERM (Enterprise risk management implementation) has positive relationship with return at 1.01, DIV at 8.1, and EPS at 1.6 which implies no sign of multicollarity and also that the Enterprise risk management implementation and return, dividend and Earning per share have the same linear positive direction and also that ERM (Enterprise risk management implementation) has a negative relationship with market capitalization at -1.06 and -1.33 at price earnings ratio, which also implies no sign of multicollarity but an opposite linear direction.

The Omnibus test is insignificant with the (chi-square = 8.687, df =5,  $p > 0.05$ ). The overall percentage depicts that this model prediction is correct at 67.3% as the selected period. Similar to the  $R^2$  (in linear regression analysis), the Nagelkerker  $R^2$  explains 22.4% of the ERM (Enterprise risk management implementation). The Hosmer and Lerner show test depicts the fitness of the model with 0.698 which  $p > 0.05$  shows fitness of the model. The explanatory variables in the model revealed that return, Div, EPS, and M\_CAP have negative and positive significant effect on ERM (Enterprise risk management implementation) at ( $\beta$ : -0.001:  $p < 0.05$ ); ( $\beta$ : 0.028:  $p < 0.05$ ); ( $\beta$ : 0.533:  $p < 0.1$ ) and ( $\beta$ : 0.000:  $p < 0.05$ ) while PER has insignificant effect on ERM (Enterprise risk management implementation) at ( $\beta$ : 0.397:  $p < 0.05$ ).

**Table 4.** Binary logistic regression  
Dependent variable: Earnings yield (ERM)

	Alternative Model				
	Chi-square	Diff	Sig		
Omnibus Test	8.687	5	0.122		
Overall %			67.3		
-2LL Value			54.575		
Nagelkerker R <sup>2</sup>			0.224		
H & L Test			0.698		
	B	S. E	Wald	Sig	Exp (B)
Constant	0.414	0.378	1.204	0.272	1.513
Ret	-0.001	0.001	0.735	0.039	1.000
PER	0.000	0.000	0.718	0.397	1.029
Div	0.028	0.059	0.230	0.032	1.029
EPS	0.533	0.409	1.692	0.093	1.703
M CAP	0.000	0.000	2.161	0.014	1.000

Source: Author’s Compilation, 2023.

It implies that the return on investment of the selected organization influences the risk implementation prospects negatively, meaning the level of return on investment must be sustained so that return continually has impact on the overall risk exposure of the organizations. Dividend policy adopted in the organization, balances the risk implementation stages in the organization. The earning per share of the organization, which is a form of quick return on investment, gives the selected organization the strategic enablement to sustain their risk position even before the accounting period of the selected organization commences. The market capitalization shows that the organization has good market credibility and goodwill, which has helped the firms establish and implement good enterprise risk management level.

#### 4. DISCUSSIONS

The provided section delineates the empirical outcomes of a study, encompassing descriptive statistics, correlation analysis, and a binary logistic regression model. These findings can be harmonized with the existing body of knowledge in the ensuing manners:

Descriptive Statistics: The descriptive statistics furnish an all-encompassing portrayal of the variables scrutinized. They proffer insights into the centrality, variability, and dispersion of each variable. Practitioners and researchers can employ these statistics to gain a finer grasp of data attributes and make judicious determinations. To illustrate, the study investigates variables like “Ret”

(Return), “MC” (Market Capitalization), “PER” (Price Earnings Ratio), “DIV” (Dividend), “MPS” (Market Price per Share), “EPS” (Earnings per Share), and “DPS” (Dividend per Share). These statistics can be juxtaposed with industry standards or historical data to gauge the fiscal robustness and performance of the entities studied.

**Correlation Matrix:** The correlation matrix imparts insights into the interrelations among variables. Positive and negative correlations between variables such as “ERM” (Enterprise Risk Management implementation), “Ret”, “DIV”, “EPS”, “MC”, and “PER” hint at plausible connections amid these factors. This can facilitate the identification of potential patterns and linkages that contribute to an overarching comprehension of the research quandary. Researchers can further delve into the causal connections and potential implications of these correlations.

**Binary Logistic Regression Model:** The binary logistic regression model aims to forecast the probability of a binary outcome predicated on explanatory variables. In this instance, the model explores the sway of variables like “Ret”, “DIV”, “EPS”, “M\_CAP”, and “PER” on “ERM” (Enterprise Risk Management implementation). This modeling method permits researchers to quantitatively gauge the influence of each variable on the likelihood of instituting risk management practices within organizations. The findings can serve as a basis for suggesting improved strategies and practices for risk management.

**Statistical Tests and Measures:** The study employs diverse statistical tests and measures to evaluate the caliber and validity of the model. The Omnibus test, Nagelkerke’s  $R^2$ , Hosmer-Lemeshow test, and the significance levels of coefficients ( $\beta$ ) bestow insights into the model’s goodness-of-fit, predictive potency, and the significance of its variables. These statistical evaluations augment the rigor of the research outcomes and furnish substantiation for the inferences drawn.

**Practical Implications:** The study’s findings bear tangible implications for organizations and decision-makers. For instance, identifying substantial variables like “Ret”, “DIV”, “EPS”, “M\_CAP”, and “PER” that influence the implementation of enterprise risk management signifies that organizations should prioritize maintaining favorable returns, adopting judicious dividend policies, and adeptly managing earnings per share to augment their risk management practices. The significance of “MC” (Market Capitalization) vis-à-vis risk management underscores the pivotal role of robust market credibility and goodwill in efficacious risk management strategies.

Incorporating these findings into the prevailing body of knowledge enriches the comprehension of the connections between financial variables and the

implementation of enterprise risk management. This can guide practitioners, researchers, and policymakers in making informed judgments and devising effective risk management strategies for organizations.

## 5. CONCLUSIONS

The aim of this study was to examine how ERM implementation affects effectiveness in the Nigerian manufacturing sector. Based on the results, it can be concluded that there is a positive correlation between ERM implementation and financial performance indicators such as return, dividend, EPS, MC, PER, and DPS. This suggests that Nigerian manufacturing companies can enhance their risk management practices, improve their effectiveness, and ensure long-term sustainability by adopting ERM as a continuous process.

The study also highlights the importance of developing a comprehensive risk management plan that outlines the specific risks faced by manufacturing firms in Nigeria and the strategies to mitigate those risks. It is recommended that manufacturing firms in Nigeria should adopt ERM as a strategic management process and a continuous improvement approach to enhance their effectiveness and improve their risk management practices.

Furthermore, the study provides insights into the limited implementation of ERM in Nigerian manufacturing firms and the need for further research on the barriers to ERM adoption. The study suggests that future research should investigate the factors that hinder the implementation of ERM in Nigerian manufacturing firms, such as lack of awareness, limited resources, and cultural factors.

This study contributes to the literature on ERM implementation and effectiveness in the Nigerian manufacturing sector and provides insights that could help manufacturing firms in Nigeria to enhance their risk management practices, improve their effectiveness, and ensure their long-term sustainability.

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### **Conflict of interests**

The authors declare there is no conflict of interest.

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## ЕФИКАСНОСТ УПРАВЉАЊА РИЗИКОМ У НИГЕРИЈСКИМ ПРОИЗВОДНИМ ПРЕДУЗЕЋИМА

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### САЖЕТАК

Ова студија има за циљ да испита ефикасност имплементације менаџмента ризика предузећа (ЕРМ) у нигеријском производном сектору. Такође, Циљ ове студије јесте да анализира ризике са којима се суочавају производне фирме у Нигерији и да препоручи акције за рјешавање и смањење очекиваних опасности. У истраживању је коришћена инференцијална и дескриптивна статистика за испитивање ефикасности примјене менаџмента ризика предузећа у производном сектору Нигерије. Подаци за ову студију прикупљени су из финансијских извјештаја производних предузећа и других релевантних публикација о производним предузећима у Нигерији у периоду од 2016. до 2020. године. Студија је открила да менаџмент ризика предузећа има позитиван однос са показатељима финансијских перформанси, као што су поврат на инвестиције, дивиденда, зарада по акцији, тржишна капитализација, однос цијене и зараде по акцији, и дивиденда по акцији. Студија препоручује да производне компаније у Нигерији имплементирају менаџмент ризика предузећа као сталну активност како би побољшале своје праксе управљања ризицима, унаприједиле своју ефикасност и осигурале дугорочну одрживост. Ова студија доприноси литератури о имплементацији менаџмента ризика предузећа у нигеријском производном сектору и пружа вриједан увид у разумијевање материје креаторима политике, регулаторима и пословним менаџерима.

**Кључне ријечи:** *ефикасност, менаџмент ризика, финансијске перформансе, нигеријске производне фирме.*

# ECONOMICS OF EDUCATION: THE EXAMPLE OF THE BALKAN COUNTRIES

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## ABSTRACT

Economic growth is an economic topic that attracts a lot of attention in science and research. This is a consequence of the emergence of increasingly frequent regional and global instabilities, which often develop into open economic crises of a larger scale. Therefore, today's economic stability is largely threatened due to the slowdown in GDP growth. Economic growth is influenced by various economic factors, with education being one of the most important, which undeniably boosts productivity, competitiveness, and growth. Among the first, this topic was elaborated by Solow. In this research, regression analysis was used to analyze the influence of several selected variables that determine the state of education. The research results are presented in two models. The dependent variable is Gross National Income per capita (GNIpc), and the independent variables in the first model are years of education, macroeconomic stability, and ability to accept information technologies. In the first model, none of the independent variables is individually significant for the movement of GNIpc. The continuation of the analysis (second model) excludes the variable of macroeconomic stability. The final results are significant for the movement of GNIpc and show that an increase of one year in education leads to an increase in GNIpc by 4408 units, while an increase in the speed of ICT adoption leads to an increase in GNIpc by 543 units. Thus, the research results show a positive and significant influence of the selected independent variables on the economic growth of the Balkan countries.

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## 1. INTRODUCTION

A number of factors affect the rate of economic growth. In its general form, this regularity can also be seen in the structure of production which reads:

$$Y = f(Tp, K, L),$$

where the indicated symbols represent: Y – Gross domestic product (GDP), Tp – Technical progress, K – capital, and L – labour.

According to [Solow \(1956\)](#), technical progress expressed as the accumulation of knowledge and technological base development is the main factor of economic growth. [Lucas \(2015\)](#) also identifies the impact of human capital on economic growth, as a constituent of production function. Impact of education, science, technological development, research and innovation on GDP growth can be sublimated through the independent variable of technical progress. But the inverse dependence is also valid because the aforementioned areas have an impact on technical progress and GDP growth through the accumulation of knowledge. It is a direct consequence of the growth of productivity of labor and equipment (capital).

The era of globalization is accompanied by intensive economic development, which has become a social paradigm in a way. Recent definitions, new development approaches and models emphasize multidisciplinary ever more, given that social, structural and technological changes occurred in the observed period, along with GDP nominal growth (aggregate or per capita). Now, in addition to economic conditions, economic development has to meet natural sustainability requirements, which mainly include environmental, energy and other natural factors and standards. The phrase sustainable development for many means the care for the environment, although the term sustainability is much more meaningful and complex. It is easy to perceive that developed communities demand smart, inclusive and sustainable growth, which assumes that GDP (Y) growth takes place in a good (humane) social environment. But such an ambition can only be achieved by countries with developed institutions, including the system and policy implemented in the entire education system. For example, the term “smart” is characterized by processes of acquiring new knowledge, even at lower education levels, studying, lifelong learning, etc.

European Union (EU) member states adopted the EU 2020 Strategy to apply policy and standards of smart, sustainable and inclusive development. Smart growth is the privilege of countries with developed education system ([Goldin & Katz, 2020](#); [Hanushek & Woessmann, 2020a](#)), the countries that invest in

research, development and innovation (Visvizi, Lytras & Daniela, 2018; Hanushek, 2016). Inclusive growth component depends on the quality and quantity of education system, especially in primary, secondary and tertiary education. It has been proved that compulsory and high-quality primary and secondary education are the condition for economic development and social inclusion of a country population. However, developed, quality and branched educational institutions present the conditions for smart and inclusive growth (Lilles & Rõigas, 2017; Nistor, Mera & Pop Silaghi, 2018). The new instrument of the European Union (the Next Generation EU, 2021-2027) puts considerable attention to education through various initiatives. The one that stands out is the Digital Education Action Plan (European Commission, 2023). It is a renewed European Union (EU) policy initiative that sets out a common vision of high-quality, inclusive and accessible digital education in Europe and aims to support the education systems of the Member States to adjust to the new, digital age. It can be concluded that the basic social systems of education are an important factor in economic growth, whereby they differ in the level of development, organization, distribution, but also in social awareness. Therefore, research on the impact of non-economic factors on GDP growth is particularly important, not only for developed countries, but also for developing countries.

It is an indisputable fact that the Balkan countries are situated in a geostrategic, but also economically unique area. Regardless of the differences, most of these countries are passing through important stages in their economic and overall social development. In this, transition processes, reforms, as well as the responses to the consequences of the 2008/2009 global economic crisis, the debt crisis in the Eurozone, and now the conflict in Ukraine, are highlighted. At the same time, the global economic order does not wait, but even faster imposes the strictest standards in competitiveness, exports, ICT development, etc. The countries of the region still suffer from “the post-transition syndrome”, chronic unemployment and insufficiently high growth rates. Hence the question: how to achieve a long-term GDP growth of at least 4 to 6%, how to create conditions for greater investments in education system, scientific research, reforms and stabilization of institutions?

The subject of this paper is to determine the relationships between education systems, i.e. all levels of education, scientific and other institutions and the economic growth, i.e. their influence on GDP per capita growth rate. The observed region is homogeneous by most relevant indicators, economic and trade indicators, knowledge, culture and tradition. In the current conditions, the economic activity of the region is not possible without the necessary accumulation of knowledge as a production factor. Therefore, research on the

impact of education, scientific and technological research, innovation and other forms of knowledge on GDP growth are very useful.

The complex nature of economic growth and its interdependence with many factors has already been emphasized. Many factors “intertwine” with each other. Education system, science and research depend to a great extent on the economic and institutional capacity of a society. In this, the so-called other institutions that influence the balance of the budget and the fiscal system (they stabilize the debt and the budget), as well as institutions for the protection of property and intellectual property. And finally, it is important to reduce corruption, which is one of the conditions for efficient work of institutions, and faster growth of the well-being in this Euro-region.

Therefore, the main hypothesis is that GDP per capita growth is in positive correlation with quantitative and qualitative indicators of education system for the entire Balkan region. That is, their influence on economic growth is significant and positive. The results depend on the institutions and policies responsible for creating and planning education system development as well as the scientific research base (Saviotti, Pyka & Jun, 2016; Astakhova et al., 2016).

In addition to education institutions, other social and economic indicators are also important, given that education and science depend on them, i.e.: budget balance and structure of budget and fiscal system, attitude towards corruption, protection of intellectual property, as well as the protection of property in general. These social areas are in strong interaction. The second aim of the paper is to prove the hypothesis that education and these factors are in positive correlation with the growth of GDP per capita, and that the relationship between the observed variables is significant.

As stated, theoretical economic progress depends on the available labor and capital factor, but also on the influence of technical and technological progress. It seems that the last factor is getting more important and is becoming a condition for faster GDP growth. The global market is characterized by rapid changes and new technical-technological and organizational innovations. Now digitization sets standards in all social spheres. In terms of the sector, the following are increasingly significant: technological readiness, adoption of leading technologies, especially in IT, artificial intelligence (AI), robotics, biotechnologies, microelectronics, new materials, etc.

In order to check the hypotheses about GNI per capita, the following variables are used in the analysis: years of education, macroeconomic stability, and ability to accept information technologies. Different methods are used in the research, primarily econometric methods.

The analysis includes the following countries: Bulgaria, Romania, Croatia, Serbia, Bosnia and Herzegovina, Montenegro, Albania, Slovenia and Greece.

## 2. PREVIOUS RESEARCH

Economic implications of education in the Balkans countries are de facto the subject of research into technical progress, i.e. the impact of education, science, technological changes and innovations on GDP growth, i.e. on economic development. They mean proving the relationship between the factors of technical progress and GDP growth, that is, GDP per capita.

Unlike the neoclassical theory, the new theory of endogenous growth treats the issues of economic growth differently. [Robert Lucas \(1988\)](#), [Grossman & Helpman \(1991\)](#), [Aghion & Howitt \(1992\)](#), as well as [Romer \(1994\)](#), who is one of the founders of the endogenous growth theory, confirmed the importance of knowledge, education and technical-technological progress for economic growth.

Education, scientific research and technical-technological progress affect the economic development and social well-being of post-transition countries ([Popović, Erić, Stanić & Krajišnik, 2019](#)). Even though most of the countries in the Balkan region have completed reforms in the education systems, developed and strengthened institutions (including education institutions), harmonized policies and legislation with the EU, there are still no major effects on GDP per capita growth ([Popović, Erić & Bjelić, 2020](#)). Previous research and practice have shown that developed economies or economies in developing countries have more efficient systems of education, science and research. It is also true that there is no economic well-being without continuous accumulation of knowledge arising from education and scientific system ([Benos, 2008](#)). It has been proven that economic progress depends on education and scientific basis, and the synergy of institutions and numerous other factors ([Hanushek & Woessmann, 2020b](#)). [Woessmann \(2015\)](#) proved the importance of education for the prosperity of an individual and the community, whereby he sees education as the leading factor in economic growth and thus employment. The research is related to knowledge-based economies.

The research conducted by [Wang and Liu \(2016\)](#) proves that education and human capital significantly boost GDP growth, emphasizing the role of higher education, while [Grant \(2017\)](#) believes that the lack of education can threaten economic progress in the future, which can result in poverty and social exclusion.

According to Saviotti, Pyka & Jun (2016), education leads to greater social mobility and increased participation of higher social class population, while Hanushek (2016) observes differences in cognitive skills that affect GDP growth rates among countries. More years of schooling without increasing cognitive skills have systemically accelerated rates of economic growth.

Wider Balkan region is still lagging behind the European Union, although funds are invested in research and education in pre-accession countries (Popović & Erić, 2018). The European Union supports modernization of public institutions, including various levels of education, research and development. Together with member states and candidate members, it makes efforts to modernize the education system, introduce modern methods and contents in the teaching process, as well as optimize the duration of schooling.

In the previous context, the European Union as a global regional integration makes great efforts to maintain external competitiveness. In addition to traditional branches (automotive, electrical, mechanical and chemical industries), the European Union is pushing new high technologies, innovations, development of ICT, artificial intelligence, biotechnology, optics, new materials, sustainable energy, etc. It allocates significant funds to education, research, development and innovation (Erić, 2018). Investments made for these purposes contribute to technical-technological progress and positive tendencies in high technologies. This is best seen in the aims and implementation of the EU Strategy 2020 program, as a model of smart, sustainable and inclusive growth (Popović, 2016; Popović & Erić, 2021). In their research, Hanushek & Woessmann (2020a) quantify the economic benefits from improving education covered by the European Union education aims. In the research, they present disaggregated projections for each of the EU countries and comparative economic results for alternative goals of member policies. By applying certain techniques, they have estimated that an increase in student achievement by 25 PISA points in the EU will, in the long term, contribute to an increase in GDP by 3.4 times. Furthermore, Hanushek & Woessmann (2020b) in their paper from the period of the COVID-19 pandemic, assess the economic implications of school closures around the world in 2020. They believe that the losses from school closures will have lasting economic effects unless they are effectively remedied. According to them, students affected by school closures could expect about a 3 percent lower lifetime income. On the macro-economic level, according to their estimation, closing schools would lead to 1.5% lower GDP by the end of this century at the global level.

Škare & Tomić (2014) proved that education and innovation influenced the economic growth in OECD countries in the period 1950-2013. Through

productivity growth, they proved that GDP depends on technological changes (which depend on education system). Kesici Çalışkan (2015) explores the correlation between education and economic growth and the role of scientific research institutions. Economic growth as a function of technological progress is also investigated by Tomić (2012). Further, Freeman (2013) explores global change and economic growth and innovation, while Malerba & Cantner (2006) explore the industrial structure. Freeman & Soete (2009) conditioned economic progress and changes by changes in technologies and increasingly pronounced motives for public and private investments in education, science and technology. And finally, Pecea, Ecaterina, Oros & Salisteanu, (2015) proved a positive correlation between GDP growth and innovation, while Aghion & Antonin (2018) proved a positive impact of innovation on social mobility.

### 3. MATERIALS AND METHODS

**Material.** In this paper, database for analysis is primarily the database from the World Development Indicators (WDI), and the World Economic Forum on Global Competitiveness (WEF), from which the data on the dependent and explanatory variables were taken. Description of variables and numerical values by country are given in the following table.

**Table 1.** Data on variables in the model and statistical sources

Country	Gross National Income per capita	Years of education (Avg.)	Macroeconomic stability	Ability to accept information technologies ICT
	Dependent variable	Explanatory variables		
Notation in the model	GNIpc	Ed.years	Macr.ec.stab.	ICT.accep
Albania	6.110	10.1	70	53
Bulgaria	11.200	9.8	90	73
BiH	6.810	11.4	75	52
Greece	20.000	11.4	75	65
Croatia	17.630	10.6	90	61
N. Macedonia	6.190	11.6	75	58
Montenegro	9,340	9.8	70	63
Romania	14.160	11.1	90	72
Serbia	8.460	11.2	75	53
Slovenia	28.280	12.7	100	69

Source: World economic forum, 2022; World Bank, 2023.

**Methodology.** In this paper, an attempt is made to verify the hypotheses about the relationship between education and economic growth by applying a multiple linear regression model (Anderson, 2003). An extended multiple linear regression model was applied by means of backward method and regression procedures, as well as residual analysis (Hwang & Yoon, 2006; Kollo & Rosen, 2005).

As an approximation of the Gross Domestic Product, Gross National Income per capita (GNI per capita, dependent variable) was analyzed, which is in the function of the variables: average number of years of schooling (independent variable) and some control variables that are closely related to education and economic growth (acceptance of information-communication technologies, capacity for innovation and macroeconomic stability taken from the World Economic Forum data).

In particular, the method of including independent variables in the regression model, the so-called backward elimination procedure, was used. Analysis and comparison of models is performed by the IBM SPSS Statistics 23 program.

The backward method gradually excludes independent variables. The order of exclusion of independent variables from the model is determined by the contribution of each specific independent variable in explaining the variability of the dependent variable. The contribution is measured by defined statistical criteria (value of F statistic for inclusion – F, i.e. probability p).

The initial assumption is that all independent variables are included in the model, and then variables are excluded from the model (according to pre-set criteria).

The defined problem is determined by the specification of the model in general form:

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n \quad (1)$$

The model is set to take into account the aims to be achieved. Marginal change is difficult to estimate because the independent variables are related not only to the dependent variable, but also to each other.

#### 4. RESULTS AND DISCUSSIONS

The regression shows 2 models, described in the table below. It has already been mentioned that we used the backward procedure method. This means that the first model represents the results of all included variables while in the second iteration (2nd model) the results without the weakest variable in the previous model are simulated.

**Table 2.** Backward procedure overview, Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Ability to accept information technologies, macroeconomic stability, years of education		Enter
2		Macroeconomic stability	Backward (criterion: Probability of F-to-remove >=, 100).

Source: Authors’ calculation

The summary statistics in the table below show determination coefficients (R square) over 0.6, which means that more than 60% of the variations in Gross National Income are determined by the joint movement of independent variables in both models. Based on these results, it can be said that it is a well-established model and we proceeded to further analyses. That is, the econometric analysis shows that there is a relevant influence of the number of years of schooling, the ability to accept information technologies, as well as macroeconomic stability on the movement of the Gross National Income of the selected countries. It is obvious that education and scientific research, the results of which to the greatest extent represent new information technologies, have direct impact on income and economic well-being. This is confirmed by the research of Solow (1956), or the research conducted by Saviotti, Pyka & Jun (2016), and Astakhova et al. (2016).

**Table 3.** Summary statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.828 <sup>a</sup>	.686	.529	4984.174	.686	4.365	3
2	.801 <sup>b</sup>	.642	.540	4925.958	-.044	.837	1

a. Predictors: (Constant), ICT.accep, ed.years, macr.ec.stab.

b. Predictors: (Constant), ICT.accep, ed.years

c. Dependent Variable: GNIpc

Source: Authors’ calculation

Analysis of variance (ANOVA) in both models shows that the variables have sufficient freedom of variation (levels of freedom) for statistical inference, the F test result of 4.365 in the first model and 6.274 in the second model confirm statistical significance of the defined models.

**Table 4.** Variance analysis

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	325289220	3	108429740	4.365	.059 <sup>b</sup>
	Residual	149051939	6	24841989		
	Total	474341160	9			
2	Regression	304485708	2	152242854	6.274	.027 <sup>c</sup>
	Residual	169855451	7	24265064		
	Total	474341160	9			

a. Dependent Variable: GNIpc

b. Predictors: (Constant), ICT.accep, ed.years, eacr.ec.stab

c. Predictors: (Constant), ICT.accep, ed.years

Source: Authors' calculation

Results of the regression analysis in terms of individual significance of variables and the intensity of their coefficients are given in the table below. Also, the results are presented in two models. The dependent variable is Gross National Income per capita (GNI per capita) while independent variables in the first model are: years of schooling, macroeconomic stability, and ability to accept information technologies. None of the independent variables is individually significant for the movement of GNI per capita.

However, in the second model, the macroeconomic stability variable was excluded, and then both retained independent variables (years of schooling and acceptance of ICT) were significant for the movement of GNI per capita. In addition, an increase in one average year of schooling leads to an increase in GNI per capita by 4408 units, while an increase in the acceptance of ICT leads to an increase in GNI per capita by 543 units.

**Table 5.** Analysis of the coefficients significance

Model B	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	Std. Error	Beta				
1	(Constant)	-63698.1	24985.9		-2.549	.044
	Ed.years	3410.7	2154.1	.420	1.583	.164
	Macr.ec.stab.	235.5	257.3	.340	.915	.395
	ICT.accept	323.8	319.5	.351	1.013	.350
2	(Constant)	-69164.1	23978.1		-2.884	.024
	Ed.years	4408.5	1836.1	.543	2.401	.047
	ICT.accept	543.5	208.3	.590	2.608	.035

Source: Authors' calculation

The results obtained in the second model show that the research hypothesis of this paper is correctly set, that is, that education, innovation and scientific research stimulate economic growth in terms of GNI per capita increase. This confirms the Solow's theory to a great extent, who proved that the accumulation of knowledge through technical progress affects economic growth. In this part of the paper, these independent variables were retained: years of schooling and acceptance of IT, which proved to be significant for the movement of GNI per capita. And the course of the variables is correct, since it was proved that an increase in the average number of years of schooling affects the growth of GNI per capita, as well as that an increase in ICT acceptance rate has a positive effect on GNI per capita. These results conform to the paper published by [Goldin & Katz \(2020\)](#), [Hanushek, & Woessmann \(2020a\)](#), [Visvizi, Lytras & Daniela \(2018\)](#), as well as [Hanushek \(2016\)](#). The obtained results are compatible with conclusions reached by [Hanushek & Woessmann \(2020 b\)](#), as well as those by [Woessmann \(2015\)](#).

## 5. CONCLUSIONS

The countries of the Balkans are featured by the unique geographical and economic space. Bulgaria, Romania, Croatia, Serbia, Bosnia and Herzegovina, Montenegro, Albania, Slovenia and Greece are included in this research. Although there are certain differences in the level of economic development, this region is still a homogeneous and relatively uniform area in terms of development (except Greece and Slovenia). The Balkan countries are close culturally, educationally, historically, linguistically, etc. Today, they are unique in the processes of transition from socialism to capitalism, although with different results and different speeds of these changes. Education systems, and especially institutions, have certain similarities. In the institutional sense, science, research, development, innovation and acceptance of new technologies are close to education.

The key aim of these countries is rapid and long-term economic growth in order to cancel the "gap" in relation to developed countries, reduce the unemployment rate, increase investments, etc. Some researchers agree that the desirable and possible long-term GDP growth rate for this region is at least 4 - 6%. An important prerequisite for faster economic growth is greater investment in education, science, research and development, and above all necessary reforms and institutional stabilization. Thus, the subject of this paper is to determine the nature and degree of relationships between the education system and economic growth, i.e. impact on the growth of GNI per capita. Therefore, the accumulation of knowledge as a production factor is extremely important for economic

development (Solow, 1956), hence the impact of education and innovation on economic growth was investigated. The economic growth depends on several factors, where the system of education, innovations, science and research largely depends on the macroeconomic and institutional capacity of the society.

The results of the research have confirmed the hypothesis that economic growth is positively correlated with the years of schooling in the education system, as well as the acceptance of ICT, for the entire Balkan region. Therefore, the influence of these independent variables on GNIpc is significant and positive. Statistically, the research results were obtained by means of two models. In both models, the dependent variable is GNI per capita, while the independent variables in the first model are years of schooling, macroeconomic stability and the ability to accept information technologies. These variables are individually insignificant, but the summary statistics of the first model show coefficients of determination (R square) over 0.6, which means that the model is well set. Therefore, the second model excludes the variable that treats macroeconomic stability. The independent variables, years of schooling and acceptance of ICT are significant for the movement of GNI per capita, where an increase in one year of schooling leads to an increase in GNI per capita by 4408 units while an increase in the acceptance of ICT leads to an increase in GNI per capita by 543 units. In the second model, the statistical analysis shows a significant and positive influence of selected variables on the economic growth of the Western Balkans countries. The results of this research comply with the results of most previous research works, namely with Saviotti, Pyka & Jun (2016), Astakhova et al. (2016), Goldin & Katz (2020), Hanushek & Woessmann (2020a), Visvizi, Lytras & Daniela (2018), Hanushek (2016), Lilles & Rõigas (2017), Nistor, Mera & Pop Silaghi (2018), et al.

### Conflict of interests

The authors declare there is no conflict of interest.

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## ЕКОНОМСКИ АСПЕКТИ ОБРАЗОВАЊА: ПРИМЈЕР ЗЕМАЉА БАЛКАНА

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### САЖЕТАК

Економски раст је економска тема која заокупља велику пажњу у науци и истраживањима. То је посљедица појава све чешћих регионалних и глобалних нестабилности, које неријетко прерастају у отворене економске кризе већих размјера. Стога је данас економска стабилност у великој мјери угрожена због успоравања раста БДП-а. На економски раст утичу различити економски фактори, при чему је образовање један од најважнијих, који неоспорно подстиче продуктивност, конкурентност и раст. Међу првима, ову тему је разрадио Роберт Солоу. У овом истраживању путем регресионе анализе анализирани су утицаји неколико изабраних варијабли које детерминишу стање у области образовања. Резултати истраживања приказани су у два модела. Зависна варијабла је бруто национални доходак по становнику (GNIPc), а независне варијабле у првом моделу су:

године школовања, макроекономска стабилност, способност прихватања информационих технологија. У првом моделу ниједна од независних варијабли појединачно није сигнификантна за кретање GNIpc, при чему сумарна статистика показује коефицијенте детерминације (R square) преко 0,6 што указује на добро постављен модел. Наставак анализе (други модел) искључује варијаблу макроекономска стабилност, а задржава независне варијабле године школовања и прихватање ICT-а. Коначни резултати су сигнификантни за кретање GNIpc, и показују да повећање једне године школовања доводи до повећања GNIpc за 4408 јединица, док повећање брзине прихватања ICT-а доводи до повећања GNIpc за 543 јединице. Дакле, резултати истраживања показују позитиван и сигнификантан утицај изабраних независних варијабли на економски раст земаља Балкана.

**Кључне ријечи:** образовање, инфомационо-комуникациона технологија (ICT), економски раст, Балкан.

# EXPLAINING THE CORRELATES OF CHILD'S MULTIDIMENSIONAL POVERTY IN SOUTH AFRICA USING THE ALKIRE-FOSTER APPROACH

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## ABSTRACT

Child's poverty remains one of the major concerns in the Sustainable Development Goals (SDGs). This study analyzed the determinants of child's multidimensional poverty in South Africa using the 2017, 2018 and 2019 General Household Survey (GHS) datasets. The Alkire-Foster's methodology was used to compute child's Multidimensional Poverty Index (MPI), and its correlates were analyzed using the Tobit regression. The results revealed that some regional and areas of residence factors significantly influenced MPIs across the periods ( $p < 0.05$ ). Also, being a Coloured, Indian/Asian, and White child and biological children of the households' heads significantly reduced MPIs ( $p < 0.05$ ). Conclusively, policies and programs to address child's poverty must among others, be sensitive to some racial, provincial and gender factors. It is therefore recommended that the government needs to critically come with strategies to facilitate achievement of some SDGs as a prerequisite for reducing child's multidimensional poverty.

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## 1. INTRODUCTION

In South Africa, reducing poverty has been a priority of aligned legislative and policy initiatives. The apartheid government selectively implemented economic development programmes with significant bias against some population groups. Therefore, the current manifestation of poverty and inequality in South Africa is the aftermath of past governance structure and selective implementation of social welfare packages as characterized by the apartheid era (Seekings & Nattrass, 2015). Although policy interventions to address poverty under democratic governance have yielded some positive results, the overall performance is still

falling short of people's expectations on improvement in standard of living and wealth creation.

The groundbreaking work of Amartya Sen provides the foundation upon which multidimensional poverty analysis is built (Sen, 2000). Sen (2000) stressed the need to understand actual poverty in terms of capability deprivation, which includes opportunities, choices, and entitlements. From that time, literature began to focus on the broader sense of poverty from its multidimensional perspective (Alkire & Santos, 2013). According to Bastos (2001), welfare concept analysis should focus on home living conditions rather than households' income levels. The multidimensional view of welfare is favored by both the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs) (Alkire & Jahan, 2018).

From the unidimensional perspective, poverty seems to be endemic among South African children. Some statistics have shown that poverty increased by 11.1% between 1995 and 1999, while 11 million children were poor in 2002 (Alliance for Children's Entitlement to Social Security, 2002; Omotoso & Koch, 2018). Moreover, Statistics South Africa (2020) submitted that 51.0% of South African children were uni-dimensionally poor. On the other hand, based on 2012 data, multidimensional child deprivation ratio for South Africa was 35.7%, which can be compared with 16.0% for Botswana and 29.30% for Namibia (United Nations Department of Economic and Social Affairs, Population Division, 2015). Recently, 62.1% of South African children were multidimensionally poor in 2020, and majority simultaneously suffered multiple deprivations (Statistics South Africa, 2020). According to Statistics South Africa (2014), poor health, low level or no education, poor living conditions, inadequate income, lack of empowerment as well as threat from violence or crime are the factors that promote multidimensional poverty. It was discovered that the primary determinants of poverty include gender, unemployment, household size, marital status, and population group (Jansen et al., 2015; Makhhalima, 2020; Omotoso & Koch, 2018).

In Burkina Faso, Fonta et al. (2020) found that using the Alkire-Foster MPI, child's multidimensional poverty reduced with maternal education, income, urban residence, but promoted by polygamy, residence in some rural areas, chronic illness among households' heads, debts and households' size. Nguetse Tegoum & Hevi (2016) used the multiple correspondence analysis (MCA) and hierarchical classification methods to analyze child's multidimensional poverty in Cameroon. It was found that multidimensional poverty was influenced by education, mother's age and presence in the household. Dutta (2021) analyzed the determinants of child's multidimensional poverty in India and Bangladesh

using the multidimensional overlapping deprivation approach (MODA). It was found that maternal education and empowerment reduced the chance of child's multidimensional poverty.

The objective of this paper is to determine the factors explaining multidimensional poverty indicator (MPI) among South African children. The MPI was computed with different attributes covered different dimensions of households' welfare. It was hypothesized that child's demographic characteristics do not significantly influence multidimensional poverty index (MPI) which was computed using the Alkire-Foster (AF). The majority of previous research studies have examined household multidimensional poverty in South Africa. However, the determinants of poverty from a multifaceted perspective with a focus on children are not well understood in general. This study will contribute to existing literature by filling this important research gap.

## 2. MATERIALS AND METHODS

### Sampling Procedures for the Data

This study used the General Household Survey (GHS) datasets for 2017, 2018 and 2019, which were collected by the Statistics South Africa. The data were collected from every member of the household. The focus of this study was on multidimensional poverty among children. Therefore, information on households' members who were less than 18 years was used. The data collection for the three years used a Master Sample (MS) frame which was compiled in 2013 by [Statistics South Africa \(2017, 2018 and 2019\)](#). This sampling frame was designed with the 2011 Census, and comprised of 103,576 enumeration areas (EAs), 3,324 primary sampling units (PSUs) and 33,000 dwelling units (DUs). Each of the surveys also has sampling weights for ensuring representativeness of the samples. After the data were sorted and merged, a total of 25,915, 25,224, 20,083 and 71,711 of children were selected in the 2017, 2018, 2019 and combined datasets, respectively.

### Child's multidimensional poverty index and its decomposition using Alkire-Foster Method

This study used the [Alkire & Foster \(2011\)](#) method to compute the multidimensional poverty index (MPI) using some selected child's welfare attributes from the 2017, 2018 and 2019 GHS datasets. Table 1 shows the selected welfare dimensions and attributes. Four dimensions were identified which are standard of living, health, education, and perceived happiness. The Table reveals

that in all, there were ninety-one (91) welfare attributes of which seventy-six (76) belonged to the standard of living category, eleven (11) belonged to health, two (2) belonged to education, and two (2) belonged to perceived happiness. The standard of living was broken into six (6) indicators, while health was broken into two (2). The Alkire-Foster method begins with proper definition of poverty cutoff for identifying the children that were multidimensionally poor. Each of the selected attributes was coded as 1 for the deprived children and 0 for the non-deprived. The ninety-one selected attributes are defined in Table 1 following Omotoso & Koch (2018) and Fonta et al. (2020).

**Table 1.** Child MPI dimensions, indicators, Deprivation cut-offs and weights

Dimension (Weight)	Indicator (Weight)	Attributes' Coding Method
Standard of living (76/91)	Assets (22/91)	A child was coded to be deprived if the household does not own each of the following assets: motor vehicle; radio of television set; swimming pool; DVD player/blu-ray player /pay TV (M-Net/DSTV/ Top TV) subscription; air conditioner (excluding fans); computer/desktop/laptop; vacuum cleaner/floor polisher; dish washing machine; washing machine; tumble dryer deep freezer – free standing; refrigerator or combined fridge freezer; electric stove; microwave oven; built-in kitchen sink; home security service; home theatre system; geyser providing hot running water; solar hot water geyser; and solar electrical panel
	Telecommunications (7/91)	A child was coded to be deprived if the household does not have access to the following: home Internet connection; Internet in a library or community hall/Thusong centre; Internet for students at a school/university/college; Internets at place of work; Internet Café ≤2km from the household; Internet Café and Telephone.
	Waste removal (6/91)	A child was coded to be deprived if the household has the following: irregular or no waste removal; littering, water pollution, outdoor/ indoor air pollution; land degradation; and excessive noise.
	Housing characteristics (10/91)	A child was coded to be deprived if the household possesses each of the following: informal/traditional dwelling type (shack, caravan or other); without bricks or cement for walls and without materials such as tile, corrugated iron, asbestos, and others for roof; with unimproved floor materials; more than two persons per room; using unimproved drinking water; distance of water source from the dwelling more than 30 minutes; using unimproved toilet facilities; and sharing toilet facilities.
Standard of living (76/91)	Safety (10/91)	A child was coded to be deprived if the household responded yes to each of the following: motor vehicle injury; bicycle related injury; gun shots wounds; severe trauma due to violence, assault, or beating; crime-related injury; fire or burn; accidental poisoning; intentional poisoning; sports related injuries; and other form of injuries.
	Energy (21/91)	A child was coded to be deprived if the household possesses each of the following features: lack access to electricity; uses paraffin for lighting; uses candles for lighting; uses no energy source for lighting; uses other unclean sources for cooking; uses paraffin for cooking; uses wood for cooking; uses coal for cooking; and uses animal dung for cooking.

Dimension (Weight)	Indicator (Weight)	Attributes' Coding Method
Health (11/91)	Nutrition/hunger (8/91)	A child was coded to be deprived if the household responded yes to each of the following: run out of money to buy food; run out of money 5 or more days in the past 30 days; cut the size of meal or skip any meals; cut size of meals 5 or more days in the past 30 days; skipped meals; skipped meals 5 or more days in the past 30 days; smaller variety of food; and smaller meals 5 or more days in the past 30 days
	Healthcare Facilities and Health Status (3/91)	A child was coded to be deprived if the household responded yes to each of the following: not covered by any medical aid scheme; it takes more than 30 minutes to reach the health facility; and the child has a fair or poor health status.
Education (2/91)	Early Childhood Development (ECD) (2/91)	A child was coded to be deprived if each of the following holds: a child of 0-59 months is not attending any ECD centre; a child who is old enough to attend school (6-18 years) does not attend and school/ education institution.
Perceived happiness (2/91)	Perceived Happiness (2/91)	A child was coded to be deprived if the household's head says they are poor; and the head is not happy or same as before.

Source: Own Computation, 2023

After coding the selected attributes as either 0 or 1, the Alkire-Foster method begins with definition of the cut-off, which identifies whether a child is multidimensionally poor based on his or her total weighted deprivation. In this study, the ninety-one attributes were equally weighted and the sum of the attributes in each dimension defines the assigned weight. In other words, the cut off is a portion of weighted deprivations a child must have in order to be considered poor, and it is symbolized with  $p$ . Therefore, a child is considered poor if his/her deprivation score is equal or greater than the poverty cut-off i.e., a child is poor if  $c_j \geq p$ .

Following recommendation from Alkire & Foster (2011), the child's MPI assumes a one-third poverty cut off which, based on the ninety-one attributes constitutes 30.33 MPI. Therefore, a child is multi-dimensionally poor if he/she has a deprivation score higher than or equal to 30. For children with a deprivation score that is below the poverty cut-off, even if it is non-zero, it is replaced by zero '0'. This is referred to as censoring in poverty measurement. Using the notation  $c_j(z)$  for the censored deprivation, such that when  $c_j \geq z$ , then  $c_j(z) = c_j$ , but if  $< z$ , then  $c_j(z) = 0$  hence,  $c_j(z)$  is the deprivation score of those who are poor. Like with the weights, the choice of poverty cut-off is also flexible in the Alkire-Foster method, depending on a particular context. The child's MPI, which is expected to lie between 0 and 1 is the product of poverty incidence and poverty

intensity. Poverty incidence is the child's multidimensional headcount ratio (H) which is expressed as:

$$H = \frac{m}{N} \quad (1)$$

Where  $m$  is the number of children who are multidimensionally poor, and  $N$  is the total population of children. Also, intensity of multidimensional poverty is computed as:

$$I = \sum_{j=1}^m c_j(z) \quad (2)$$

Where  $c_j(z)$  is the censored deprivation score of child  $j$ . Mathematically, the child MPI is the product of H and A. Therefore,

$$MPI = H \cdot A \quad (3)$$

MPI can be decomposed into its component dimensions and censored indicators. The MPI decomposition can be expressed as:

$$MPI(x; y; z) = \frac{n(x)}{n(x; y)} MPI(x; z) + \frac{n(y)}{n(x; y)} MPI(y; z) \quad (4)$$

Where  $n(x)$  refers to the number of individuals in  $x$  (the same goes for  $n(y)$  and  $n(x; y)$ )

For this study child MPI was decomposed by province, race, and sector of residence.

### **Tobit Regression Model of the Determinants of Child's MPI**

The Tobit regression model was employed to analyze the factors influencing child's multidimensional welfare indicators. Tobit model is among the best regression models when the dependent variable can be censored. Since the dependent variable lies between 0 and 1, we applied the censored regression following some previous studies (Oyekale, 2023; Oyekale & Molelekoa, 2023; and Mosasane & Oyekale, 2021). The model can be specified as:

$$Y^* = \phi_0 + \phi_{kj} \sum_{k=1}^d X_{ij} + e_i \quad (4)$$

$$Y^* = 0 \text{ if } y \leq 0, y = Y^* \text{ if } y > 0$$

$Y^*$  = Multidimensional poverty

$\beta s$  = estimated parameter or coefficient

$ei$  = error term and is normally distributed with zero mean and constant variance.

$X_i$  = explanatory variables which are difficulty with seeing (yes = 1, 0 otherwise), difficulty with hearing, (yes = 1, 0 otherwise), difficulty with walking (yes = 1, 0 otherwise), difficulty with remembering (yes = 1, 0 otherwise), difficulty with selfcare (yes = 1, 0 otherwise), difficulty with communication (yes = 1, 0 otherwise), Eastern Cape (yes = 1, 0 otherwise), Northern Cape (yes = 1, 0 otherwise), Free State (yes = 1, 0 otherwise), KwaZulu-Natal (yes = 1, 0 otherwise), North West (yes = 1, 0 otherwise), Gauteng (yes = 1, 0 otherwise), Mpumalanga (yes = 1, 0 otherwise), Limpopo (yes = 1, 0 otherwise), child's gender (male = 1, 0 otherwise), child age (years), coloured (yes = 1, 0 otherwise), Indian/Asian (yes = 1, 0 otherwise), White (yes = 1, 0 otherwise), son or daughter of household's head (yes = 1, 0 otherwise), father alive (yes = 1, 0 otherwise), father part of household (yes = 1, 0 otherwise), mother alive (yes = 1, 0 otherwise); mother part of household (yes = 1, 0 otherwise), domestic worker service (yes = 1, 0 otherwise), household size, traditional area (yes = 1, 0 otherwise), farms (yes = 1, 0 otherwise), salaries/wages commission (yes = 1, 0 otherwise), Income from business (yes = 1, 0 otherwise), pensions (yes = 1, 0 otherwise), grants (yes = 1, 0 otherwise), social grants (yes = 1, 0 otherwise), sales of farming products/service (yes = 1, 0 otherwise), other income sources (yes = 1, 0 otherwise), backyard garden (yes = 1, 0 otherwise), school garden (yes = 1, 0 otherwise), and communal garden (yes = 1, 0 otherwise).

### 3. RESULTS AND DISCUSSIONS

#### Decomposition of Children's MPI

The results presented in Table 2 show the intensity, incidence, and the multidimensional poverty indicator (MPI) across the different provinces, population groups and geographical residence of the children. The results revealed that children from the Western Cape had the lowest multidimensional poverty incidence, severity and MPI in 2017, 2018, 2019 and the combined data. The incidences of deprivation were 39.00%, 39.00%, 32.00% and 2.00% in 2017, 2018, 2019 and the combined data, respectively. The intensity of poverty showed that children from the Western Cape province were deprived in 39.00%,

39.00%, 88.00% and 52.00% of the weighted indicators in 2017, 2018, 2019 and combined data, respectively. The results further revealed that Eastern Cape province had the highest MPI with 34.00%, 33.00%, 29.00% and 6.00% in 2017, 2018, 2019 and combined data, respectively. The incidences of multidimensional poverty deprivation were 43.00%, 43.00%, 32.00% and 7.00% in 2017, 2018, 2019 and combined data, respectively. The intensity of poverty showed that children from Eastern Cape province were deprived in 79.00%, 78.00%, 33.00%, and 82.00% of the weighted indicators in 2017, 2018, 2019 and combined data, respectively. The Table also presents the intensity, incidence and MPI across children's population groups, and geography type. The results presented in the Table revealed that Black/African children were the most multidimensionally poor population group, followed by the Coloured, White and Indian/Asian children. Across the children's geography type, the results revealed that children from traditional areas were more deprived compared to those in farms and urban areas.

**Table 2.** Alkire-Foster multidimensional poverty intensity and incidence across South African provinces

	2017			2018			2019			Combined Data		
	A	H	MPI	A	H	MPI	A	H	MPI	A	H	MPI
<b>Province</b>												
Western Cape	39.00	39.00	15.00	39.00	39.00	15.00	88.00	32.00	28.00	52.00	2.00	1.00
Eastern Cape	79.00	43.00	34.00	78.00	43.00	33.00	90.00	32.00	29.00	82.00	7.00	6.00
Northern Cape	56.00	40.00	22.00	56.00	39.00	22.00	87.00	31.00	27.00	65.00	2.00	1.00
Free State	59.00	40.00	24.00	60.00	39.00	23.00	86.00	32.00	27.00	67.00	2.00	2.00
KwaZulu-Natal	76.00	41.00	31.00	73.00	41.00	30.00	90.00	32.00	29.00	79.00	9.00	7.00
North West	67.00	41.00	27.00	67.00	40.00	27.00	85.00	31.00	27.00	72.00	3.00	2.00
Gauteng	42.00	40.00	17.00	43.00	39.00	17.00	87.00	32.00	27.00	56.00	6.00	3.00
Mpumalanga	76.00	41.00	31.00	73.00	40.00	29.00	88.00	32.00	28.00	78.00	4.00	3.00
Limpopo	75.00	38.00	29.00	72.00	38.00	28.00	86.00	31.00	27.00	76.00	5.00	4.00
<b>Population Group</b>												
Black/African	69.00	41.00	28.00	68.00	40.00	27.00	88.00	32.00	28.00	74.00	37.00	28.00
Coloured	39.00	39.00	15.00	37.00	39.00	15.00	87.00	31.00	27.00	52.00	2.00	1.00
Indian/Asian	7.00	37.00	3.00	6.00	39.00	2.00	84.00	31.00	26.00	30.00	0.00	0.00
White	4.00	40.00	2.00	3.00	41.00	1.00	85.00	31.00	26.00	28.00	0.00	0.00
<b>Geographical Location</b>												
Urban	48.00	40.00	19.00	47.00	39.00	19.00	86.00	31.00	27.00	59.00	18.00	11.00
Traditional	84.00	41.00	34.00	83.00	41.00	34.00	90.00	32.00	29.00	85.00	21.00	17.00
Farms	77.00	44.00	33.00	77.00	43.00	33.00	91.00	33.00	30.00	81.00	2.00	1.00
Total	64.00	40.00	26.00	63.00	40.00	25.00	88.00	32.00	28.00	71.00	40.00	28.00

Source: Own Computation based on South Africa GHS data in 2017, 2018 and 2019.

Note: A - denotes poverty intensity; H- denotes poverty incidence

## Correlates of Child Multidimensional Welfare

The Tobit regression results for Alkire-Foster MPI are presented in Table 3. Multicollinearity among the analyzed variables was scrutinized. This was done by computing the variance inflation factor (VIF) statistics. The mean VIF for the independent variables were 3.76, 3.49, 2.92 and 3.42 for 2017, 2018, 2019 and all the years combined, respectively. These results showed that the models did not suffer from serious problem of multicollinearity. The models also produced good fits for the data given the statistical significance of the Likelihood Ratio Chi Square at 1% level.

Table 3 shows the effects of some disability variables such as child's being unable to see, walk, hear, take care of self, remember things and communicating on MPI. The results revealed that inability to see, walk, take care of yourself, and communicate significantly affected Alkire-Foster MPI (henceforth denoted as AF MPI) in some of the results. The parameters of hearing impairment in Table 3 did not show statistical significance in all the results. Similarly, the parameters of being unable to see did not show statistical significance in 2017 at 10% level. However, the estimated parameters for the 2018, 2019 and combined dataset showed statistical significance at 5% level. These results imply that children who had eyesight problems had lower AF MPI in 2018, 2019 and combined dataset.

Investigations on poverty and disability have gained momentum and this is influenced by the work done by Sen on the capability approach. [White and Yamasaki \(2017\)](#) examined multidimensional poverty among the native-and foreign-born in the United States and considered the disability aspect. Their results are in alignment with the results of this study since they found out that people with disabilities were likely to suffer multiple deprivation. Moreover, numerous studies conducted on poverty and disability found out that disabled people are more likely to be poor compared to people without disabilities ([Brucker et al., 2015](#), [Pinilla-Roncancio, 2018](#), [Banks et al. 2021](#), [DeBeaudrap et al. 2020](#)). [Banks et al. \(2021\)](#) found that multidimensional poverty was related to an individual having a functioning limitation that affects cognitive reasoning and self-care.

The results in Table 3 revealed that the parameters for children who were unable to walk in 2018, 2019 and combined dataset did not show statistical significance at 10% level. However, in the 2017 dataset, there was statistical significance at 1% level. This implies that children who were unable to walk had a higher AF MPI increased in 2017, when compared with their counterparts with no such diasability. The results further revealed that estimated parameters for children who were not able to care for themselves in 2017 and 2019 showed statistical

significance at 5% level. These results imply that children who were not able to care for themselves had higher AF MPI in 2017 and in the combined dataset, when compared with those without such disability. The estimated parameters for communication impairment in 2018 and combined datasets showed statistical significance at 5% level of significance. This implies that the children who were suffering from some form of communication impairment had higher AF MPI in 2018 and in the combined dataset.

These results are in line with those of [Mitra et al. \(2011\)](#) who revealed that people with disabilities were found to be multidimensionally poor compared to those without disabilities. They further mentioned that disabled people had four times higher chances of being multidimensionally poor compared to people without disabilities. [UNICEF \(2007\)](#) mentioned that people with disabilities are affected by poverty because it lowers households' incomes due to their inability to work. It was further stipulated by [Opoku et al. \(2017\)](#) that even though disabled people do not depend on anyone, that is, are employed, they are more likely to be underemployed or underpaid due to their incapacitation. [Grut et al. \(2012\)](#) found that there are unique challenges facing disabled people in South Africa in accessing health care and other form of social services. [Mutwali and Ross \(2019\)](#) submitted that in South Africa, disabled people have poor physical access to health care facilities in terms of not being covered under any medical aid scheme, using public facilities, and taking longer time to reach the facilities when compared to those without disabilities. According to a study conducted by [Mkabile and Swartz \(2020\)](#) in the Western Cape province of South Africa, it was revealed that caregivers and parents of children living with disabilities could not utilize intellectual disability service because of financial challenges and community stigmatization.

The results in Tables 2 further showed the effect of provincial and geographical factors on child's AF MPI. The parameters for Eastern Cape province did not show statistical significance at the 10% level in 2019. However, the estimated parameters for 2017, 2018 and combined dataset showed statistical significance at 1% level. These results imply that when compared with children from Western Cape province and holding other variables constant, children from the Eastern Cape had higher AF MPI in 2017, 2018 and combined dataset. These results are related to those of [Mosasane and Oyekale \(2021\)](#) who revealed that Eastern Cape was one of provinces with the highest level of multidimensional poverty in South Africa. [Megbowon \(2018\)](#) also submitted that although the South African government has made progress in alleviating poverty since the end of apartheid in 1994, there is still existence of poverty in the provinces with Eastern Cape being one of poorest. According to [Noble et al. \(2014\)](#), Eastern Cape province

remains the largest recipient of social grants and has the highest level of welfare deprivations.

The Tobit regression results in Table 3 further show that Northern Cape parameters did not show statistical significance at 10% level in 2017, 2018 and combined dataset. However, the estimated parameters for 2019 showed statistical significance at 1% level. These results imply that compared to children from the Western Cape and holding other variables constant, children in the Northern Cape had lower AF MPI in 2019. The results of this study are also related to those of [Mosasane and Oyekale \(2021\)](#) who also found out that the Northern Cape Province respondents had lower AF MPI than Western Cape. These results are in line with those of [Ndhlovu \(2010\)](#) who also revealed that the Northern Cape province was one of the provinces that experienced a significant decline in poverty.

The parameters of Free State in Table 3 did not show statistical significance in 2017, 2018 and combined data. However, the estimated parameters showed statistical significance at 1% level in 2019. These results imply that in 2019, children from the Free State had lower AF MPI when compared with those from the Western Cape and holding other variables constant. The parameters of KwaZulu-Natal in Table 3 did not show statistical significance in 2019. However, the estimated parameters in 2017, 2018 and combined dataset showed statistical significance at 5% level. These results imply that when compared to children from the Western Cape and holding other variables constant, children from KwaZulu-Natal province had higher AF MPI in 2017 and combined dataset, but had a lower AF MPI in 2019.

The North West province parameter in 2019 and combined dataset did not show statistical significance. However, in 2017 and 2019 the estimated parameters show statistical significance at 5% level. These results imply that when compared to children from the Western Cape and holding other variables constant, children from the North West province had higher AF MPI in 2017 and lower value in 2019. The parameter for Gauteng province did not show statistical significance in 2019. However, the estimated parameters showed statistical significance at 1% level in 2017, 2018 and combined dataset. These results imply that when compared to children from the Western Cape and holding other variables constant, children from Gauteng province had lower AF MPI in 2017, 2018 and combined dataset. [Fransman and Yu \(2019\)](#) also revealed the findings that are similar to the one of this study where respondents from Gauteng and Western Cape provinces had their MPI reduced. [Jackson and Yu \(2023\)](#) also found Gauteng respondents to have increased MPI.

The estimated parameters for Mpumalanga did not show statistical significance in 2018. However, in 2017, 2019 and combined dataset, the parameters showed statistical significance at 1% level. These results imply that when compared to children from the Western Cape and holding other variables constant, children from Mpumalanga had higher AF MPI in 2017 and combined dataset and lower value in 2019. These results are related to those of [Mosasane and Oyekale \(2021\)](#) who compared Western Cape to Mpumalanga and found that MPI in Mpumalanga was higher. The estimated parameters for Limpopo also showed statistical significance at the 1% level across all the years. These imply that when compared to children in the Western Cape and holding other variables constant, children from Limpopo province had lower AF MPI across the years. These results are contrary to those of [Jackson and Yu \(2023\)](#) who revealed that the Limpopo households had higher MPI.

Regarding the geographical location of children, the results in Table 3 showed statistical significance at 1% level for the children residing in traditional areas for 2017, 2018, 2019 and combined dataset. The results presented in Table 3 showed that when compared to children from urban areas and holding other variables constant, children from traditional areas had higher AF MPI across the years. Similarly, the parameters for farm residents showed statistical significance at 1% level across the years. These imply that compared to the children in urban areas and holding other variables constant, children from farms had higher AF MPI across the years.

The estimated parameters for racial identity showed that Coloured parameter did not show statistical significance for 2019, but significant in 2017, 2018 and combined data at 1% level. These results imply that when compared with Black/African children, Coloured children had lower AF MPI in 2017, 2018 and combined data. The Indian/Asian parameters did not show statistical significance ( $p > 0.10$ ) in Table 3. However, the estimated parameters for 2017, 2018 and combined dataset were significant ( $p < 0.10$ ). The results presented in Table 3 imply that when compared to Black/African children and holding other variables constant, Indian/Asian children had lower AF MPI in 2017, 2018, 2019 and combined data.

**Table 3.** Tobit Regression Estimates of the Determinants of Children's Alkire-Foster MPI

	2017	2018	2019	Combined Data
	Coefficient	Coefficient	Coefficient	Coefficient
Disability				
Seeing	-1.25e-07	-3.52e-07***	-1.66e-07**	-2.38e-07***
Hearing	1.49e-07	-2.16e-08	-8.69e-08	-5.08e-08
Walking	3.33e-07**	1.37e-07	4.87e-08	1.44e-07*
Remembering	-6.21e-08	2.03e-09	-2.62e-08	-2.57e-08
Selfcare	6.24e-08	1.64e-07**	1.10e-09	9.83e-08***
Communication	-1.31e-07	3.54e-07**	2.79e-08	2.04e-07***
Province				
Eastern Cape	6.64e-07***	5.26e-07***	-6.34e-08	4.63e-07***
Northern Cape	8.93e-08	-6.32e-10	-2.37e-07***	3.78e-08
Free State	-3.96e-08	-1.05e-07	-2.32e-07***	-6.65e-08
KwaZulu-Natal	3.98e-07***	5.24e-08	-1.56e-07**	1.78e-07***
North West	1.74e-07**	-5.54e-08	-4.58e-07***	-9.84e-09
Gauteng	-2.55e-07***	-3.91e-07***	-8.91e-08	-2.03e-07***
Mpumalanga	3.88e-07***	1.37e-08	-2.65e-07***	1.28e-07***
Limpopo	-3.64e-07***	-5.76e-07***	-4.87e-07***	-4.51e-07***
Child gender	-6.83e-08**	-4.24e-08	-2.97e-08	-5.54e-08***
Child age	-9.71e-09**	-1.17e-08**	1.92e-08***	2.57e-09
Population group				
Coloured	-8.10e-07***	-9.29e-07***	-3.50e-08	-6.26e-07***
Indian/Asian	-1.26e-06***	-1.20e-06***	-1.36e-07	-9.56e-07***
White	-8.41e-07***	-9.36e-07***	-1.14e-07	-7.24e-07***
Son or daughter	6.14e-07***	5.57e-07***	1.05e-07***	4.39e-07***
Father alive	-1.20e-07***	-1.19e-07***	1.30e-08	-8.34e-08***
Father part of household	-3.17e-07***	-3.21e-07***	-6.69e-08**	-2.69e-07***
Mother alive	-2.00e-08	-1.46e-07**	1.95e-08	-7.20e-08**
Mother part of household	-1.20e-07***	-1.20e-07***	-1.11e-07***	-1.32e-07***
Domestic worker service	1.18e-06***	1.31e-06***	4.18e-07***	1.11e-06***
Household size	9.92e-09	3.32e-08***	-1.28e-08***	2.60e-08***
Geography type				
Traditional	1.05e-06***	1.14e-06***	2.96e-07***	8.56e-07***
Farms	1.38e-06***	1.53e-06***	5.30e-07***	1.19e-06***
Salaries/wages commission	-8.70e-07***	-9.08e-07***	-1.02e-07***	-7.98e-07***
Income from business	-6.22e-07***	-6.87e-07***	-1.45e-08	-4.48e-07***
Remittances	-3.38e-07***	-4.24e-07	1.57e-08	-3.40e-07***
Pensions	-1.01e-06	-9.55e-07	-4.62e-08	-8.68e-07***
Grants	9.00e-07***	7.93e-07***	-4.06e-08	5.93e-07***
Social grants	-7.34e-07	-6.27e-07***	-1.98e-07***	-6.69e-07***
Sales of farming products/ service	-1.16e-07	-2.73e-07***	-2.05e-08	-1.29e-07***
Other income sources	-5.44e-07***	-4.82e-07***	-1.26e-08	-4.84e-07***
Backyard garden	2.94e-07***	2.92e-07***	-4.24e-08	3.33e-07***
School garden	8.30e-07	-4.65e-07	4.61e-07	4.47e-07*
Communal garden	-3.64e-08	5.36e-07**	1.74e-07	4.24e-07***
_Cons	2.20e-06***	2.21e-06***	4.67e-06***	2.80e-06***
Var (e,mpi)	5.29e-12	5.35e-12	3.43e-12	5.37e-12
LR Chi2	9969.90	9230.63	577.61	17448.17
Prob Chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R2	-0.0169	-0.0161	-0.0012	-0.0106
Log Likelihood	299666.44	291533.92	242348.05	828736.54
Mean VIF	3.76	3.49	2.92	3.42

Source: Own Computation based on South Africa GHS data in 2017, 2018 and 2019

Note: \*\*\*, \*\* and \* imply statistically significant at 1%, 5% and 10% levels, respectively.

The estimated parameter for White children did not show statistical significance in 2019. However, those for 2017, 2018 and combined data showed statistical significance at 1% level. The results imply that when compared to Black/African children and holding other variables constant, White children had lower AF MPI in 2017, 2018 and combined data. These results are related to those of [Statistics South Africa \(2021\)](#) that revealed that Black children had a higher level of MPI compared to children in the other population groups.

The parental factors influencing AF MPI results are presented in Table 3. The son/daughter parameters showed statistical significance at 1% level for 2017, 2018, 2019 and combined data. The results imply that non-biological children in the household had higher levels of AF MPI in 2017, 2018, 2019 and combined data. The father alive parameter did not show statistical significance in 2019. However, the estimated parameters for 2017, 2018 and combined dataset showed statistical significance. The results presented in Table 3 imply that children whose fathers were alive had their lower AF MPI being in 2017, 2018, 2019 and combined data.

The father part of the household parameters showed statistical significance at 5% level in 2017, 2018, 2019 and combined data. The results in Table 3 imply that children who their father were part of the household had lower AF in 2017, 2018, 2019 and combined data. The mother alive parameters did not show statistical significance ( $p>0.10$ ) in 2017 and 2019. However, the estimated parameters for 2018 and combined dataset showed statistical significance at 5% level. The results imply that children whose mothers were alive had lower AF MPI in 2018 and combined dataset. Also, the parameters of mother residing in the same households with the child showed statistical significance at 1% level in 2017, 2018, 2019 and combined data. The results imply that children who were residing in the same households as their mothers had lower AF MPI in 2017, 2018, 2019 and combined data. The results are related to those of the UNICEF (2020) which also revealed that children with a mother or father alive have reduced chance of being multiply deprived.

In Table 3, the parameter of child's gender did not show statistical significance at 10% for 2018 and 2019. However, the estimated parameters showed statistical significance at 1% level for 2017 and combined dataset. The results imply that male children had lower AF MPI in 2017 and combined dataset. The results presented in Table 3 show child age parameters, The child age parameters did not show statistical significance in combined dataset. However, the estimated parameters showed statistical significance at 1% level for 2017, 2018 and 2019. These results imply that as a child's age increases, their AF MPI reduced in 2017,

2018, 2019 and combined data. These results are related to those of Aboaba et al. (2019) who found out that age had a negative relationship with poverty.

The domestic worker parameter showed statistical significance at 1% level in 2017, 2018, 2019 and combined data. The results imply that children whose households had domestic workers had higher AF MPI in 2017, 2018, 2019 and combined data. These findings might be associated with the circumstance that having to pay the worker(s) reduces the household purchasing power or per capita income. The household size parameters showed statistical significance at 5% level in 2018, 2019 and combined data. These results imply that as a household adds one additional member, child's AF MPI increased in 2018 and combined dataset and reduced in 2019. The results of this study are related to those of Makhalima (2020) who also revealed that the larger the household size, the higher the likelihood of a child being multidimensionally poor.

Income is a significant measure of wellbeing. The salaries/wages commission parameters showed statistical significance in 2017, 2018, 2019 and combined data. These results imply that children from household that were receiving salaries/wages commission had lower AF MPI in 2017, 2018, 2019 and combined data. The parameters of receipt of income from business did not show statistical significance in 2019 at 10% level. However, the estimated parameters showed statistical significance at 1% level in 2017, 2018 and combined dataset. These results imply that children from households that were earning income from businesses had lower AF MPI in 2017, 2018 and combined data. The remittances parameter did not show statistical significance in 2019. However, for 2017, 2018 and combined dataset the estimated parameters showed statistical significance at 1% level. These results imply that children from households that were receiving remittances had lower AF MPI in 2017, 2018 and combined data.

Pension's parameters in Table 3 did not show statistical significance for 2019. However, the estimated parameters showed statistical significance ( $p < 0.01$ ) for 2017, 2018 and combined dataset. The results imply that children from households that were receiving pensions had lower AF MPI in 2017, 2018 and combined data. These results are related to those of Aboaba et al. (2019) and Ashagidigbi et al. (2020) who revealed that people earning income had their poverty declining. The grants parameters did not show statistical significance in 2019. However, the estimated parameters for 2017, 2018 and combined dataset were statistically significant at 1% level. The results imply that children from households that were receiving grants had higher AF MPI in 2017, 2018 and combined data. These results might be associated to the circumstance that the social security grants money is not enough to be able to provide for their basic needs.

The social grants parameters were statistically significant at 1% level in 2017, 2018, 2019 and combined data. The results imply that children from households that were receiving social grants had lower AF MPI in 2017, 2018, 2019 and combined data. The sales of farming-products/services parameters were insignificant in 2017 and 2019. However, the estimated parameters were statistically significant at 1% level in 2018 and combined dataset. These results imply that children from households that realized incomes from sales of farming products/services had lower AF MPI reduced in 2018 and combined data. Other income sources parameters in were insignificant for 2019 and combined dataset. However, the estimated parameters were statistically significant at 1% level for 2017 and 2018. These results imply that children from households with other income sources had lower AF MPI in 2017 and 2018. The results on are related to those of [Makhalima \(2020\)](#) who revealed that children from households that were earning some form of income were less likely to be poor.

Table 3 also reveals that cultivation of backyard garden parameter was statistically insignificant at 10% level in 2019. However, the 2017, 2018 and combined dataset parameters were statistically significant at 1% level. These results imply that children whose households had backyard gardens had higher AF MPI in 2017, 2018 and combined data. The school garden parameters did not show statistical significance for 2018 and 2019. However, the estimated parameters showed statistical significance for 2017 and combined data. These results imply that children who had school gardens had higher AF MPI in 2017 and combined data. The communal garden parameters did not show statistical significance for 2017 and 2019. However, the estimated parameters showed statistical significance at 1% level for 2018 and combined dataset. These results imply that children who had communal gardens had higher AF MPI in 2018 and combined dataset.

## **5. CONCLUSIONS**

This study highlighted the dimensions of multidimensional deprivation among South African children using the Alkire-Foster approach. The study is making some contributions to literature by expanding the dimensional composition of poverty indicators covering ninety-one attributes. More importantly, a nationally representative samples for 2017 to 2019 were used. This ensure robustness of estimated poverty indicators, which had been further analyzed econometrically. The results indicated some critical highlights of provincial, racial and sectoral differences among the children's multidimensional poverty index (MPI). More importantly, several households' demographic and socio-economic variables had

some significant influences on children's multidimensional poverty. Due to the spatial differences in child's MPI, government needs to critically come up with strategies to facilitate achievement of some SDGs as a prerequisite for reducing child's multidimensional poverty. It is also evident that when compared to Black/African children, all population groups had their MPIs reduced. Moreover, compared to children from urban areas, children from traditional areas and farms had their AF MPI increased. It was also indicated that children whose household received grants had their MPI significantly increased. This underscores the fact that households on grants are often poor and may need further interventions to lift them out of poverty. The livelihood component of our variables revealed the role of remittances, business income, wage employment and other supplementary income sources in facilitating households' welfare and child's poverty reduction. There is therefore the need for interventions for the promotion of income generating opportunities to enhance households' welfare. Moreover, poverty reduction interventions in South Africa should marginally address the needs of different geography types with farm and traditional areas requiring top priorities. There is also the need for racial consideration given that Black children showed a higher level of deprivation in multidimensional poverty. Finally, the role of biological parents in raising healthy and happy children have been underscored in the results with significant reduction in MPI. Therefore, promotion of cultural and institutional mandates for enhancing the presence of biological parents in child's household holds significant prospects for reducing MPI.

### **Limitations of the Study**

This study had some limitations. The main limitation concerns missing variables such as maternal education. In some other instances, some important attributes like child mortality were missing.

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### **Conflict of interests**

The authors declare there is no conflict of interest.

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## ОБЈАШЊЕЊЕ КОРЕЛАЦИЈА МУЛТИДИМЕНЗИОНАЛНОГ СИРОМАШТВА ДЈЕТЕТА У ЈУЖНОЈ АФРИЦИ КОРИШЋЕЊЕМ ПРИСТУПА АЛКИРЕ-ФОСТЕР

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### Сажетак

Сиромаштво дјеце остаје једна од главних брига у циљевима одрживог развоја (СДГ). Ова студија анализира је детерминанте вишедимензионалног сиромаштва дјеце у Јужној Африци. Коришћени су подаци Опште анкете о домаћинствима (ГХС) из 2017, 2018. и 2019. године. Алкире-Фостерова методологија је коришћена за израчунавање индекса мултидимензионалног сиромаштва дјеце (МПИ), а корелације су анализирани коришћеном Тобитове регресије. Резултати су открили да су неки регионални фактори и фактори подручја пребивалишта значајно утицали ( $p < 0,05$ ) на МПИ у свим периодима. Такође, код обојене, индијско/азијске и бијеле дјеце, те биолошке дјеце главе домаћинства значајно су смањени МПИ ( $p < 0,05$ ). Коначно, политике и програми за рјешавање проблема сиромаштва дјеце морају, између осталог, бити осјетљиви на неке расне, покрајинске и родне факторе. Стога се препоручује да влада критички приступи стратегијама за олакшавање постизања неких циљева одрживог развоја, као предуслова за смањење вишедимензионалног сиромаштва дјеце.

**Кључне ријечи:** *сиромаштво дјеце, индекс вишедимензионалног сиромаштва, Алкире-Фостер, Јужна Африка*



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**ПРЕГЛЕДНИ НАУЧНИ ЧЛАНЦИ**  
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# INFLATION AND ECONOMIC GROWTH TRENDS: GLOBAL AND SOUTH AFRICAN PERSPECTIVES

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## ABSTRACT

This paper explores the global inflation and economic growth trends, with a special focus on South Africa, from the 1970s – the period marked by the crumbling of the Bretton Woods system and the ensuing stagflation – to 2022. Our exploration reveals that global inflation is driven mainly by advanced economies, and there are signs of a negative correlation between the levels of income and inflation rates. We observed a structural break in global inflation in 1995 when inflation substantially decreased and became more stable than before. Our analysis links this structural break and stability in inflation to the emergence of strict monetary policy regimes like inflation targeting. Emerging and developing economies experienced a substantial decrease in inflation after they adopted inflation-targeting policies, as compared to advanced economies. In contrast, AEs benefitted from a significant rise in their economic growth. For South Africa, the trends in inflation and economic growth displayed a different picture. Although negligibly, South Africa's inflation rose three years after adopting inflation targeting. During the same period, the South Africa experienced rising economic growth. To better understand the relationship between inflation and economic growth, we suggest the use of extensive data and models to investigate the structural breaks experienced.

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## 1. INTRODUCTION

Given the emergence of the Covid-19 pandemic, and the ensuing results thereof, inflation has once again become a topical issue. It is rearing its ugly head among a host of other economic evils, such as sluggish economic growth and rising unemployment. Despite other economic evils, what makes the issue of inflation topical is its role in destabilizing the financial sector directly and thereby

exacerbating the other economic ills. Without a doubt, failure to control inflation will lead to the inability to control all other economic variables (Brown, 2001). Inflation is known to erode the purchasing power of a currency over time, which inflates the costs of living.

In recovery efforts against the Covid-19 pandemic, fiscal and monetary stimuli have become prevalent, which resulted in overheating of the economies, affecting mainly the Emerging Markets and Developing Economies (EMDEs) (Reinhart & Von Luckner, 2022). In nearly half of 34 AEs and 78 out of 109 EMDEs as classified by the International Monetary Fund (IMF), annual inflation averages for 2021 exceeded 5% - a trend last experienced more than 20 years ago (Reinhart & Von Luckner, 2022). Such an alarming rise in inflation makes the issue timely for our study. However, it is not only inflation that is worsening but also economic growth. The World Bank (2022) warns there is an impending danger of an ensuing stagflation. The damage is projected to negatively affect the EMDEs and low-income economies the most.

Given this background, one question arises, is this the return of the 1970s stagflation? Could the trends be similar? This necessitates exploring the inflation trends from 1970 to 2022 in our study. Further, given that inflation is accelerating faster in EMDEs than in AEs, thereby driving global inflationary trends, we find it more prudent to devote attention to EMDEs. Against this background, this paper explores the global inflation-growth trends between 1970 and 2022. Firstly, the choice of the period is motivated by data availability and, secondly, by 1970 as the starting point given the stagflation of the era, which is compared to the events occurring post Covid-19.

Our paper also gives some attention to the South African inflation, inflation uncertainty and economic growth trends and dynamics. Our choice for South Africa is backed by three reasons. First, South Africa is an emerging economy grappled with rising inflation and sluggish growth (see International Monetary Fund, 2023). This is not the case with other emerging economies, like China and India for instance, which are experiencing high growth rates (see World Economic Forum, 2023). First, South Africa's current economic outlook mirrors the stagflation of the 1970s which justifies its inclusion in the study. Second, South Africa has one of the leading financial sectors in Africa, which exposes other African economies to any changes within the South African economy (International Monetary Fund (IMF) 2014). Third, South Africa is a member state of the Common Monetary Area <sup>1</sup>(CMA) that uses the South African rand as

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<sup>1</sup> The Common Monetary Area is a monetary union made up of South Africa, Namibia, Eswatini and Lesotho. All the member states have their currencies pegged to the South African rand at 1:1 parity and also recognize the rand as a legal tender.

the legal tender, exposing the member states to the South African monetary and real variables.

Although a discussion of the dynamics between inflation and economic growth is a well-researched topic, our paper seeks to enrich literature in various ways. We admit that inflation and economic growth nexus is a well-studied topic in economics. At a global level, the studies that are closer to ours are those by [Barro \(2013\)](#) and [Sidrauski \(1967\)](#). We add our voice to the discourse through providing trend analysis of global inflation and economic growth between 1970 and 2022. We also explore the inflation-economic growth dynamics along different income levels. Furthermore, we investigate the trends for structural breaks using a global sample and seek to explain the likely causes of the major structural breaks in inflation between 1970 and 2022. We also compare the changes in inflation and economic growth three years before and three years after the adoption of inflation targeting to examine whether there is evidence that it contributed to the eventual decline in the global inflation rates after 1995 and associated changes in economic growth.

For South Africa, studies on the inflation-economic growth nexus also exist. However, most of these studies analyze South Africa in isolation from other economies (see, for example, [Hodge, 2006](#); [Odhiambo, 2013](#); [Phiri, 2018](#); [Mandeya and Ho, 2021](#)). Our study complements these studies through an analysis of the inflation, inflation uncertainty and economic growth trends for South Africa in relation to other EMDE countries. In this fashion, we seek to explore if the trends move in tandem with other EMDEs.

The paper is organized as follows. The second section explored the global inflation and growth trends between 1970 and 2022. The third section presents the episodes of inflation, inflation uncertainty and economic growth, both before the adoption of inflation targeting and after the adoption. Section 4 examines if South African trends mirror the EMDE trends, while section 5 concludes the study.

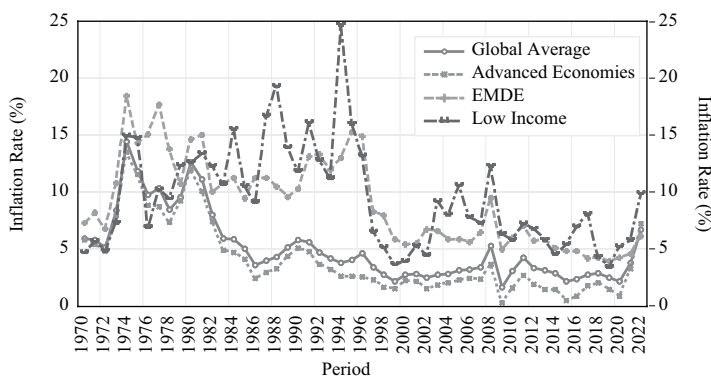
## **2. GLOBAL INFLATION AND ECONOMIC GROWTH TRENDS: 1970 – 2022**

There is compelling evidence suggesting a significant decline in the purchasing power of global currencies since the collapse of the Bretton Woods agreement. This is evident when looking at the Big Mac Index published by [The Economist \(2023\)](#). There is no shortage of explanations for this decrease in the purchasing power of global currencies. The first interpretation is that during Bretton Woods, central banks pursued the gold standard rules of the game where the purchasing power of the currencies was a priority for policy ([Bordo & Eichengreen, 2008](#)).

The second explanation cites the persistence of above-zero inflation rates, as allowed by the monetary policies that accommodate inflation pressures, guided by the notion that permanently higher output levels can be attained by accepting above-zero inflation rates. There is an interesting insight to be gained from each of these hypotheses. We do not dispute their validity nor run a horserace between them. The focus of this section is drawn to the second interpretation, with a particular emphasis on the global inflationary trends from 1970 (as limited by data availability) to 2022. First, an analysis of the global inflationary trends will be given in relation to the different development levels, followed by an insight into the global inflation-growth trends.

### 2.1. Global inflationary trends (1970 – 2022)

The average rates of global inflation have been above zero since 1970. This is sustained mainly by the fact that policymakers and economists believe that the opposite of it, that is deflation, poses more costs to the economy, such as an increase in the real value of debt in the case of unexpected deflation, triggering or aggravating recessions hence leading to deflationary spirals (Blanchard, Dell’Ariccia & Mauro, 2010; Krugman, 2010). Figure 1 illustrates the inflationary trends between 1970 and 2022, with a breakdown of the global economy, advanced economies, low-income economies, and Emerging Markets and Developing Economies (EMDE). The data used was derived from the World Bank database by Jongrim, Ayhan and Franziska (2023). It is based on a sample of 196 countries (virtually all countries – making it a complete population). Gross Domestic Product (GDP) weighted averages of inflation were used in the illustration.



**Figure 1.** Global inflation trends (GDP-weighted averages) in line with levels of development: 1970 - 2022

Source: Authors' computations with data from Jongrim, Ayhan and Franziska (2023)

Four patterns can be observed from this dataset. First, throughout the period illustrated in Figure 1, it is noticeable that the levels of inflation and economic development correlate. Interestingly, the lower the level of development, the higher the levels of inflation and the inverse is true, where the higher the level of development, the lower the levels of inflation. Institutional failures and weaknesses (poor central bank and government policies) and the pressure to fight a host of macroeconomic issues such as high unemployment and poverty reduction can be some of the reasons attributed to the negative correlation between the levels of development and the higher levels of inflation.

The second observation shows that the global inflationary trends are driven mainly by advanced economies. For instance, the turning points coincide at best, or at least advanced economies precede the global inflationary trends. Since the data used was GDP-weighted, one may argue that this is due to the disproportionately high share of advanced economies' income in relation to the global income.

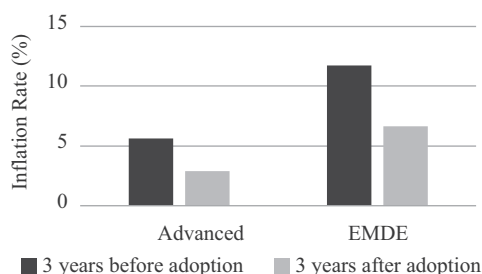
The third observation points to the stability or volatility of inflation rates in relation to the level of development or income. The data illustrate that inflation volatility is negatively related to the level of development. This is visible in the number of turning points in the data. The lower the income, the higher the data turning points. Again, institutional weaknesses and the pressure from several macroeconomic issues can be cited as the prime reasons. The changes in the inflation rates for low-income countries are very volatile, exhibiting sharp changes, for instance, the sharp declines and rises from 1986 to 1987 and from 1994 to 1997.

The fourth observation illustrates several structural breaks in inflation in 1974, 1986, 1995 and 2008. We can link 1974 to the stagflation of the 1970s. In 1986, inflation was in check due to a sharp drop in energy prices (see [Howell, Burns & Clem, 1987](#)), while 2008 can be linked to 2007/8 global financial crisis. Of these breaks, the most notable one worthy of scrutiny is 1995 for two reasons. First, the improvements in inflation after an increase were very sharp compared to other periods and second, inflation was, on average, strikingly higher before 1995 and lower after 1995. What could explain such a break in the rates of inflation?

While a point of contention among scholars can be on the factors that led to this striking improvement in inflation, for certain, a point of agreement is that this was not a shock but an enduring factor. The improvements in macroeconomic policies aimed at taming down prices globally, transmitted through globalisation, are cited as one of the reasons behind decreasing inflation in the mid-90s ([McLeay & Tenreyro, 2019](#); [Del Negro, Lenza, Primiceri & Tambalotti, 2020](#)).

Globalisation increased, which stimulated competition for global markets, drawing prices down. Simultaneously, there was a growing momentum towards the adoption of inflation targeting policies by both advanced and the emerging economies, which tied down inflation expectations (Rose, 2007).

As it usually happens, the advanced economies adopted inflation targeting in its early years, with New Zealand in the pioneering role in 1990, then gradually spreading to the emerging markets (Taylor, 2019). In exploring the reasons behind the relatively low and stable global inflation rates from 1995, it appears that there is some trace of evidence to the adoption of inflation targeting. In substantiating this claim, we may need to illustrate the marginal changes in inflation after adopting inflation targeting, comparing advanced and emerging markets. Figure 2 below illustrates the changes in average inflation in inflation targeting countries.



**Figure 2.** Changes in inflation in inflation-targeting countries

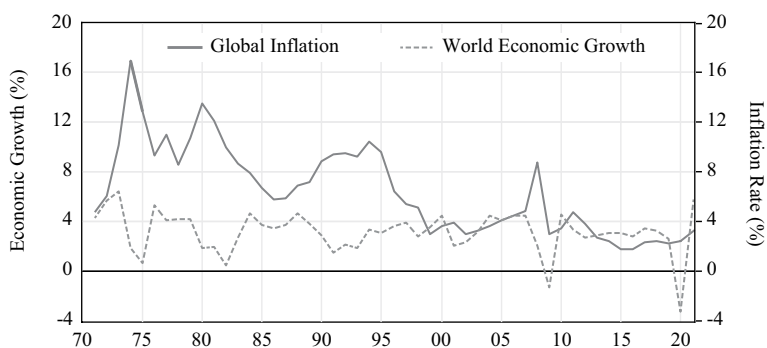
Source: Authors' computations with data from the [World Bank \(2022\)](#)

In Figure 2, we draw an analogy of the impact of inflation targeting on advanced economies vis-à-vis EMDEs. We compiled a sample of countries that adopted inflation-targeting regimes, made up of 12 advanced economies and 15 EMDEs. It can be observed from Figure 2 that the average inflation rate substantially decreased within three years after the adoption of inflation targeting, as compared to the average three years before the policy adoption. Our motivation for three years is to allow time for the impact lag of the monetary policies. For EMDEs, inflation declined by 5.08 percentage points, which is higher than the decrease in advanced economies, having a reduction of 2.74 percentage points. Because the decline in inflation after the adoption of inflation targeting is higher for the EMDEs, compared to advanced economies, it could be that EMDEs contributed immensely to the decline in the inflation rates in 1995. This motivates further scrutiny of inflation dynamics in EMDEs, especially concerning changes in monetary policy regimes. To fully understand the effects of inflation targeting, we will also investigate its impact on economic growth. On the first account,

we detail the global inflation-growth trends, and then in closing, the effects of inflation targeting on economic growth will be analysed.

### 2.2. Insights into the global inflation-growth trends (1970 – 2022)

Directed by the second explanation that, after the collapse of the Bretton Woods Agreement, inflation has been persistently above zero for fear of the opposite, that is deflations, as well as the notion that permanently higher rates of growth can only be accommodated by positive rates of inflation, an analysis of the inflation-growth trends will be explored. Figure 3 illustrates the global inflation-growth trends between 1970 and 2022.



**Figure 3.** Global Inflation-Growth trends (1970 – 2022)

Source: Authors’ computations with data from [Jongrim, Ayhan & Franziska \(2023\)](#)

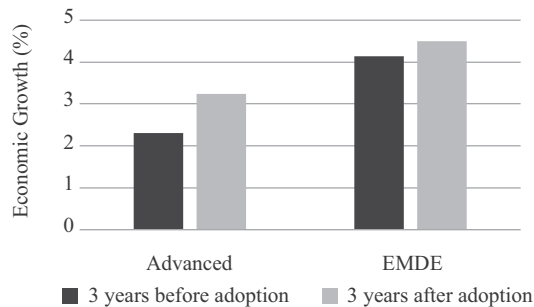
The most remarkable observation from this dataset is that since 1973, there have been sharp contrasts between the inflation rate and the economic growth rates. It can be noticed that rising rates of inflation are associated with declining rates of economic growth, for instance, around 1973 and around 2009.

Between 1972 and 1976, the world experienced a stagflation when inflation and unemployment were on a rampant increase, with contracting economic production. This period defied the Phillips curve hypothesis, which primed on the inflation-unemployment trade-off. Arab oil embargoes and the resultant rise in crude oil prices, high budget deficits and the collapse of the Bretton Woods agreement are cited as some of the causes of this stagflation ([Goutsmedt, 2021](#); [Rehn, 2022](#)). The world saw inflation decelerating while economic growth improved in the periods approaching 1985 as governments and policymakers were devising policies to counteract the effects of the deflation.

Sharp increases in inflation also coincided with 2007/8 global financial crisis. Over the same period, the global economy contracted considerably, recording

negative economic growth rates. The economic activities were revived by the resurgence of Keynesian economics throughout the world, with various governments increasing their expenditure. The emergence of the Covid-19 pandemic resulted in a record contraction in the global economic growth in 2020, shedding nearly 4% of economic growth.

In line with the fourth observation identified in section 2.1, the argument that the turning point in global inflation is credited to the adoption of inflation targeting will not be complete without also illustrating its effect on economic growth. We would like to determine if the trends are similar to our findings in Figure 3. Accordingly, Figure 4 illustrates the changes in average economic growth in countries that adopted inflation targeting three years before and three years after.



**Figure 4.** Changes in economic growth in inflation targeting countries

Source: Authors' computations with data from the [World Bank \(2022\)](#)

At first glance, the adoption of inflation targeting appears to have boosted economic growth by a large margin in advanced economies and there is hardly any difference for the EMDEs, as illustrated in Figure 4. Although such simple comparisons can be misleading due to the host of other factors that affect economic growth, there is a possibility of a weak relationship between the adoption of inflation-targeting and economic growth in EMDEs.

In summary, trends illustrate that the adoption of inflation targeting ties down inflation by a more significant margin in EMDEs relative to advanced economies. However, the impact on economic growth is lesser in EMDEs compared to advanced economies, notwithstanding the fact that the trends on economic growth are not something to rely on, given a plethora of factors affecting economic growth.

After the adoption of inflation targeting, EMDE countries recorded decelerating inflation and low but stable growth. However, this has not been the case with South

Africa, despite being also an EMDE. Instead, after adopting inflation targeting in 2000, the South African trends seem to illustrate decelerating inflation, albeit with stagnant growth. This anomaly further justifies further analysis of the South African trends. Accordingly, the debate will only complete after exploring the South African trends in more or less the same fashion we investigated the global dynamics. Apart from the fact that South Africa resembles more or less in the same trends as the collective EMDEs, South Africa's influential role played by the South African Rand as the anchoring currency in the CMA and its monetary policies further motivate the choice of South Africa. Accordingly, the following sections draw focus on South Africa.

### 3. SOUTH AFRICA'S INFLATION, INFLATION UNCERTAINTY AND ECONOMIC GROWTH TRENDS

In line with the trends discovered in section 2, this section further explores the inflation, inflation uncertainty and economic growth trends for South Africa in line with different monetary policy regimes adopted between 1970 and 2022. The monetary policy landscape is dominated by numerous policies before 2000 and inflation targeting since 2000. Table 1 illustrates the evolution of monetary policies and the associated economic growth, inflation and inflation uncertainty averages in South Africa since 1970, which shows that mainly five monetary policy regimes were pursued in South Africa until 2022.

**Table 1.** South Africa's Monetary Policy Regimes: 1970 - 2022

Period	Monetary Policy Regime	Economic growth (Average)	Inflation rate (Average)	Inflation Uncertainty (Average)
1970 - 81	Liquid asset ratio-based system	3.71%	10.66%	404.35%
1981 - 85	Mixed system during the transition	1.42%	14%	346.95%
1986 - 98	Monetary targeting	1.55%	12.02%	289.03%
1998 - 99	Monetary targeting in conjunction with informal core-inflation targeting	1.45%	6%	368.10%
2000 - 22	Inflation targeting	2.36%	5.49%	197.61%

Source: [Casteleijn \(2001\)](#) for monetary policy frameworks, and economic growth, inflation and inflation uncertainty figures are authors' computations with data from SARB quarterly bulletins.

South Africa pursued dominantly direct intervention monetary policies in the 1970s but evolved over time towards market-oriented policies towards the late 1990s ([Van Der Merwe, 1997](#)). Section 3.1 explains the evolution of these policies in line with the inflation, inflation uncertainty and economic growth trends from 1970 to 2022.

### 3.1. Monetary policy frameworks and the economic growth, inflation and inflation uncertainty trends before inflation targeting (1970 – 1999)

#### 3.1.1. Trends during the liquid asset ratio-based regime (1970 – 1981)

Policies of the 1970s were characterised with direct interventions in the monetary sector and gradually evolved toward market-oriented policies. As the system changed, it also coincided with the transition from the pound to the South African rand as the official currency and legal tender in 1961. During this era, the regime exercised much emphasis on liquid asset requirements, rendering interest rates insignificant. Further, direct intervention measures were employed to directly tie down the growth of money supply, and indirectly the effects were transmitted ultimately to dampen inflation (Casteleijn, 2001). The average inflation rate between 1970 and 1981 was 10.66%, associated with an economic growth rate of 3.71%.

In the early 1970s, housing and vegetable inflation increased sharply, which drove inflation uncontrollably (SARB, 1972). The situation was worsened by the Arab world’s oil embargos on the United States and Netherlands in 1973 (Wakeford, 2006). That was not the peak of oil price woes as the Organisation of Petroleum Exporting Countries (OPEC) restricted oil production in 1973, which pushed the price of crude oil by more than 400% (Van Der Merwe & Meijer, 1990). Figure 6 illustrates the trends between 1970 and 2022. As illustrated, the trends between 1970 and 1981 show a sharp increase in inflation uncertainty, consistent with Friedman’s (1977) hypothesis of inflation being the driver of inflation uncertainty.

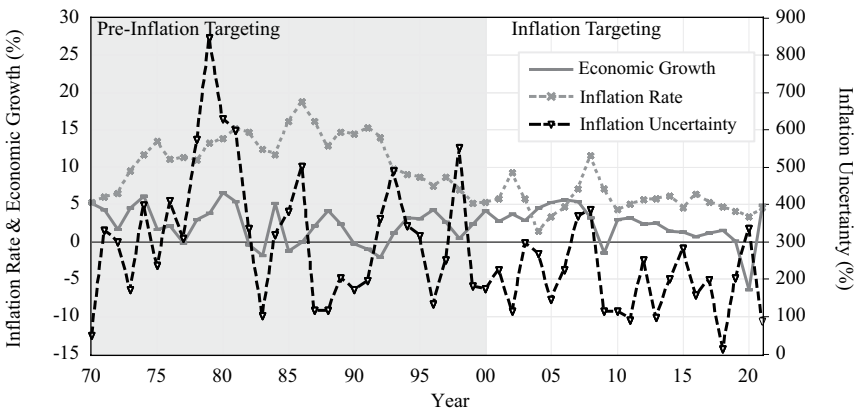


Figure 5. Inflation, inflation uncertainty and economic growth trends (1970 - 2022)

Source: Authors’ computations with SARB Quarterly Bulletin data.

Inflation was on an upward trend throughout the early 1980s, associated with rises in inflation uncertainty. This is less explained by the internal factors, and mainly by external factors such as rising international oil prices as well as oil import embargoes on the apartheid<sup>2</sup> government in 1979 (Crawford & Klotz, 1999). The inflation level remained high until the transition to a cash-reserve regime in 1981.

### 3.1.2 Trends during the transition period (1981 – 1985)

The SARB could not dwell any longer on direct intervention mechanisms given the rampant inflation and had to shift towards market-oriented policies (Mollentze, 2000). With the De Kock commission under way, efforts to liberalise the financial sector were echoed, and started gathering momentum (see De Kock 1978; 1985). The De Kock commission argued for the development of financial markets as a necessary condition and platform for not only financial stability but also long-run growth. The commission advised against direct intervention mechanisms and vied for market-determined interest rates. In turn, the economy moved towards market-related measures with less regulations, and greater financial liberalisation, which effect from 1981 (Moolman & Du Toit, 2004).

The measures were also extended to the international capital markets where capital movements were eased by SARB (Odhiambo, 2011). To influence ongoing interest rates, the system employed the use of the discount rate which regulated the cost of overnight collateralised lending. While the interest rates were controlled indirectly by the discount rate, the supply of credit was influenced by open market operations, which was expected to regulate money supply, and the inflation rate by an estimated lag of over twelve months (Aron & Muellbauer, 2006).

However, all these measures were in vain since inflation kept rising, with the average inflation increasing by more than double the previous regime's average recording an average of 14%. The sanctions on South Africa forced production costs up, which fuelled the inflation further. However, Chicheke (2009) offered a different view, rather arguing that that it was Governor Gerhard De Kock's poor monetary policy performance that left inflation high.

Consistent with the Friedman hypothesis, inflation uncertainty rose during this period, marking a record 346.95%. Economic growth decreased substantially to

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2 Apartheid, which was in existence between 1940 and 1994, was an institutionalised system in South Africa and Namibia that vied for racial discrimination, prioritizing the white minorities while disadvantaging the non-white majority.

an average of 1.42%. Economic sanctions on South Africa can be linked to this decline in economic growth.

### **3.1.3 Trends during the monetary targeting regime (1986 – 1999)**

The De Kock Commission report was finalised and commissioned in 1985, bringing with it a number of recommendations (see [De Kock, 1985](#)). The first step towards implementation of the De Kock commission was the adoption of the monetary targeting in the mid-1980s, which relied on the M3<sup>3</sup> as the nominal anchor for inflation ([Stals, 1997](#)). The belief was that M3 money supply has a direct influence of the creation of bank credits, hence the value of the rand. However, the reserve bank did not create any ways to account itself to the public in case of failure to meet its targets ([Aron & Muellbauer, 2006](#)). Because the direct relationship between money supply and inflation did not exist in South Africa or was weakened by the structural transitions in the financial system, and the velocity of money supply was unstable, monetary targeting did not work and it was abandoned ([Casteleijn, 2001](#)).

The authorities, first, failed to keep inflation stable, and second, failed to keep the growth of money supply within the targets in nine out of 14 years. The failure to control inflation was mainly due to the lack of a structural relationship between money supply and inflation while the failure to control money supply was due to the easing of sanctions on South Africa, which resulted in capital inflows and the subsequent rise in money supply. The actual growth of money supply breached the targets rampantly and continuously from 1994 onwards.

The lifting of sanctions and weak monetary stance coupled with the lack of empirical evidence in support of monetary targeting were the main contributors to the failure by the policy of control inflation ([Moll, 1999](#); [Van Der Merwe, 1997](#)). The lifting of sanctions and the subsequent rise in demand for domestic products contributed to the low but steady rise in economic growth, to an average of 1.61% during this period. From these trends, one interesting observation can be noticed that inflation started to decline in 1992 owing to the partial adoption of the informal inflation targeting from 1992 ([Van Der Merwe, 2004](#)).

### **3.1.4 Trends during the inflation targeting regime (2000 – 2022)**

Because the monetary targeting approach did not yield the desired results, the SARB decided to switch to formal inflation targeting from 2000 when they

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3 M3 is the most comprehensive measure of money in South Africa, which includes in it all other definitions of money as well as long term balances.

used the inflation rate of 3-6% as the nominal anchor ([South African National Treasury, 2000](#)). Although the framework was adopted in 2000, the target was supposed to be met by 2002, with a clause that was announced in 2001 allowing temporary deviation from the target in cases of exogenous supply shocks.

South Africa adopted inflation targeting framework with the hope that it will tie down inflation expectations and achieve price stability which will then create conditions conducive for economic growth. Price stability is crucial to achieve for two main reasons. First basis was to preserve the savings from the scourge of rising inflation, thus cushioning the poor from inflation while, second was to anchor inflation expectations to boost confidence in the economy and promote economic growth prospects ([StatsSA, 2016](#); [Vermeulen, 2020](#)).

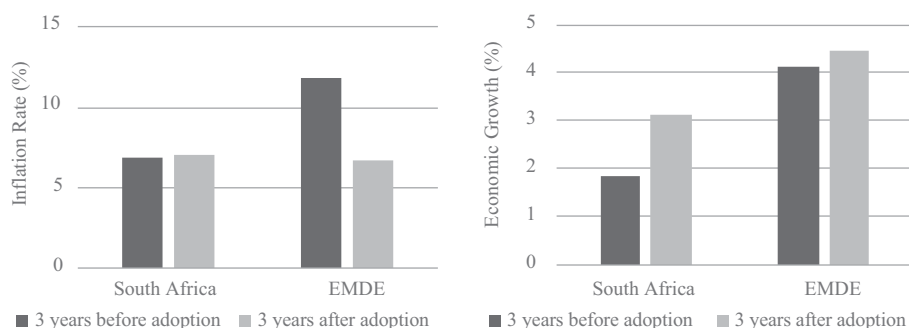
Figure 6 depicts a downward trend in inflation as well as inflation uncertainty after the adoption of inflation targeting. During this period, inflation recorded an average of 5.49%, which falls within the official inflation targets. Inflation uncertainty has decreased since the inflation targeting framework's inception. This ties down speculation while boosts investor confidence. Inflation uncertainty recorded an average rate of 197.61%. Both inflation and inflation uncertainty recorded the lowest averages under inflation targeting, which corroborates with [Mandeya and Ho \(2021\)](#) findings that inflation targeting managed to stir the South African economy towards price stability.

Although inflation targeting has mainly been rated a success, there are periods where the targets were breached. For instance, in 2002 inflation rose to more than 9% which threatened its credibility ([StatsSA, 2016](#)). However, the failure cannot be attributed to SARB, but rather, to external factors such as the rise in the price of oil, as well as adverse weather conditions ([Akinboade, Siebrits & Niedermeier, 2004](#)). Also, another breach coincided with the global financial crisis of 2007/8 and extended to 2009, owing to the crisis as well as increases in the prices of food, electricity and oil (see [SARB, 2008](#)).

South Africa experienced stunted economic growth during this period, recording an average rate of 2.36%. Since averages are affected by outliers, this low rate of average economic growth can be attributed to the emergence of Covid-19 in 2020 and the associated economic lockdowns. The economy of South Africa in 2020 contracted by 6.4% as a result. Apart from the impact of Covid-19 on production and economic growth, 2007/8 global financial crisis which hit the South African shores in 2009, also contracted the economy by 1.5%.

#### 4. DOES SOUTH AFRICAN INFLATION-ECONOMIC GROWTH DYNAMICS RESEMBLE THE EMDE TRENDS?

Having established that the South African trends differ from the EMDE trends, this section explores the changes in inflation and economic growth three years after the adoption of inflation targeting, in comparison to three years before the adoption. We perform this operation using the same approach as we did in section 2. In this way, we illustrate the changes in the average inflation rate and economic growth in South Africa three years before the adoption of inflation targeting and three years after, shown in Figure 6. We make this comparison in light of the EMDE economies' illustrations in section 2.



**Figure 6.** Changes in the average inflation rates and economic growth, three years before the adoption of inflation targeting and three years after adoption.

Source: Authors' computations with data from the [World Bank \(2022\)](#)

Regarding changes in the inflation rate, the trends seem to illustrate that South Africa followed its own trend. While the EMDEs showed a substantial decrease in the inflation rates three years after policy adoption, on the contrary, South Africa showed hardly any changes, with a negligible rise in inflation. This is because South Africa experienced inflationary pressures sharply in the first few months of 2002 largely as a result of the depreciation of the South African Rand in the last half of 2001 as well as rising expectations of price increases (SARB, 2002). However, existing empirical studies involving longer data spans suggest otherwise; for example, [Mandeya and Ho \(2021\)](#) find evidence in favour of inflation targeting effectiveness in South Africa.

Regarding economic growth, the trends seem to be more consistent with advanced economies than with EMDEs. South Africa recorded a substantial rise in economic growth three years after the adoption of inflation targeting, compared to the gains by the advanced economies, which is relatively higher

than EMDEs. However, we still raise the same objection that this rise may not be attributable to inflation targeting but to other factors that may affect economic growth unless this notion stands an empirical or sensitivity test.

## 5. CONCLUSIONS

This paper explored the global inflation and economic growth trends from 1970 to 2022. The observed trends illustrate the signs of a negative correlation between income and inflation pointing out that global inflation is mainly driven by inflation from advanced economies. Stability in inflation rates decreases with the decrease in incomes across countries. We further observed that, despite inflation rates assuming different turning points over the period under study, the one of interest is 1995 for two reasons. First, the improvements in inflation after an increase in inflation were very sharp compared to other periods and last, but more importantly, inflation was on average strikingly higher before 1995 and lower after 1995. We sought reasons behind this, and suspicions are on the emergence of credible policies against inflation, with inflation-targeting at the centre. We then drew an analogy of countries that adopted the inflation-targeting policy. Interestingly, the changes in inflation three years after the adoption of inflation targeting were quite substantial for EMDEs compared to advanced economies, which attracted our interest more towards the EMDEs. Even though there is a substantial number of EMDEs, we chose to focus on South Africa. At a first glance, South Africa seems to mirror the same trends, and given its influential role in Africa, and more especially to the CMA, we further explored its trends. An observation of longer data trends seems to show inflation stabilising. However, running the exact comparisons on the EMDEs narrates a different story. Instead, inflationary trends observe a different trajectory to that of other EMDEs three years after the adoption of inflation targeting as it showed a negligible increase in South Africa, compared to a considerable decline for EMDEs. Again, the trends for economic growth favour more of the advanced economies than the EMDEs since South Africa's economic growth improved considerably while the EMDEs showed a slight improvement. However, we recommend that these findings stand robustness tests with long data spans and that other variables that may affect economic growth should be considered.

### **Conflict of interests**

The authors declare there is no conflict of interest.

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## ТРЕНДОВИ ИНФЛАЦИЈЕ И ЕКОНОМСКОГ РАСТА: ГЛОБАЛНЕ И ЈУЖНОАФРИЧКЕ ПЕРСПЕКТИВЕ

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### САЖЕТАК

Овај рад истражује трендове глобалне инфлације и економског раста, са посебним фокусом на Јужну Африку од 70-их година прошлог вијека, периода обиљеженог распадом Бретонвудског система и стагфлацијом која је уследила, до 2022. године. Наше истраживање открива да је глобална инфлација вођена углавном од стране напредних економија; а постоје знаци негативне корелације између нивоа дохотка и стопа инфлације. Уочили смо структурални прекид глобалне инфлације 1995. године када се инфлација значајно смањила и постала стабилнија него раније. Наша анализа повезује овај структурни прекид и стабилност инфлације са појавом строгах режима монетарне политике као што је таргетирање инфлације. Економије у успону и економије у развоју доживјеле су значајно смањење инфлације након што су усвојиле политике таргетирања инфлације, у поређењу са развијеним економијама. Насупрот томе, АЕ су имале користи од значајног пораста њиховог економског раста. За Јужноафричку Републику, трендови инфлације и економског раста показали су другачију слику. Иако занемарљиво, инфлација у Јужноафричкој Републици је порасла три године након усвајања политике таргетирања инфлације. Током истог периода, Јужноафричка Република је доживјела убрзан економски раст. Да бисмо боље разумјели однос између инфлације и економског раста, предлажемо коришћење опсежних података и модела за истраживање структуралних ломова.

**Кључне ријечи:** *инфлација, економски раст, таргетирање инфлације, глобални трендови, Јужна Африка.*



# THE QUALITY OF INSTITUTIONS IN THE COUNTRIES OF SOUTHEAST EUROPE: A COMPARISON WITH THE MEMBERS OF THE EUROPEAN UNION

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## ABSTRACT

The purpose of this paper is to show the importance of the development of institutions and the institutional environment in a globalized world. The methodology used to measure the quality of institutions are components of the World Governance Indicators Database developed by Kaufmann, Kraay & Mastruzzi (2010) where we performed a comparative analysis of the quality of institutions for three samples of countries, the countries of Southeast Europe (countries of the region), the newest members of the EU and the countries of Central Europe and the Baltic States. After that, we showed the degree of correlation between economic development measured by GDP per capita in purchasing power parity and each of the six indicators of the quality of institutions. The results show that the countries of the region lag significantly behind the countries we call New Europe (Central Europe and the Baltics), but also lag behind the youngest members of the European Union in terms of the quality of institutions, i.e. the rules of the game. When it comes to correlation between economic development and institutional environment, for all 6 indicators of institutional environment, a strong and positive correlation was shown, especially between the rule of law and economic development. The conclusion is that the countries of the region must strengthen the rule of law, fight against institutional corruption, ensure political stability so that the economic standard of their citizens could improve.

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## 1. INTRODUCTION

Many authors investigate the relationship between the quality of institutions and economic growth, and in addition to the basic determinants of economic growth such as the accumulation of physical and human capital and technological changes, they believe that institutions are one of the key factors of growth (Rodrik et al., 2002, p. 2). Positive relationship between the quality of institutions and economic growth and development has been proven by many researchers (Acquah et al., 2023; Acemoglu, Johnson & Robinson, 2004; Acemoglu & Robinson, 2010; Eicher & Leukert, 2009; Kanani & Larizza, 2021; Knack & Keefer, 1995; Hall and Jones, 1998; La Porta et al., 1998; Nikzad, 2021; Uddin et al., 2023).

New institutional economy is based on the teachings of Douglas North, a researcher who received the Nobel Prize in 1990 for his capital work “Institutions, Institutional Change and Economic Performance”. My research of the impact of the development and quality of the institutional environment on economic development is based on Douglas North’s concept of institutions and institutional environment.

As a rule, institutions should be distinguished from organizations. According to the postulates of the New Institutional Economy, institutions are the rules of the game, written and unwritten rules of the game that define political, economic and overall social relations, while organizations are only subjects that take care of implementing the rules of the game.

One practical definition of institutions is provided by Lin and Nugent (1995, pp. 2306-2307) who define institutions as a set of human-designed rules of behaviour that shape the interactions of human beings, in part by helping them form expectations of what other people will do.

Social infrastructure is a term coined by Hall and Jones (1998, p.2) who explored the role of institutions in economic development. According to them, social infrastructure includes institutions and government policies that determine the economic environment within which individuals accumulate skills, and firms accumulate capital and produce output. In addition to researching the connection between institutions and economic development, some authors also investigate the connection between institutions and the development of entrepreneurship, which also opens a new field and reveals new perspectives on the importance of the quality of institutions in the overall development of the country (Ferreira et al, 2023).

In several earlier works, we investigated connection between institutions and economic development, reaching similar conclusions. What is specific to this work is that over time, the countries of our region has still lagged behind not only the countries of Central Europe and the Baltic States, but also the countries that were last admitted to the membership of the European Union, such as Croatia, Bulgaria and Romania.

Globalization, which experienced its momentum after the fall of the Berlin Wall, marked the beginning of the rise for the countries of Central Europe and the Baltics, which after joining the European Union really experienced economic growth and ensured their population a decent life and an orderly system. We could state without exaggeration that these countries have completed their transition process (see EBRD Transition Report 2022-2023).

The claim that was written a long time ago in the Transition Report published by the European Bank for Reconstruction and Development is still evident for the countries of the region, namely that they are stuck in transition (EBRD, 2013).

## 2. MATERIALS AND METHODS

The basic question in the analysis of institutions and the institutional environment is how to measure institutions. In order to assess quality of the institutions many authors use Transition Report and their new methodology. However, in this paper we will stick to the 6 indicators developed by Kaufmann, Kraay & Mastruzzi (2010) called *World Governance Indicators*. The six components used to measure the quality of institutions include: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption. This database is also supported by the World Bank and data for 215 countries exist from 1998 to 2021. Our period of analysis will be from 2004 to 2021, the last year for which there are available data.

We have aggregated countries into three groups:

1. Countries of the region or countries of Southeast Europe: Albania, Bosnia and Herzegovina, North Macedonia, Montenegro and Serbia.
2. The youngest members of the European Union: Bulgaria, Croatia and Romania.
3. Central European countries and Baltic countries: Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Slovakia and Slovenia.

In the first part of the analysis, we will perform a comparative analysis of the quality of institutions for these three groups of countries, looking at the averages

of each group of countries. It is important to emphasize that the quality of institutions according to these indicators is measured on a scale from -2.5 to 2.5, where a higher value indicates a higher quality of the institutional environment.

In the second part of the research, we will focus on the last year for which there are data on the quality of institutions, 2021, and we will perform a correlation analysis between economic development measured by gross domestic product per capita at purchasing power parity and each of six indicators of the quality of institutions.

Before presenting the research results, it is necessary to explain in more detail the meaning of each of the indicators.

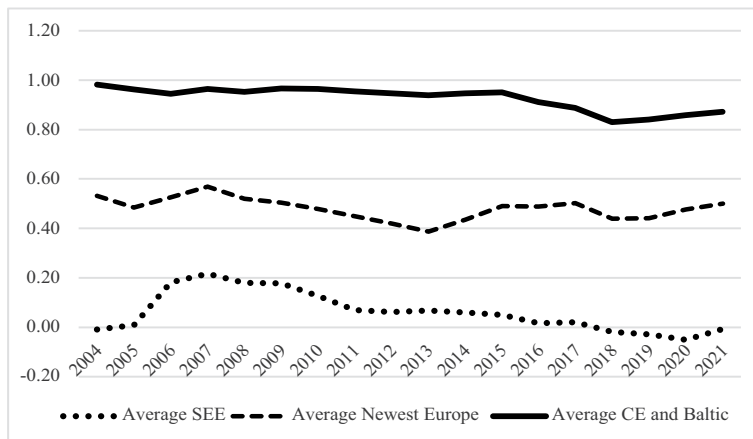
**Table 1.** Six measures of institutional quality in *World Governance Indicators Dataset*

<i>Voice and Accountability (VACC)</i>	Captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
<i>Political Stability (PS)</i>	Measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.
<i>Government Effectiveness (GE)</i>	Captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
<i>Regulatory Quality (RQ)</i>	Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
<i>Rule of Law (ROL)</i>	Captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
<i>Control of Corruption (COC)</i>	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests.

Source: [World Governance Indicators \(2023\)](#).

### 3. RESULTS

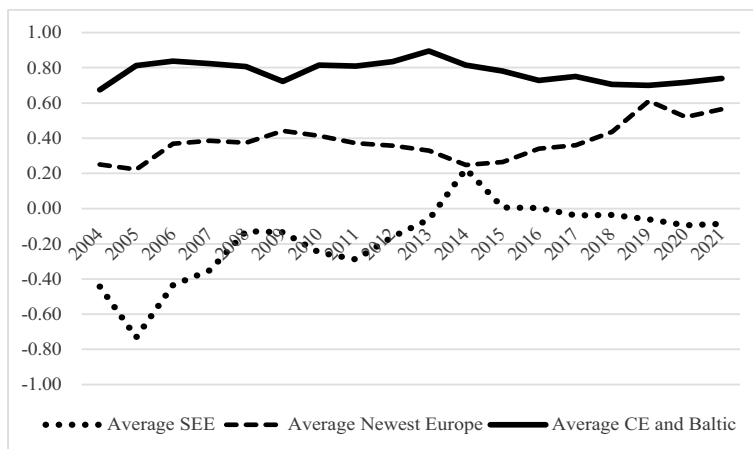
The first figure of results shows a comparative analysis of the variable *Voice and Accountability* for three groups of countries, where we used a simple arithmetic mean for each group of countries.



**Figure 1.** Comparison of Voice and Accountability between SEE countries, Newest European Members and CE and Baltic countries

Source: [World Governance Indicators Database, 2023](#) and Author’s calculation

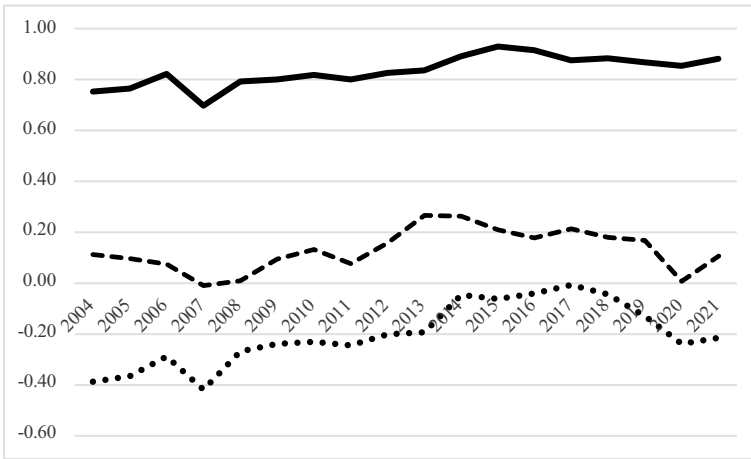
The second figure of results shows a comparative analysis of the variable *Political Stability* for three groups of countries, where we used a simple arithmetic mean for each group of countries.



**Figure 2.** Comparison of Political Stability between SEE countries, Newest European Members and CE and Baltic countries

Source: [World Governance Indicators Database, 2023](#) and Author’s calculation

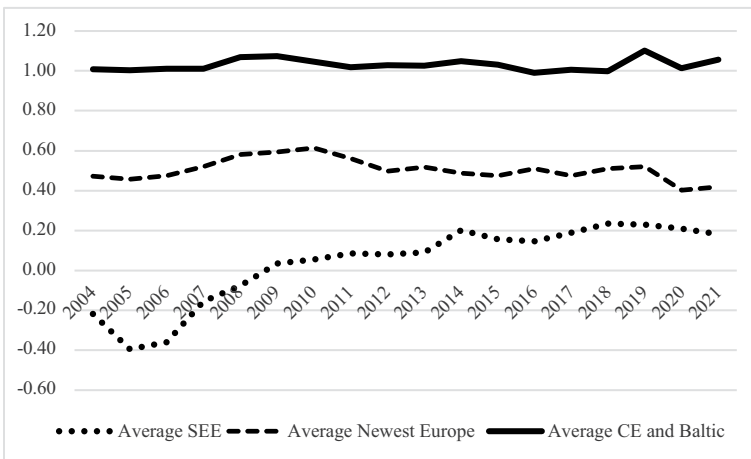
The third figure of results shows a comparative analysis of the variable *Government Effectiveness* for three groups of countries, where we used a simple arithmetic mean for each group of countries.



**Figure 3.** Comparison of Government Effectiveness between SEE countries, Newest European Members and CE and Baltic countries

Source: [World Governance Indicators Database, 2023](#) and Author’s calculation

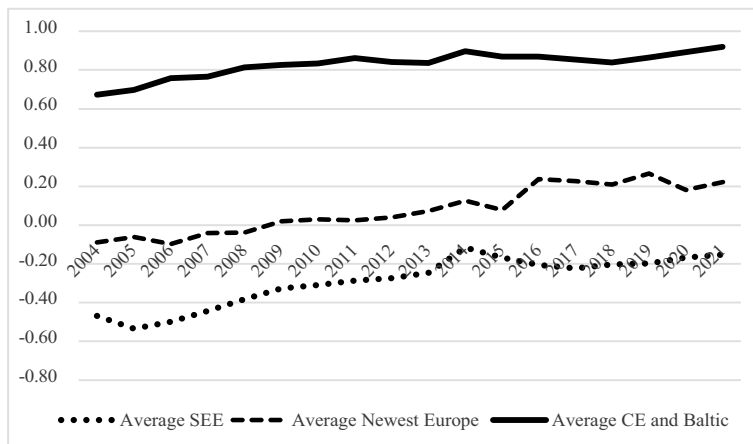
The fourth figure of results shows a comparative analysis of the variable *Regulatory Quality* for three groups of countries, where we used a simple arithmetic mean for each group of countries.



**Figure 4.** Comparison of Regulatory Quality between SEE countries, Newest European Members and CE and Baltic countries

Source: [World Governance Indicators Database, 2023](#) and Author’s calculation

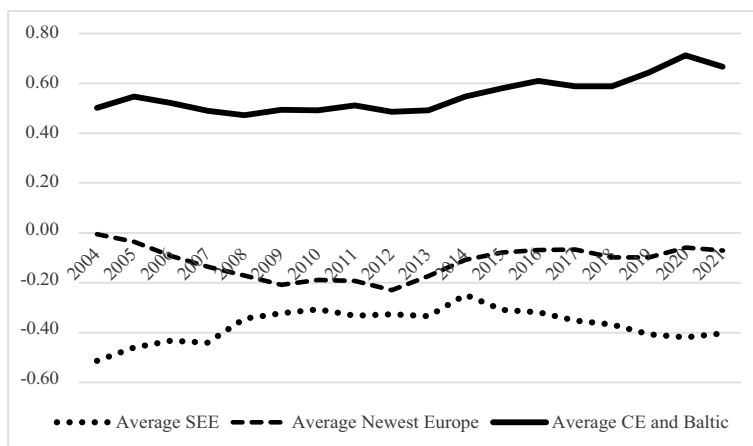
The fifth figure of results shows a comparative analysis of the variable *Rule of Law* for three groups of countries, where we used a simple arithmetic mean for each group of countries.



**Figure 5.** Comparison of Rule of Law between SEE countries, Newest European Members and CE and Baltic countries

Source: [World Governance Indicators Database, 2023](#) and Author's calculation

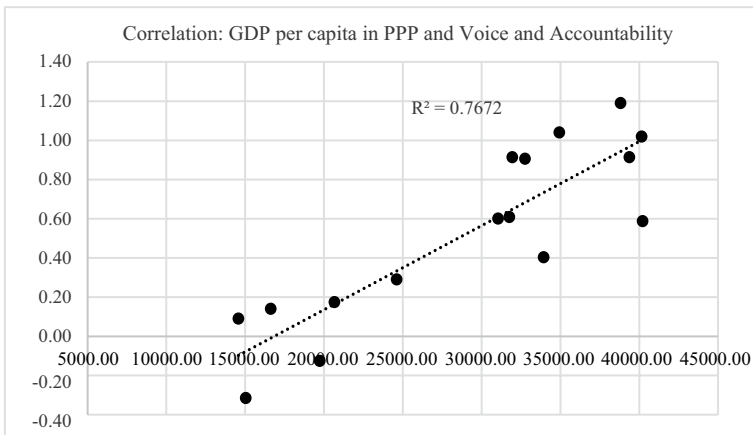
The sixth figure of results shows a comparative analysis of the variable *Control of Corruption* for three groups of countries, where we used a simple arithmetic mean for each group of countries.



**Figure 6.** Comparison of Control of Corruption between SEE countries, Newest European Members and CE and Baltic countries

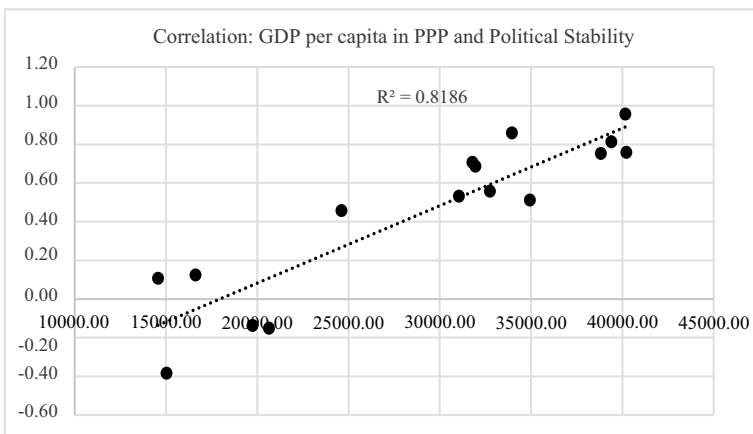
Source: [World Governance Indicators Database, 2023](#) and Author's calculation

In the next part of the results, we will present the correlation coefficient between economic development of each country measured by gross domestic product per capita at purchasing power parity for 2021 and each of the indicators of institutional quality for each country in 2021.



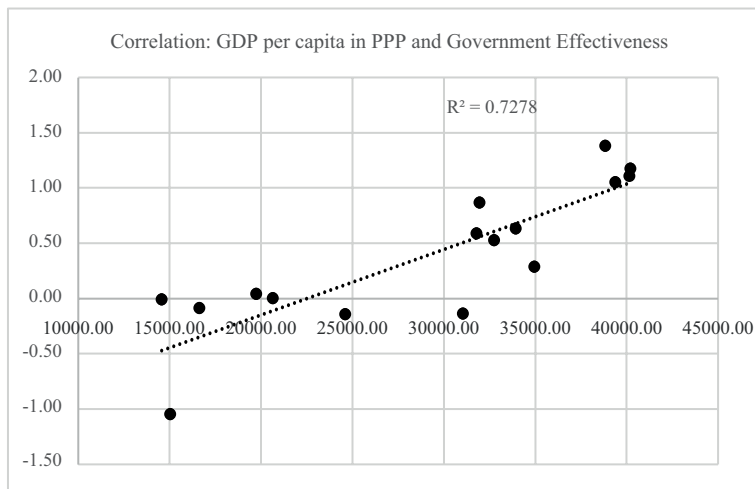
**Figure 7.** Correlation between economic development and Voice and Accountability of each country for 2021

Source: [World Governance Indicators Database, 2023](#); IMF World Economic Outlook Database, 2023 and Author’s calculation



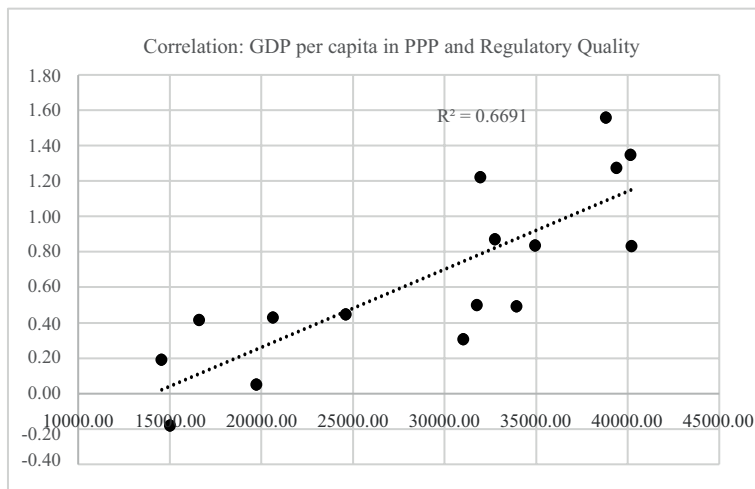
**Figure 8.** Correlation between economic development and Political Stability of each country for 2021

Source: [World Governance Indicators Database, 2023](#); IMF World Economic Outlook Database, 2023 and Author’s calculation



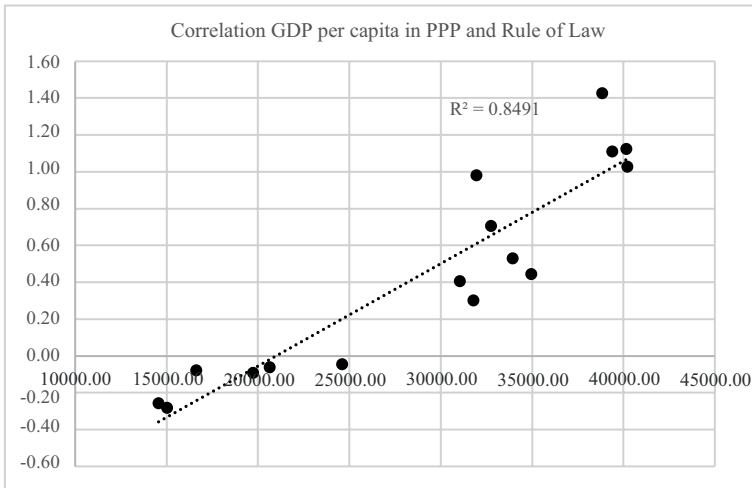
**Figure 9.** Correlation between economic development and Government Effectiveness of each country for 2021

Source: [World Governance Indicators Database, 2023](#); IMF World Economic Outlook Database, 2023 and Author's calculation



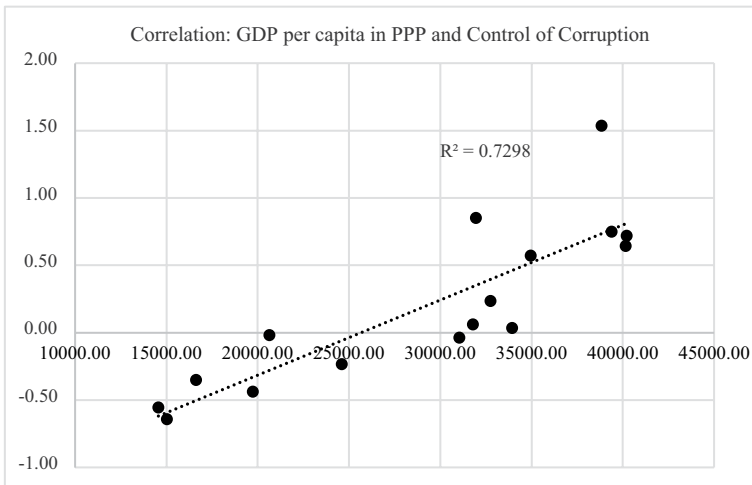
**Figure 10.** Correlation between economic development and Regulatory Quality of each country for 2021

Source: [World Governance Indicators Database, 2023](#); IMF World Economic Outlook Database, 2023 and Author's calculation



**Figure 11.** Correlation between economic development and Rule of Law of each country for 2021

Source: [World Governance Indicators Database, 2023](#); IMF World Economic Outlook Database, 2023 and Author's calculation



**Figure 12.** Correlation between economic development and Control of Corruption of each country for 2021

Source: [World Governance Indicators Database, 2023](#); IMF World Economic Outlook Database, 2023 and Author's calculation

#### **4. DISCUSSIONS**

In the first part of the results, we could see that the countries of the region lag behind the youngest members of the European Union by all six criteria, and that they lag behind New Europe (Central Europe and the Baltics) even more significantly, without any prospects of catching up even in the long term. In some of my previous works, I hinted that the development of institutions can be accelerated in the countries of the region and that in some reasonable medium term they could catch up at least with neighboring EU member countries, but these new studies deny my earlier predictions. What is worrying is that the gap between the countries of the region is widening in terms of the quality of institutions, so not only are we not catching up with developed Europe, but the difference in the quality of institutions is even increasing in some segments, such as the rule of law, corruption control and the effectiveness of government policies.

What is noticeable from the previous six graphs is that the lag is the greatest for the variables Rule of Law and Control of Corruption. As expected, in the countries of the region, there is a lot of public opinion about the inefficiency of the judiciary, the absence of elements of the rule of law, and it is known that institutional corruption has become a model for the behavior of government bodies in many countries of the region. Of course, corruption is also present in the most developed countries of the world, but the degree of corruption is clearly determined by these indicators.

Regarding the correlation between economic development measured by GDP per capita by purchasing power parity, a high positive correlation was shown between economic development and each of the six indicators of the quality of institutions. In the table in the appendix, it can be seen that none of the correlation coefficients falls below the value of 0.80, which we interpret to mean that the development of institutions and overall economic development move together in a very strong and positive correlation relationship. As many other authors confirmed these statement, our work also makes contribution in that sense. The highest degree of correlation between economic development and the quality of institutions is shown by the variables of political stability, rule of law and absence of corruption (see Table 8 in Appendices).

#### **5. CONCLUSIONS**

After clarifying in the discussion the basic results obtained through the comparative analysis and correlation analysis, it is important to emphasize the implications of the obtained results for economic policy makers. And not only them, but also power holders in general.

We have seen that the quality of institutions in the countries of the region is significantly behind the countries that are the youngest members of the EU, but much more significantly behind the countries of New Europe and that this gap is widening. We could say that what was written in the EBRD Transition Report 15 years ago is still valid today: the region is trapped or trapped in the transition. The reform processes must be unleashed at high speed.

What the correlation analysis indicated clearly and unequivocally shows: there is no economic development and standard of living without the rule of law, the absence of corruption, political stability and the efficiency of government policies. This conclusion does not refer only to the bearers of economic policies, but also to all authorities of countries that influence the creation of the quality of institutions. Our key conclusion that we derive from the analysis is that the region as a whole, and then every individual country, if it wants to provide normal living conditions for its citizens, must build a functional country based on the rule of law, and then the economic parameters will not be missing, either: investments and capital flees from unstable areas where there are unclear rules of the game (there are no rules of institutions but some other unwritten rules). The construction of legal state for the countries of the region is a *conditio sine qua non* in order to catch connection at least with the New Europe. The bottom line is that reforms in the countries of the region are taking place too slowly and that the key to catching up with developed countries lies in the acceleration of the reform processes.

### Conflict of interests

The author declares there is no conflict of interest.

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## APPENDICES: TABLES

**Table 2.** Values of indicator *Voice and Accountability (VACC)*

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Albania	0,01	0,00	0,08	0,11	0,17	0,14	0,12	0,06	0,02	0,05	0,14	0,16	0,17	0,20	0,18	0,14	0,09	0,09
Bosnia and Herzegovina	0,17	0,21	0,19	0,13	0,02	0,00	-0,08	-0,16	-0,10	-0,12	-0,07	-0,10	-0,13	-0,21	-0,27	-0,24	-0,32	-0,31
North Macedonia	-0,16	-0,10	0,17	0,28	0,20	0,17	0,11	-0,04	-0,03	-0,06	-0,14	-0,18	-0,23	-0,14	-0,03	-0,02	0,06	0,14
Montenegro	0,11	0,13	0,26	0,26	0,24	0,24	0,19	0,21	0,22	0,18	0,16	0,14	0,08	0,12	0,05	0,02	0,04	0,17
Serbia	-0,18	-0,21	0,21	0,31	0,28	0,33	0,29	0,28	0,20	0,29	0,21	0,23	0,20	0,12	-0,02	-0,05	-0,12	-0,12
<b>Average SEE</b>	<b>-0,01</b>	<b>0,01</b>	<b>0,18</b>	<b>0,22</b>	<b>0,18</b>	<b>0,18</b>	<b>0,13</b>	<b>0,07</b>	<b>0,06</b>	<b>0,07</b>	<b>0,06</b>	<b>0,05</b>	<b>0,02</b>	<b>0,02</b>	<b>-0,02</b>	<b>-0,03</b>	<b>-0,05</b>	<b>-0,01</b>
Bulgaria	0,57	0,59	0,58	0,69	0,58	0,56	0,53	0,45	0,40	0,34	0,37	0,43	0,40	0,43	0,36	0,36	0,26	0,29
Croatia	0,66	0,45	0,48	0,52	0,47	0,49	0,48	0,52	0,54	0,51	0,51	0,56	0,53	0,48	0,44	0,46	0,58	0,61
Romania	0,37	0,41	0,52	0,50	0,51	0,46	0,43	0,38	0,32	0,31	0,43	0,49	0,54	0,60	0,52	0,52	0,59	0,60
<b>Average Newest Europe</b>	<b>0,53</b>	<b>0,49</b>	<b>0,53</b>	<b>0,57</b>	<b>0,52</b>	<b>0,50</b>	<b>0,48</b>	<b>0,45</b>	<b>0,42</b>	<b>0,39</b>	<b>0,44</b>	<b>0,49</b>	<b>0,49</b>	<b>0,50</b>	<b>0,44</b>	<b>0,44</b>	<b>0,48</b>	<b>0,50</b>
Czech Republic	0,95	0,91	0,96	1,00	1,03	1,03	1,01	1,02	0,97	0,98	1,03	1,04	1,03	0,88	0,81	0,84	0,98	1,02
Estonia	1,09	0,99	1,07	1,07	1,09	1,09	1,11	1,13	1,11	1,12	1,17	1,19	1,21	1,21	1,18	1,18	1,17	1,19
Hungary	1,15	1,18	1,02	1,04	0,97	0,91	0,89	0,84	0,75	0,74	0,55	0,56	0,40	0,54	0,48	0,34	0,39	0,40
Lithuania	0,88	0,90	0,86	0,89	0,85	0,90	0,92	0,86	0,93	0,94	0,96	0,97	1,00	0,99	0,89	1,00	1,01	1,04
Latvia	0,70	0,78	0,85	0,83	0,78	0,85	0,79	0,74	0,78	0,77	0,85	0,85	0,84	0,80	0,78	0,86	0,87	0,91
Poland	1,02	0,94	0,80	0,88	0,95	1,03	1,04	1,03	1,06	1,00	1,11	1,04	0,84	0,78	0,70	0,67	0,62	0,59
Slovak Republic	0,95	0,90	0,93	0,95	0,94	0,88	0,91	0,97	0,97	0,96	0,96	0,97	0,96	0,91	0,84	0,86	0,88	0,91
Slovenia	1,11	1,09	1,07	1,06	1,02	1,06	1,05	1,06	1,00	1,00	0,96	0,99	1,01	1,01	0,96	0,98	0,94	0,91
<b>Average CE and Baltic</b>	<b>0,98</b>	<b>0,96</b>	<b>0,94</b>	<b>0,96</b>	<b>0,95</b>	<b>0,97</b>	<b>0,97</b>	<b>0,96</b>	<b>0,95</b>	<b>0,94</b>	<b>0,95</b>	<b>0,91</b>	<b>0,91</b>	<b>0,89</b>	<b>0,83</b>	<b>0,84</b>	<b>0,86</b>	<b>0,87</b>

Source: World Governance Indicators Database, 2023 and Author's calculation

**Table 3.** Values of indicator *Political Stability (PS)*

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Albania	-0,43	-0,51	-0,51	-0,20	-0,03	-0,05	-0,19	-0,28	-0,14	0,09	0,49	0,35	0,34	0,38	0,37	0,11	0,09	0,11
Bosnia and Herzegovina	0,02	-0,50	-0,44	-0,63	-0,54	-0,67	-0,69	-0,82	-0,54	-0,40	-0,02	-0,40	-0,40	-0,35	-0,40	-0,42	-0,44	-0,38
North Macedonia	-0,85	-1,16	-0,74	-0,43	-0,30	-0,30	-0,52	-0,62	-0,49	-0,42	0,26	-0,29	-0,35	-0,25	-0,21	0,00	0,11	0,12
Montenegro	#N/A	#N/A	0,05	0,11	0,77	0,82	0,58	0,57	0,60	0,50	0,22	0,14	0,28	-0,06	0,04	0,07	-0,06	-0,15
Serbia	-0,51	-0,76	-0,54	-0,59	-0,54	-0,48	-0,42	-0,28	-0,22	-0,08	0,18	0,24	0,14	0,09	0,01	-0,07	-0,16	-0,13
<b>Average SEE</b>	<b>-0,44</b>	<b>-0,73</b>	<b>-0,44</b>	<b>-0,35</b>	<b>-0,13</b>	<b>-0,13</b>	<b>-0,25</b>	<b>-0,29</b>	<b>-0,16</b>	<b>-0,06</b>	<b>0,23</b>	<b>0,01</b>	<b>0,00</b>	<b>-0,04</b>	<b>-0,04</b>	<b>-0,06</b>	<b>-0,09</b>	<b>-0,09</b>
Bulgaria	0,00	0,15	0,39	0,36	0,37	0,35	0,36	0,30	0,38	0,17	0,08	0,02	0,08	0,33	0,46	0,58	0,42	0,46
Croatia	0,69	0,43	0,56	0,61	0,57	0,61	0,61	0,62	0,61	0,64	0,62	0,59	0,66	0,69	0,80	0,69	0,61	0,71
Romania	0,06	0,09	0,15	0,20	0,18	0,36	0,27	0,19	0,08	0,18	0,05	0,19	0,28	0,06	0,05	0,56	0,53	0,53
<b>Average Newest Europe</b>	<b>0,25</b>	<b>0,22</b>	<b>0,37</b>	<b>0,39</b>	<b>0,37</b>	<b>0,44</b>	<b>0,41</b>	<b>0,37</b>	<b>0,36</b>	<b>0,33</b>	<b>0,25</b>	<b>0,27</b>	<b>0,34</b>	<b>0,36</b>	<b>0,44</b>	<b>0,61</b>	<b>0,52</b>	<b>0,57</b>
Czech Republic	0,65	0,94	1,05	1,02	1,05	0,91	0,99	1,11	1,05	1,08	0,99	0,98	0,98	1,00	1,03	0,94	0,92	0,96
Estonia	0,70	0,61	0,74	0,63	0,57	0,57	0,66	0,61	0,64	0,75	0,78	0,62	0,67	0,65	0,59	0,63	0,72	0,76
Hungary	0,83	1,00	0,99	0,75	0,75	0,54	0,69	0,74	0,68	0,80	0,67	0,75	0,65	0,81	0,75	0,77	0,84	0,86
Lithuania	0,77	0,78	0,87	0,82	0,75	0,63	0,72	0,67	0,79	0,96	0,74	0,76	0,83	0,78	0,74	0,78	0,93	0,82
Latvia	0,62	0,81	0,84	0,56	0,20	0,35	0,53	0,32	0,45	0,59	0,49	0,44	0,48	0,46	0,41	0,44	0,47	0,69
Poland	0,15	0,36	0,35	0,68	0,91	0,94	1,02	1,07	1,05	0,97	0,84	0,87	0,51	0,52	0,49	0,56	0,52	0,51

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Slovak Republic	0,59	0,90	0,78	1,04	1,08	0,92	1,05	0,97	1,09	1,12	1,04	0,87	0,72	0,91	0,74	0,67	0,63	0,56
Slovenia	1,08	1,09	1,09	1,10	1,15	0,94	0,87	0,97	0,94	0,88	0,97	0,95	0,99	0,87	0,90	0,81	0,71	0,76
<b>Average CE and Baltic</b>	<b>0,67</b>	<b>0,81</b>	<b>0,84</b>	<b>0,82</b>	<b>0,81</b>	<b>0,72</b>	<b>0,81</b>	<b>0,81</b>	<b>0,83</b>	<b>0,90</b>	<b>0,81</b>	<b>0,78</b>	<b>0,73</b>	<b>0,75</b>	<b>0,71</b>	<b>0,70</b>	<b>0,72</b>	<b>0,74</b>

Source: World Governance Indicators Database, 2023 and Author’s calculation

**Table 4.** Values of indicator *Government Effectiveness (GE)*

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Albania	-0,41	-0,70	-0,59	-0,43	-0,37	-0,25	-0,28	-0,20	-0,27	-0,32	-0,05	0,06	0,06	0,13	0,11	-0,03	-0,12	0,00
Bosnia and Herzegovina	-0,70	-0,77	-0,63	-0,86	-0,60	-0,72	-0,74	-0,73	-0,45	-0,43	-0,49	-0,59	-0,41	-0,48	-0,64	-0,67	-1,04	-1,04
North Macedonia	-0,18	-0,34	-0,13	-0,24	-0,10	-0,14	-0,19	-0,23	-0,22	-0,17	0,02	0,00	0,00	0,02	0,09	-0,10	0,06	-0,08
Montenegro	#N/A	0,35	0,16	-0,29	-0,01	-0,01	0,13	0,08	0,12	0,15	0,29	0,20	0,17	0,20	0,12	0,14	-0,07	0,01
Serbia	-0,25	-0,36	-0,24	-0,26	-0,26	-0,07	-0,08	-0,14	-0,18	-0,18	0,00	0,02	-0,01	0,10	0,11	0,02	-0,01	0,05
<b>Average SEE</b>	<b>-0,39</b>	<b>-0,36</b>	<b>-0,29</b>	<b>-0,42</b>	<b>-0,27</b>	<b>-0,24</b>	<b>-0,23</b>	<b>-0,24</b>	<b>-0,20</b>	<b>-0,19</b>	<b>-0,05</b>	<b>-0,06</b>	<b>-0,04</b>	<b>-0,01</b>	<b>-0,04</b>	<b>-0,13</b>	<b>-0,24</b>	<b>-0,22</b>
Bulgaria	0,08	0,13	-0,14	-0,13	-0,18	0,07	-0,07	-0,08	-0,03	-0,02	-0,11	0,02	0,12	0,13	0,14	0,20	-0,18	-0,14
Croatia	0,44	0,45	0,56	0,46	0,58	0,59	0,59	0,51	0,68	0,68	0,68	0,49	0,45	0,57	0,55	0,49	0,46	0,59
Romania	-0,18	-0,30	-0,19	-0,36	-0,37	-0,37	-0,12	-0,20	-0,17	0,14	0,23	0,13	-0,14	-0,06	-0,15	-0,19	-0,26	-0,13
<b>Average Newest Europe</b>	<b>0,11</b>	<b>0,1</b>	<b>0,07</b>	<b>0</b>	<b>0,01</b>	<b>0,1</b>	<b>0,13</b>	<b>0,08</b>	<b>0,16</b>	<b>0,27</b>	<b>0,26</b>	<b>0,21</b>	<b>0,18</b>	<b>0,21</b>	<b>0,18</b>	<b>0,17</b>	<b>0,01</b>	<b>0,11</b>
Czech Republic	0,87	0,92	1,09	0,85	0,96	0,88	0,91	0,93	0,93	0,92	1,03	1,06	1,04	1,06	0,98	0,95	0,95	1,11
Estonia	0,91	0,94	1,15	1,01	1,16	1,00	1,08	1,07	0,95	0,97	1,01	1,06	1,09	1,11	1,18	1,17	1,33	1,38
Hungary	0,81	0,75	0,84	0,70	0,70	0,68	0,65	0,66	0,62	0,69	0,59	0,55	0,50	0,52	0,49	0,49	0,57	0,63
Lithuania	0,69	0,76	0,72	0,66	0,56	0,69	0,74	0,70	0,83	0,83	0,98	1,18	1,07	0,96	1,07	1,04	1,05	1,06
Latvia	0,58	0,53	0,66	0,43	0,52	0,62	0,73	0,69	0,83	0,88	0,95	1,09	1,00	0,90	1,04	1,10	0,87	0,87
Poland	0,44	0,45	0,34	0,36	0,46	0,52	0,63	0,60	0,66	0,66	0,77	0,77	0,68	0,58	0,58	0,54	0,36	0,29
Slovak Republic	0,82	0,88	0,83	0,69	0,85	0,86	0,78	0,78	0,78	0,73	0,79	0,77	0,83	0,70	0,61	0,58	0,54	0,53
Slovenia	0,90	0,89	0,96	0,89	1,12	1,15	1,02	0,98	1,02	1,01	1,00	0,97	1,12	1,17	1,12	1,08	1,16	1,18
<b>Average CE and Baltic</b>	<b>0,75</b>	<b>0,77</b>	<b>0,82</b>	<b>0,7</b>	<b>0,79</b>	<b>0,8</b>	<b>0,82</b>	<b>0,8</b>	<b>0,83</b>	<b>0,84</b>	<b>0,89</b>	<b>0,93</b>	<b>0,92</b>	<b>0,88</b>	<b>0,88</b>	<b>0,87</b>	<b>0,85</b>	<b>0,88</b>

Source: World Governance Indicators Database, 2023 and Author’s calculation

**Table 5.** Values of indicator *Regulatory Quality (RQ)*

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Albania	-0,19	-0,40	-0,15	0,03	0,14	0,24	0,23	0,28	0,24	0,25	0,28	0,19	0,20	0,23	0,27	0,29	0,24	0,19
Bosnia and Herzegovina	-0,23	-0,58	-0,47	-0,29	-0,18	-0,11	-0,12	-0,06	-0,06	-0,07	-0,04	-0,17	-0,13	-0,04	-0,13	-0,11	-0,17	-0,18
North Macedonia	0,02	-0,23	-0,09	0,04	0,12	0,19	0,24	0,22	0,26	0,25	0,42	0,37	0,39	0,45	0,52	0,45	0,45	0,42
Montenegro	#N/A	-0,13	-0,55	-0,13	-0,07	0,03	-0,01	0,00	0,03	0,09	0,18	0,24	0,24	0,34	0,40	0,41	0,44	0,43
Serbia	-0,47	-0,62	-0,53	-0,44	-0,39	-0,18	-0,07	-0,02	-0,07	-0,06	0,18	0,15	0,03	-0,03	0,11	0,11	0,09	0,05
<b>Average SEE</b>	<b>-0,22</b>	<b>-0,39</b>	<b>-0,36</b>	<b>-0,15</b>	<b>-0,08</b>	<b>0,03</b>	<b>0,06</b>	<b>0,08</b>	<b>0,08</b>	<b>0,09</b>	<b>0,20</b>	<b>0,16</b>	<b>0,15</b>	<b>0,19</b>	<b>0,24</b>	<b>0,23</b>	<b>0,21</b>	<b>0,18</b>
Bulgaria	0,71	0,66	0,62	0,64	0,73	0,69	0,68	0,55	0,57	0,55	0,59	0,59	0,71	0,67	0,62	0,54	0,47	0,45
Croatia	0,53	0,48	0,37	0,41	0,41	0,47	0,49	0,44	0,35	0,37	0,28	0,25	0,25	0,31	0,50	0,56	0,37	0,50
Romania	0,18	0,24	0,44	0,51	0,60	0,62	0,67	0,69	0,56	0,63	0,60	0,58	0,58	0,45	0,42	0,46	0,36	0,31
<b>Average Newest Europe</b>	<b>0,47</b>	<b>0,46</b>	<b>0,47</b>	<b>0,52</b>	<b>0,58</b>	<b>0,59</b>	<b>0,61</b>	<b>0,56</b>	<b>0,50</b>	<b>0,52</b>	<b>0,49</b>	<b>0,48</b>	<b>0,51</b>	<b>0,48</b>	<b>0,51</b>	<b>0,52</b>	<b>0,40</b>	<b>0,42</b>
Czech Republic	1,00	1,11	1,11	1,05	1,22	1,31	1,30	1,20	1,05	1,08	1,00	1,09	0,98	1,23	1,27	1,24	1,24	1,35
Estonia	1,23	1,25	1,29	1,32	1,39	1,39	1,39	1,39	1,41	1,44	1,67	1,66	1,70	1,64	1,55	1,59	1,54	1,56
Hungary	1,17	1,05	1,20	1,21	1,17	1,08	1,01	1,03	0,98	0,90	0,75	0,76	0,60	0,65	0,57	0,60	0,48	0,50
Lithuania	1,06	0,94	0,97	1,01	1,04	0,95	0,96	0,93	1,12	1,15	1,19	1,27	1,13	1,15	1,10	1,16	1,09	1,28
Latvia	0,92	0,87	0,93	0,95	0,97	0,92	0,93	0,95	1,01	1,04	1,17	1,08	1,08	1,15	1,14	1,19	1,19	1,22
Poland	0,76	0,81	0,70	0,77	0,84	0,98	1,02	0,96	1,00	1,05	1,06	0,97	0,91	0,82	0,88	1,02	0,86	0,84
Slovak Republic	1,08	1,13	1,08	0,97	1,08	1,05	1,00	1,00	1,04	0,93	0,89	0,78	0,89	0,82	0,81	1,01	0,79	0,87
Slovenia	0,84	0,88	0,79	0,80	0,85	0,91	0,76	0,69	0,63	0,62	0,66	0,62	0,64	0,58	0,65	1,01	0,92	0,83
<b>Average CE and Baltic</b>	<b>1,01</b>	<b>1,00</b>	<b>1,01</b>	<b>1,01</b>	<b>1,07</b>	<b>1,07</b>	<b>1,05</b>	<b>1,02</b>	<b>1,03</b>	<b>1,03</b>	<b>1,05</b>	<b>1,03</b>	<b>0,99</b>	<b>1,00</b>	<b>1,00</b>	<b>1,10</b>	<b>1,01</b>	<b>1,06</b>

Source: World Governance Indicators Database, 2023 and Author’s calculation

**Table 6.** Values of indicator *Rule of Law (ROL)*

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Albania	-0,70	-0,76	-0,70	-0,66	-0,60	-0,49	-0,39	-0,44	-0,52	-0,52	-0,31	-0,30	-0,30	-0,40	-0,40	-0,40	-0,35	-0,26
Bosnia and Herzegovina	-0,49	-0,52	-0,50	-0,47	-0,41	-0,36	-0,36	-0,33	-0,20	-0,14	-0,13	-0,24	-0,17	-0,18	-0,21	-0,20	-0,29	-0,28
North Macedonia	-0,19	-0,30	-0,54	-0,42	-0,32	-0,29	-0,30	-0,27	-0,25	-0,23	-0,06	-0,22	-0,33	-0,29	-0,29	-0,28	-0,08	-0,08
Montenegro	-0,22	-0,14	-0,21	-0,19	-0,09	-0,02	-0,06	-0,06	-0,06	-0,03	0,01	-0,02	-0,12	-0,09	0,02	0,02	-0,01	-0,06
Serbia	-0,74	-0,95	-0,54	-0,46	-0,49	-0,47	-0,43	-0,33	-0,33	-0,30	-0,09	-0,06	-0,11	-0,16	-0,15	-0,12	-0,10	-0,09
<b>Average SEE</b>	<b>-0,47</b>	<b>-0,53</b>	<b>-0,50</b>	<b>-0,44</b>	<b>-0,38</b>	<b>-0,33</b>	<b>-0,31</b>	<b>-0,29</b>	<b>-0,27</b>	<b>-0,24</b>	<b>-0,12</b>	<b>-0,17</b>	<b>-0,21</b>	<b>-0,22</b>	<b>-0,20</b>	<b>-0,20</b>	<b>-0,17</b>	<b>-0,15</b>
Bulgaria	-0,12	-0,11	-0,11	-0,06	-0,12	-0,04	-0,10	-0,14	-0,12	-0,15	-0,08	-0,14	-0,12	-0,11	-0,09	-0,01	-0,11	-0,04
Croatia	0,04	0,08	-0,05	0,04	0,03	0,04	0,08	0,11	0,15	0,18	0,22	0,15	0,36	0,33	0,32	0,37	0,26	0,30
Romania	-0,19	-0,15	-0,13	-0,11	-0,02	0,05	0,11	0,10	0,09	0,19	0,24	0,23	0,47	0,46	0,39	0,44	0,39	0,41
<b>Average Newest Europe</b>	<b>-0,09</b>	<b>-0,06</b>	<b>-0,10</b>	<b>-0,04</b>	<b>-0,04</b>	<b>0,02</b>	<b>0,03</b>	<b>0,02</b>	<b>0,04</b>	<b>0,07</b>	<b>0,13</b>	<b>0,08</b>	<b>0,24</b>	<b>0,23</b>	<b>0,21</b>	<b>0,27</b>	<b>0,18</b>	<b>0,22</b>
Czech Republic	0,76	0,86	0,86	0,88	0,90	0,96	0,93	1,02	1,02	1,02	1,14	1,13	1,01	1,12	1,05	1,05	1,05	1,13
Estonia	0,88	0,90	1,13	1,12	1,16	1,12	1,15	1,18	1,15	1,19	1,37	1,33	1,22	1,28	1,23	1,27	1,37	1,43
Hungary	0,85	0,84	0,98	0,94	0,91	0,77	0,77	0,76	0,61	0,58	0,51	0,40	0,43	0,56	0,58	0,52	0,51	0,53
Lithuania	0,56	0,58	0,71	0,69	0,68	0,72	0,78	0,77	0,84	0,83	0,94	1,00	1,02	0,99	0,95	1,02	0,99	1,11
Latvia	0,54	0,57	0,62	0,72	0,78	0,79	0,76	0,74	0,78	0,76	0,87	0,79	0,95	0,93	0,95	1,01	0,95	0,98
Poland	0,42	0,47	0,38	0,41	0,55	0,65	0,71	0,79	0,82	0,84	0,87	0,83	0,62	0,42	0,40	0,41	0,53	0,44
Slovak Republic	0,46	0,49	0,49	0,43	0,53	0,53	0,56	0,60	0,49	0,46	0,49	0,49	0,62	0,54	0,50	0,52	0,67	0,71
Slovenia	0,91	0,88	0,90	0,95	1,01	1,07	1,00	1,05	1,01	0,99	1,00	0,97	1,08	1,02	1,05	1,11	1,06	1,03
<b>Average CE and Baltic</b>	<b>0,67</b>	<b>0,70</b>	<b>0,76</b>	<b>0,77</b>	<b>0,81</b>	<b>0,83</b>	<b>0,83</b>	<b>0,86</b>	<b>0,84</b>	<b>0,84</b>	<b>0,90</b>	<b>0,87</b>	<b>0,87</b>	<b>0,86</b>	<b>0,84</b>	<b>0,86</b>	<b>0,89</b>	<b>0,92</b>

Source: World Governance Indicators Database, 2023 and Author's calculation

**Table 7.** Values of indicator *Control of Corruption (COC)*

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Albania	-0,72	-0,81	-0,79	-0,71	-0,61	-0,55	-0,53	-0,70	-0,78	-0,75	-0,59	-0,52	-0,45	-0,46	-0,52	-0,54	-0,55	-0,56
Bosnia and Herzegovina	-0,32	-0,23	-0,30	-0,37	-0,36	-0,38	-0,34	-0,33	-0,31	-0,24	-0,30	-0,39	-0,46	-0,53	-0,58	-0,63	-0,62	-0,64
North Macedonia	-0,55	-0,49	-0,40	-0,39	-0,21	-0,15	-0,09	-0,11	-0,05	-0,06	-0,03	-0,24	-0,27	-0,30	-0,37	-0,43	-0,47	-0,35
Montenegro	-0,47	-0,35	-0,38	-0,38	-0,24	-0,22	-0,25	-0,22	-0,13	-0,29	-0,08	-0,09	-0,05	-0,06	0,01	0,00	-0,02	-0,02
Serbia	-0,49	-0,41	-0,28	-0,34	-0,30	-0,32	-0,32	-0,30	-0,36	-0,33	-0,25	-0,29	-0,36	-0,41	-0,37	-0,43	-0,43	-0,44
<b>Average SEE</b>	<b>-0,51</b>	<b>-0,46</b>	<b>-0,43</b>	<b>-0,44</b>	<b>-0,34</b>	<b>-0,32</b>	<b>-0,31</b>	<b>-0,33</b>	<b>-0,33</b>	<b>-0,33</b>	<b>-0,25</b>	<b>-0,31</b>	<b>-0,32</b>	<b>-0,35</b>	<b>-0,37</b>	<b>-0,41</b>	<b>-0,42</b>	<b>-0,40</b>
Bulgaria	0,07	0,02	-0,11	-0,23	-0,27	-0,23	-0,24	-0,27	-0,28	-0,33	-0,30	-0,32	-0,24	-0,17	-0,16	-0,16	-0,30	-0,24
Croatia	0,24	0,14	0,04	0,06	-0,05	-0,09	0,02	0,03	-0,03	0,11	0,20	0,23	0,18	0,09	0,07	0,08	0,20	0,06
Romania	-0,32	-0,26	-0,21	-0,23	-0,19	-0,31	-0,35	-0,33	-0,38	-0,30	-0,22	-0,14	-0,15	-0,12	-0,20	-0,21	-0,07	-0,04
<b>Average Newest Europe</b>	<b>0,00</b>	<b>-0,03</b>	<b>-0,09</b>	<b>-0,13</b>	<b>-0,17</b>	<b>-0,21</b>	<b>-0,19</b>	<b>-0,19</b>	<b>-0,23</b>	<b>-0,17</b>	<b>-0,11</b>	<b>-0,08</b>	<b>-0,07</b>	<b>-0,07</b>	<b>-0,10</b>	<b>-0,10</b>	<b>-0,06</b>	<b>-0,07</b>
Czech Republic	0,38	0,48	0,35	0,32	0,34	0,38	0,38	0,38	0,31	0,30	0,43	0,50	0,59	0,60	0,54	0,56	0,58	0,64
Estonia	0,98	0,99	1,01	0,97	0,95	1,00	0,99	1,05	1,09	1,18	1,30	1,29	1,27	1,24	1,50	1,56	1,61	1,54
Hungary	0,67	0,63	0,63	0,60	0,43	0,40	0,30	0,33	0,30	0,29	0,16	0,15	0,10	0,12	0,08	0,06	0,09	0,04
Lithuania	0,37	0,31	0,16	0,10	0,11	0,23	0,37	0,32	0,39	0,42	0,55	0,61	0,71	0,55	0,49	0,69	0,80	0,85
Latvia	0,15	0,27	0,36	0,34	0,23	0,20	0,20	0,28	0,24	0,32	0,41	0,46	0,43	0,53	0,32	0,51	0,72	0,75
Poland	0,11	0,25	0,26	0,28	0,45	0,44	0,51	0,56	0,66	0,65	0,68	0,73	0,79	0,73	0,65	0,64	0,65	0,57
Slovak Republic	0,34	0,45	0,38	0,30	0,31	0,27	0,25	0,23	0,07	0,05	0,12	0,14	0,18	0,13	0,26	0,21	0,44	0,24
Slovenia	1,02	0,90	1,03	1,01	0,94	1,05	0,92	0,94	0,83	0,72	0,72	0,77	0,82	0,81	0,87	0,92	0,80	0,72
<b>Average CE and Baltic</b>	<b>0,50</b>	<b>0,55</b>	<b>0,52</b>	<b>0,49</b>	<b>0,47</b>	<b>0,49</b>	<b>0,49</b>	<b>0,51</b>	<b>0,49</b>	<b>0,49</b>	<b>0,55</b>	<b>0,58</b>	<b>0,61</b>	<b>0,59</b>	<b>0,59</b>	<b>0,64</b>	<b>0,71</b>	<b>0,67</b>

Source: World Governance Indicators Database, 2023 and Author's calculation

**Table 8.** Correlation between economic development measured by GDP per capita in PPP and each of six indicators of institutional quality

Country	Gross domestic product per capita, constant prices in PPP for 2021	Voice and Accountability	Political Stability	Government Effectiveness	Regulatory Quality	Rule of Law	Control of Corruption
Albania	14559,68	0,09	0,11	0,00	0,19	-0,26	-0,56
Bosnia and Herzegovina	15030,36	-0,31	-0,38	-1,04	-0,18	-0,28	-0,64
North Macedonia	16614,64	0,14	0,12	-0,08	0,42	-0,08	-0,35
Montenegro	20650,59	0,17	-0,15	0,01	0,43	-0,06	-0,02
Serbia	19732,73	-0,12	-0,13	0,05	0,05	-0,09	-0,44
Bulgaria	24609,70	0,29	0,46	-0,14	0,45	-0,04	-0,24
Croatia	31767,73	0,61	0,71	0,59	0,50	0,30	0,06
Romania	31034,91	0,60	0,53	-0,13	0,31	0,41	-0,04
Czech Republic	40151,25	1,02	0,96	1,11	1,35	1,13	0,64
Estonia	38810,65	1,19	0,76	1,38	1,56	1,43	1,54
Hungary	33932,85	0,40	0,86	0,63	0,50	0,53	0,04
Lithuania	39380,87	0,91	0,82	1,06	1,28	1,11	0,75
Latvia	31947,41	0,91	0,69	0,87	1,22	0,98	0,85
Poland	34940,55	1,04	0,51	0,29	0,84	0,44	0,57
Slovak Republic	32745,07	0,91	0,56	0,53	0,87	0,71	0,24
Slovenia	40199,07	0,59	0,76	1,18	0,83	1,03	0,72
<b>Correlation Coefficient</b>		<b>0,88</b>	<b>0,90</b>	<b>0,85</b>	<b>0,82</b>	<b>0,92</b>	<b>0,85</b>
<b>Determination Coefficient</b>		<b>0,77</b>	<b>0,82</b>	<b>0,73</b>	<b>0,67</b>	<b>0,85</b>	<b>0,73</b>

Source: World Governance Indicators Database, 2023; IMF World Economic Outlook Database, April 2023 and Author's calculation

## КВАЛИТЕТ ИНСТИТУЦИЈА У ЗЕМЉАМА ЈУГОИСТОЧНЕ ЕВРОПЕ: ПОРЕЂЕЊЕ СА ЧЛАНИЦАМА ЕВРОПСКЕ УНИЈЕ

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### Сажетак

Сврха овог рада јесте да покаже значај развоја институција и институционалног окружења у глобализованом свету, а поготово у земљама у транзицији какав је наш регион. Земље региона су још увијек заглављене у транзицији с обзиром да кључне реформе још увијек стоје или се крећу врло спорим темпом. Квалитет институција у земљама региона у доброј мјери може да одрази напредак у транзицији. Методологија која се користи за мјерење квалитета институција је саставни дио базе података свјетских показатеља управљања коју су развили Кауфманн ет ал. (2010) гдје смо извршили компаративну анализу квалитета институција за три узорка земаља, земље југоисточне Европе (земље региона – Албанија, БиХ, Црна Гора, Сјеверна Македонија и Србија), најновије чланице ЕУ (Бугарска, Хрватска и Румунија) и земље средње Европе и балтичких држава (Чешка, Естонија, Мађарска, Летонија, Литванија, Пољска, Словенија и Словачка). Након тога, показали смо степен корелације између економског развоја

мјереног БДП-ом по становнику у паритету куповне моћи и сваког од шест индикатора квалитета институција. Резултати показују да земље региона значајно заостају за државама које називамо „Нова Европа“ (Централна Европа и Балтик), али и за најмлађим чланицама Европске уније по квалитету институција. Када је у питању корелација између економског развоја и институционалног окружења, за свих шест индикатора институционалног окружења, показала се снажна и позитивна корелација, посебно између владавине права и економског развоја. Нарочито је изражена позитивна корелациона веза између квалитета институција и владавине права (правне државе), као и економског развоја и контроле корупције гдје су корелациони коефицијенти били највећи, а управо у ове двије области квалитета институција земље региона највише заостају не само за најмлађим државама чланицама ЕУ, већ и за земљама „Нове Европе“. Закључак је да земље региона морају да ојачају владавину права, да се боре против институционалне корупције, да обезбиједи политичку стабилност како би побољшале економски стандард својих грађана.

**Кључне ријечи:** *институције, институционално окружење, транзиција, глобализација, економски развој, Европска унија, свјетски индикатори управљања.*

# REMITTANCE INFLOWS AND EXCHANGE RATE IN KENYA: AN EMPIRICAL INVESTIGATION

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## ABSTRACT

**Purpose:** This study investigated the impact of remittances on the nominal exchange rate in Kenya, using annual data from 1980 to 2020. The study was motivated by the need to find out how remittances affect the exchange rate in Kenya based on an increase in remittance inflows in low- and middle-income countries, including Kenya. This is important as Kenya continues to build a stable macroeconomic environment that supports economic growth and other milestones specified in the Sustainable Development Goals.

**Methodology:** The study used the autoregressive distributed lag approach to examine this linkage.

**Results:** The study, therefore, concludes that remittance inflows in Kenya are not associated with the appreciation of the currency, as predicted by some previous studies.

**Conclusion:** The study, therefore, concludes that remittance inflows in Kenya are not associated with the Dutch-disease phenomenon.

**Recommendation:** It is recommended that Kenya may continue to implement policies that support remittance inflows to realize an improvement in the balance of payments in the country.

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## 1. INTRODUCTION

Remittances are associated with a positive impact on several economic variables, such as poverty reduction, economic growth, and financial development. The studies that have focused on the impact of remittances on macroeconomic indicators show overwhelming evidence of poverty mitigating economic growth support in different countries. Even the United Nations (UN) has embraced remittances as a source of development finance in most countries, especially in developing countries. Low- and middle-income countries received US\$540

billion in 2020 despite the disruptions caused by COVID-19 (World Bank, 2021). Although this was a decline of US\$8 billion from remittance inflows in 2019, these inflows remained high and surpassed the overseas development assistance of US\$170 billion in 2019 (World Bank, 2021). A surge in remittances was also recorded in sub-Saharan Africa. With the exclusion of Nigeria, remittances increased by 2.3% in 2019 (World Bank, 2021). The surge in remittances has been a welcome development, especially in developing countries that have been relying on development assistance, external borrowing, and foreign direct investment (FDI) as sources of development finance. Remittances are projected to increase to US\$565 billion in 2022 as the world recovers from COVID-19 disruptions and effects (World Bank, 2021). The question that this study sought to answer is whether remittance inflows impact the exchange rate.

The studies that investigated the impact of remittances on the nominal exchange rate or real effective exchange rate had inconclusive results. Some of the studies found that remittances caused an appreciation of the exchange rate (for example, Joof & Touray, 2021; Kim, 2019; Dutta & Sengupta, 2018). Others found that remittances caused a depreciation of the exchange (for example, Barrett, 2013), yet others found no effect (for example Adejumo & Ikhide, 2019). Most of these studies used panel data analysis. The inconclusive results are specific to the countries where they were conducted and cannot be generalised to other countries. This leaves countries in a catch-22 situation. Although remittances are a welcome source of external funding that does not come with conditionalities, they may lead to exchange rate instability that negatively affects macroeconomic stability if they are not properly managed.

This study relooks the relationship between exchange rate and remittances in Kenya using the autoregressive distributed lag (ARDL) approach. Kenya has been selected for this study because it is one of the signatories to the Sustainable Development Goals (SDGs) which require each country to achieve set targets on the 17 SDGs. Given this pressure, multiple sources of development finance (including remittances) are important to support projects necessary to achieve the SDG targets for Kenya. However, an understanding of the trade-off between remittances as a source of development finance and undesired exchange rate movement is important. Furthermore, Kenya is among the countries that have witnessed an increase in remittance inflows even in the face of economic interruptions like COVID-19. The exchange rate movement is one of the key economic variables that measure macroeconomic stability. The exchange rate movement also reflects a country's ability to maintain the stability that is pertinent to achieving the SDGs. It can also be argued that Kenya has managed to maintain a relatively stable exchange rate compared to some African countries; hence a

study investigating the impact of remittances on the exchange rate will add value to the economy in the quest to maintain and support macroeconomic stability and economic growth.

The rest of the paper is divided as follows: Section 2 discusses the literature review. This section is subdivided into two: 2.1 delves into country-based literature, and 2.2 highlights theoretical and empirical literature. Section 3 focuses on the estimation techniques, while section 4 outlines the data analysis and discussion of the results. Section 5 concludes the study.

## 2. LITERATURE REVIEW

### 2.1. Remittance and Exchange Rate Dynamics in Kenya

Kenya is one of the signatories to the SDGs, the successor to the Millennium Development Goals that ended in 2015. This puts the government under pressure to support remittances in an endeavour to increase much-needed capital inflows to achieve the SDGs. To monitor the remittances, the Central Bank of Kenya (CBK) carries out a monthly survey with formal channels such as commercial banks and other authorised international remittances service providers in Kenya. Although it is widely known that statistics from formal remittance channels underestimate the total remittances that are remitted through informal channels, Kenya has consistently recorded an increase in remittances despite the negative impacts of COVID-19 on employment and wages (IFAD, 2021a). This shows how important remittances are to the country. The consistent increase in remittance inflows is attributed to financial innovation that has opened more convenient channels, such as facilitate using mobile phones for transactions, allowing families to receive money in the face of the lockdown (IFAD, 2021a). It can also be argued that an increase in remittance inflows could be because of the use of formal channels, compared to previous periods when emigrants were coerced with a ban on travel because of the lockdown.

To encourage remittance inflows, the UN has set the cost of these transactions at 3%. Although Kenya has reduced the cost of remittance transactions from 15 to 8% in the past 10 years, it still has a lot of work to do to see the rate decline to the recommended 3% (IFAD, 2021a). However, compared to other sub-Saharan African countries, Kenya ranks third (IFAD, 2021a). As an initiative of IFAD, the Platform for Remittances, Investment and Migrants' Entrepreneurship (PRIME Africa) has the main objective of reducing remittance transfer costs to Kenya in support of SGD 10.c, enhancing financial inclusion through remittance-linked financial services and reducing informal channels in Kenya (IFAD, 2021b).

Apart from initiatives through IFAD, the CBK is in the process of reviewing the National Payment Strategy 2021–2025 by focusing on enhancing digital payments that will hopefully smoothen remittance transactions (IFAD, 2021b). In Kenya, there are 41 commercial banks, 14 microfinance banks, the Post Office Savings Bank (Postbank), and 17 money remittance providers that are licenced to handle inbound and outbound transfers (IFAD, 2021b). This has increased the number of formal channels that can be used to transfer remittances to and from Kenya.

Remittance inflows into Kenya have defied all the odds, especially during the COVID-19 pandemic when remittances were anticipated to decline due to the negative effects of the pandemic on employment (IFAD, 2021a). Remittance inflows increased from US\$139.6 million in 1990 (contributing only 1.6% of the gross domestic product – GDP) to US\$2838.2 million in 2019 (3% of the GDP), almost double the amount received in 1990 (World Bank, 2022). Remittances fluctuated between 1991 and 2003; thereafter, the inflows grew steadily to an average of 2.2% of GDP or US\$1164 million (World Bank, 2022). Kenya experienced a surge in remittance inflows between 1997 and 2000, while major drops were recorded in 1996 and 2001, with 0.7% and 0.3% of GDP registered (World Bank, 2022). In 2020, remittance inflows exceeded every expectation, with an increase of 0.1% contribution to GDP or US\$261 million recorded (World Bank, 2022). Figure 1 shows the trends in remittances from 1980 to 2020.



**Figure 1.** Remittance Inflows 1980–2020

Source: [World Bank, 2022](#)

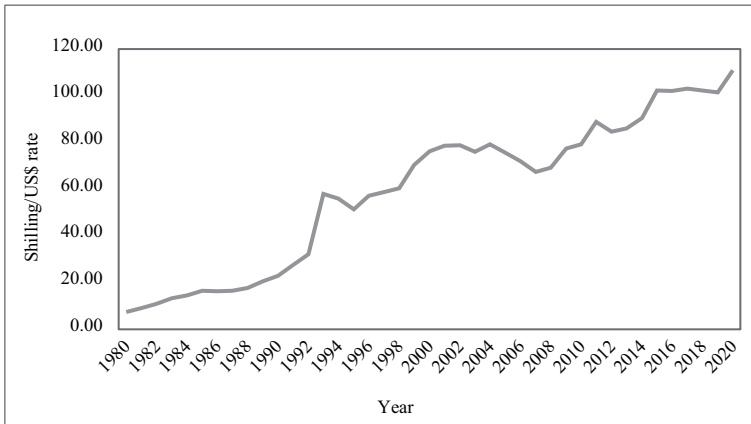
Figure 1 shows a consistent increase in remittance inflows from 2003, although the remittances never reached the levels recorded between 1997 and 2000 (World Bank, 2022).

On the real exchange rate front, the Central Bank of Kenya (CBK) is mandated to regulate the foreign exchange space under the Central Bank of Kenya Act Part VI A and Legal Notice No. 23 of 1996 (CBK, 2016). The CBK works closely with authorised dealers to ensure that buying, selling, borrowing, and lending of foreign currency are done by observing set guidelines to ensure transparency and efficiency (CBK, 2016). All transactions that involve foreign currency, including exports and imports, are, therefore, at the helm of the CBK through licenced dealers (CBK, 2016).

Kenya has a strong engine in domestic consumption that accounts for over 70% of GDP, while exports remain weak (World Bank, 2012). Agriculture remains the major driver of exports (tea, coffee, cut flowers, and vegetables) (Kenyan Government, 2019). The major trading partners of Kenya are Europe, Japan, the United States of America, and low-income countries in Africa. The growth of Kenyan exports in these markets has been both intensive margin (growth of existing products in existing markets) and extensive margin (new products in existing markets and new products in new markets) (World Bank, 2012). Kenya uses the instruments of the Common Market for Eastern and Southern Africa and the East African Community to limit imports of food by charging high tariffs to non-members (Kenyan Government, 2019). It is quite evident that Kenya has not fully explored export performance, which has affected the country's competitiveness (especially with a mismatch between exports and imports and a limited export base that is predominantly merchandise related).

Although Kenya has programmes, initiatives, and policies in the foreign exchange space to support transactions related to foreign exchange, the composition of the exports (which is largely agriculturally based) and a comparably high import demand have put pressure on the country's exchange rate. The real effective exchange rate is the real value of a currency in relation to another currency. The trends in the exchange rate are shown in Figure 2.

Figure 2 shows that the Kenyan Shilling (KSh) was strong between 1980 and 1992, with an average of KSh 17.2 (World Bank, 2022). The exchange rate deteriorated by KSh 26 in 1993 and never recovered from the trajectory (World Bank, 2022). In 2020, the currency recorded the highest exchange rate of KSh 110.9, the highest ever recorded between 1980 and 2020 (World Bank, 2022). The general upward trend in the exchange rate signified a depreciation of the Kenyan Shilling against the US Dollar.



**Figure 2.** Trends in the Exchange Rate 1980–2020

Source: [World Bank, 2022](#)

## 2.1 A Review of Related Literature

[Lucas & Stack \(1985\)](#) propose three motives for migrants to send money home. The first motive is *ultraism*, which is linked to empathy for the struggling family members left back home. The desire to assist them in their financial struggle causes migrants to send remittances home. The second motive is *co-insurance*, where migrants invest back home as a fallback when they return home or when they lose their jobs in a foreign land. The third motive is the *savings motive*, where migrants endeavour to build up savings back home in case there is a fluctuation in their earnings. Remittances are likely to lead to an increase in demand for non-tradables in response to an increase in domestic demand. This is supported by [Adam & Page \(2005\)](#), who found that remittances result in an increase in human investment – education and cash assets, real estate investment, and starting or expanding small businesses. Remittances also provide a stable and countercyclical income during shocks such as droughts and wars ([Kapur, 2004](#)). Although the benefits of remittances are well documented in the literature, the surge in remittance inflows can result in remittance-receiving countries experiencing an appreciation of their currency. This is when the surge in remittances results in a plethora of challenges in the domestic economy, such as the balance of payments challenges as exports become less competitive due to an appreciation of the domestic currency. An upward movement in the exchange rate harms the tradable sectors of the economy if the surge in inflows is not channelled into investment but increases the demand for imports. This puts pressure on the balance of payments.

In the literature, two channels have been proposed that result in the firming of the exchange rate, which negatively affects the competitiveness of tradable goods. The first channel is the Salter-Swan-Conder-Dornbusch model, where exchangeable prices are assumed to be exogenously determined. The spending effect (due to higher capital inflows) and the exogenously determined prices cause the price of non-tradable goods to increase. This causes an expansion in the non-tradable sector – and an increase in the price of non-tradable – relative to the tradable sector, resulting in the exchange rate appreciation. The expansion of the non-tradable sector results in a resource movement effect, drawing additional resources toward the sector (Acosta, Baerg & Mandelman, 2009; Corden & Neary, 1982). A second channel is an increase in household wealth that may result in households substituting labour for leisure (Acosta, Lartey & Mandelman, 2007). This causes a decrease in the supply of labour, leading to a shrink in the labour, putting an upward pressure on wages, and resulting in an increase in production costs. The labour effect and resource reallocation cause an appreciation of the exchange rate.

There is growing literature on the impact of remittances on the real exchange rate, real effective exchange rate, and nominal exchange rate. The surge in remittances that African countries have experienced in the past few years in general, and in Kenya in particular, requires a relook at the relationship between remittances and the exchange rate. The findings of this study provide policy makers in Kenya with policy options to manage the exchange rate. Studies that have investigated the impact of remittances on the exchange rate can be divided into three categories. Some studies found that remittances cause an exchange appreciation (see, for example, Joof & Touray, 2021; Kim, 2019; Dutta & Sengupta, 2018; Acosta, Baerg & Mandelman, 2009). A second set of studies found that remittances cause a depreciation of the exchange rate (see Braihim, Nefzi & Sambo, 2018; and Barrett, 2013). The third category of studies found no impact (see, Mongardini & Rayner, 2009). This section outlines empirical studies that were done on the impact of remittances on exchange rate.

The first category of literature found that remittances cause an appreciation of the exchange rate. Oleksiv & Mirzoieva (2022) examined the influence of remittances on the exchange rate on Ukraine using the autoregressive distributed lag approach. The study found that remittances cause an appreciation of the exchange rate. In the same spirit, Joof & Touray (2021) investigated the impact of remittances on the real effective exchange rate using fully modified ordinary least squares (OLS) and dynamic OLS, using quarterly data from 2009 to 2019 for Gambia, and found that remittances cause an appreciation of the real effective exchange rate. A 15% increase in remittances was found to result in a 1.5% appreciation of the real effective exchange rate. Azizi (2021) investigated the

impact of remittances on the exchange using data for 101 developing countries from 1990 to 2015. The study found that remittances lead to real exchange rate appreciation. [Hien et al. \(2020\)](#) examined the impact of remittances on real effective exchange rate for 32 Asian countries using data from 2006 to 2016. Employing the System Generalised Methods of Moments (S-GMM), the study found a 1% increase in remittance per capita lead to 0,103% appreciation in the real effective exchange rate. [Kim \(2019\)](#) investigated the impact of remittances on the exchange rate using data from 114 developing countries spanning from 1970 to 2013. Employing a general equilibrium monetary model, the study found that remittances cause an increase in money supply under a fixed exchange rate regime and an appreciation of the nominal exchange rate. However, the degree of openness was found to mitigate the appreciation of the nominal exchange rate. [Dutta & Sengupta \(2018\)](#) investigated the impact of workers' remittances on the real effective exchange rate in India using data from 1980 to 2015. Employing the ARDL approach to cointegration, the study found that remittances cause an appreciation of the exchange rate. One percent increase in remittances led to 0.076% appreciation of the exchange rate in the long run, with a rate of adjustment of 51%. In the same spirit, [Hassan & Holmes \(2013\)](#) examined the long-run relationship between the real exchange rate and remittances for emerging and developing economies. The results confirmed that an increase in remittance inflows lead to an appreciation of the real effective exchange rate. This finding was also confirmed by a panel Error Correction Model (ECM), where unidirectional causal flow was found from remittances to real exchange rate in the short run.

[Acosta, Baerg & Mandelman \(2009\)](#) investigated the impact of remittances on real exchange rate using panel data from 1990 to 2003 for 106 developing and transition countries. The study found results consistent with those of [Joof & Touray \(2021\)](#) and [Kim \(2019\)](#). The study found evidence that remittances put an upward pressure on the real exchange rate, although the effect was weak in deeper and more sophisticated financial markets that could maintain trade competitiveness. [Lopez, Molina & Bussolo \(2007\)](#) investigated the impact of remittances on the real effective exchange rate using cross-country data for 24 Latin American countries. They found a surge in remittance inflows caused an appreciation. [Izquierdo & Montiel \(2006\)](#) found the same results in three out of six Central American countries for the period from 1960 to 2004: the Dominican Republic, El Salvador, and Guatemala. Similarly, [Amuedo-Dorantes & Pozo \(2004\)](#) employed a panel data assembled from 13 Latin American and Caribbean countries over the period from 1978 to 1998, which validated the conventional view that an increase in remittances leads to an appreciation of the real exchange rate.

The second category of literature found remittances to cause a depreciation of the exchange rate. [Adejumo & Ikhide \(2019\)](#) investigated the impact of remittances on the exchange rate in Nigeria using dynamic OLS and data from 1981 to 2014. The study found remittances to cause the exchange rate to depreciate. [Braithim, Nefzi & Sambo \(2018\)](#) investigated the impact of remittances on the real effective exchange rate in nine Middle East and North Africa (MENA) countries using data from 1980 to 2015. Employing panel ARDL, remittances were found to cause a depreciation of the exchange rate. [Essayad, Palamuleni & Satyal \(2018\)](#) examined the impact of remittances on Nepal's real effective exchange rate using the ARDL approach. The study found the same results as those [Adejumi & Ikhide \(2019\)](#) found for Nigeria, where remittances caused real effective exchange rate depreciation in the short run but were insignificant in the long run. [Khurshid et al. \(2017\)](#) carried out a study on the effects of workers' remittances on exchange rate volatility in Pakistan. Using annual time series data and the generalised methods of moment approach, the study found that remittances caused exchange rate depreciation but had a positive effect on export competitiveness. The study further revealed that remittance inflows only led to exchange appreciation if it was associated with savings, while remittances channelled towards consumption reduced competitiveness and caused depreciation. [Barrett \(2013\)](#) employed a model with official development assistance, government expenditure and trade terms in Jamaica using data from 1995 to 2010. The study found that remittances caused a depreciation of the exchange rate.

[Nketiah et al. \(2019\)](#) examined the impact of remittances on real exchange rate in Ghana using data from 1970 to 2016. Employing Ordinary Least Squares (OLS) the study found that remittances have no significant impact on real exchange rate. [Izquierdo & Montiel \(2006\)](#) in a study on six Central American countries using data from 1960 to 2004, found consistent results with [Nketiah et al. \(2019\)](#) for Jamaica, Nicaragua, and Honduras. [Mongardini & Rayner \(2009\)](#) carried out a study on the relationship between remittances and the real effective exchange rate in sub-Saharan African countries and found no relationship between remittances and the real effective exchange rate in the long run mainly because of excess capacity in non-tradable sectors of these countries.

The extant literature reveals a need for further research to establish the impact of remittances on the exchange rate. The inconclusive results of different studies reviewed make generalisation of the result inappropriate. Another study on the nature of the relationship in Kenya will provide more information on how to strike a balance between using remittances as a development finance source and stabilising the exchange rate, as well as provide a conducive environment for economic growth.

### 3. MATERIALS AND METHODS

#### *Estimation techniques*

The ARDL bounds approach was used in this study to investigate the impact of remittances on the exchange rate in Kenya. The ARDL approach was developed by Pesaran & Shin (1999) and later expanded by Pesaran, Smith & Shin (2001). The ARDL approach was selected for this study because of its numerous advantages, such as, the use of variables integrated of different orders and robust in small samples.

#### *Variable definitions*

The key variables in this study are remittances (REM) and exchange rate (EXR). The remittances are measured by remittance inflows as a percentage of GDP, while the exchange rate was measured by the real exchange rate between the Kenyan Shilling and the US Dollar using the average period rate. Remittances are anticipated to cause an appreciation of the nominal exchange rate.

The variable descriptions are given in Table 1.

**Table 1.** Variable Descriptions for the Model

Variable	Description	Expected Impact on Exchange Rate
EXR	Shillings/US\$ – average period nominal exchange rate	-
REM	Remittance inflows as a percentage of GDP	Remittances are expected to cause an appreciation of the exchange rate.
FDI	FDI inflows as a percentage of GDP	FDI is expected to cause an appreciation of the exchange rate.
TOP	Exports and imports as a percentage of GDP	Trade openness is expected to cause an exchange rate appreciation if exports outweigh imports.
BM	Broad money as a percentage of GDP	Broad money is expected to cause an exchange rate depreciation.
GFE	Government consumption expenditure as a percentage of GDP	Government consumption expenditure is expected to cause exchange rate depreciation.
GDPG	GDP growth rate	Economic growth is expected to cause exchange rate appreciation.
PL	Price level	High prices are expected to cause exchange rate depreciation.

Source: Authors' compilation

#### *Model Specification*

The ARDL bounds model specification is given in Equation 1 below.

$$\begin{aligned}
\Delta EXR = & \varphi_0 + \sum_{i=1}^p \varphi_{1i} \Delta EXR_{t-i} + \sum_{i=0}^q \varphi_{2i} \Delta REM_{t-i} + \sum_{i=0}^q \varphi_{3i} \Delta FDI_{t-i} + \sum_{i=0}^q \varphi_{3i} \Delta TOP_{t-i} \\
& + \sum_{i=0}^q \varphi_{4i} \Delta BM_{t-i} + \sum_{i=0}^q \varphi_{5i} \Delta GFE_{t-i} + \sum_{i=0}^q \varphi_{6i} \Delta GDPG_{t-i} + \sum_{i=0}^q \varphi_{7i} \Delta GDPC_{t-i} \\
& + \pi_1 EXR_{t-1} + \pi_2 FDI + \pi_3 TOP + \pi_4 BM_{t-1} + \pi_5 GFE_{t-1} + \pi_6 GDPG_{t-1} \\
& + \pi_7 GDPC_{t-1} + \mu_{1t}
\end{aligned} \tag{1}$$

Where:

EXR – exchange rate

REM – remittances

FDI – foreign direct investment

TOP – trade openness

BM – broad money

GFE – government consumption expenditure

GDPG – GDP growth rate

PL – price level

$\varphi_0$  – is a constant;  $\varphi_1 - \varphi_7$  and  $\pi_1 - \pi_7$  are coefficients; and  $\mu_t$  is the error term.

### ECM-based Model Specification

The ARDL bounds testing approach to cointegration is used to examine whether there is a long-run relationship between the variables in the model. The ARDL bounds test uses a set of critical values: the upper and the lower bound. The calculated statistics are compared to the upper and lower bounds. If the calculated statistics are above the upper bound, cointegration is confirmed at either 1%, 5% or 10%. If the calculated F-statistic is less than the lower bound, no long-run relationship is confirmed. However, if the F-statistic is between the lower and the upper bounds, the results are inconclusive. If cointegration is confirmed in the model, the estimation is done in two steps. The first step is the estimation of the long-run relationship and saving the residuals. The residuals are included in the estimation of the short-run equation. In the case of no cointegration, only an estimation of the short-run equation is done.

$$\begin{aligned}
\Delta EXR = & \varphi_0 + \sum_{i=1}^p \varphi_{1i} \Delta EXR_{t-i} + \sum_{i=1}^q \varphi_{2i} \Delta REM_{t-i} + \sum_{i=1}^q \varphi_{3i} \Delta FDI_{t-i} + \sum_{i=1}^q \varphi_{4i} \Delta TOP_{t-i} \\
& + \sum_{i=0}^q \varphi_{5i} \Delta BM_{t-i} + \sum_{i=1}^q \varphi_{6i} \Delta GFE_{t-i} + \sum_{i=1}^q \varphi_{7i} \Delta GDPG_{t-i} + \sum_{i=1}^q \varphi_{8i} \Delta GDPC_{t-i} \\
& + \theta_1 ECM_{t-1} + \mu_{1t}
\end{aligned} \tag{2}$$

Where all the variables are as described in Equation 1,  $\varphi_1 - \varphi_7$  and  $\theta_1$  are coefficients.

### Data Sources

The data for the study – namely, remittances (REM), exchange rate (EXR), foreign direct investment (FDI), trade openness (TOP), broad money (BM), government consumption expenditure (GFE), economic growth (GDPG) and price level (GDPC) – were extracted from the World Bank Development Indicators ([World Bank, 2022](#)). Exchange rates were retrieved from the [CBK \(2021\)](#).

## 4. RESULTS

**Table 2.** Unit Root Test

Panel 1: Dickey-Fuller Generalised Least Squares (DF-GLS)				
Variable	Stationarity of all Variables in Levels		Stationarity of all Variables in First Difference	
	Without Trend	With Trend	Without Trend	With Trend
EXR	-0.4398	-1.9567	-5.8439***	-5.8899***
REM	-2.5237	-1.5475	-5.7422***	-5.2374***
FDI	-4.1916***	-5.0704***	-	-
GDPG	-3.3326***	-3.7597**	-	-
GFE	-0.7520	-2.5972	-4.6788***	-5.2664***
TOP	-1.2875	-2.2561	-6.1704***	-6.2208***
BM	-1.4462	-2.3807	-7.0370***	-7.2662***
PL				
Panel 2: Phillips-Perron (PP)				
Variable	Stationarity of all Variables in Levels		Stationarity of all Variables in First Difference	
	Without Trend	With Trend	Without Trend	With Trend
EXR	-0.8370	-1.8774	-5.7885***	-5.7275***
REM	-1.1750	-2.1522	-5.6110***	-5.7712***
FDI	-4.2316***	-5.3110***	-	-
GDPG	-3.5975**	-3.7362**	-	-
GFC	-1.7256	-2.8067	-5.5182***	-5.4182***
TOP	-1.7392	-2.2942	-6.1080***	-6.0735***
BM	-1.7977	-2.4600	-7.0791***	-7.0831***
PL				

Note: \*, \*\* and \*\*\* denote stationarity at 10%, 5% and 1% significance levels respectively.

Source: Authors' calculation

The results in Table 2 confirm that all the variables are stationary in their levels or in the first difference. Stationarity is when the mean, covariance, and variance of variables in a model remain constant over time ([Gujarati & Porter, 2010](#)). To proceed with the data analysis, long run relationship among variables in the model was tested. The results are resented in Table 3.

**Table 3.** Cointegration Results

Dependent Variable	Function	F-Statistic	Cointegration Status
EXR	F(EXD REM, FDI, TOP, BM, GFC, GDPG, PL)	8.1380***	Cointegrated

Note: \*, \*\* and \*\*\* denote stationarity at 10%, 5% and 1% significance levels respectively.

Source: Authors' calculation

### *Coefficient Estimation*

The confirmation of cointegration in the model implies an estimation of the long-run equation and saving the residuals as the first step. The second step is the estimation of the short-run equation, including the residuals. The selection of appropriate lags for the variables in the model was done using the Schwarz Bayesian Information Criteria (SIC). The criterion was selected because it gave the most parsimonious equation. The optimal lag length selection for the model is 1, 2, 0, 1, 0, 1, 2, 0 (REM, FDI, TOP, GFC, GDPG, BM and PL respectively). The long-run and the short-run results are reported in Table 4.

**Table 4.** Long-Run and Short-Run Results

Regressors	Coefficient	T-ratio
Panel A - Long run Results		
C	-59.7807	0.7690
REM	0.9761***	2.9392
FDI	0.8784***	2.9099
TOP	-0.6655	-1.1674
GFC	0.5942	0.2227
GDPG	-0.7364*	-1.9469
BM	0.6752***	3.6037
PL	0.1045	0.7690
Panel B – Short-Run Coefficients		
$\Delta rem$	0.2656**	2.2283
$\Delta rem1$	0.1604**	3.1062
$\Delta FDI$	0.7790**	2.4393
$\Delta TOP$	0.2905**	2.3739
$\Delta GFC$	0.17982	0.2144
$\Delta GDPG$	-0.1761	-0.5249
$\Delta BM$	0.1263	0.4017
$\Delta BM1$	0.7165**	2.1843
$\Delta PL$	0.0316	0.6408
ECM (-1)	-0.3026***	-3.3405
R-squared – 0.778		
S.E of Regression – 3.2943		
Akaike Info Criterion – -107.367		
R-Bar Squared – 0.6487		
F-Stat (10, 28) – 8.4183[0.000]		
Schwarz Bayesian Criterion – 119.8433		

Note: \*, \*\* and \*\*\* denote stationarity at 10%, 5% and 1% significance levels respectively.

Source: Authors' calculation

## 5. DISCUSSIONS

The results in Table 4, Panel A and Panel B, show the positive impact of remittances on the nominal exchange rate. This is reflected by a coefficient that is positive and significant at 1% level of significance in the long run and 5% level of significance in the short run. The findings point to the fact that remittances cause a depreciation of the exchange rate in Kenya. The findings of this study are not unique for Kenya alone. [Adejumo & Ikhide \(2019\)](#) in a study on Nigeria; [Braithim, Nefzi & Sambo \(2018\)](#) in a study on nine MENA countries; and [Essayad, Palamuleni & Satyal \(2018\)](#) in a study on Nepal found the same results. The same pattern is exhibited by the trend in remittances and exchange in Figure 1 and Figure 2, respectively. The possible explanation for this relationship is that remittances have an influence on the exchange rate indirectly through the channels that households decide to use to remit the funds. If remittances are used for consumption purposes, they result in exchange rate depreciation because they cause exports to be less competitive and possibly cause a surge in import demand. This could be the case for Kenya. Although the financial system is advancing, it is possible that the recipients of remittances have limited knowledge or access to the financial instruments for investment and savings. This implies that policy makers in Kenya need to complement remittances promoting policies with education on different export competitive promoting channels and vehicles that can be exploited by remittance recipients besides consumption.

Other results reported in Table 4 show that FDI has a positive impact on the exchange rate in the short run and the long run. Thus, FDI causes an increase in the nominal exchange rate – a depreciation. One possible explanation was identified by [Khurshid et al. \(2017\)](#) that if FDI was related to acquisition associated with privatisation, it would not cause an appreciation of the exchange rate. Trade openness was found to have no impact on the exchange rate in the long run, but only a positive impact in the short run. This outcome corroborates the depreciation effect of remittances on the exchange rate. The surge in consumption due to remittance inflows could account for the positive impact in the short run. However, in the long run, there could be a tendency of exports and imports levelling up, resulting in no impact on the exchange rate. Government consumption expenditure as a percentage of GDP has no impact on the exchange rate in Kenya. Economic growth was found to have a negative impact in the long run, but not in the short run. The study also found that broad money has a positive impact on the exchange rate in the long run and in the short run. According to the results in Table 4, an increase in the money supply results in an exchange rate depreciation. This is in line with economic theory, where an increase in money supply (especially not matched by production) is inflationary and less favourable

for both external and internal investors (Mohr & Associates, 2015). The price level was found to be insignificant in both short and long run.

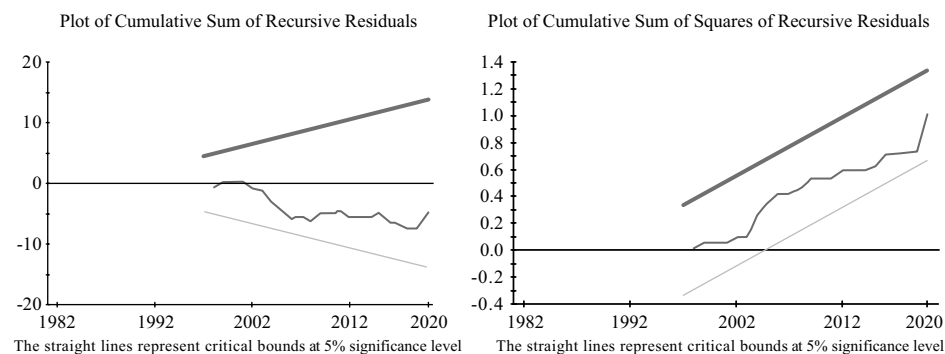
The error term (ECM) for the model had the right sign, with a coefficient of 0.302. It took slightly more than three years for the Kenyan economy to return to equilibrium when there is disequilibrium. The function is the right fit for the model with an explanatory power of 77%. The model passed all diagnostic tests, and the results are reported in Table 5.

**Table 5.** Diagnostic Results

LM Test Statistic	Results
Serial Correlation	2.515 [0.113]
Functional Form	1.846 [0.174]
Normality	0.657 [0.720]
Heteroscedasticity	0.514 [0.219]

Source: Authors’ calculation

The model is stable at 5% level of significance as reported in Figure 1: cumulative sum of recursive residuals (CUSUM) and the cumulative sum of square recursive residuals (CUSUMSQ).



**Figure 3.** CUSUM and CUSUMSQ Plots

Source: Authors’ calculation

## 6. CONCLUSIONS

This study investigated the impact of remittances on the nominal exchange rate in Kenya using annual time series data from 1980 to 2020. The variables of interest were nominal exchange rate and remittance inflows; however, control variables (FDI, trade openness, government consumption expenditure, economic growth, broad money, and price level) were also included to ensure that the

model is fully specified. Using the ARDL approach, the findings of this study revealed that remittances had a positive impact on the exchange rate irrespective of the timeframe considered. Thus, remittances lead to nominal exchange rate depreciation according to the findings of this study. The study fails to support the argument that remittance inflows lead to an appreciation of the local currency as opined by some previous studies. The depreciation of the nominal exchange rate causes tradable goods and services in Kenya to be attractive, according to the finding of this study. Thus, remittances help to promote exports in Kenya. Based on the findings of the study, policy makers in Kenya need to avail more channels that remittance-receiving families can use to promote savings rather than consumption. This will ensure that the consistent increase in remittances received by the country is channelled into productive activities that promote economic stability and growth in line with the SDGs. Promotion of remittances will also promote exports contributing positively to the balance of payments.

### Conflict of interests

The authors declare there is no conflict of interest.

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## ПРИЛИВИ ДОЗНАКА И ДЕВИЗНИ КУРС У КЕНИЈИ: ЕМПИРИЈСКО ИСТРАЖИВАЊЕ

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### САЖЕТАК

**Сврха:** Ова студија је истраживала утицај дознака на номинални курс у Кенији, користећи годишње податке од 1980. до 2020. Студија је била мотивисана потребом да се открије како дознаке утичу на девизни курс у Кенији, имајући у виду повећање прилива дознака у земљама са ниским и средњим приходима, укључујући Кенију. Ово је важно јер Кенија наставља да гради стабилно макроекономско окружење које подржава економски раст и друге прекретнице наведене у Циљевима одрживог развоја.

**Методологија:** Студија је користила ауторегресивни дистрибуирани приступ коинтеграцији.

**Резултати:** Студија је утврдила позитивну везу између дознака и номиналног девизног курса и на кратак и на дуги рок. Наведено имплицира да повећање прилива дознака у Кенији доводи до депресијације валуте.

**Закључак:** Студија стога закључује да приливи дознака у Кенији нису повезани са феноменом холандске болести.

**Препорука:** Препоручује се да Кенија настави да спроводи политике које подржавају приливе дознака како би се остварило побољшање платног биланса у Кенији.

**Кључне ријечи:** *Кенија, дознаке, девизни курс, ауторегресивно дистрибуирано кашњење, апресијација, депресијација.*



# OPTIMIZING THE ECONOMIC BENEFITS OF PUBLIC SPENDING FROM NATIONAL YOUTH DEVELOPMENT AGENCY GRANT FUNDING

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## ABSTRACT

This study examined the economic benefits of the National Youth Development Agency (NYDA) grant funding, in the Eastern Cape, using cost benefit analysis (CBA) and least absolute deviation (LAD) regression analysis on a sample size of 253 respondents. The study found that public investment towards youth entrepreneurship through NYDA grant funding yields positive social returns. The study further found that the development of youth entrepreneurship should go beyond just NYDA grant funding to include favorable policies towards closing gender gaps, supportive education systems as well ensuring diverse economic sectors.

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## 1. INTRODUCTION

Welfare maximization is an ultimate objective for governments, therefore economists are constantly attempting to find ways of optimizing welfare benefits based on the rational allocation of total resources in and amongst members of society as well as the redistribution of wealth through taxation and legislation (Irshad, 2016, p.1). For this reason, this study focuses on assessing whether government spending through the National Youth Development Agency (NYDA) grant funding, in the Eastern Cape province of South Africa, has been favorable.

The NYDA grant funding came into effect in 2013 and is specifically designed to provide young South African entrepreneurs with an opportunity to access both financial and non-financial business support to establish or expand their

businesses. The NYDA grant funding uses governmental resources that are scarce and subject to opportunity costs, whose alternatives are often forgone, in favor of supporting the NYDA mandate. Over a period of 7 years (2013-2019) the NYDA has also disbursed grants to youth enterprises and cooperatives across the country, to the value of about R204.5 million. Given the large amount of public funds invested through the NYDA grant funding, it was important to assess whether this investment had favorable` social benefits.

More importantly is that since the inception of NYDA grant funding its economic impact has not previously been measured or assessed. As such, there has not been any scientific basis to justify NYDA grant funding before the commencement of this current work. In this way, the study contributes to the existing body of knowledge in the discipline of welfare economics by, for the first time, scientifically measuring public funds flowing to the NYDA mandate.

## 2. THEORETICAL FRAMEWORK

Welfare economics, as a field, offers the theoretical framework used in public economics to better aid collective decision-making, design public policies, and make social evaluations (Baujard, 2013, p.1). The term ‘welfare economics’ was coined by Arthur Cecil Pigou in his publications *Wealth and Welfare (1912)* and *Economics of Welfare (1920)*, (Nath, 1973; Baujard, 2013; Caldari & Nishizawa, 2014; Forte, 2018). Modern welfare economics has, since, emerged through an evolution process of aggregating the different theories of different economists across different times, namely Pareto Optimality, Kaldor-Hicks Compensation Criterion, Social Welfare Function of Bergson and Samuelson, Scitovsky Criterion, and Amartya Sen’s Theory of Welfare (Irshad, 2016, p. 2-3). However, Black and Siebrits (2019, p. 84), claim that when assessing the welfare effects of public policy, economists normally distinguish between two criteria: Pareto Optimality and Bergson criterion.

The Pareto Optimality criterion, named after Vilfredo Pareto, is a state of economic affairs where no one can be made better off without simultaneously making at least one other person worse off (Nas, 1996, p.11). This means that under the Pareto criteria, then, a policy-induced change is justified only if it improves the wellbeing of at least one person without harming any other (Black & Siebrits, 2019, p. 84). Additionally, according to Akter (2016) and, Black and Jansen (2019), this ideal and allocative efficiency requires the simultaneous concurrence of the following three conditions: Pareto optimality in consumption<sup>1</sup>;

<sup>1</sup> Pareto optimality in consumption occurs when the marginal rates of substitution in consumption are identical for all consumers and no consumer can be made better off without making others worse off (Akter 2016, p. 31; Black & Jansen, 2019, p. 22).

Pareto optimality in production<sup>2</sup>; and simultaneous equilibrium for consumers and producers<sup>3</sup>.

On the other hand, the Bergson criterion was first introduced by Abram Bergson in his article *A Reformulation of Certain Aspects of Welfare Economics* (1938), (Nath, 1973, p. 57). Bergson, followed by Paul Samuelson in 1947, developed the ‘Social Welfare Function’ theory for measuring welfare (Irshad, 2016; Igersheim, 2019). Black and Siebrits (2019, p. 88-89) state that the Bergson criterion is best explained by a social welfare function according to which a community’s welfare is defined in terms of the utilities of all the individuals making up the community. This makes the Bergson criterion much broader than earlier welfare theories and allows for welfare improvement even if one or more individuals are harmed in the process (Black & Siebrits, 2019, p. 84). This means that a redistribution of income can be justified on welfare grounds even if it places one or more individuals in a worse position (Black & Siebrits, 2019, p. 84).

The principles of welfare economics, thus, form the basis for research into how government interventions improve social welfare (Akter, 2016, p.43). Essentially, welfare economics creates the basis upon which stakeholders can judge the achievements of policymakers in allocating resources (Akter, 2016, p. 1). As such, research questions into the (possible) effects of various policies on the welfare of a society are either about the future impact (*ex ante*), e.g. if this economic policy will increase social welfare or about the past impact (*ex post*), e.g. if that economic policy increased social welfare (Nath, 1973, p. 57).

Empirical methods and techniques such as cost-benefit analysis (CBA), cost-effectiveness analysis (CEA), multi-criteria decision analysis (MCDA), and general equilibrium approaches aid in assessing the economic or overall societal effects of project or policy interventions (Robinson, 1993; Mullins et al., 2014).

### 3. MATERIALS AND METHODS

*Cost-benefit Analysis:* Given that the NYDA grant funding is financed from public funds, the primary hypothesis of this study was tested using the CBA methods as a means of evaluating the merits of the program. The CBA was

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2 Pareto optimality in production occurs when the marginal rate of transformation in production is identical for all products and it is impossible to increase the production of any good without reducing the production of other goods, (Akter, 2016, p. 31; Black & Jansen, 2019, p. 23).

3 Simultaneous equilibrium for consumers and producers occurs when the marginal rates of substitution in consumption are equal to the marginal rates of transformation in production, such as when production processes must match consumer wants, (Akter, 2016, p. 31; Black & Jansen, 2019, pp. 25-26).

used to quantify the net benefits of NYDA grant funding in the Eastern Cape by comparing the benefits thereof with the corresponding costs. The annual NYDA grant funding disbursed (i.e., costs) and the recipients' annual business turnover (i.e., benefits) were deemed applicable for the purposes of conducting the CBA. The following methodological steps were followed when conducting CBA.

The first step in the CBA was to identify and assign monetary values to the costs and benefits. The related costs were identified as the actual grant amounts disbursed through NYDA in the Eastern Cape. These costs were sourced and provided by the finance department of the NYDA from audited financial statements only for the period 2016-2019. In order to identify the benefits, the surveyed respondents were asked to indicate their businesses' annual turnovers over the period under review.<sup>4</sup> The associated benefits were then calculated from one year after the receipt of the participants' respective NYDA grant funding.

The second step was to discount the costs and benefits in order to evaluate them in a time dimension (i.e., base year/date). In line with suggestions by Mullins et al. (2014, p.69), 8% was selected as the discount rate in this study's CBA. The discounting formulas for each factor are presented below:

$$PVC = \sum \frac{C_t}{(1+r)^t} \quad (1)$$

Where:

*PVC* = present value costs,

$C_t$  = costs,

*r* = discount rate, and

*t* = period.

$$PVB = \sum \frac{B_t}{(1+r)^t} \quad (2)$$

Where:

*PVB* = present value benefits,

$B_t$  = benefits,

*r* = discount rate, and

*t* = period.

4 Considerations for establishing impact of the NYDA business support services were made using a 3-point Likert-type scale (1= no impact, 2 = minor impact, 3= major impact). The mean scores associated with the impact of NYDA grant funding were biased towards a score of 3 (i.e., major impact).

In the assessment criteria step of the CBA, the Net Present Value and Benefit-Cost Ratio were used as decision-making criteria.<sup>5</sup> The formulas are as follows:

$$NVP = \sum \frac{B_t - C_t}{(1+r)^t} \quad (3)$$

Where:

$NPV$  = present value benefits,

$B_t$  = benefits,

$C_t$  = costs,

$r$  = discount rate, and

$t$  = period.

$$BCR = \frac{\sum \frac{B_t}{(1+r)^t}}{\sum \frac{C_t}{(1+r)^t}} \quad (4)$$

where:

$BCR$  = benefit-cost ratio,

$B_t$  = benefits,

$C_t$  = costs,

$r$  = discount rate, and

$t$  = period.

The last step in the CBA was to determine how a change in any one or more of the variables would affect the value of the NPV and BCR, respectively. To that end, two percentage points are added and subtracted to the aforementioned 8% discount rate in order to calculate the upper and lower bound estimates.

*Regression Analysis:* The study also determined the significance of other factors (i.e., gender, education and growth rates) in influencing the business performance of the NYDA grant recipients. The secondary hypotheses were tested by using a least absolute deviation (LAD) regression analysis in cross-sectional data relating to respondents' annual turnover over the period 2014-2019. LAD is suggested as an alternative method to the ordinary least squares (OLS) approach to estimating regression coefficients, as it is insensitive to outliers and, therefore, tends to be more robust (Dodge, 1997; Giloni, Simonoff & Sengupta, 2006; Yong, 2014).

<sup>5</sup> A decision rule or criterion for the acceptance of a project is that the NPV must be greater than zero (i.e., positive); the BCR must be more than one ('1'), (Mullins et al., 2014, p. 42).

The secondary hypotheses are expressed in the following equation:

$$\pi_t = \beta_0 + \beta_1\phi_i + \beta_2\ddot{E}_i + \beta_3\Omega_i + e_i$$

Where:

$\pi$  = average annual turnovers (2014-2019),

$\beta_0$  = intercept term,

$\phi$  = gender (dummy variable: 1 if male; 0 if female),

$\ddot{E}$  = education (dummy variable: 1 if post school; 0 otherwise),

$\Omega$  = average Eastern Cape GDP growth rates per industry (2014-2019),

$e$  = error term,

$i$  =  $i^{\text{th}}$  observation, and

$t$  = period.

*A priori* expected signs of the coefficients  $\beta_1$ ;  $\beta_2$ ;  $\beta_3$  were as follows:

*Gender ( $\phi$ ):* a positive coefficient was expected in that businesses owned by males accrue higher turnovers than their female counterparts.

*Education ( $\ddot{E}$ ):* a positive coefficient was expected in that post-school education leads to improved turnovers.

*Industry GDP Growth Rate ( $\Omega$ ):* a positive coefficient was expected in that the growth rates of the provincial economy have a positive impact on turnover.

In order to test that the parameters were not statistically significant, a two-tailed t-test was performed.

*Data Collection:* In order to achieve Denzin's (1978) triangulation, the study employed multiple data collection methods, including using a questionnaire, focus group and secondary data. First, the NYDA was approached for a list of the NYDA grant funding recipients in the Eastern Cape province of South Africa over the period 2013-2018, and a list of approximately 681 beneficiaries was provided. A scientifically sound sample size was derived by use of a Raosoft calculator at a 5% margin of error, which was calculated to be 246 respondents. The study primarily adapted probability sampling, as well as snowballing techniques - where it was difficult to locate the study population. Ultimately, the total number of respondents who took part in this study amounted to 253. The questionnaire was used to collect data on the demographics of the NYDA grant funding beneficiaries, business characteristics, their subjective perceptions on the impact of the NYDA support interventions, as well as their business challenges. In order to test the internal consistency and, thereby, the reliability of the research instrument used, the Cronbach's alpha coefficient was calculated using IBM SPSS Statistics 27.0.1.0. The results obtained showed high reliability

at 0.829. To gather more detailed opinions and knowledge about the research topic a focus group session was held with selected participants based on their willingness to share information beyond the scope of the questionnaire during the face-to-face survey phase of the research. The participants are based in various locations within the Eastern Cape Province and were all business owners operating different types of businesses in different sectors. Lastly, secondary data used in the regression analysis (i.e., the GDP growth rates of the industry sectors in the Eastern Cape for the years 2014-2019) was sourced from Statistics South Africa website.

#### 4. RESULTS

**Table 1.** Results of Cost-Benefit Analysis at 8% discount rate (2016-2019)

Years	Discount Factor	Total Costs	Present Value Costs	Total Benefits	Present Value Benefits
0	1	4 015 718.4	4 015 718.4	0	0
1	0.925925926	6 044 791.29	5 597 028.972	12 692 480.50	11 752 296.76
2	0.85733882	10 307 681.67	8 837 175.643	31 534 948.50	27 036 135.55
3	0.793832241	4 264 841.08	3 385 568.352	50 414 912.50	40 020 982.97
		<b>R24 633 032.44</b>	<b>R21 835 491.37</b>	<b>R94 642 341.50</b>	<b>R78 809 415.28</b>

Source: Authors' calculation

First, the results presented in Table 1 indicate that when total costs are subtracted from the total benefits, the grant funding offered by the NYDA over the period 2016-2019 led to a social welfare gain of R70 009 309.06. From the presented results, the NPV results were greater than zero (i.e.,  $NPV > 0$ ). The results also indicate that the BCR was more than one ( $BCR > 1$ ).

**Table 2.** Results of Cost-Benefit Analysis at 6% discount rate (2016 - 2019)

Years	Discount Factor	Total Costs	Present Value Costs	Total Benefits	Present Value Benefits
0	1	4 015 718.40	4 015 718.40	0	0
1	0.943396226	6 044 791.29	5 702 633.29	12 692 480.50	11 974 038.21
2	0.88999644	10 307 681.67	9 173 799.99	31 534 948.50	28 065 991.90
3	0.839619283	4 264 841.08	3 580 842.81	50 414 912.50	42 329 332.69
		<b>R24 633 032.44</b>	<b>R22 472 994.49</b>	<b>R94 642 341.50</b>	<b>R82 369 362.80</b>

Source: Authors' calculation

Based on these calculations presented in Table 2, the NPV results were found to be greater than zero (i.e.,  $NPV > 0$ ). The BCR results were also found to be more than one ( $BCR > 1$ ).

**Table 3.** Results of Cost-Benefit Analysis at 10% discount rate (2016-2019)

Years	Discount Factor	Total Costs	Present Value Costs	Total Benefits	Present Value Benefits
0	1	4 015 718.40	4 015 718.40	0	0
1	0.909090909	6 044 791.29	5 495 264.81	12 692 480.50	11 538 618.64
2	0.826446281	10 307 681.67	8 518 745.18	31 534 948.50	26 061 940.91
3	0.751314801	4 264 841.08	3 204 238.23	50 414 912.50	37 877 469.95
		<b>R24 633 032.44</b>	<b>R21 233 966.62</b>	<b>R94 642 341.50</b>	<b>R75 478 029.49</b>

Source: Authors' calculation

From the presented calculations in Table 3, the NPV results were greater than zero (i.e.,  $NPV > 0$ ). The BCR results were similarly found to be more than one ( $BCR > 1$ ).

**Table 4.** Results of Least Absolute Deviation Regression Analysis

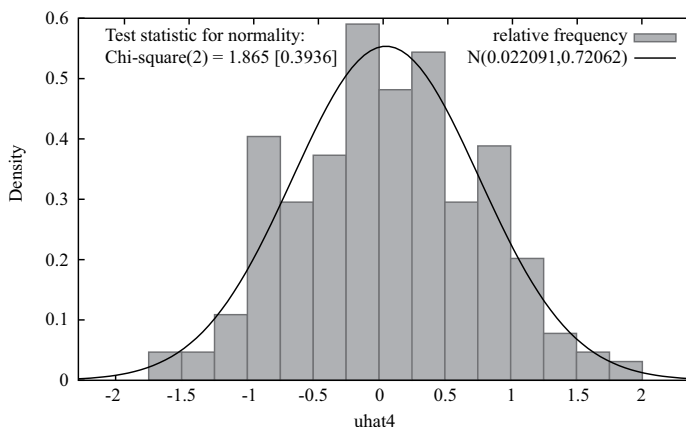
Variable	Coefficient	Std. Error	t-ratio	p-value	Significance
Constant	3.89638	0.119073	32.72	<0.0001	***
Gender	0.398662	0.135689	2.938	0.0036	***
Education	0.645200	0.127056	5.078	<0.0001	***
Industry GDP growth rates	0.102445	0.0596059	1.719	0.0869	*

Source: Authors' calculation

\* significant at the 10 percent level

\*\* significant at the 5 percent level

\*\*\* significant at the 1 percent level

**Figure 1.** Normality of residual

Source: Authors' calculation

The regression results presented in Table 4 indicate that gender, education, and industry GDP growth rates are all significantly related to the performance of the respondents' annual business turnovers. The test for normality presented in Figure 1 further confirmed that the variables are independent of each other (i.e., are not associated).

## 5. DISCUSSIONS OF THE RESULTS

The CBA revealed that the estimated benefits exceed the estimated costs (i.e. NPV is positive), given the applied discount rates (8%, 6% and 10%). The CBA findings further imply that the public expenditure for Eastern Cape youth businesses through the NYDA grant funding was economically viable during the period under review (i.e., BCR more than one). Since the CBA was conducted *ex post*, this makes the research findings useful for learning about the actual rather than a projected value of the program.

The CBA findings were supported by the focus group discussion. In general, the focus group participants indicated that the NYDA's grant funding was beneficial, as it helped the participants to: kick-start their businesses, obtain assets that are still in their possession and regularly used in their business operations, have a professional businesses appearance and ultimately secure business opportunities. It was also noted from participants that without the NYDA grant funding their businesses' performance would have been poor as it would have taken longer for their businesses to establish and grow. The participants further stated that they gained value from the NYDA's grant funding as it came with other non-financial business support services, including pre and post-care from NDYA staff. At the same time, the focus group participants suggested improvements in the areas of access to finance for businesses in the growth or expansion stage, application turnaround times, access to markets, links to the entrepreneurship ecosystem, lowering administrative burden, mentorship, monitoring and evaluation and organizational culture.

The LAD regression results further showed that the annual turnovers of the participating youth businesses were impacted by factors such as gender, education, and industry GDP growth rates. These findings revealed that business turnovers of the NYDA grant funding recipients are biased towards male-owned businesses, as well as business owners with post-school qualifications. Also, the economic performance of the Eastern Cape industry sectors had an impact on the success of the participants' business turnovers.

## **6. CONCLUSIONS AND RECOMMENDATIONS**

The study concludes that NYDA grant funding in the Eastern Cape generally yields positive social returns in the form of relative increases in recipients' business turnover, and thus contributed to increased welfare in the province. However, the recipients' gender, education and industry GDP growth rates also had a significant impact on the business annual turnover. Notwithstanding the presented conclusions, in order to optimize the economic benefits of the public spending through the grant funding program, it is recommended that NYDA implements the following:

- Increase the grant funding budget significantly to make the program permanently sustainable.
- Provide business support services to more female entrepreneurs, to grow the number of female-led youth-owned businesses.
- Develop a grant funding-linked service aimed specifically at providing disabled youth entrepreneurs with business support services.
- Promote entrepreneurship as a viable and even preferred career choice for youth – especially youth with a tertiary education, supported by entrepreneurship education that cuts across all education fields.
- Consider more rural youth entrepreneurs as possible grant funding recipients, to grow the number of rural youth-owned businesses.
- Provide more support in the sectors where young people appear to be struggling to establish their presence, i.e., agriculture, utilities, construction, and logistics to grow the number of youth businesses in these industries.
- Review the current grant funding exclusions in relation to extant businesses' annual turnover limits; as well as the methodology used to calculate grant amount ranges to be awarded to youth enterprises, particularly in respect to those businesses operating in the growth or expansion stage.
- Strengthen the training and re-training of young entrepreneurs in the areas of innovative marketing and sales pitching, as well as public procurement and tendering. This should be supported by NYDA prioritizing youth entrepreneurs as part of their own internal procurement processes including qualifying NYDA grant funding recipients.
- Digitize the grant funding application process and develop an online grant funding tracking system, where applicants can easily track the progress and status of their application without having to visit or call NYDA offices.
- Make use of online platforms as a means of ensuring easy access and wider reach of its existing Entrepreneurship Development Program.
- Review the current business mentorship programs in order to improve their effectiveness.

- Lobby private and public institutions to provide business infrastructure support for youth businesses, including business premise rental subsidies or discounted rates, mobile vans/containers, and/or designated market stalls.
- Make a case for the extension of Covid-19 relief support schemes for youth businesses for a minimum of 3 years.
- Review the present grant funding practices against international best practices, so as to improve the culture of its organization in serving youth businesses.

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### Conflict of Interests

The authors declare there is no conflict of interest.

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## ОПТИМИЗАЦИЈА ЕКОНОМСКИХ КОРИСТИ ЈАВНЕ ПОТРОШЊЕ ИЗ ГРАНТ ФИНАНСИРАЊА НАЦИОНАЛНЕ АГЕНЦИЈЕ ЗА РАЗВОЈ МЛАДИХ

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### САЖЕТАК

Ова студија је испитала економске користи гранта Националне агенције за развој младих у Источном Кејпу, користећи анализу трошкова и користи и регресиону анализу најмањег апсолутног одступања на узорку од 253 испитаника. Студија је показала да јавна улагања у омладинско предузетништво кроз грантове Агенција доносе позитивне друштвене поврате. Студија је даље открила да развој омладинског предузетништва треба да превазиђе само финансирање грантова Агенције и да укључи повољне политике за престанак родних неравноправности, подстицајне образовне системе, као и обезбјеђивање различитости привредних сектора.

**Кључне ријечи:** *економија благостања, социјална заштита, економски утицај, анализа трошкова и користи, млади, предузетништво, финансирање грантова, Национална агенција за развој младих.*

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**ПРЕТХОДНО САОПШТЕЊЕ**  
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# INDUSTRIAL POLICY IN ASIAN NEWLY INDUSTRIALIZED COUNTRIES: CONTROVERSIES, REVIEW AND LESSONS

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## ABSTRACT

The paper's aim is to use the successful example of the newly industrialized Asian countries, as well as the countries of the East Asian region in general, to prove the need to implement industrial policy in many countries, both those lagging behind in industrial development and those that have reached the technological frontier. The paper describes the evolution of industrial policy in these countries and what distinguishes them from other developing countries that were unsuccessful in its implementation: the developmental state, which recognized timely the turning point from the strategy of import substitution to the strategy of export promotion, implemented both strategies simultaneously, picked winners, provided support to infant industries through selective interventions, but also disciplined the recipients of its support, tracked its own comparative advantages and anticipated their changes, with a strong synergy between the state and private sectors, and looking at Japan as a model of industrial development, i.e. the lead goose. Industrial policy is one of the most controversial issues in economics. There has been a long debate between two schools of thought - orthodoxy and heterodoxy - as to whether there is a need for industrial policy in general, as well as the role of the state in the process of its creation and implementation, as opposed to the free market model of development in which there is no place for industrial policy, and if it appears it can be only of a general nature, and by no means in the form of selective interventions. Over the last 10 to 15 years, there has been a revision both at the academic level and in the real world that has made industrial policy more acceptable, and thus the debate about it has become less ideologically colored and more pragmatic and nuanced. At the theoretical level, the market fundamentalist view of little theoretical justification for industrial policy has lost its dominance. Despite maintaining neoliberal orthodoxy as the advice

of international financial institutions in the process of creating economic policy in developing countries, industrial policy remained important for the promotion of industrial development, especially the infant industries. It is accepted that there are many types of market failures that must be addressed through industrial policy. It is increasingly recognized that industrial policy is not just a highly idiosyncratic practice associated only with the miracle economies of East Asia, but what most of today's developed countries used when they were in the position of the catching-up countries. As a conclusion, the paper discusses the possibility of transferring the East Asian model to other countries, and sheds light on the determinants of industrial policy success and failure. The key conclusion is that there is room for successful industrial policy even in countries that have reached the technological frontier and want to push it further, as well as in countries lagging behind in industrial development, although the global context in which industrial policy is situated has changed over time. A special commentary is referred to the economic and industrial development of the former countries of Yugoslavia.

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## **1. INTRODUCTION**

Although focused on the growth and development of the industry, industrialization represents an extremely broad issue related to almost all aspects of economic development.

Although industrial policy as a factor of economic growth is crucial, it has long been neglected and underestimated by many authors. However, a heterodox perspective has challenged the prevailing orthodox paradigm of industrial policy by emphasizing the need for government intervention to promote industrial development.

Stimulating the development and growth of the industrial sector became a priority in most developing countries (LDCs) after the Second World War. Despite efforts, the industrial sector has experienced uneven growth in major world regions. Generally, Asian newly industrialized countries (NICs) have recorded positive and high growth rates (Amsden, 1985), while most other LDCs achieved negative or negligible industrial sector growth.

The basic idea of industrial policy in Asian NICs (except Hong Kong) was that the state should create temporary protective barriers in order to provide incentives for enterprises to establish infant, that is, new industries, and engage in research and development activities. All Asian NICs (except Hong Kong) share a common industrial policy in terms of picking winners (Lall, 1994), meaning the early identification of activities that could provide a strong boost to growth. These industries were given priority in obtaining directed (and often subsidized) loans and foreign exchange, state investment funds, and other support measures.

Since the industrial policy measures used in Asian NICs were similar to those used in other LDCs where such policies were less successful, the question arose as to why Asian NICs were particularly successful in using these measures. Overall, Asian NICs simply adopted productive industrial strategies because they followed their own comparative advantages; the state anticipated changes in comparative advantages in the East Asian NICs (Islam, 1992); industrial policy was characterized by flexibility: import substitution and export promotion strategies were not static choices but the sequence of events with certain overlapping; the state recognized the turning point and gradually reduced protection (Yang, 1994); the emphasis on exports provided a relatively objective criterion for disciplining aid recipients; the state had more autonomy - it was a developmental state. The autonomy of the state was firmly supported by a dense network of institutions that facilitated productive links between the public and private sectors. Additionally, Asian NICs were generally more successful than other LDCs in attracting and utilizing foreign capital (Adams & Davis, 1994), although Evans emphasizes that industrialization in this region, with the exception of the Philippines, largely occurred without foreign investment until the industrial sector was firmly established.

The second question pertains to the possibility of replicating the East Asian model to other LDCs.

Despite the fact that the growth of industrial exports is the most prominent feature of the economic miracle of Asian NICs, agriculture made a significant contribution in the early stages of industrialization in many countries, except those endowed with mineral wealth, those having service-based economies, and those receiving substantial economic aid. These countries realized in a timely manner that the appropriate development of agriculture forms the basis for neutralizing other developmental gaps. Empirical data for the period 1965-1995 show that countries that neglected agriculture grew more slowly than countries that focused on agricultural development. During the period 1970-1993, agricultural production in the East Asian NICs grew on average at a rate

of about 3.6% per year, compared to Latin American (LA) countries (2.7%) and Sub-Saharan African (SSA) countries (1.7%).

On the whole, agricultural development in Asian NICs, in contrast to other LDCs, effectively provided the foundation for industrial growth, as agriculture became a source of savings and foreign exchange for investment in other sectors, as well as for securing income for farmers, which increased domestic demand (Naya & McCleery, 1993). According to Roemer, the integration of agricultural development and industrialization in Taiwan may be the most successful in the world.

Today, there is a consensus that there was no singular Asian model of industrialization but rather different models for individual countries with a considerable number of similar measures. There is no single Asian strategy for industrial development but rather a continuum of different approaches (Lindauer & Roemer, 1994). Each country set different industrial goals, utilized different interventions, and thus had different patterns of industrial and export growth, reliance on FDI, development of technological capabilities, and so on.

### **1.1. Research Methodology**

In this paper the following research methodology is used: methods of comparison, analysis, synthesis, induction and deduction and the method of statistical analysis, tabular and other method of text illustration, historical method, method of generalization and specialization, etc.

## **2. COMPONENTS OF THE INDUSTRIAL STRATEGY OF ASIAN NICS**

Among Asian NICs industrialization was carried out by pursuing comparative advantages determined by existing and potential factor endowments. However, the economic policy measures that supported industrialization were far from neoclassical ideals in all countries except Hong Kong and, to some extent, Singapore. It can be argued that the Republic of Korea, Taiwan, and the Southeast Asian NICs even employed protectionist regimes. These five countries insulated exporters from disincentives resulting from protectionist regimes, creating a *simulated* free trade environment that offered easy access to inputs at essentially world prices (Lindauer & Roemer, 1994).

Authors of the neoclassical orientation advocate the view that Hong Kong and Singapore are generally open to world trade. However, in Singapore, the state has

managed the economy with a *firmer hand* to accelerate changes in comparative advantages by intervening in setting wages and influencing private investment decisions (Roemer, 1994).

Republic of Korea and Taiwan generally represent more complex cases. Both countries avoided overvaluation of the exchange rate and operated with flexible labor markets where wages remained low, reflecting a surplus of labor, while their rapidly growing export-led demand did not increase wages.

The experiences of both countries depart from the neoclassical prescriptions in the realm of financial market management. *Chaebol*<sup>1</sup> had access to subsidized bank loans, while smaller firms had to borrow at much higher interest rates in informal credit markets. On the other hand, Taiwan granted bank loans at relatively high interest rates but was similar to Korea in other aspects of its financial system.

Neoclassical economists, due to these discrepancies from the orthodox strategy of outward orientation and export-led development, explain the growth of Republic of Korea and Taiwan in terms of comparative advantages and export-oriented state interventionism. This neoclassical interpretation of the interventionist but *market-conforming* approach of Republic of Korea and Taiwan was not accepted by a group of authors, including Westphal (1990), Amsden (1985) and Wade (2003a, 2003b, 2014, 2015). Noting the same phenomena, these authors suggest much deeper conclusions.

Westphal (1990) argues that export subsidies for established industries achieved only slightly more than what a neutral incentive system would have accomplished. However, for a small number of *infant* industries targeted as future exporters, a whole range of incentives was provided, and for the most part, these industries experienced rapid productivity growth and success in export markets. Amsden (1985) contends that the development of Japan, Republic of Korea, and Taiwan exemplifies *the thesis of late industrialization*. Wade (2003a, 2003b, 2014, 2015), analyzing Taiwan, speaks of a *state market*. In the Southeast Asian NICs, state intervention yielded mixed results. In Indonesia, Thailand, and the Philippines, the ruling regimes are significantly reliant on a reciprocal system known as *clientelism*. In clientelistic states, intervention primarily benefits *rent-seeking* rather than rapid export growth. High protective barriers are maintained long after the sector has matured, suffocating the export growth of sectors that process products from other sectors into final goods. However, three Southeast Asian

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1 When the state adopted an export promotion strategy in the early 1960s, special roles were assigned to conglomerates known as *chaebol*. Some of these conglomerates became so-called *general trading companies* which directed the exports of small and medium-sized producers. They can take the form of a single large company or several groups of companies.

NICs (excluding the Philippines) were exceptionally successful in implementing export-oriented growth.

It can be said that Asian NICs developed a continuum of successful industrialization strategies. Hong Kong, and to some extent Singapore, applied a market-based model of an open economy in line with neoclassical economics. In Republic of Korea, and to a lesser extent in Taiwan and Singapore, state interventions and market forces were at play. The three Southeast Asian NICs generated export-led growth by implementing two interventionist measures - sound macroeconomic policies and isolating exports from the adverse effects of protectionism and rent-seeking, along with the adoption of gradual reform programs.

### 3. THE ROLE OF THE STATE IN THE INDUSTRIAL DEVELOPMENT OF ASIAN NICs

Since industry was meant to be the leading sector in Asian NICs, it had to receive greater priority in terms of resources, labor, and so on. In *state-led* economies, it was believed that even assuming that entrepreneurs correctly assessed a country's *existing* comparative advantages, they were by no means able to do so regarding *future* comparative advantages (Woronoff, 1992). This was already a sufficient reason for the state to make the majority of decisions. This approach is considered typical and characteristic of East Asian NICs. As Woronoff argues, industrial policy was very detailed, specifying the development not only of sectors but often products and even determining companies and their roles in the sector.

Since the goal was to promote the development of specific key sectors, industrial policy in Asian NICs set priorities, which formed the basis for developing an element of the strategy called *targeting*. The state made choices of strategically most important sectors to be particularly promoted, and then the focus would shift to other sectors. At the core of targeting there was an idea of *dynamic* comparative advantages, which means that sectors that currently do not have, but should acquire comparative advantages, were promoted. Targeted sectors/activities were rarely those taken up by the private sector.

Amidst industrial policies and targeting, planning was the third integral component of the developmental strategy of Asian NICs. The effectiveness of economic planning bodies significantly varied over time, but the general impression is that planning was most influential in Republic of Korea. Planning certainly played a useful role in mobilizing resources and directing them. It helped to some extent in avoiding overlaps and duplications, preventing gaps and bottlenecks, and

expanding the economic base. Even when plans were not strictly implemented, they served as a guide for action.

It is difficult to say [...] which path (*command* or *liberal* economy) is superior, as both have their advantages and disadvantages. It is evident that planning, industrial policies, and targeting sometimes go too far and that it is occasionally necessary to rely more on market signals. Where everything is left to free enterprise, there is sometimes a feeling that more government leadership is needed [...]. In this way, perhaps the best middle ground between opposing approaches can be found.

### 3.1. State and Interventionist Industrial Policy

Before the economic take-off of Asian NICs, most authors dealing with economic development considered that markets in LDCs are either *non-existent* or *inefficient*. Since it was believed that *infant* industries in LDCs were not internationally competitive, there was an accepted need for the state to protect these new industries. This paradigm accurately identified many market shortcomings that hindered economic development, as well as the need for a decisive role of the state in guiding and coordinating industrial activities.

Authors of orthodox orientation believe that there are no circumstances in which the state can act impartially and effectively, in the national interest. In other words, there is no need to doubt the success of the market. This line of thinking in the literature on economic development has been influential and convincing at the same time, prevailing in some countries even today.

The empirical challenge grew in the second half of the 1980s because evidence had accumulated showing that most East Asian NICs did not conform to the neoclassical characterization. Asian NICs aggressively selected or created *winners* at the sectoral (and even corporate) level by intervening in trade, allocating credit, importing and diffusing technology, building domestic technological capacity, investing in education, promoting exports, etc. These countries achieved unprecedented rates of economic growth and diversification of industrial sectors and exports, albeit with significant variations among countries reflecting different levels and types of interventions. This raised the dilemma of whether interventions were desirable due to market imperfections (in which case it challenged neoclassical development theory) or whether interventions were irrelevant (in which case an explanation was needed as to why they were not as ineffective as elsewhere in the world) (Lall, 1996).

### 3.1.1. Controversies

Roughly speaking, East Asian NICs experienced an average growth rate of 5-6% of GDP p/c during the second half of the 20th century. The measure of development in these countries can be better assessed when considering that GDP p/c growth in today's developed countries (MEDCs) during the Industrial Revolution averaged around 1-1.5% or during the Golden Age of Capitalism (1950-1973) when it averaged 3%. In the debate that accompanied this spectacular economic transformation, the most contagious discussion was about the role of industrial policy.

At the beginning, there was hesitation among orthodox economists even to acknowledge the existence of industrial policy in the East Asian NICs. In 1993, the World Bank entered the debate with an analysis intended to examine the role of state intervention in economic, and particularly, industrial development but based on the neoliberal perspective that it represents.

In the *East Asian Miracle Study* (EAM), the analysis of the Bank focused on three types of government interventions: 1) directed loans, 2) export promotion, and 3) structural policies, concluding that in the East Asian NICs, the first and second groups of measures were successful, while the third was not. However, all three types of interventions should be evaluated together because otherwise, the Bank de facto evaluates one component of industrial policy without taking into account their interrelationships.

The study made a distinction between *market-friendly* and *market-unfriendly* interventions. The first set of interventions was *functional* - they did not attempt to direct resources towards specific activities but rather aimed to remove inherent market deficiencies. *Market-unfriendly* interventions were *selective*, diverting resources to winners chosen by the state. The World Bank attributed the success of East Asian countries to *market-friendly* interventions, while labeling selective interventions as unnecessary.

The World Bank's analysis of *market-friendly* versus selective interventions represents the final word on industrial policy from the leading global proponent of neoliberal economic development policies.

Singh argues that the World Bank is unaware of the ironic implications of its analysis because if, despite state intervention, the industrial structure in Republic of Korea (as well as in Japan) is still consistent with their dynamic comparative advantages, the conclusion must be that, on average, the state correctly chose the *winners*. Therefore, according to the World Bank's criteria, Korea's (and Japan's) industrial policy should be considered successful.

The Bank's claims about industrial policy are biased and partial, and the theoretical framework is inadequate. EAM evaluates itself as *a religious essay*, but it is also an *essay based on faith* because it essentially reaffirms the official belief system of the World Bank (Yanagihara, 1994).

### 3.1.2. Revision

Since the late 1980s, there has been a significant shift in thinking about the need for industrial policy and its contribution to the development of numerous countries. Many authors, with Japanese and generally Asian authors as pioneers, emphasize that industrial policy has played a significant role in the economies of the East Asian region.

Revisionists believe that we should not evaluate the success or failure of industrial policy based on individual cases. Firstly, everyone is susceptible to mistakes, so the fact that a state made a poor decision in the realm of industrial policy is not an argument *against* industrial policy; secondly, the assessment of industrial policy largely depends on the used performance measures (Chang, 2006); thirdly, it all depends on the time frame; and fourthly, the impact of industrial policy cannot be measured solely in relation to what happened in a specific sector, as orthodox economists typically do, due to spill-over effects, which are highly significant in evaluating industrial policy.

Heterodox authors have conducted a strong revision of neoclassical views in the field of criticizing state intervention and advocating for free trade. Structuralists argue for *the thesis of positive effects* of various forms of state assistance to targeted sectors in countries of the East Asian region, which were provided during the creation of comparative advantages.

However, Chowdhury and Islam (1993) argue that structuralists tend to treat the process of creating industrial policy in a too mechanical way, with the private sector passively responding to bureaucratic initiatives and state leadership. Neoclassical economists believe that since protectionism cushions corruption, the state *de facto* tends to protect industries with low and declining comparative advantages, rather than industries expected to become internationally competitive (Smith, 1995).

Finally, many authors suggest that the neoclassical paradigm has entered its degenerative stage, much like what happened with classical economics in the years before Keynes.

Today, economic theory fully acknowledges that interventions can help correct market failures. However, neoclassical economists argue that the risk of state

failure in some cases is so significant that it is better not to rely on selectivity but rather for the state to limit itself to *market-friendly* interventions.

The state is prone to mistakes, but the market is also susceptible to them. Furthermore, the capacities of the state are not static nor given forever, and there are also different levels of selectivity in intervention. The general conclusion is that as long as the development process faces widespread market imperfections, there are valid reasons to apply selective and functional intervention.

The experience of major East Asian NICs precisely indicates that these market constraints can be reduced, and the process of industrialization can be significantly stimulated and invigorated by appropriate interventions (Lall, 1996).

## 4. PATTERNS AND STRATEGIES OF INDUSTRIALIZATION

### 4.1. Autarkic versus competitive industrial policy

Autarkic industrial policy protects *infant* industries longer than competitive ones, so the maturation of heavy and chemical industries takes several decades. Neoclassicists believe that a sector must mature within a period of 5 to 8 years. The key drawbacks of autarkic industrial policy are: 1) as the size of the protected industrial sector grows relative to competitive tradable goods, its failure to generate foreign exchange negatively affects macroeconomic performance; 2) it excessively burdens the primary sector as it experiences a relative decline with the growth of GDP p/c; 3) it works against *unprotected* industries that already possess comparative advantages, such as agriculture and light industry.

The positive contribution of competitive industrial policy to economic growth can be observed in the crucial second and third stages of the development model of the East Asian NICs, when there was an expansion of labor-intensive industries (production primarily oriented towards exports). In the case of Taiwan and Republic of Korea, *the turning point* came 12 years after the adoption of competitive industrial policy. The turning point (Auty, 1994) the next stage of economic development begins with involves the gradual abandonment of lagging, low-productivity industries and the conquering of industries with growing competitive advantages.

Competitive industrial policy provides assistance in acquiring technology, subsidized loans, tax reliefs, and trade incentives for *infant* industries, provided that they quickly achieve *economic* and *technological maturity* (Auty, 1994). *Economic* maturity implies international competitiveness of companies without subsidies, while *technological* maturity implies that up-to-now infant companies

must make necessary technical adjustments that enhance the productivity of newly installed production capacities.

#### **4.1.1. Industrialization strategy for *latecomers*: inward versus outward-oriented industrialization strategy**

According to Kubo, Robinson and Dollar (1992), the strategy of export-oriented industrialization is superior because it surpasses the limitations of the domestic market. The potentials of export markets are greater and can grow faster than domestic markets. As highlighted by Hatcher and Salvatore, an export-oriented strategy involves more efficient resource utilization and has higher investment rates and increasing capital intensity. Dollar (1992) adds that because exports provide access to foreign capital without increasing external debt, outward-oriented economies have been more successful in avoiding debt crises.

However, most authors acknowledge that mere export growth is not sufficient and that the growth of industrial exports has been the crucial contributor to economic growth. As Bradford (2005) emphasizes, an export promotion strategy serves to achieve industrial development by moving a country's production structure up the technological ladder, shifting from labor-intensive to capital-intensive industries, and towards skill-intensive and technology-intensive industries. This structural change places a strong emphasis on improving existing and acquiring new technologies.

While several LDCs, primarily Asian NICs, have successfully completed the transition from inward-oriented to outward-oriented development, the question remains as to why the majority of LDCs have failed to achieve this transition. After the initial stage of import substitution, they turned to further import substitution, which included raw materials and capital goods.

According to Gereffi (1995), that is the main reason why other LDCs lagged behind in redirecting themselves from the primary phase of the industrialization strategy through import substitution to the secondary one and from the primary phase of the industrialization strategy through export orientation to the secondary one. For example, Latin America should have shifted towards an export-oriented industrialization strategy by the 1950s, prior to the East Asian NICs.

The Great Depression of the 1930s and the Second World War initiated the adoption of inward-oriented strategies in LA countries, which reached their zenith in the 1970s [...]. Trade relations tended to worsen for LA [...]. Overall, this meant that development efforts were focused on satisfying the needs of

the domestic market, often substituting imports that could not be sourced from outside the region due to the constraints imposed by the war (Gajinov, 1997).

The inward-oriented and outward-oriented strategies are not two opposing strategies but rather two complementary approaches to achieving the same goal. The objective of both is for *latecomers* to catch up with the MEDCs because LDCs show technological lag, which is further complicated by the fact that technical innovations in MEDCs are rapidly pushing the technological frontier forward (Grabowski, 1994).

#### 4.2. Experience of Asian NICs in choosing the industrialization strategy

Since many authors had already noticed in the 1950s that an industrial strategy, based solely on import substitution, was not sufficient to achieve stable economic growth, many LDCs, including the East Asian NICs, redirected themselves toward outward-oriented industrialization in the 1960s. However, Adams and Davis believe that the economies of Asian NICs could only be characterized as outward-oriented or economies that implement export promotion strategies from the mid-1980s. Nevertheless, according to the World Bank, during the period 1963-1973, Hong Kong, Republic of Korea, and Singapore could be classified as *strongly* outward-oriented countries, while Indonesia, Malaysia, and Thailand fell into the *moderately* outward-oriented category.

In general, 1) Asian NICs implemented import substitution policies over a much shorter period compared to other LDCs; 2) they shifted towards export promotion earlier, that is, in a timely manner; 3) sometimes both strategies were implemented simultaneously; and 4) the import substitution strategy was much more moderate in terms of the intensity of applied protectionism and focused on the development of labor-intensive sectors.

However, Asian NICs do not constitute a homogeneous entity when it comes to the choice of industrialization strategy. These countries were driven by different goals, natural resource endowments, market sizes, etc., all of which resulted in significant differences among them in terms of the duration of the import substitution strategy, its intensity, and the *turning point* that marked the shift towards the export promotion strategy (Table 1).

In the third stage of industrialization, technology-intensive products and products with high added value gained increasing importance in Asian NICs. Singapore, Taiwan, and Republic of Korea, in particular, initiated the promotion of research and development by establishing technological cities and institutes, and technology transfer from abroad.

**Table 1.** SUMMARY OF INDUSTRIAL POLICIES OF EAST ASIAN NICs

	Japan	Korea	Taiwan	Singapore
<b>Policy</b>				
Infant industry protection	Very strong	Very strong	Very strong	None
Export promotion	Strong	Very strong	Very strong	Strong, but mostly indirect
SOEs in manufacturing	Not used	Used in some critical industries	SOEs ran most key upstream industries	SOEs ran some key capital-intensive industries
Large private-sectors firms	Strongly promoted (especially enterprise groups)	Strongly promoted (especially enterprise groups)	Discouraged (most large firms were SOEs)	Not promoted (large firms were either SOEs or TNCs)
SMEs	Promoted by encouraging large firms to upgrade their subcontractors	Weakly promoted (some SME-specific funds)	Promoted through strong public investment in R&D and infrastructure	Weakly promoted (some SME-specific funds)
Private-sector corporate restructuring	Some Involvement	Very deep Involvement	Deep Involvement	Some Involvement
TNCs	Strongly discouraged	Strongly discouraged outside selected sectors	Discouraged outside selected sectors	Strongly promoted, but in a targeted manner
R&D	Private-sector-led	Private-sector-led	Government-led	Government-led
<b>Policy implementation</b>				
Centralization in policy making	Strong	Very strong	Very strong	Strong
Government-private sector relationship	Two-way cooperation, systematic	<i>Top-down</i> direction, less systematic than in Japan	Mixture of antagonism, benign neglect, and central control	Local private sector unimportant
Role of private-sector association	Very important	Important, but controlled by the government	Important, but controlled by the government	Local private sector unimportant

Source: Chang (2006)

Regarding LA countries, certain *modalities* can be observed because export promotion was implemented with varying intensity and using different measures. There are two main variants: on one hand, *ideological* openness (practiced primarily by Chile, Argentina, and Uruguay), and on the other hand, *pragmatic* openness (adopted by Colombia, Brazil, and others) (Gajinov, 1997).

#### 4.2.1. Industry targeting

A distinctive characteristic of the industrial policy of most Asian NICs was the promotion of the development of specific priority industries, products, and even enterprise development, known as *targeting*. Targeting can be defined as selective support for chosen industries and involves import protectionism, subsidies for the import of capital goods and other inputs, preferential loans, tax reliefs, etc. The targeted industries were rarely those that the private sector would deal with, so the state took on the task of promoting the development of specific industries or products. The state made choices of strategically most important industries and promoted those that did not yet have but should gain comparative advantages. The idea of *dynamic* comparative advantages was most pronounced in targeting (Woronoff, 1992).

Furthermore, when the targeted industries developed technological and managerial capacities and achieved international competitiveness, protection and other forms of support were gradually withdrawn, generally within a period of 5 or 10 years after initiation (Naya & Tan, 1995).

Structuralists believe that carefully targeted subsidies and protection enabled the development of new activities by reducing costs and risks, emphasizing that industrial policy became inefficient when the goals became overly ambitious or when too many industries were promoted simultaneously.

On the other hand, the neoclassical viewpoint rejects targeting, considering that it not only creates winners but also losers (Naya & Tan, 1995). Neoclassical economists believe that in the case of Asian NICs, this might have led to a slowdown in natural industrial development.

#### 4.2.2. Dynamic comparative advantages, industrial transformation, and the evolution of export structure

In the context of structural changes in production and exports, East Asian NICs have held on to their own comparative advantages, although with significant differences. However, the extraordinary export performances of Asian NICs would not have been possible if these economies had relied solely on their initial comparative advantages (UNCTAD, 1996). They had to create new comparative advantages in other activities. In some countries, this process was largely spontaneous, while in others, there was a certain degree of intervention. This approach is considered typical and characteristic of East Asian NICs, and it is rightly regarded as the true source of the *economic miracle* in these countries.

It was considered that even under the assumption that the private sector correctly assesses the country's *existing* comparative advantages, it is in no way capable of doing so regarding *future* comparative advantages. Therefore, it was the role of the state to do this. The best example of such a strategy is Republic of Korea, to a significant extent Taiwan, while even Singapore was not entirely immune to it.

However, despite its advantages, this strategy had its drawbacks. As highlighted by [Woronoff \(1992\)](#), negative outcomes can take two forms: firstly, it is possible to invest in industries that do not and may never have comparative advantages, or to invest in promising industries too early or with excessive resources; secondly, there may be a lack of investment in non-targeted industries. Such a policy can lead to a *dual* economy that is divided between priority and non-priority industries, and between favored and neglected enterprises.

Therefore, encouraging labor-intensive industries was a reasonable decision. It is crucial to emphasize this if one wishes to understand where these *respected miracles* originated from. At their inception, they were indeed *miracles* of cheap labor and very little more than that ([Woronoff, 1992](#)).

However, East Asian NICs did not limit themselves to industries where cheap labor had a decisive advantage but used their initial advantage to penetrate other sectors that were hard to access for these countries. The most fascinating example is Korean shipbuilding<sup>2</sup>, but also highly sophisticated electronic products.

While labor in the East Asian NICs was becoming increasingly expensive, there was also growing competition from poorer countries in South East and South Asia where labor was cheap. The only way to maintain efficient competitiveness was to reduce labor participation and correspondingly increase capital participation, which also required raising the technological level ([Woronoff, 1992](#)). Additionally, this implied another form of improvement, which was the enhancement of quality. In this way, since the late 1980s, there has been a drastic and qualitative change in the industrial structure of Asian NICs.

Tables 2 and 3 show a whole series of similarities as well as significant differences in industrial transformation between the East Asian NICs and the Southeast Asian NICs, as well as within each group. The evolution of the export structure of the East Asian NICs shows a clear pattern of sequential transformation from primary products and activities in free zones, through more advanced stages of industrialization, towards products that require the highest level of skills

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2 At the beginning, Republic of Korea had the capability to produce the steel framework and some simpler equipment, while the engine and more complex equipment were purchased from Japan or Europe. Nevertheless, the advantage in labor-intensive work was sufficient for Republic of Korea to push Japanese and European shipyards out of the market.

and technology (UNCTAD, 1996). They followed the model and space in the form of export markets that remained behind Japan, after leaving each stage of development according to *the theory of flying geese*. Japan was the *leading goose*. In follower countries, imported goods in the initial phase squeezed out many domestic producers from the market. However, over time, as imports facilitate the transfer of technology and the acquisition of capital goods needed for the production of import-substituting products, and as the domestic market for technologically advanced products increases in these countries, domestic companies find a niche in the domestic market. In leading countries, when they lose competitiveness, production is discontinued and replaced with imports from follower countries that have built a competitive industry for the production of that product. In this way, this sequence of events combines the life cycle of a particular product with the dynamic process of changing comparative advantages. The result is a regional division of labor that constantly evolves within the group of economies (Gajinov, 2023).

In the case of Southeast Asian NICs, a less systematic development pattern is observed, as well as greater differences among the countries compared to the East Asian NICs, but they also followed the model and space in the form of export markets that remained behind the East Asian NICs, according to the same theory.

The transformation in the Southeast Asian NICs in comparison to the East Asian NICs has been slower. However, differences in the pattern and course of transformation may be even more significant. In the Southeast Asian NICs (Table 3), a relatively modest export-oriented development of industries with low to medium skill requirements, technological complexity, capital, and production volumes is observed, and, in contrast, in Malaysia and Thailand, rapid growth in the export of more sophisticated industries has been evident since the early 1980s.

While East Asian NICs achieved a relatively diversified export structure, in the Southeast Asian NICs a dual structure largely emerged, with exports grouping at both the upper and lower ends of the knowledge and technology ladder (UNCTAD, 1996). Furthermore, the total export of the upper segments from the Southeast Asian NICs conceals a significant import content/dependence. In the Southeast Asian NICs, a larger portion of imported elements is processed for export in the form of components, much less in the form of final products. The import content of exports is significantly higher in Malaysia and Thailand than in Republic of Korea and Taiwan.

In this way, what appears to be a jump from the lower end of knowledge and technology ladder to the higher end of exports consequently largely reflects a

growing division of labor among the countries in the region, where the Southeast Asian NICs take over less demanding and more labor-intensive assembly processes. However, this export structure is more a result of the success of the Southeast Asian NICs in attracting the subsidiaries of TNCs rather than utilizing existing domestic capacities in those industries. In this context, [...] the idea of *recycled comparative advantages*, which combines domestic cost advantages with the technology and skills of TNCs, may not necessarily have the same implications for the host country and foreign firms (UNCTAD, 1996).

**Table 2.** FIRST-TIER NIES: COMMODITY STRUCTURE OF EXPORTS, 1965-1994 (% of total non-oil exports)

Commodity group	Republic of Korea				Taiwan				Singapore				Hong Kong			
	1965	1975	1985	1994	1965	1975	1985	1994	1965	1975	1985	1994	1965	1975	1985	1994
Group I	42.8	17.7	5.9	5.3	60.0	19.0	8.6	7.0	61.1	36.9	23.3	8.6	7.5	3.2	4.0	5.0
Food	17.5	14.1	4.4	2.8	53.0	16.6	6.2	4.0	21.2	11.8	7.6	4.8	4.7	1.9	2.1	2.9
Other primary commodities	25.3	3.6	1.5	2.5	7.0	2.4	2.4	3.0	39.9	25.1	15.7	3.8	2.8	1.3	1.9	2.1
Group II	43.8	53.3	36.3	25.2	26.3	48.7	44.4	25.7	12.6	12.4	10.6	6.1	74.4	69.0	56.4	48.4
Wood and paper products	11.1	5.6	0.7	1.1	7.3	5.2	2.9	1.7	1.3	3.1	2.4	1.0	0.5	0.3	0.6	1.5
Textile, cloth, footwear	30.9	43.9	32.1	22.7	15.8	38.9	32.6	19.4	9.1	7.8	6.5	4.0	64.2	60.4	46.7	44.8
Non-metallic mineral products	1.7	2.3	1.2	0.7	2.6	1.1	2.3	1.2	1.9	1.1	0.9	0.7	0.9	0.8	0.5	0.7
Toys and sport equipment	0.1	1.5	2.3	0.7	0.6	3.5	6.6	3.4	0.3	0.4	0.8	0.4	8.8	7.5	8.6	1.4
Group III	9.1	11.0	30.8	14.7	4.2	6.1	11.1	9.6	5.4	8.6	4.8	3.9	7.7	4.4	3.6	2.7
Iron and steel	7.7	4.9	6.4	5.4	2.6	1.9	2.1	1.9	2.3	2.6	1.4	0.9	0.9	0.1	0.1	0.2
Fabricated metal products	1.3	2.6	5.2	2.8	1.2	2.7	5.4	6.1	2.5	2.0	1.7	1.3	3.6	2.9	2.5	2.3
Ships and boats	0.0	3.0	17.9	5.6	0.0	0.4	0.6	0.5	0.1	3.8	1.4	1.1	0.5	0.3	0.1	0.0
Other <sup>a</sup>	0.1	0.6	1.3	1.0	0.4	1.1	3.0	1.0	0.5	0.2	0.3	0.6	2.6	1.2	0.9	0.2
Group IV	3.0	10.9	13.4	35.3	3.1	11.7	19.0	29.2	13.7	24.8	29.4	32.7	4.7	9.5	12.9	18.2
Rubber and plastic products	0.7	3.7	2.0	2.2	0.3	3.1	4.1	3.9	0.8	0.6	0.8	1.1	1.0	2.8	2.3	1.8
Non-electrical machinery	1.5	0.7	2.0	5.7	1.4	2.8	4.5	8.2	4.6	8.6	8.6	7.5	0.6	1.6	3.3	
Electrical machinery	0.3	6.4	7.2	20.8	1.4	5.1	9.1	15.1	1.8	13.2	19.0	23.4	3.1	6.1	9.0	13.1
Road motor vehicles	0.6	0.1	2.2	6.6	0.0	0.7	1.3	2.0	6.5	2.4	1.0	0.7	0.0	0.0	0.0	0.0
Group V	1.4	7.2	13.5	19.5	6.4	14.4	17.0	28.5	7.4	17.4	31.9	48.7	5.8	13.9	23.1	25.8
Chemicals and pharmaceuticals	0.2	1.6	3.6	7.1	4.9	2.0	2.9	6.1	5.7	6.0	8.7	6.9	1.3	0.9	1.1	4.0
Computer and office equipment	0.0	1.0	2.1	4.0	0.0	1.6	4.5	13.5	0.3	2.6	9.3	27.6	0.0	1.7	5.7	7.1
Communication equipment <sup>b</sup>	0.9	3.0	5.7	6.7	1.3	9.0	7.7	6.6	0.5	4.9	8.6	10.4	3.6	7.0	6.9	4.5
Other <sup>c</sup>	0.3	1.7	2.1	1.7	0.1	1.8	1.9	2.3	0.9	4.0	5.3	3.8	0.9	4.3	9.4	10.2

<sup>a</sup> Transport equipment other than road motor vehicles, ships and aircraft; and sanitary and plumbing;

<sup>b</sup> Telecommunications and sound recording and reproducing apparatus and equipment and semiconductors.

<sup>c</sup> Aircraft and associated equipment; and scientific instruments, including watches, and photo equipment.

Source: Author's calculations based on data: UN CommodityTrade Statistics.

**Table 3.** FIRST-TIER NIEs: COMMODITY STRUCTURE OF EXPORTS, 1965-1994 (% of total non-oil exports)

Commodity group	Indonesia				Malaysia				Thailand			
	1967	1975	1985	1994	1965	1975	1985	1994	1965	1975	1985	1994
	96.7	95.8	75.9	42.0	94.8	81.0	63.6	23.6	98.0	85.7	63.3	28.7
Group I	27.0	22.7	14.6	11.7	6.9	7.7	6.1	3.6	55.2	64.0	47.4	22.7
Food	69.7	73.1	61.3	30.3	87.9	73.3	57.5	20.0	42.8	21.7	15.9	6.0
Other primary commodities	0.2	0.4	16.4	43.6	1.5	5.6	7.0	12.0	1.6	11.1	22.5	27.1
Group II	0.0	0.1	10.0	17.3	0.7	2.6	1.5	4.1	0.1	1.3	1.3	1.1
Wood and paper products	0.2	0.3	6.1	24.7	0.5	2.7	4.5	6.2	0.5	6.6	16.7	20.4
Textile, cloth, footwear.	0.0	0.0	0.4	1.0	0.3	0.3	0.5	1.1	1.0	3.2	4.2	4.0
Non-metallic mineral products	0.0	0.0	0.0	0.6	0.0	0.0	0.4	0.7	0.0	0.0	0.3	1.6
Toys and sport equipment	0.1	0.3	0.4	3.0	0.3	0.8	2.2	3.0	0.1	0.8	1.7	3.3
Group III	0.0	0.0	0.3	1.0	0.1	0.2	0.5	0.8	0.0	0.3	1.0	0.7
Iron and steel	0.1	0.2	0.0	1.1	0.2	0.4	0.5	1.1	0.1	0.5	0.6	1.5
Fabricated metal products	0.0	0.1	0.0	0.2	0.0	0.1	1.2	0.6	0.0	0.0	0.0	0.2
Ships and boats	0.0	0.0	0.0	0.7	0.0	0.1	0.1	0.5	0.0	0.0	0.1	0.9
Other <sup>a</sup>	2.5	1.4	1.0	3.9	2.3	5.7	20.7	29.8	0.1	1.6	9.6	20.7
Group IV	0.0	0.0	0.1	0.9	0.5	0.7	0.6	1.3	0.0	0.4	1.3	2.8
Rubber and plastic products	2.5	0.8	0.2	0.6	0.7	1.6	2.1	3.6	0.0	0.2	1.8	3.7
Non-electrical machinery	0.0	0.6	0.8	2.1	0.2	3.1	17.9	24.5	0.1	1.0	6.3	12.7
Electrical machinery	0.0	0.0	0.0	0.4	1.0	0.4	0.2	0.4	0.0	0.0	0.2	1.5
Road motor vehicles	0.5	2.1	6.3	7.5	1.2	6.9	6.5	31.6	0.1	0.9	3.0	20.2
Group V	0.5	1.4	5.9	3.2	1.1	1.0	1.6	3.1	0.1	0.6	1.4	3.0
Chemicals and pharmaceuticals	0.0	0.0	0.0	0.9	0.0	0.9	0.2	10.0	0.0	0.0	0.8	9.5
Computer and office equipment	0.0	0.1	0.0	2.5	0.0	0.6	3.3	13.8	0.0	0.1	0.1	4.2
Communication equipment <sup>b</sup>	0.0	0.6	0.4	0.9	0.1	4.4	1.4	4.7	0.0	0.2	0.7	3.5

<sup>a</sup> Transport equipment other than road motor vehicles, ships and aircraft; and sanitary and plumbing;

<sup>b</sup> Telecommunications and sound recording and reproducing apparatus and equipment and semiconductors.

<sup>c</sup> Aircraft and associated equipment; and scientific instruments, including watches, and photo equipment.

Source: Author's calculations based on data: UN CommodityTrade Statistics

When analyzing the evolution of the export structure of the East Asian NICs, it is particularly noticeable that the share of capital goods exports in total exports, which ranged from a min. of 3% to a max. of 10% in 1965 (Republic of Korea and Singapore), increased in 1990, ranging from a min. of 24% to a max. of 48% (Hong Kong and Singapore). The share of both natural resource-based products (ranging from a max. of 72.6% in Singapore in 1970 to a min. of 10.5% in Republic of Korea in 1987) and labor-intensive products (ranging from a max. of 76.2% in Hong Kong in 1970 to a min. of 39.0% in Republic of Korea in 1987) drastically declined, while the share of exports of physical and human capital-intensive goods, which ranged from a min. of 12.3% to a max. of 19.6% in 1970 (Republic of Korea and Hong Kong), increased in 1987, ranging from a min. of 45.4% to a max. of 54.9% (Hong Kong and Singapore).

In the evolution of the export structure of the Southeast Asian NICs, the rapid increase in the share of industrial exports in total exports is even more noticeable,

rising from 3%-6% in 1965 to 41% for Indonesia and 61%-71% for the other three countries in 1991. Within industrial exports, the share of labor-intensive products increased from nearly 0% in 1965 to 17% for Thailand and 61%-71% for the other three countries in 1991. The share of capital goods in total exports was still negligible for Indonesia in 1991, reached 14% for the Philippines, and 22% for Thailand but increased to 38% for Malaysia, thanks to the activities of TNCs in this country.

### 4.2.3. Export-led growth

Export-led growth refers to a pattern of growth based on the interconnected expansion of industrial production and exports.

East Asian NICs, and to a lesser extent Southeast Asian NICs, took advantage of a fortunate circumstance in the form of rapidly growing global markets during the 1970s, although their development did not solely depend on global demand growth. East Asian NICs achieved significant export results already after 1965. By 1986, these countries became the most significant exporters among LDCs. Taiwan led the way with a \$40 billion USD in exports, followed by Hong Kong and Republic of Korea with a \$35 billion USD in exports each. Singapore ranked third with \$22 billion USD in exports. In the East Asian NICs, in the first half of the 1980s, the share of exports in GDP amounted to 35% in Republic of Korea, over 50% in Taiwan, and even 100% in the city-states of Hong Kong and Singapore.

Among Southeast Asian NICs, annual growth rates ranged from 17% to 30%. These countries were predominantly exporters of primary products in the 1960s and 1970s, with the export of industrial products contributing 8% or less to total commodity export revenues in 1970. In 1990, the export of industrial products accounted from 35% (in Indonesia) to 64% (in Thailand) of total export revenues (Roemer, 1994). According to data from the United Nations Industrial Development Organization - UNIDO from 1991, the share of East and Southeast Asian NICs in global exports of industrial products increased from 3.5% in the 1970s to 12% in 1988.

Export-led growth is measured by the speed of expansion and growth in the export of industrial products. *The rate of export industrialization* represents the ratio between the export of industrial products and total exports (Table 4). Although this indicator varies significantly for Asian NICs, all countries recorded increasing rates. In 1984/85, the rate exceeded 90% for East Asian NICs, with the exception of Singapore. Southeast Asian NICs lag behind East Asian NICs in this regard, although there is a noticeable and rapid growing trend, even during the period of the global recession in the period 1980-1985.

*Market placement* is another significant indicator of export-led growth. The majority of exports from Asian NICs was placed in MEDCs. By the late 1980s, Republic of Korea directed 67% of its exports to Japan, the United States, and the EC-9. The corresponding shares were 48.2% for Hong Kong, 71.3% for Taiwan, 44.9% for Singapore, and 64.4% for the Southeast Asian NICs. The United States was individually the largest market for all East Asian NICs. Southeast Asian NICs export more to Japan, primarily due to Japan's demand for raw materials. However, for the export of industrial products, the United States remains the largest market.

**Table 4.** EXPORT INDUSTRIALIZATION RATES

	1970	1980	1985	1986	1987
USA	70.1	67.9	74.6	76.5	77.9
Japan	93.3	95.6	97.1	97.3	97.3
R. Korea	76.7	89.9	91.4	92.0	92.8**
Taiwan	76.1	87.9	90.5	91.0	91.8
Hong Kong	92.9	92.4	91.6	92.1	92.4
Singapore	30.5	53.9	58.4	65.4	71.7
Thailand	10.7	29.0	39.3	44.6	-
Malaysia	7.4	19.0	27.3	37.3	39.8
Philippines	7.6	37.0	57.1	58.0	-
Indonesia	1.4	2.4	13.2	19.5	24.3
Mexico	32.5	11.9	27.1	30*	-
Brasil	14.2	38.6	44.8	41*	-
Argentina	13.9	23.2	21.4	26.4	-
Chile	4.4	9.7	7.4	9.2	-

Note: Industrial exports are defined as SITC 5-9 (excl. SITC 68).

\* IBRD, World Development Report, 1988; \*\*Each country's trade statistics.

Source: Author's analysis.

Unfortunately, at the same time, new forms of protectionism and trade regionalism are on the rise in MEDCs. The global trade system is moving away from the most-favored-nation treatment towards selective quantitative restrictions under the pretext of voluntary export restrictions. These measures are disproportionately targeted against the industrial exports of Asian NICs and other LDCs.

## 5. CONCLUSIONS

Although the experiences of other countries can be considered valuable lessons, there is no a particular pattern of good industrial policy that countries can adopt immediately. The fact is that policy making is fundamentally context-specific. Similar policies may work well in one country but not in another. Thus, the choice of industrial policy is quite unique to the circumstances of each individual country. Even among countries in East and Southeast Asia there are significant

differences in the industrial policy measures, the duration of their implementation, and their outcomes. The measures used in successful countries are not necessarily vastly different from those used in less successful economies. Success is based on original combinations of policy measures and the effectiveness of their implementation.

On the other hand, the question is whether the numerous measures that are an integral part of the industrial policy of Asian NICs can be replicated in other countries today. Because, today, the room for maneuver by LDCs in shaping policies is largely limited.

The lessons we can draw from the experience of economies in the East Asian region will always encounter skepticism from those who wonder whether Asian NICs are unique and characterized by special circumstances. They are indeed unique - due to their history, geopolitical circumstances, geographical location, cultural elements, and so on.

The special circumstances argument can be equally applied to the development of the United States and the United Kingdom, as well as to the development of Asian NICs and countries in the region. For instance, the United Kingdom experienced prosperity during periods when it colonized weaker nations, used slaves, sold opium to China, and subjected children to 12-hour workdays in miserable working conditions. Throughout its development, the United Kingdom also routinely violated the intellectual property rights of others and in the period 1750-1842 maintained a law prohibiting the export of machinery to competing economies. The American economy benefited from similar conditions. Additionally, the United States benefited from its geographical size, large population, immigrant labor force, and exceptional endowment of natural resources.

Many authors, who are skeptical about the transferability of the model of Asian NICs, believe that the exact opposite can be said about the transferability of market-dominant model of Anglo-American economies.

We can conclude that each country is unique in terms of its own mix of history, culture, ethnic composition, timing, and development, etc. In this way, the experience of Asian NICs and, in general, the East Asian region is neither more nor less idiosyncratic than the experience of any other country.

Lessons for other countries from Asian NICs and, in general, countries in the East Asian region on industrial policy can be reduced to: 1) the importance of the state in targeting industries and promoting currently unprofitable industries, but with development potential; 2) budget transfers may not necessarily be the

most significant element of industrial policy; 3) other countries should clearly define the objective and duration of state intervention; 4) they should use both industrialization strategies, sometimes even simultaneously, and timely apply the turning point; and 5) Japan's recession should not be interpreted as evidence that industrial policy becomes ineffective upon reaching *technological frontier*.

As for the reflections regarding the successor countries of the former Yugoslavia (SCFY), it can be pointed out that they have shared several common characteristics with Asian NICs (primarily their peripheral status, which Asian NICs have long surpassed), but they also have many differences. Among the differences, one should certainly mention far more favorable geopolitical conditions, cheaper and facilitated transfer of high technologies, easier and unconditional access to all forms of foreign capital, open markets in MEDCs, etc., during the *take-off* phase, unlike the SCFY.

Therefore, undertaking industrial policy measures in the SCFY that were applied by Asian NICs has been and remains impossible because it would be in contradiction with the neoliberal policy of the EU, the United States, and international financial institutions, which have taken responsibility for the *growing up* of the economies of the SCFY.

We can list numerous areas where adopting industrial policy measures similar to those of Asian NICs is not possible: 1) the impact of foreign capital in SCFY: a) an enormous increase in foreign debt, mostly used to buy *social peace*, infrastructure projects with a very long payback period, etc.; b) foreign aid is the so-called *development* aid, inspired by the benefits of donors; c) FDI are highly concentrated in financial services. Investments in production are limited to assembly and light industries, without planning and interconnection. This is directly connected with the development model, which is shaped taking into account the weak role of industry. However, the *FDI-driven model* is approaching its end; 2) neglect of agriculture and the food industry along with a misguided subsidy policy: insufficient funding, irregular payments, and a lack of targeted support for specific sectors. It is essential to remember the example of Thailand, which initially invested all resources in developing a single crop - production and processing of rice; 3) only declarative implementation of the export-led growth strategy, persistently maintaining an unrealistic exchange rate that discourages exports; 4) strengthening partnerships between the state and the private sector because representatives of the private sector are de facto employees of the state apparatus, etc.

Changes in the economic policies of peripheral countries depend on and originate from political changes. Only politically independent countries can be

economically independent countries, and vice versa. They can be independent in creating economic in general, and industrial, and other policies.

The key conclusion is that there is room for a successful industrial policy even in countries that have reached *technological frontier* and want to push it further, as well as for countries that lag behind in industrial development, provided they meet the aforementioned conditions.

### Conflict of interests

The author declares there is no conflict of interest.

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## **ИНДУСТРИЈСКА ПОЛИТИКА У АЗИЈСКИМ НОВОИНДУСТРИЈАЛИЗОВАНИМ ЗЕМЉАМА: КОНТРОВЕРЗЕ, РЕВИЗИЈА И ПОУКЕ**

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### **Сажетак**

Циљ чланка јесте да се успешним примјером новоиндустријализованих земаља Источне Азије докаже потреба за спровођењем индустријске политике у многим земљама - како у онима које заостају у индустријском развоју, тако и у онима које су достигле *технолошку границу*. Чланак описује еволуцију индустријске политике у овим земљама и оно што их разликује од других земаља у развоју које су биле неуспјешне у њеном спровођењу: развојна држава, која је препознала *тренутак заокрета* са стратегије супституције увоза ка стратегији промоције извоза, симултано спроводила обе стратегије, *бирала побједнике*, обезбиједила подршку *младим* секторима селективним интервенцијама, али и дисциплиновала њене примаоце подршке, пратила сопствене компаративне предности и

антиципирала њихове промјене, уз снажну синергију између државног и приватног сектора, и угледање на Јапан као модел индустријског развоја, односно *лидера*. Индустријска политика је једно од најконтроверзнијих питања у економији, нарочито у економији привредног развоја. Дуго се водила дебата између ортодоксне и хетеродоксне струје мишљења о томе да ли постоји потреба за индустријском политиком генерално, као и о улози државе у процесу њеног стварања и примјене, на супрот слободотржишном моделу развоја у коме нема мјеста за индустријску политику. Уколико се она и укаже може бити само општег карактера, никако у облику селективних интервенција и *избора побједника*. Током посљедњих 10 до 15 година дошло је до ревизије како на академском нивоу, тако и у реалном свијету који су учинили индустријску политику прихватљивијом, те је на тај начин дебата постала мање идеолошки обојена, а више прагматична и нијансирана. На теоретском нивоу, гледиште тржишних фундаменталиста слабог теоретског оправдања за индустријску политику је изгубило своју доминацију. Успркос задржавању неолибералне ортодоксности као *савјета* међународних финансијских институција у процесу стварања економске политике у земљама у развоју, индустријска политика је остала значајна за промоцију индустријског развоја, нарочито младих сектора. Постоји много врста тржишних неуспјеха који се морају рјешавати кроз индустријску политику. У раду су коришћене методе поређења, анализе, синтезе, индукције и дедукције и метода статистичке анализе, табеларне и друге методе илустрације текста, историјска метода, метода генерализације и специјализације и др. Све више се признаје да индустријска политика није само изразито идиосинкратична пракса повезана само са *чудотворним* привредама Источне Азије, већ оно што је већина данашњих развијених земаља користила када су биле у позицији земаља које су их *сустизале*. Као закључак, у раду се разматра могућност преношења *источноазијског* модела на друге земље и расвјетљавају детерминанте успјеха и неуспјеха индустријске политике. Кључни закључак је да простора за успјешну индустријску политику има чак и у земљама које су достигле *технолошку границу* и желе да је помјере, као и у земљама које заостају у индустријском развоју, иако се глобални контекст у коме се индустријска политика налази промијенио током времена. Посебан коментар се односи на економски и индустријски развој земаља бивше Југославије.

**Кључне ријечи:** *државна интервенција, млади сектори, касна индустријализација, секторске интервенције, државно тржиште, таргетирање, избор побједника, тржишни пласман, раст вођен извозом, динамичке компаративне предности, индустријска трансформација, еволуција извозне структуре.*