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REGIONAL BALANCED DEVELOPMENTS IN NORTH MACEDONIA. CHALLENGES, TRENDS AND PERSPECTIVES

Abstract: Regional economic development is considered as an important feature for enriching the economic cohesion policy. Regional development policy for North Macedonia implies a state institutional effort for settling a national priority within the framework of EU's policy for promoting economic and social cohesion, derived from the Lisbon Strategy, aimed at reducing regional disparities with respect to socio-economic development level in between North Macedonia's statistical regions. For the purpose of addressing regional disparities and stimulating a sustainable economic development, North Macedonia, adapted a law on balanced regional development in 2007 and went through many subsequent legislative acts in the years to come with the aim of improving the long-lasting deficiency of a sustainable regional development gaps in the country. This policy-oriented paper, based on the regional statistical data of North Macedonia from a retrograde perspective, covering in principle the past twenty years, 2000-2020, analyzes a set of economic development indicators, using a panel level data for the 8 statistical regions in North Macedonia. Based on a econometric assessment of Fixed Effect with Driscoll and Kraay standard errors, using regional fixed effects, the study will try to identify the economic factors which may contribute to reducing the regional economic disparities within the country. The results of the study will provide relevant policy recommendations to the authorities and interested parties for establishing a productive institutional action on identifying the challenges, trends and perspectives in the policy of a balanced regional development.

Keywords: North Macedonia, Regional development, Fixed Effects with Driscoll and Kraay standard errors.

1   1. INTRODUCTION

During the years of 90th, North Macedonia was one of the most fiscally centralized country in Europe where most of the municipalities did not have sufficient fiscal space for generating their own financial resources, leading to uneven development level of the country on regional grounds, thus, raising the concerns of economic disparities between country regions and municipalities. Regional economic development on equal basis is considered as a catalyst factor for enriching a suitable level of the socio-economic cohesion policy within the state. The enhancement of balanced regional development means improvement of socio-economic welfare associated with significant reduction of regional disparities. Regional development policy[1], for North Macedonia implies a state of institutional effort for settling a national priority within the framework of EU's policy for promoting economic and social cohesion, derived from the Lisbon Strategy (European Commission, 2020)[2]. For the purpose of addressing regional disparities and stimulating a sustainable economic development, North Macedonia, adapted a law on balanced regional development in 2007 and went through many subsequent legislative acts in the years to come, with the aim of improving the long-lasting deficiency of a sustainable regional development gaps in the country (Trenovski and Panev, 2017). *Lately, aiming at the*

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[1]This arrangement was endorsed for the enhancement of socio-economic development of the planning regions in North Macedonia, in line with the EU guidelines where the self-government units of the country will be able to utilize relevant components of IPA funds, available for the country.

[2] https://portal.cor.europa.eu/europe2020/Profiles/Pages/TheLisbonStrategyinshort.aspx.

reduction of regional disparities in between and within regional planning centers in the country, the state relevant institutions, introduced an action plan for allocating the budgetary funds at the level of at least, 1 percent of GDP, to undeveloped regions. This policy-oriented paper, based on the regional statistical data of North Macedonia from a retrograde perspective, covering in principle the past twenty years, 2000-2020, analyzes a set of economic and demographic development indicators, as crucial for inequality concern in North Macedonia. The paper will try to outline a summary of results, which detect the development gaps within and in between the planning regions of North Macedonia. The results of the study will provide relevant policy recommendations to the authorities and interested institutional bodies for establishing productive institutional actions on identifying the challenges, trends and perspectives in the policy of a balanced regional development.

2   THEORY OVERVIEW ON MEASURING REGIONAL INEQUALITY

To capture inequality measurement indicators, regional disparities GDP per capita will be used in the current study. For this purpose, the study will rely on one widespread measure indicator of regional disparity, identified by the convergence literature, which is *GINI coefficient,* as expressed in equation (1) (Canaleta et al, 2004; Gluschenko, 2018). Following equation (1), x_i is the GDP capita per planning region, x_j is the national GDP per capita, $\bar{x}$ is the average national GDP capita, p_i is the ratio of regional employment to national employment. Different weights are given to each unit, in so doing, we reduce the problems resulting from the degree of aggregation and giving more relevance to large units[3].

$$G_x = 1/\bar{x}\sum_i p_i \left| x_i - x_j \right| \quad (1)$$

Table 1: Values of GINI coefficient in the statistical regions in North Macedonia, based on the data of GDP per capita.

Coefficient	Years	Statistical regions in North Macedonia							
		Vardar	East	Southwest	Southeast	Pelagonija	Polog	Northeast	Skopje
GINI	2000-2005	0.19	0.21	0.19	0.19	0.20	0.18	0.14	0.13
	2006-2010	0.21	0.23	0.21	0.21	0.22	0.20	0.15	0.14
	2011-2015	0.24	0.25	0.23	0.24	0.25	0.21	0.20	0.13
	2016-2020	0.28	0.28	0.27	0.22	0.28	0.26	0.25	0.11
Average	2000-2020	0.23	0.24	0.22	0.22	0.24	0.21	0.19	0.13

Source: State Statistical Office, 2020 and own calculations based on equation (1)
Note: Indices are calculated based on GDP per capita data accounting for regional GDP and regional employment in North Macedonia, based on own calculations, using data from State Statistical Office of North Macedonia.

The GINI indicator is mostly used in the analysis of income and regional inequalities (Tsui, 1996; Esteban, 1994). Table 1 shows the results of the GINI indicator for GDP per capita, respectively, over the period 2001-2005, 2006 – 2010, 2011-2015 and 2016-2020, on average basis, for the eight statistical regions in North Macedonia. A five-year average should be enough to account for one economic cycle. GINI coefficient is the best index for measuring inequality concerns, which reflect the shared values of a frequency distribution of income, investment and welfare (Canaleta, *et al* 2004). Low values of GINI coefficient, close to 0 express perfect equality, whereas a GINI coefficient closer to 1 express maximal inequality among values. As can be observed from table 1, less inequality concerns are noted for the statistical regions of Skopje and Northeast East, recording average values of GINI coefficient's close to 0, during the observed period 2000-2020, whereas for the remaining statistical regions of Vardar, Southwest, Southeast, Pelagonija and Polog, the inequality concern is higher in comparison to the regions of Skopje and Northeast, during the same period.

3   STYLIZED FACTS

However, to capture some inequality concerns among regions, in this section, we outline relevant indicators associated to regional economic development in North Macedonia, like: *regional growth rate, regional GDP per capita and regional GDP per worker employed.* On the ground of growth prospects, we can detect that the highest growth rate, in all the statistical regions, except Vardar, was recorded during the observed period 2006-2010, probably due to high influx of Foreign Direct Investment in this period, which occurred due to favorable investment climate in North Macedonia, reinforced by the policy of Free industrial zones.

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[3] Although GINI coefficient as a statistical measure of inequality, is free of any explicit egalitarian judgment, it still expresses any intuitive view on the grounds of egalitarian principle, since the values of GINI coefficient are compared with those that are better off (Temkin, 1994).
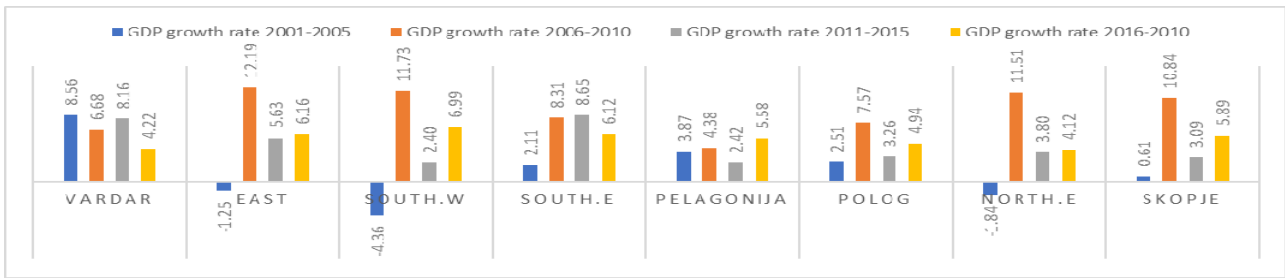
Figure 1: Regional growth rate
Note: author's calculations, using data from State Statistical Office of North Macedonia.

Referring to GDP per capita as a differentiation factor with respect to regional economic development, associated with regional living standard (figure 2), we can see that Skopje region had the biggest share of GDP per capita in the country, while the North east and Polog regions had the lowest share in terms of GDP per capita, during the four observed periods.
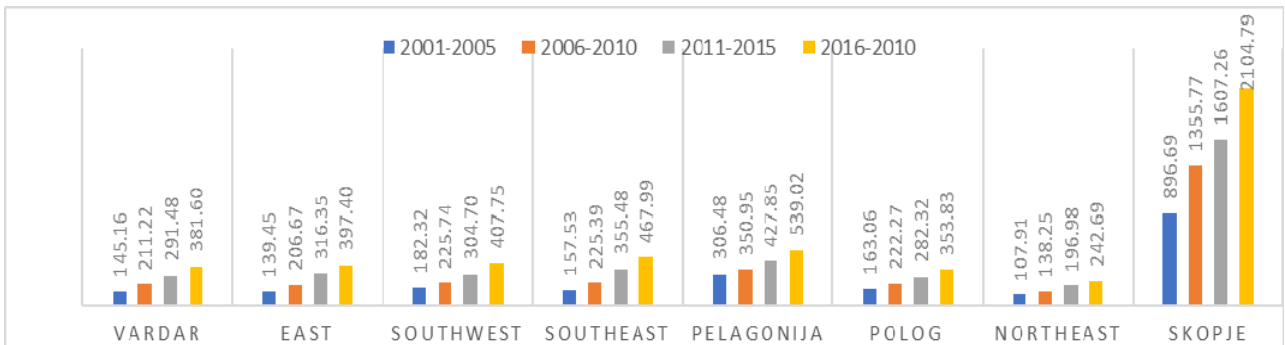

Figure 2: Regional GDP per capita, in Euro
Note: author's calculations, using data from State Statistical Office of North Macedonia.

During the analyzed periods there is a positive trend of increase in the GDP per capita terms in all regions, but the disparities between regions also remain. As confirmed from figure 2, on the basis of GDP per capita differences between regions, the region of Skopje, on average, during the whole observed period, 2000-2020, is 8 times richer than the poorest region of the country, which as confirmed from the analysis is the North East region and 5 times richer than Polog region (the second poorest region in the country. The analysis, as outlined in figure 2 and 3 shows evidence that Polog Region and Northeast Region recorded the lowest values of GDP per capita. Poor economic growth is only one concern with rising inequality because other dimensions of development and wellbeing may suffer as well (Partridge and Weinstein, 2013).
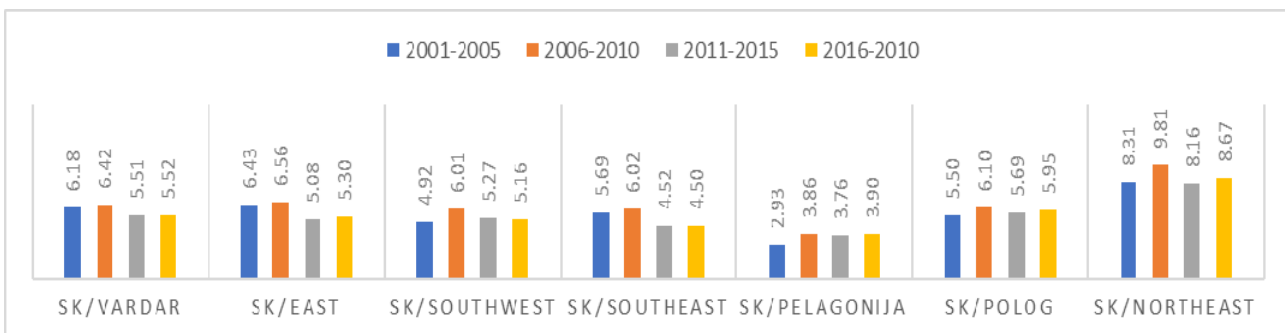

Figure 3: GDP per capita in Skopje region, in comparison to GDP per capita in other statistical regions of the country, in Euro
Note: author's calculations, using data from State Statistical Office of North Macedonia.

The increase of regional disparities with respect to economic development is a significant concern for internal migration of the labor force between regions (Michálek and Podolak, 2011). Therefore, appropriate policy measures should be undertaken by the government to reinforce equal economic development among the regions. The intensive development of the Skopje region is expected to have a significant impact on investment inequality and imbalances in the reallocation of the regional labor force. Figure 4 outlines the story of GDP per worker employed, where we can notice that the highest GDP contributed from labor force comes from the region of Skopje.
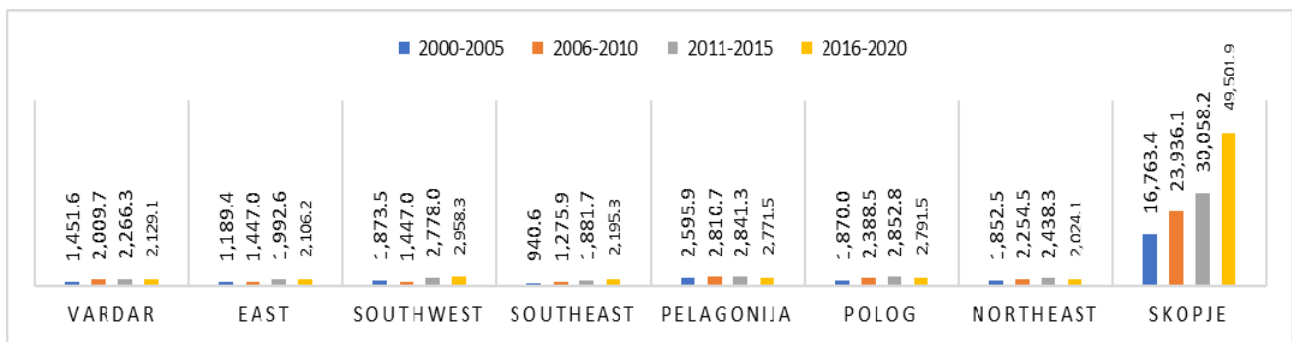
Figure 4: GDP per worker employed
Note: author's calculations, using data from State Statistical Office of North Macedonia.

On the grounds of comparison basis, as evidenced from figure (5), GDP per worker employed in Skopje region is significantly higher, than other statistical regions, ranging from 6 to 24 times, where the highest discrepancy is recorded during the observed yearly period 2016-2020.
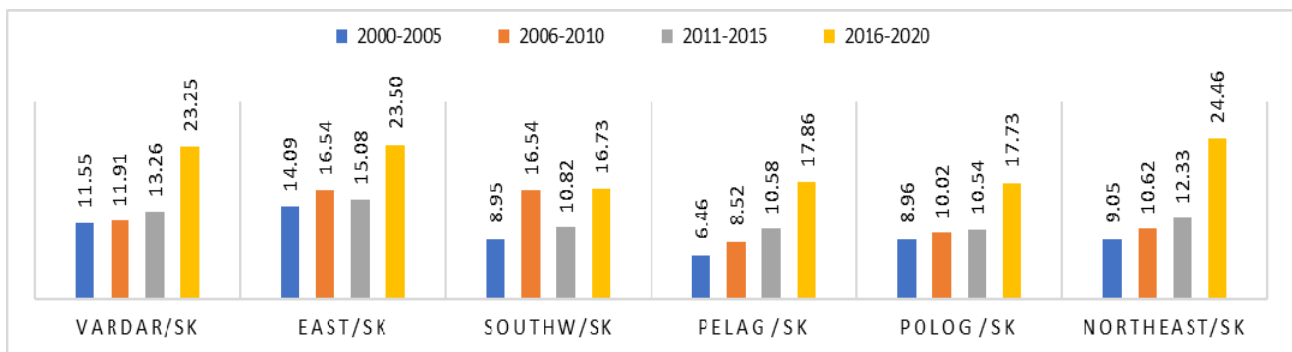

Figure 5: GDP per worker employed in Skopje in comparison to GDP per worker employed in the selected statistical region
Note: author's calculations, using data from the State Statistical Office of North Macedonia

Figure 6 outlines an increasing trend of gross fixed capital formation[4] value in the country, recording its maximal amount in the year of 2016, with insignificant downturn in the years after 2016.
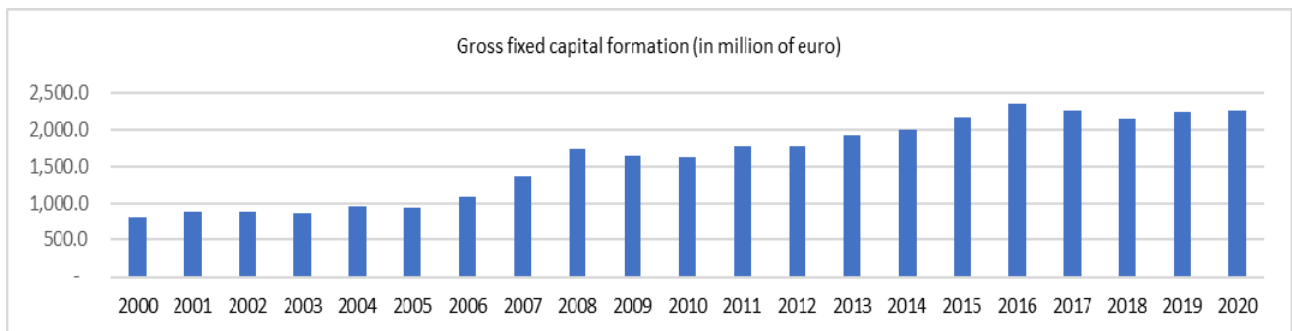

Figure 6: Gross fixed capital formation in North Macedonia, in millions of Euros.
Note: author's calculations, using data from State Statistical Office of North Macedonia.

However, at regional profile, based on shared percentages of gross fixed capital formation at regional level, as outlined in figure (7), Skopje region is again well favored in comparison to other stagnated regions, confirming a biased concept of governmental investments policies in the public goods (infrastructure, healthcare) and private investments.

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[4] Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings (World Bank, 2023).
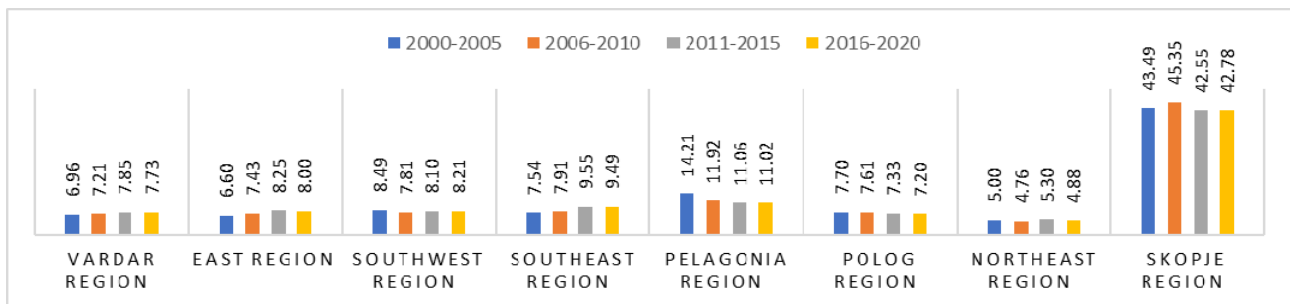
Figure 7: Gross fixed capital formation in North Macedonia' regions, as a share of country's total, in millions of Euros.

Note: author's calculations, using data from the State Statistical Office of North Macedonia.

The findings outlined in this section reveal significant increasing trend of development disparities, between North Macedonia's statistical regions, during the whole observed period, 2000-2020, which confirms that North Macedonia, still has a mono-centric model of economic development, where Skopje region is well favored on the grounds of economic development in comparison to other stagnated regions of the country, despite the country obligations which are derived from the Lisbon Strategy. North Macedonia is still categorized by unequal economic development at regional level, which is unusual case for small countries with small number of regions.

4   LITERATURE REVIEW

There is a large extent of literature trying to explain income inequality determinants at country or regional context. On the grounds of country level data, the empirical literature mostly outlines the effects of macroeconomic variables (unemployment and inflation) or fiscal policy variables (tax rate, government expenditure) as evidenced factors determining the size of income inequality (Mocan, 1999; Auten & Caroll, 1999). On the grounds of multi-country evidence, the empirical evidence outlines an institutional related factor, as crucial in determining inequality concerns among countries, like corruption, government expenditure, agriculture development (Tanninen, 1999; Vanhoudt, 2000; Barro, 2000). Some studies examined the Kuznets's (1955) hypothesis concerning the inverted U-shaped relationship between inequality and the level of development, studies which are mostly outlined on internal labor force migration due to regional inequality concerns (Mushinski, 2001; Thornton, 2001). The Kuznet's hypothesis states that agricultural and rural sectors feature lower inequality and lower level of GDP per capita, establishing a negative relationship between GDP per capita and income inequality, whereas the urban sectors feature higher inequality and higher level of GDP per capita, thereby, establishing a positive association between GDP per capita and income inequality at early stages of development. This paper will shed light on measuring inequality worries on regional level in North Macedonia, thus, providing a milestone for building relevant policy frameworks on the grounds of improving inequality concerns among North Macedonia's statistical regions.

5   ECONOMETRIC FRAMEWORK
5.1   Static panel analysis: Fixed effects with Driscoll and Kraay standard errors

Driscoll and Kraay standard errors (FEDK) are asymptotically efficient in the panel samples where time series, 'T' exceeds the number of panels 'N' (Hoechle, 2007). By relying on large T asymptotic, FEDK estimates assumes that the standard nonparametric time-series covariance matrix estimator is robust to general forms of cross-sectional as well as temporal dependence (Hoechle, 2007). Driscoll and Kraay's estimates are robust to heteroscedasticity and autocorrelation. To control for the presence of cross - sectional dependence we apply the Driscoll and Kray standard errors in the fixed regression model, using the stata command *xtscc, fe,* accounting for two-time lags. We also control for time and country fixed effects in the FEDK estimates. Assuming the linear regression of a model:

$$y_{it}=x'_{it}\Theta+\varepsilon_{it}, \ t=1,2,...,N \ (2)$$

Where, the dependent variable is y_{it} is a scalar, x'_{it} is a vector of independent variables, Θ represent the vector of unknown coefficients, i denotes the cross-sectional units and t denotes time dimension of the sample and ε_{it} represent the scalar disturbance term. It is assumed that the regressors x'_{it} to be uncorrelated with the scalar disturbance term ε_{it} for all i, t (strong erogeneity). However, since in the standard pooled OLS the disturbance term ε_{it} are allowed to be auto correlated, heteroscedastic and cross-sectional dependent, Driscoll and Kraay standard errors for the coefficient estimates are then obtained as the square roots of the diagonal elements of the asymptotic (robust) covariance matrix.

$$V\ (\Theta)=(X'X)^{-1}S_T(X'X)^{-1}\ (3)$$

Where S_T is defined as in Newey and West (1987), allowing the Driscoll and Kraay's covariance matrix estimator to be equal to the heteroscedasticity and autocorrelation consistent covariance matrix estimator of Newey and West (1987) applied to the time series of cross-sectional averages.

5.2 Methodology and method of analysis

This paper will try to shed light on estimating income inequality concerns between 8 statistical regions in North Macedonia, relying on a yearly panel data set for the period 2000-2020. The reduced form of the growth equation for the estimation purpose is as follows:

$$GINI_{IT}=\beta_0+ \beta_1 x_{it}+ \beta_2 x_{it} \cdot d+\Theta_i+\gamma_t+\mu_{it}\ (4)$$

Where $GINI_{IT}$ is the dependent variable denoting the inequality coefficient for the 8 statistical regions in North Macedonia, as calculated on table 1. x_{it} is the vector of explanatory variables, d_1 is the dummy variable denoting the specific regions in North Macedonia. β_0 is the constant. $\beta_2 x_{it} \cdot d$ is the interaction term between regional dummy and explanatory variables. Θ_i is regional dummy and γ_t is year dummy. μ_{it} is the usual standard error. Extending this approach, for estimation purpose, we have used the following equation:

$$GINI_{IT}=\beta_0+ \beta_1 GDPcp_{it}+ \beta_2 GDPGR_{it}+ \beta_3 GEXP_{it}+\beta_4 GFCF_{it}+\beta_5 OG_{it} +\beta_6 TGDP_{it} + \beta_7 GDPcp_{it} \cdot d + \beta_8 GDPGR_{it} \cdot d+ \\ \beta_9 GFCF_{it} \cdot d + \beta_{10} OG_{it} \cdot d + \beta_{11} TGDP_{it} \cdot d+\Theta_i+\gamma_t+\mu_{it}\ (5)$$

Where $i=1,\ 2...,n$ is the regional index, $t=1,2,...,n$ is the time index, denoting the years from 2000 to 2020. The empirical model assumes that GINI coefficient in North Macedonia is a function of GDP per capita ($GDPcp_{it}$), GDP growth rate ($GDPGR_{it}$), government expenditures ($GEXP_{it}$) Gross Fixed Capital Formation ($GFCF_{it}$), output gap (OG_{it}), and trend GDP accounting for potential GDP ($TGDP_{it}$) as well as the interaction terms between these variables with specific regional dummy, accounting for eight statistical regions in North Macedonia. As concern to the interaction terms with *regional* dummy, the aim of the study is to differentiate the determining factors of income inequality (captured by GINI index), across 8 group of statistical regions in North Macedonia[5]. For each considered region as a subject of study, the remaining group of regions is considered as benchmark category of regions.

5.3 Discussion of the results

We discuss the economic interpretation of the Fixed Effects with Driscoll and Kraay standard errors. To distinguish the effect of macroeconomic factors on income inequality, with respect specific regions in North Macedonia, we have included the interaction terms[6] between regional dummies with macroeconomic factors. By these interactions, we test the hypothesis that the effect of macroeconomic factors on income inequality is different among the specific regions in North Macedonia. Focusing on the results with regular variables (column 1), we outline an inequality enhancement effect of growth rate, GDP per capita and Gross Fixed Capital formation, which on the other hand represent the main macroeconomic factors which are triggering inequality concerns in North Macedonia, due to unequal distribution of the economic welfare in the country, which is stimulated through unequal distribution of public spending throughout the statistical regions in the country, at initial stage. The deteriorating effect of output gap, which denotes the cyclical component of the economic activity and potential GDP (captured by trend GDP) on income inequality is a signal that a country may experience potential inflation pressures, following the Keynesian approach, which arises due to increase of the demand component of the economy (Dauti and Elezi, 2020). Concerning the interaction term of GDP per capita with regional dummies, the result is statistically significant at 1 percent of significance for Pelagonija and Polog region. Hence, 100 Euro increase of GDP per capita in the Pelagonija region, is associated with 0.1 Euro of income inequality[7], whereas for the remaining regions the impact of 100 Euro increase on GDP per capita, is associated with 0.4 Euro increase of income inequality[8]. However, although GDP per capita is found to be on a statistically significant relationship with income inequality, the size of the impact of GDP per capita on income inequality is very low, denoting the inelastic change of income inequality due to changes on GDP per capita among the statistical regions in the country. In the Polog region, GDP per capita changes are found to be on a positive and statistically significant relationship with

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[5] Vardar region, Eastern region, Southeastern region, Southwestern region, Pelagonija region, Polog region, Northeastern region and Skopje region.

[6] The presence of a significant interaction indicates that the effect of one predictor variable on the response variable is different at different values of the other predictor variable. It is tested by adding a term to the model in which the two-predictor variables are multiplied. Adding an interaction term to a model drastically changes the interpretation of all of the coefficients. If there were no interaction term B_1 would be interpreted as the unique effect of macroeconomic factors on income inequality at the whole sample of the eight statistical regions in North Macedonia. Since the interaction indicates that the effect of macroeconomic factors on income inequality is different for different values of regional dummy, the unique effect of macroeconomic factors is not limited to B_1, but also depends on the values of the regional dummy variable.

[7] 0.0018 (0.0047-0.029*1) See column (6) the interaction coefficient of GDP per capita with Pelagonija regional dummy and the unique coefficient of GDP per capita

[8] 0.0047(0.0047-0.029*0) See column (6) where the interaction effect is 0, since dummy variable for the benchmark category of Pelagonija regions, denoting the remaining regions in North Macedonia is zero, in this case.

income inequality. Hence, 100 Eu increase of GDP per capita in the Polog region is related to average increase of income inequality by 1.1 Euro, ceteris paribus[9], whereas, for the benchmark category of the remaining statistical regions, this impact is estimated to be 0.4 Euro increase of income inequality, per average increase of GDP per capita by 100 Euro[10]. In the same way, the interaction terms of output gap[11] for Pelagonija and Polog regions are negative and statistically significant at 1 percent level of significance, signaling for the increase of the demand components of the economy (consumption, investments, government expenditures and net exports) as vital for reducing the disparity that these regions are facing on the grounds of economic development in comparison to the remaining statistical regions, albeit, in the long run some potential inflation pressures may arise due to triggered aggregate demand. Following the interpretations of the output gap coefficients for these two regions, it is noticeable that per 100 Eu increase of output gap in the Pelagonija and Polog region, income inequality decreases by 2.22[12] and 0.54[13] Euro, into these regions, respectively. The marginal impact of output gap on income inequality may lay behind the scope of the absence of economic activity into these regions. The interaction term of GDP growth coefficient with regional dummy is statistically significant, at 10 percent level of significance only for Pelagonija region, relying on a negative relationship with income inequality, although the size of the impact is marginal. As concern to the aggregate supply coefficient represented by trend GDP the results indicate statistically significant impact of aggregate supply on income inequality, for Pelagonija and Polog region, having regard the statistically significant interaction coefficient of trend GDP with regional dummies for these two regions. Hence, per 100 euro increase in the aggregate supply in Pelagonija and Polog region, income inequality decreases by 0.57[14] and 0.54[15] euros, respectively, ceterus paribus. This result is an indication that production activities should be favored into these regions, in order to make the welfare impact of aggregate supply functional for decreasing income inequality into the respective regions of Pelagonija and Polog.

Table 2: Results from the Fixed Effect with Driscoll and Kraay standard errors

GINI - dependent variable	(1) North Macedonia	(2) Vardar region	(3) East region	(4) Southwest region	(5) Southeast region	(6) Pelagonija region	(7) Polog region	(8) Northeast region	(9) Skopje region
$GDPCp_{it}$	0.00438***	0.00431***	0.00458***	0.00435***	0.00458***	0.00474***	0.00432***	0.00425***	0.00328**
	(0.000514)	(0.000547)	(0.000535)	(0.000534)	(0.000472)	(0.000589)	(0.000507)	(0.000461)	(0.00133)
$GDPGR_{it}$	0.000162*	0.000174	0.000137	0.000248*	0.000131	0.000170*	0.000151	0.000196**	-5.78e-05
	(9.24e-05)	(0.000116)	(9.47e-05)	(0.000124)	(0.000109)	(8.62e-05)	(9.83e-05)	(8.44e-05)	(0.000133)
$GEXP_{it}$	-0.000168	-0.000167	-0.000156	-0.000179	-0.000158	-0.000161	-0.000176	-0.000190*	0.000324
	(0.000109)	(0.000114)	(0.000108)	(0.000113)	(0.000110)	(0.000108)	(0.000110)	(0.000104)	(0.000284)
$GFCF_{it}$	0.000195**	0.000200**	0.000193**	0.000193**	0.000193**	0.000199**	0.000189**	0.000193**	0.000459*
	(7.93e-05)	(8.28e-05)	(8.06e-05)	(8.18e-05)	(8.18e-05)	(7.87e-05)	(7.97e-05)	(7.71e-05)	(0.000231)
OG_{it}	-0.00219***	-0.00216***	-0.00229***	-0.00218***	-0.00229***	-0.00237***	-0.00216***	-0.00213***	-0.00174**
	(0.000244)	(0.000259)	(0.000254)	(0.000254)	(0.000222)	(0.000282)	(0.000242)	(0.000218)	(0.000630)
$TGDP_{it}$	-0.00215***	-0.00212***	-0.00224***	-0.00213***	-0.00224***	-0.00231***	-0.00212***	-0.00208***	-0.00180***
	(0.000237)	(0.000252)	(0.000247)	(0.000246)	(0.000217)	(0.000274)	(0.000233)	(0.000213)	(0.000607)
$GDPCp_{it} \cdot d$		-0.00191	0.000712	0.00610	-0.00398	-0.00293***	0.00734**	-0.0121	0.00125
		(0.00148)	(0.00138)	(0.00477)	(0.00401)	(0.000798)	(0.00320)	(0.0107)	(0.00120)
$GDPGR_{it} \cdot d$		3.51e-05	0.000232**	-0.000319	0.000490	-0.000402*	-0.000594*	-0.000406	0.00123***
		(0.000178)	(9.40e-05)	(0.000288)	(0.000403)	(0.000200)	(0.000312)	(0.000330)	(0.000403)
$GEXP_{it} \cdot d$		7.70e-05	0.000447***	-0.000264**	0.000104	0.000141**	-0.000234	-0.000736**	-0.000366*
		(0.000112)	(0.000119)	(0.000125)	(0.000170)	(5.39e-05)	(0.000138)	(0.000290)	(0.000180)
$GFCF_{it} \cdot d$		0.000140*	-2.67e-05	-0.000241*	0.000413**	8.21e-05	-0.000222*	0.000202	-0.000249
		(7.30e-05)	(5.44e-05)	(0.000134)	(0.000158)	(6.42e-05)	(0.000120)	(0.000332)	(0.000162)
$OG_{it} \cdot d$		0.000906	-0.000363	-0.00282	0.00170	0.00144***	-0.00331**	0.00621	-0.000576
		(0.000722)	(0.000658)	(0.00229)	(0.00186)	(0.000380)	(0.00151)	(0.00522)	(0.000573)
$TGDP_{it} \cdot d$		0.000878	-0.000415	-0.00282	0.00178	0.00135***	-0.00342**	0.00589	-0.000443
		(0.000698)	(0.000650)	(0.00226)	(0.00190)	(0.000378)	(0.00152)	(0.00509)	(0.000553)
Observations	168	168	168	168	168	168	168	168	168
Number of groups	8	8	8	8	8	8	8	8	8
R-square	0.9487	0.9493	0.9524	0.9523	0.9529	0.9505	0.9522	0.9637	0.9528

Notes: Dependent variable is GINI coefficient denoting income inequality. Driscoll and Kraay standard errors in brackets, ***, ** and * indicate significance of coefficients at 1, 5 and 10 per cent, respectively. *d* is the regional dummy variable.

6 CONCLUSION AND POLICY IMPLICATIONS

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[9] (0.00432+0.00734*1). See column (7) the interaction coefficient of GDP per capita with Polog regional dummy and the unique coefficient of GDP per capita.

[10] (0.00432+0.00734*0) =0.004 x 100=0.4

[11] Output gap is measured as a percentage difference of actual GDP (aggregated demand) from trend - potential GDP, aggregate supply, as calculated with Hodrick-Prescott filter. Theoretically, the underlying expansion in economic growth means an increase of output gap, meaning that actual GDP converges to its potential level, thus, forcing for inflation pressures, when actual GDP is higher than potential GDP (Dauti and Elezi, 2022)

[12] (-0.0237 +0.00144*1) =-0.02226 x 100 = -2.221

[13] (-0.00216-0.00331*1) =-0.00547 x 100 =-0.547

[14] (-0.00231-0.00342*1) =-0.00573 x 100=-0.5

[15] (-0.00212-0.00342*1) =-0.00554 x 100 =-0.5

This policy-oriented paper tried to evaluate on empirical grounds some of the main macroeconomic indicators of income inequality across eight state statistical regions of North Macedonia, relying on a yearly data set for the period 2000-2020. Moreover, having regard latest oriented policies of North Macedonia for regional economic cohesion in a coherence with the Lisbon Treaty, as a pre-requisite of EU adherence path, regional economic development is becoming vital tool for reducing regional disparities for the country. is crucial for the country. Considering the reviewed statistical data on some of the macroeconomic indicators, like: GDP per capita, GDP per worker employed, gross fixed capital formation, government expenditure, the study reveals significant differences on the trajectory of these indicators, between statistical regions. Hence on the grounds of GDP per capita indicator as a crucial measure of standard of living, the study outline that Skopje region has the highest share of GDP per capita in the country, while the Northeast and Polog region are suffering from the lowest GDP per capita, during the whole observed period, making the Skopje region, on average three times richer than the remaining statistical regions, where in extreme cases this region is times richer than Northeast region and five times richer than Polog region. Also, the reviewed data on GDP per worker employed across the statistical regions, reveals that GDP contributed from the labor force comes mainly from the region of Skopje. Gross fixed capital formation which includes private and public investments is found to experience unequal share among the statistical regions during the whole observed period, in favor of Skopje region again in comparison to other stagnated regions, confirming a biased concept of investment policies in public goods (infrastructure, healthcare, schooling, social welfare) and private goods (domestic and foreign investments). On empirical grounds, using the fixed effects estimates with Driscoll and Kraay standard errors, the study finds that stimulating aggregate supply, throughout facilitating domestic production, on Polog and Pelagonija region, two of the most stagnated regions, can significantly reduce the un-favoring economic situation of these regions in comparison to other statistical regions, thus contributing to the reduction of economic disparities at state level. Output gap as a macroeconomic indicator of convergence process of actual GDP (aggregate demand) to potential GDP (aggregate supply) is found to be on a negative relationship with income inequality for Pelagonija and Polog region, meaning that income inequality can be reduced only through increase of the demand component of the economy (increased consumption, investments, government expenditures and net exports), although some inflation pressures may be provided due to the increase of the demand components in the long run. The study contributes to the empiricism of regional economics in several ways. Firstly, it enriches the empirical literature of the determinants of economic disparities on regional context. Secondly, it contributes to the policy debate in North Macedonia, regarding the efforts that the government is putting forward for achieving a sensible cohesion policy on the basis of equal economic development of North Macedonia's statistical regions and thirdly the study addresses some figures and data which outline the trends of economic development in the statistical regions in North Macedonia. The results of the study will provide relevant policy endorsements to the governmental authorized bodies and other interested parties for achieving a productive institutional reform on addressing the challenges and improved perspectives in the policy of a balanced regional economic development.

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