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Military Expenditures and Income Inequality: Evidence from a Panel Analysis

Askeri Harcamalar ve Gelir Eşitsizliği: Bir Panel Analizden Kanıtlar

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Abstract

Security is an essential need that must be ensured by any sovereign state. Military expenditures for security occupy an essential place in the budget of the states and even in the GDP. According to World Bank (2020a) statistics, average military expenditures of the countries within the government expenditures have continued to decrease since 2006, while as a share of GDP, it decreases almost steadily since 1985. Those decreases can be interpreted as signs of a relatively peaceful world. The decrease in military expenditures implies more resources for other economic sectors and also implies an increase in income equality within a country. Using a panel regression for country-level observations and the Gini index as a proxy for income inequality, this study aims to determine the impact of military expenditures on income inequality in fifty-two countries (including 28 NATO and 36 OECD member countries) over the period 2001-2019. The empirical key findings of the study can be summarized as follows: The military expenditures, consistent with the literature, increase significantly income inequality, and the findings even reveal that this situation is valid in developed countries. Moreover, the findings show that neither being a member of the NATO alliance nor governance effectiveness significantly impact the income inequality.

Jel Codes: *C23, C33, D30, H56, I30*

Keywords: *Military Expenditures, Gini Index, Income Inequality, NATO, OECD*

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Öz

Güvenlik her egemen devletin sağlaması gereken temel bir ihtiyaçtır. Güvenlik amaçlı yapılan askeri harcamalar, devletlerin bütçelerinde ve GSYİH içerisinde önemli bir yer tutmaktadır. Dünya Bankası (2020a) istatistiklerine göre, ülkelerin kamu harcamaları içerisinde ortalama askeri harcamalarının payı 2006 yılından bu yana azalmaya devam ederken, GSYİH'ye oranı da 1985 yılından günümüze neredeyse istikrarlı bir şekilde azalmaktadır. Bu azalışlar nispeten barışçıl bir dünyanın işaretleri olarak yorumlanabilir. Askeri harcamaların azalması, diğer ekonomik sektörlere daha fazla kaynak sağlanması anlamına geldiği gibi, ülke içerisinde gelir eşitliğinin de artması anlamına gelmektedir. Ülke düzeyinde gözlemler için panel regresyon analizi ve gelir eşitsizliğinin bir göstergesi olarak Gini endeksini kullanan bu çalışma, 2001-2019 yıllar arasında elli iki ülke için (28 NATO ve 36 OECD üyesi ülke dahil) askeri harcamaların gelir eşitsizliği üzerindeki etkisini belirlemeyi amaçlamaktadır. Çalışmanın ampirik temel bulguları şu şekilde özetlenebilir: Literatürle tutarlı olarak askeri harcamalar gelir eşitsizliğini önemli ölçüde artırmakta, hatta bulgular bu durumun gelişmiş ülkelerde de geçerli olduğunu ortaya koymaktadır. Ayrıca bulgular ne NATO ittifakına üye olmanın ne de yönetişim etkinliğinin gelir eşitsizliğini önemli ölçüde etkilemediğini göstermektedir.

Jel Kodları: *C23, C33, D30, H56, I30*
Anahtar Kelimeler: *Askeri Harcamalar, Gini Endeksi, Gelir Eşitsizliği, NATO, OECD*

1. Introduction

Security is an essential need that must be ensured by any sovereign State. Consequently, military expenditure occupies an essential place in the budget of the States and even in the GDP of the countries, depending on the security situation. World Bank statistics show that the average military expenditures of countries in the world within their general government expenditures have been decreasing steadily since 2006, while as a share of GDP, it decreases almost steadily since 1985 (WorldBank, 2020a). Those decreases can be interpreted as signs of a relatively peaceful world. Despite those decreases, military expenditures and military industry remain a very important part of the world economy, especially in the context of global terrorism threats and a shifting economic power between emerging countries like China and India, and developed countries like the USA and England, Germany, France, Italy, Poland in Europe. Moreover, the Chinese-Taiwanese tensions, the growing tensions in the China Sea between Asian countries (China, Japan, Taiwan, Korea, etc.), the North Korean military provocations, border tensions between India on the one hand and Pakistan and China on the other, the wars in Iraq and Syria involving the countries of the region, tensions between Iran and Saudi Arabia, the NATO expansion to the East European countries and its military invasions/interventions in Afghanistan, Iraq, Libya, etc., and recently the Russian military invasion/intervention in Ukraine, are all factors that consolidate the military spending in the world.

The factors that lead to military expenditures are multidimensional. However, we can basically keep it into two groups of factors as external and internal factors. The external factors are traditionally for defense or attack purposes. They can also be linked to the geopolitical situation in the world, the state of belligerence between countries, the multiple hotbeds of conflicts and military tensions as well as economic dominance in the world. Conversely, the endogenous factors are those motivated by the objective of balancing the internal economic unbalances like unemployment or for innovation and R&D purposes. This idea ties in with the Marxist capitalistic point of view which states that military expenditures, although unproductive, are made to fight underemployment and overcapacities of production in a Marxist capitalistic (Fontanel & Samson, 2008).

Based on the principle of opportunity cost or crowding-out effect (Lin et al., 2015), the resources allocated to military expenditure could have been used to improve the standard of living of the population. Quantitatively, some can argue that military spending will have served to create jobs by recruiting soldiers and related staff and also to create business opportunities for companies that will be suppliers to the army. In sum, the following question arises: qualitatively, does military expenditure promote the redistribution of wealth? In other words, do military expenditures have a significant (positive/negative) impact on income inequality in the countries?

By using a panel regression analysis for country-level observations, this paper aims to provide empirical evidence that military expenditures have a significant impact on the income inequality for the fifty-two countries. Incidentally, besides this main objective, this study also makes it possible to see whether NATO membership and also the type of governance have an impact on income inequality. For the income inequality in a country, Gini index is used as a

proxy. The sample for this study is made up of fifty-two (52) countries, including 36 members of the OECD, 28 members of NATO, and 11 European and neighboring countries up the Caucasus and Ural Mountains which are considered as part of the European continent. Also, the sample of 52 countries is categorized as 17 developing and 35 developed countries. The study period was from 2001 to 2019.

The rest of the study is organized as follows. A brief literature review is conducted in section 2. Next section describes the data, and presents the methodology used in the analysis. Section 4 presents the empirical analysis and findings. The last section contains conclusion with discussion.

2. Literature Review

The concept of military expenditure includes a large number of factors which can vary depending on the institution which gives the definition. For example, according to “Stockholm International Peace Research Institute” (SIPRI) definition, military expenditures of a country are all spending on current military forces and activities. The factors included in the definition may also vary depending on the importance and complexity of military in a country.

Many papers have been written on the military expenditures in general and their determinants particularly. Some authors focused on the effect of military alliances like NATO on the demand of national defense of ally countries. Some also analyze the balance between the part of defense which is a public good of a member country and the part of defense which is collective for country members (Seiglie, 1992).

Another interesting way to analyze military expenditures is to see how they affect economic growth and development of countries. They have been debates and papers on these aspects. As for the determinants, Seiglie (1992) analyzed the determinants of demand and the supply of the increase of military expenditures by using a military expenditure function. Seiglie (1992) criticized the fact that the role military expenditure in national production, although having important share in national production and central government expenditures in many countries, is not enough seen as an economic issue by economists; Especially when the role of a state in economy and the optimal allocation of resources are very important topics.

From Seiglie (1992) we can derive two categories of factors which are the existence of alliances, the domestic factors and the international factors. Fontanel & Samson (2008) have analyzed the determinants of military expenditures in general. They have enumerated six (6) mains factors which are the arms race, the new threats like terrorism, being part of an alliance like NATO which comply member to allocated 2% of their GDP to defense, arms industry of the country itself, military R&D and the state budget growth. Some of the factors are not as determinants depending on countries or time. For example, Fontanel & Samson (2008) themselves recognized that arms race factor is not a valid determinant since it lacks econometric evidences. Also being part of an alliance may decrease military expenditures of small countries which may act as a free-rider. Although in NATO alliance free-riding behavior is not only a small country linked phenomenon, rather some of the core members seem also have a "dangerous" long run free-riding behavior (Odehnal, 2015; Odehnal & Sedlacik, 2015). To the previous factors, others can be added. Looney & Frederiksen (1990) believe economic

variables and resource availability to be the main determinants. Indeed, it is observable even today that countries endowed with resources are generally having hard time dealing with security especially when they are poor. As for Hewitt (1993), he demonstrated economic crisis in both developing and developed countries, spreading out of democracy and the improvement in the world security are some of the reasons why military expenditures decline after 1985.

Most recently, Albalate et al. (2012), who analyzed the governmental determinants of military expenditures, agreed that despite the fact that democratic regimes spend less than authoritarian regimes, analysis on the effects of the difference of democracy are not clear. Additionally, they found that presidential democracy is more likely to spend more on military than parliamentarian democracy, at the same time countries having system of proportional representations are more likely to spend than countries with majoritarian and presidential system.

Solarin (2017) estimates the determinant factors that impact on the military expenditures and the impact of globalization on the military expenditures of eighty-two (82) countries. Their main finding is that there is a negative correlation with globalization and military burden, and globalization decreases the military expenditure.

Hou (2018) analyzed the factors that affect military expenditures of twenty-nine (29) Asians and Oceanians countries. His findings indicate that population, trade openness, and GDP are the crucial factors that affect military expenditures of the countries. On the other hand, his findings in terms of the political regime and conflict factors do not produce significant results on military expenditures.

As enumerated above, most of the studies on military expenditures are about its determinants. The decrease in military expenditures implies more resources for other economic sectors including a reduction in income inequality within a country. Despite that very interesting problematic, few studies have assessed the impact of military spending on income inequality. For simplicity and conciseness, the most recent studies will be considered in this literature review.

In the literature, most empirical studies on the topic conclude that military expenditures increase income inequality. First, Vadlamannati (2008) in his study find that the reason for the increase in income inequality was military expenditures. Using the panel fixed effect (FE) modeling; the author analyzed the case of Bangladesh, India, Sri Lanka and Pakistan, and over a period from 1975 to 2005 to arrive at this conclusion. However, the most important finding of the author is that increase in inequality by military expenditure occurs only in times of war. In peacetime, the opposite effect is observed, that is to say that income inequality is reduced by the military expenditures.

In the same vein, Elveren (2012), in the case of Turkey over a study period between 1963 and 2007, shows that military expenditure is not only co-integrated with income inequalities but also that these inequalities are exacerbated by military spending. As a methodological approach, Elveren (2012) uses the Granger co-integration test and the “Vector Error Correction Causality Test” (VECM). This type of approach used by Elveren (2012) has been adopted by Wolde-Rufael (2014) in the case of Taiwan (between 1976 and 2011), and Wolde-

Rufael (2016) in the case of South Korea (between 1965 and 2011). In both cases of Taiwan and South Korea, Wolde-Rufael finds that military spending has a positive impact on long-term income inequality and that this causal relationship is unidirectional, from military expenditures to income inequality. However, the fundamental difference between the two approaches of Wolde-Rufael (2014 and 2016) and that of Elveren (2012) is a methodological difference because Wolde-Rufael used the Bounds test instead of the Granger test. Using the Elveren (2012) approach, Meng et al. (2015) in the case of China (1989-2012) come to similar conclusions that military expenditures affect positively the income unfairness.

Other methodological approaches have also been used by some authors, like Töngür & Elveren (2013) who used "the Generalized Method of Moments" (GMM) in the case of a panel of countries between 1988 and 2003. Authors reach the same conclusion that military expenditures positively affect the income unfairness.

Biscione & Caruso (2019) in their study also investigate the relationship between military expenditure and income inequality on some European transition countries from 1990 to 2015. Authors methodological approach is an OLS FE modeling. As for income inequality proxies, Theil Index and the Gini index are used. Their findings confirm the positive effect of military expenditures of the European transition countries on income inequality. The same conclusions have been reached by many other studies like Graham & Mueller (2019) and Lin et al. (2015).

Nevertheless, it is interesting to mention that few studies in the literature have reached an opposite conclusion. For instance, Ali (2012) in the case of the Arab world and Chletsos & Roupakias (2018) in the case of some NATO member countries, conclude that military expenditures actually decrease income inequality. Considering the majority of the studies, the hypothesis of our study is that there is a positive impact of military expenditure on income unfairness, meaning that it increases income unfairness.

3. Data and Methodology

The main purpose of the study is to empirically investigate the impact of military expenditures on income inequality in fifty-two (52) countries (including 36 OECD and 28 NATO member countries) over the 19 years period from 2001 to 2019. For this purpose, a panel data analysis is utilized for country-level observations and the Gini index is used as a proxy for income inequality. The econometric model is therefore a panel data model that can be specified in the following equation 1:

$$Gini_{it} = \alpha_0 + \alpha_1 Milex_{it-1} + \alpha_2 V_{it-1} + \alpha_3 D_{it} + \mu_i + \vartheta_{it} \quad (1)$$

Where,

- $Gini_{it}$: It is the dependent variable which represents the income inequality.
- $Milex_{it-1}$: It represents the military expenditure. It is one year lagged variable because the impact of a military expenditure will occur at the following year.
- V_{it-1}: It represents the vector of control variables like productivity, inflation, openness, unemployment and governance. Here also the lagged of those control variables are used.

- D_{it}: The vector of dummy variables like the membership of NATO.
- μ_i: The individual fixed effect (FE) which is specific to panel data.
- ϑ_{it}: It represents the error term.

In the estimation, the explanatory variables are in the logarithmic form except for the dummy and the variables already in ratio or percentage. Therefore, the estimated coefficients of those logarithmic variables will be commented as elasticity. Moreover, the fact that explanatory variables are lagged lessens the issue of endogeneity (Biscione & Caruso, 2019).

3.1. Data

In this study, the variables and their definitions are compiled in the table 1. Additionally, the data used (see Table 1) are from the Word Bank database and the SIPRI.

Table 1: Definition and Sources of the Variables

Variables	Definition/Consistent Literature		Sources
Gini	Gini index measures the income inequality within a country varying from 0 (perfect equality) to 1 (perfect equality) **Literature**: Biscione & Caruso (2019); Töngür & Elveren (2013)		(WorldBank, Poverty and Inequality, 2020a)
Milex	Military Expenditures by country (Current US Dollar) **Literature**: Seiglie (1997); Vadlamannati (2008); Hirnissa et al. (2009); Elveren (2012); Kentor et al. (2012); Meng et al. (2015); Wolde-Rufael (2014; 2016); Biscione & Caruso (2019); Graham & Mueller (2019)	Expected Impact Positive	(SIPRI, 2021)
Productivity	GDP per person employed **Literature**: Biscione & Caruso (2019)	Expected Impact Negative	(WorldBank, World Development Indicators, 2020c)
Inflation	Inflation, consumer prices (annual %) **Literature**: Biscione & Caruso (2019)	Expected Impact Positive	(WorldBank, World Development Indicators, 2020c)
Openness	Trade (Export+Import) as share of GDP **Literature**: Jaumotte et al. (2013); Higgins & Williamson (2002)	Expected Impact Negative	(WorldBank, World Development Indicators, 2020c)
	Literature: Biscione & Caruso (2019); Amiti & Davis (2012); Helpman et al. (2010)	Expected Impact Positive	
Unemployment	Unemployment, total (percent of total labor force) **Literature**: Biscione & Caruso (2019)	Expected Impact Positive	(WorldBank, World Development Indicators, 2020c)
NATO	NATO membership **Literature**: Authors' hypothesis	Expected Impact Negative	NATO
Governance	Control variables: Voice and Accountability /Corruption/Regulatory Quality/ Governance Effectiveness/Political Stability/ Rule of Law **Literature**: Authors' hypothesis	Expected Impact Negative	(WorldBank, The Worldwide Governance Indicators, 2020b)

3.2. Research Methodology

The table 1 displays the variables used in this paper. The first variable is the dependent variable Gini index (Gini) while the other variables are explanatory variables. The military expenditures (Milex) are expected to have a positive impact on the Gini coefficient which is consistent with the majority of the literature (a positive impact is an increase in income inequality). For the other variables, the productivity is expected to have a negative impact; inflation is expected to have positive impact, unemployment with positive impact, while NATO and Governance have negative impact. As for openness, the expected sign is ambiguous according to consistent literature. The table 2 below displays the descriptive statistics.

Table 2: Descriptive Statistics

Variables	n	Mean	S.D.	Min	Max
Gini	988	33.80	6.07	23.20	57.50
Milex	988	21003	85416	5.96	752288
Productivity	988	73806	38932	11194	275234
Inflation	988	3.75	6.27	-4.48	95.01
Openness	988	96.49	54.04	19.56	380.10
Unemployment	988	9.13	5.86	1.81	37.25
NATO	988	0.54	0.50	0	1
Governance	988	0.84	0.86	-1.13	2.35

"The variance inflation factor" (VIF) is calculated to overcome the multicollinearity issues. Most of the studies agree on the fact that a value of VIF inferior to 5, indicates a safe measure of non-collinearity (Menard, 2002). Therefore, the same threshold is retained in our case. According to the VIF table (see table 3), there is no multicollinearity issue among the variables.

Table 3: Variance Inflation Factors

Variables	VIF	1/VIF
Milex	4.17	0.24
Productivity	4.04	0.25
Inflation	1.25	0.80
Openness	2.84	0.35
Unemployment	1.63	0.61
NATO	1.21	0.83
Governance	2.29	0.44
Mean VIF	2.49	

After the issue of multicollinearity, the issue of homogeneity is addressed. In the homogeneity test, the null hypothesis is that: "slope coefficients are homogenous". Therefore, if the p-value is lower than 0.05 allow the rejection of the null hypothesis. Both Pesaran & Yamagata (2008) and Blomquist & Westerlund (2013) tests suggest that the data are heterogeneous. The homogeneity test allows the choice between pooled panel if the variables are homogenous and the FE/RE otherwise. Therefore, the FE or RE approaches will be the appropriate choice.

Table 4: Results of Homogeneity Test

Tests Authors and Delta values		Statistic	Prob.
Pesaran & Yamagata (2008)	Delta (Δ)	9.312	0.00
	Adjusted Delta (Δadj)	13.169	0.00
Blomquist & Westerlund (2013)	Delta (Δ)	10.689	0.00
	Adjusted Delta (Δadj)	15.117	0.00

One of the most important tests before the estimation is the stationary test. Stationary test is very important because if estimations are done with non-stationary variables, the results may not be consistent, especially for time series. Even with panel data, the stationary test is recommended. However, the type of stationary test in panel data depends on the cross-sectional dependency of the data. If the data are cross-sectional independent, the stationary test of panel data is the same as for time series. However, if data are cross-sectional dependent, a second-generation stationary test is required (Pesaran, 2004).

Table 5: Cross-Sectional Dependency Test (Pesaran, 2004)

CD Tests	Cross-Sectional Dependency
Stat (prob)	1.596 (0.111)

The null hypothesis assumes that there is no cross-dependency between the variables. According to the test results, the cross-sectional dependency displays a p-value higher than 0.05; thus, the null hypothesis cannot be rejected (see table 5). The data are cross-sectional independent. Hence, the first-generation tests of stationary like Levin Lin-Chu are sufficient in our case. The table 6 below shows the stationary test results using the Levin-Lin-Chu test. According to the results, the variables are significantly stationary at level.

Table 6: Levin-Lin and Chu Stationary Test

Variable		Unadjusted t-Statistic	Adjusted t-Statistic	P-value
Gini	LLC	-8.827	-3.113	0.0009
	LLC-Trend	-16.693	-5.354	0.0000
Milex	LLC	-17.362	-10.196	0.0000
	LLC-Trend	-18.613	-8.553	0.0000
Productivity	LLC	-11.762	-8.339	0.0000
	LLC-Trend	-18.258	-8.681	0.0000
Inflation	LLC	-20.202	-10.441	0.0000
	LLC-Trend	-24.651	-10.472	0.0000
Openness	LLC	-24.651	-10.472	0.0000
	LLC-Trend	-9.611	-3.946	0.0000
Unemployment	LLC	-18.326	-6.898	0.0000
	LLC-Trend	-12.780	-5.625	0.0000
Governance	LLC	-17.735	-6.852	0.0000
	LLC-Trend	-16.636	-8.185	0.0000

4. Empirical Findings

The FE and RE approaches are used for the estimations. The results are presented in the following table 7. Because of the time-invariant nature of the dummy (NATO), the possibility of an unobserved effect is excluded. Therefore, that variable is dropped in the FE model.

Table 7: Results of The FE and RE Models

Dependent Variable: Gini Coefficient						
Explanatory Variables	**FE**			**RE**		
	Coefficient	**P-Value**		**Coefficient**	**P-Value**	
Milex (t-1)	0.3113	0.151		0.5452***	0.005	
Productivity (t-1)	-5.4722***	0.000		-5.5497***	0.000	
Inflation (t-1)	0.0090	0.429		0.0085	0.457	
Openness (t-1)	0.0101**	0.013		0.0070*	0.076	
Unemployment (t-1)	0.1830***	0.000		0.1827***	0.000	
NATO (dummy)	0 (Omitted)	---		-0.7078	0.595	
Governance (t-1)	-0.2499	0.248		-0.3063	0.154	
Constant	84.9885***	0.000		81.4823***	0.000	
n		936			936	
# of Countries		52			52	
R-squared	within	between	overall	within	between	overall
	0.2256	0.0813	0.0897	0.2234	0.1328	0.1383
F statistics	F(6,878)=42.63 Prob>F=0.000			Wald chi2 (7)=254.57 Prob>chi2=0.000		

The choice of either FE or RE model is decided according to the following Hausman test in the table 8. According to the test, the null hypothesis suggested that the RE is the most appropriate model, while the alternative hypothesis suggested the FE model. According to the test results, we cannot reject the null hypothesis because the p-value is superior to 0.05. Consequently, the null hypothesis cannot be rejected which means the appropriate model is RE.

Table 8: Hausman Test

H_0: Difference in coefficients not systematic	
chi2 (6) Values	Prob > chi2
3.28	0.7727

Post-estimation tests are necessary to ensure that the estimators are unbiased and consistent. Especially the heteroskedasticity and autocorrelation are the main issues; therefore, we conducted both of the tests. Null hypothesis of the test suggests that error components are homoscedastic. According to the table 9 below, the null hypothesis is rejected (the p-value<0.05), this means that error components are heteroskedastic.

Table 9: Heteroskedasticity Test

H_0 : sigma(i)^2 = sigma^2 for all I	
chi2 (52) = 58593.37	Prob>chi2 = 0.000

Table 10 below shows the autocorrelation test results. According to the rest results, (the p-value<0.05), the null hypothesis of No-first order autocorrelation is rejected.

Table 10: Results for Autocorrelation Test

H_0: No first order Autocorrelation	
Baltagi-Wu LBI = 0.72713098	Durbin-Watson = 0.572421
Corr (u_i, Xb) = 0 (assumed): Wald chi2 (8) = 90.29	Prob > chi2 = 0.0000

The residuals of our estimation are heteroskedastic while the serial autocorrelations are detected. To solve the issue, Driscoll-Kraay approach can be adopted which is consistent with the issue of heteroskedasticity and autocorrelation (Hoechle, 2007). The results of the regression using the Driscoll-Kraay standard errors estimators displayed in the table 11. Findings reveled that increase of 1% of military expenditures in concerned countries exacerbates the income inequality by 0.92% which is almost a ratio of one to one. These findings are in the same vein as the majority findings of the literature. Besides, productivity which is the GDP per person employed reduces income inequality by 3.44% for each 1% increase. As expected, since unemployment will let a category of people with less to no income, it increases income inequality: for every increase in unemployment of 1%, income inequality is expected to increase by 0.17%. From the table 1, we have seen that the impact of openness on income inequality is ambiguous. In our case, it appears that its impact is negative, although very low, in the sense that for every 1% increase in trade openness, income inequality reduces by 0.015%. As for the NATO membership and the governance effectiveness, the coefficients appear not significant in our case. Therefore, we can conclude that they have no impact on the income inequality.

Table 11: Regression Results Using Driscoll-Kraay

	Regression with Driscoll-Kraay standard errors Method: Random-Effects Within R-squared=0.2189			
Explanatory Variables	Coef.	Driscoll/Kraay S.E.	t	Prob
Milex	0.9168***	0.0976	9.40	0.000
Productivity	-3.4425***	0.1456	-23.65	0.000
Openness	-0.0148***	0.0042	-3.50	0.003
Unemployment	0.1760***	0.0162	10.85	0.000
Constant	51.7869***	3.4279	15.11	0.000

5. Conclusion and Discussion

The main purpose of this study is to analyze the effect of military expenditures on income inequality by utilizing panel data analysis in fifty-two countries over the period 2001 and 2019. The relative decrease in military expenditures in the world implies more resources for other economic sectors including an increase in income equality within a country. Using the Gini index as a proxy for income inequality, this paper determines the impact of military expenditures on income inequality in fifty-two countries (including 36 OECD member countries, 28 NATO member countries, and 11 European and neighboring countries). The findings imply that military expenditures increase significantly income inequality by a percentage of almost one-to-one, even in the most advanced countries of the world. This finding is consistent with the majority of literature. Moreover, findings show that, neither being a member of the NATO alliance, nor governance effectiveness significantly impact income inequality.

In conclusion, the key finding of the study showed that there is a positive association between military expenditures and income inequality for the fifty-two countries, during the period 2001-2019 analyzed which is consistent with the empirical findings of the literature. In NATO countries, technical and technological progress has fostered the existence of the military industry. Thanks to the industry, one can think that any increase in military expenditure should not significantly impact income inequality in these countries because the military industry would create jobs and redistribute income via the production chain. However, our empirical findings display an increase in income inequality caused by an increased in military expenditure. Three hypotheses can be provided to understand this empirical result. Firstly, increasing military expenditure can decrease government spending in other areas, such as education, health and welfare. This can have a negative impact on the income of the poorest, who depend on these public services. Secondly, the defense industries are often high paying and hire skilled and experienced workers. This means that the redistribution of wealth will not be effective since it is the most qualified workers who will be paid more. Lastly, military expenditure can lead to an increase in energy demand, which can lead to higher energy prices. This can weigh on the spending of the poorest households and therefore exacerbate income inequalities. It is of course important to note that these are just a few possible explanations. To draw more definitive conclusions, more in-depth research would be necessary.

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Çıkar Beyanı: Yazarlar arasında çıkar çatışması yoktur.
Etik Beyanı: Bu çalışmanın tüm hazırlanma süreçlerinde etik kurallara uyulduğunu yazarlar beyan eder. Aksi bir durumun tespiti halinde Fiscaoeconomia Dergisinin hiçbir sorumluluğu olmayıp, tüm sorumluluk çalışmanın yazarlarına aittir.
Yazar Katkısı: Yazarların katkısı aşağıdaki gibidir;

Giriş: 1. ve 2. yazar

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Introduction: 1st and 2nd author

Literature: 1st and 2nd author

Methodology: 1st and 2nd author

Conclusion: 1st and 2nd author

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