



REVIEWING THE DEFENSE SPENDINGS' EFFECTS ON FOREIGN TRADE OF TURKEY

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Abstract:

In order to ensure military security in a country, defense spending must be done for having a trained army with modern weapon systems. The effects of defense spending, which are not completed once and must be made continuously, are inevitable. This study sought to answer the question of how to influence Turkey's foreign trade balance in defense spending in the years 2000-2018. The Granger causality tests in the E-Views, a Windows-based econometric software program have been used. Defense spending has emerged from the analysis did not affect the foreign trade balance in Turkey. It is observed that the gross domestic product has an impact on the export and import of defense industry products.

Keywords:

Public Expenditures, Defense Spending, Foreign Trade Balance

JEL Classification

P33, H560

1. Introduction

According to the Republic of Turkey Constitution Article 5, "The fundamental aims and duties of the state are keeping the independence and integrity of the Turkish nation, maintaining the indivisible integrity of the Republic and democracy, ensuring the welfare, peace, and happiness of citizens.

While the state performs these services, it spends the taxes, collected from the citizens in the country, at optimum levels and primarily performs security, prosperity and development. These expenditures made by the state are called "public expenditures". The distribution of the public expenditures planned to be made is decided in return for the estimated income with the "budget" approved by the parliament every year. Under normal circumstances, "Defense Spending" always has an important proportion among these public expenditures.

Accessing real information about defense spending can create sensitivity for the defense power of countries, and access to this information is normally limited. When the real values are reached, these values are kept confidential. Regarding defense spending of countries, Stockholm International Peace Research Institute (SIPRI) is the most respected institution worldwide. In this study, the statistical data provided by SIPRI has been used.

Defense and security are the sine qua non of the countries. According to the literature researches on Defense spending; It can have a positive impact on economic growth, employment, and foreign trade, as well as negative or neutral effects. In this study; the effects of Turkey's defense spending on the trade balance are evaluated.

Foreign trade balance is the difference of the exports and the imports of people and organizations residing in one country to people and organizations residing in other countries (Eğilmez, 2019, p.169).

In general, the defense is defined as "protecting the sovereignty and independence of the state against the threats and interventions of other states" (Bulutoglu, 2004, p.237).

According to the armed forces literature; Defensive operations are combat operations conducted to defeat an enemy attack, gain time, economize forces, and develop conditions favorable for offensive or stability operations. The defense alone normally cannot achieve a decision. However, it can create conditions for a counteroffensive operation that lets Army forces regain the initiative (FM 3-0, 2008, p.3-10).

In order to protect the country against internal and external threats, “such as military personnel expenses, production and import of weapons and equipment, infrastructure expenditures, maintenance-repair-modernization expenses, Research and Development (R&D) activities etc are called as Defense Spendings (Canbay and Mercan, 2017, p.87).

It is clear that military expenditure has its economic cost. If a country would like to be militarily strong, it should invest in its economy. Once the country is economically strong, too much is at stake to risk in war. Countries may also have security by becoming an important partner in the world economy. Major powers will protect them from attacks because of the impacts of an attack on the world economy, and on their economy too. Maybe, the best way is to get security through economic growth (Dunne and Tian, 2013, p.9).

Peter Drucker, one of the gurus on management, for armament in 1989: “... weapons have shown that they are not productive and have become a burden to be taken into consideration in terms of economic development and performance. It is the main cause of Russia's economic crisis, America's economic troubles and especially backwardness in Latin America weapons have also lost their military capabilities. They can win the battle, but cannot determine the end of the war. In the age of nuclear, biological, and chemical (NBC) weapons, they are unable to protect their country. Now, they cannot be seen as the "war is the implementation of politics by other means (violently)", the well-known discourse of the famous strategist of Prussia, Karl von Clausewitz, but they have become bankruptcy of the policy " (Korkmazıyürek, 2018, p.138).

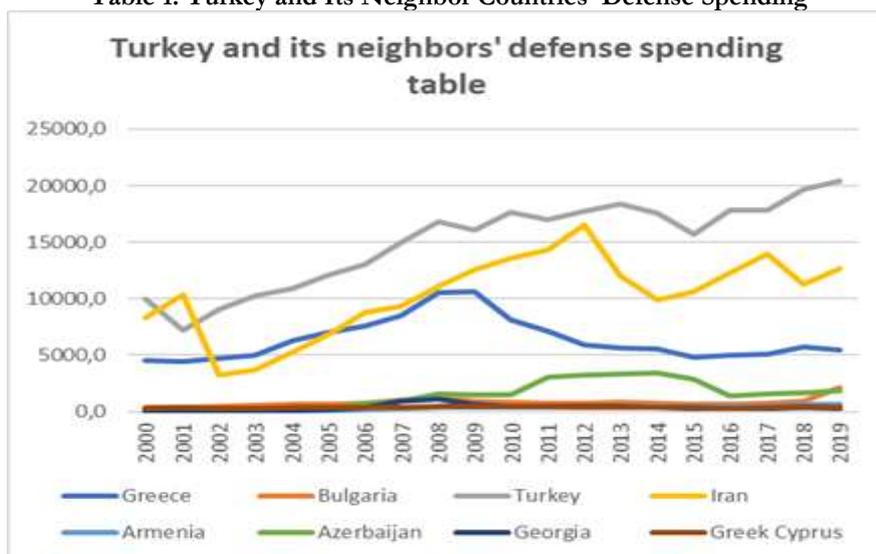
2. Defense Spending in Turkey

According to the data of the SIPRI, Turkey's defense spending shows an increase in general. Although defense spending financing is provided from intra-budget and extra-budgetary sources, the main source is the national defense budget.

Turkish defense planners suggest preparing for all possibilities. According to the former Ambassador Şükrü Elekdağ, the Turkish Armed Forces should be prepared for "two and a half battles" along our Aegean and southern borders for two full-scale operations and an uprising that can be provoked from within the country (Ayman and Şenesen, 2016, p. 36).

Turkey's neighboring countries, defense spending is presented in Table 1 below.

Table 1: Turkey and Its Neighbor Countries' Defense Spending



Source: It is prepared according to the data from SIPRI.

Turkey spends more than any of its neighbors' defense spending according to the Table 1. Turkey is followed by Iran. Greece, which came third, had to reduce its defense spending due to the economic crisis. The defense spending of Bulgaria, which follows Greece, tends to increase, and Azerbaijan, which follows it, continues in its current position. Armenia, Georgia and Greek Cyprus are the countries that make the least defense spending in terms of total size. Because of the internal struggles in the two neighboring countries, Syria and Iraq, were not added.

Defense Industry Support Fund (DISF) was established in order to realize the Turkish Armed Forces' modernization projects in 1985. Moreover, DISF provides financial resources needed for the creation of advanced defense industry in Turkey, and to ensure a regular and consistent capital flow outside the general budget. It works under the umbrella of the Central Bank and the Presidency of Defense Industries (Yentürk, 2018, p.137).

Turkish Armed Forces Foundation (TAFF): It was established in 1987 by Law No. 3388 with the aim of contributing with the financial and moral donations to contribute to the increase of the TAF's combat power through the development of national defense industry, the establishment of new defense branches, and the purchase of defense weapon systems, tools, and equipment. Together with DISF, TAFF is one of the two main factors outside the budget that contribute to the development of the TAF.

Turkish Armed Forces Foundation (TAFF) expresses its establishment policy on its official Internet web page. "Some allied countries, which Turkey bought their defense equipment, put vetoes to the usage of these weapon systems for Turkey's own national interests, during the Cyprus crisis in 1964. This has revealed the drawbacks of becoming dependent on other countries. Even if they are allies in meeting defense needs. It has undoubtedly revealed the importance of meeting defense needs with local opportunities and has formed the basis of policies for the establishment of a self-sufficient defense industry infrastructure."

TAFF makes strategic investments in the field of the defense industry. Each of them has reached the position of competent both domestic and national companies worldwide. 's companies; ASELSAN, TAI, ROKETSAN, HAVELSAN, İŞBİR, ASPİLSAN are leading companies in Turkey.

Defense News magazine, based in the US-based military publishing company, published the "Defense News Top 100" list, which is published every year on the basis of the defense sales of the previous year. This year 5 Turkish companies ASELSAN, TAI, STM, BMC and ROKETSAN were included in the list.

3. Literature

An empirical discussion started with the contribution of Benoit (1973, 1978) about the relationship between defense spending and economic effects. Benoit investigated the link between defense spending and economic growth covering the period 1950-1965 for 44 least developed countries (including Turkey). As a result, he found a positive relationship between them. According to Benoit, countries with high defense burden generally have the fastest growth rate. However, countries with the least defense burdens show the lowest growth rates. This result impressively led to a large number of research attempts on this topic and led to the creation of a literature that tends not to support Benoit's initial findings (Dunne and Tian, 2013, p. 2).

There are not many studies in the literature on the relationship between defense spendings and foreign trade balance. However, it is estimated that such spendings affect budget deficits and thus the current account deficit in developing countries.

Canbay (2020); In his article that examined between 1990 and 2017; found that defense spending will negatively affect economic growth in the short and long term, but R&D activity positively affects growth.

Canbay and Mercan (2017), in the article examining between 1986-2016; found that defense spending on the production of defense systems will cause economic contraction and current account deficit in short periods. It is the opposite for the long run.

Doğdu (2018), in his research, revealed that military R&D expenditures had a decreasing effect on the current account deficit, in Turkey, covering the years between 1997 to 2015.

Biswas and Ram (1986) concluded that there was no statistically significant relationship between defense spending and economic growth in their study for 58 underdeveloped countries in the 1960- 1970 and 1970-1977 periods.

Chowdhury (1991) did not detect any causal relationship between defense spending and growth in most countries, according to the results of the Granger causality analysis, using data from the period of 1961-1987 and time-series data for 55 developing countries.

Kusi (1994) examined the relationship between economic growth and defense spending in 77 developing countries for the period between 1971-1989. As the causality relationship varies by country, both the direction and the significance of the relationship differ.

Özmucur (1995), in 7 countries (including Turkey) 1981-1991 study period with his defense expenditure data, has found that the negative effect on economic growth. In the large-scale macro-econometric disarmament model, Özmucur stated that as a result of the trust and investment environment brought by the peaceful environment, "if resources can be directed to civilian investments instead of military spending, the contribution to the economy will be greater than the defense industry (contrary to Sezgin's finding)."

Kollias (1997), in Turkey for the period 1954-1993 examined the relationship between defense spending and economic growth has determined that there is no causality relationship.

Sezgin (2001), examined for Turkey's defense spending-growth relationship in the years 1956-1994. He used a 4-equation model consisting of growth equation, savings equation, foreign trade balance equation, and defense spending equation. According to his results; Turkey's defense spending has a positive impact on growth. On the other hand, defense spending does not have a significant effect on the trade balance and savings.

Sezgin (2004) examined the effects of Turkey's defense spending and arms imports. He used the cointegration method of Engle and Granger using the data from the 1979-2000 period. As a result, he found that the relationship between defense spending and the current account deficit is a negative relationship in the long run. Another finding is that in the short term, the current account deficit has a positive relationship with arms imports.

Dritsakis (2004), examined Turkey and Greece for the period of 1960-2001. In this study, he found that there is no co-integrated relationship between defense spending and economic growth. In addition, he identified a one-way causal relationship from economic growth to defense spending for both countries.

Özsoy (2008) examined Turkey for the duration of 1933-2004. In his study, he reached a conclusion that supports a short-term causality between defense spending and economic growth.

Pieroni (2009) examined the relationship between defense spending and economic growth for 90 countries, and negative relations were found between defense spending and economic growth in countries with a high military burden.

Alptekin and Levine (2012), they concluded that defense spending had a clear effect on economic growth in developed countries.

Dunne and Tian (2013) conducted a study covering the 1988-2010 period data of 106 countries with the panel data analysis method. As a result; defense spending in the short and long term has been found to negatively affect economic growth.

Despite the large number of studies on this subject, it is also a fact that defense spending has significant effects on macroeconomic indicators, although a strong judgment has not been reached about the relationship between defense spending and economic growth and the current account deficit.

4. Research Methodology

In this study, we perform the Time Series Analysis to find out the effects of defense spending on the foreign trade balance for the 2000- 2018 term. The Granger causality tests in the E-Views, a Windows-based econometric software program have been used. We tried to figure out the effects of different independent variables.

4.1. Model and data set

Trade Balance= TRABAL,

Defense Spending= DEFSPEN,

Defense Industry Export= DEFEXP,

Defense Industry Import= DEFIMP,

Exchange rates= EXCH,

GDP= Gross Domestic Product,

Dummy= 2008 Global Economic Crisis.

4.2. Formula:

$$TRABAL = \beta_0 + \beta_1 DEFSPENT_t + \beta_2 DEFEXPT_t + \beta_3 DEFIMP_t + \beta_4 EXCHT_t + \beta_5 GDPT_t + \beta_6 DUM_t + et \quad (1)$$

In the formula (1); t is time and *et* is error term.

The dataset of Defense Spending, Defense Industry Export, Defense Industry Import, and GDP belongs to the 2000-2018 term has been taken from the Worldbank website.

The Exchange rates data set has been taken from the OECD website for the 2000- 2018 term. Exchange rates are defined as the price of one country's' currency in relation to another country's' currency. This indicator is measured in terms of national currency per US dollar.

4.3. Results of the analyzes

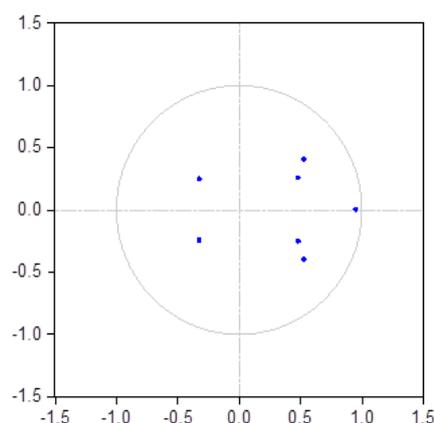
Determination of stability status of series: Unit Root Analyse

Table 2: Classic Unit Root Test

Variables	ADF		ADF First difference taken		ADF Second difference taken		PHILLIPS PERRON (PP)		PP First difference taken	
	Trend+ Constant	Constant	Trend+ Constant	Constant	Trend+ Constan	Constant	Trend+ Constant	Constan	Trend+ Constant	Constant
Trade Balance	-2.184 (0.4689)	-2.0397 (0.2688)	-4.3067 (0.0186)	-4.94194 (0.0013)			-1.94510 (0.306)	-2.203866 (0.4595)	-5.3133 (0.0006)	-10.611 (0.000)
Defense Spending	1.69792 (0.71)	-1.04488 (0.7133)	-9.1103 (0.000)	-7.08891 (0.000)			-1.709526 (0.7045)	-0.92698 (0.755)	-0.27355 (0.000)	6.2041 2 (0.0001)
Defense Sector Export	4.64129 (0.0088)	-0.58236 (0.8473)	-	-5.21303 (0.001)			-4.774131 (0.0069)	-0.59871 (0.8479)	-	9.5388 4 (0.000)
Defense Sector Import	3.90667 (0.034)	-4.02762 (0.0071)					-3.9087 (0.0339)	-4.02874 (0.0071)		
Exchange rates	0.06812 (0.9928)	-0.89736 (0.7649)	-5.411 (0.0028)	-0.5029 (0.8633)	-	-4.637 (0.0029)	-2.40841 (0.3633)	-1.12985 (0.6799)	-16.96583 (0.0001)	4.7477 6 (0.0018)
GDP	-1.1598 (0.884)	-1.48473 (0.5181)	-6.5655 (0.0003)	-1.0954 (0.6883)	-	-5.1632 (0.0011)	-0.569418 (0.9681)	-1.47755 (0.5216)	-19.386 (0.0001)	-3.90888 (0.0096)

Tests with the same hypotheses were included in the Unit Root Test application in the Table 2. The model which trendless and without constant value is not added to the study. Because such models are weaker than other models. Stability degrees of variables are important for determining the model to be applied in the next stage. According to ADF and PP test results, the Defense industry imports are stable at the level, while all other variables became stationary when the first difference is taken. In this case, the VAR based Granger Causality Analysis can be done.

Table 3: AR Characteristic Polynomial
Inverse Roots of AR Characteristic Polynomial



Since the inverse roots of the AR Characteristic Polynomial in Table 3 are located within the unit circle and are not located outside the circle, the VAR model has a stable structure.

The appropriate delay length has been determined before proceeding with the analysis. Since the examined time period is not too long, 1-period delay is determined as the appropriate delay level for the model.

Table 4: VAR (1) Model Granger Causality Analyze Results:

Granger causality relationship (**GCR**)

Null Hypotheses	Chi Square Value	P-Value	Result
There is no Granger causality relationship (GCR) btw Trade Balance & Dummy. Trade Balance → Dummy	0.039104	0.8432	Not Rejected
There is no GCR btw Dummy & Trade Balance. Dummy → Trade Balance	0.548177	0.4591	Not Rejected
There is no GCR btw Trade Balance & LnDEFSPEN. Trade Balance → LnDefSpn	0.317906	0.5729	Not Rejected
There is no GCR btw LnDEFSPEN & Trade Balance. LnDEFSPEN → Trade Balance	1.850753	0.1737	Not Rejected
There is no GCR btw LnDefExp & Trade Balance * LnDefExp → Trade Balance	3.031515	0.0817	Rejected
There is no GCR btw Trade Balance & LnDefExp. Trade Balance → LnDefExp	0.080438	0.7767	Not Rejected
There is no GCR btw LnDefImp & Trade Balance. LnDefImp → Trade Balance	0.066475	0.7965	Not Rejected

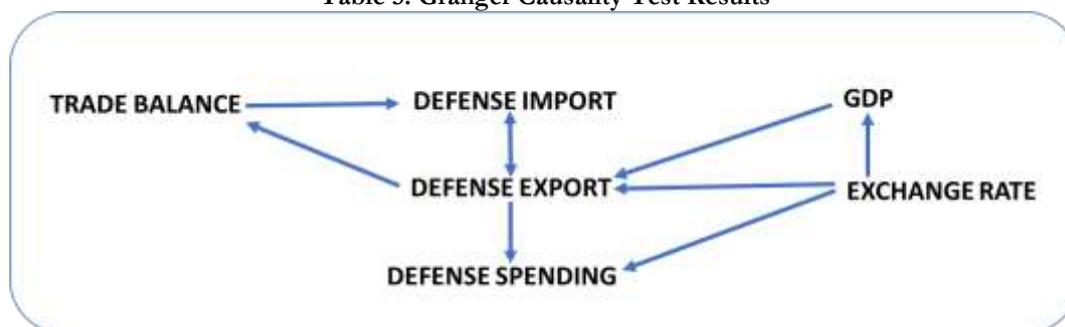
There is no GCR btw Trade Balance & LnDefImp * Trade Balance→LnDefImp	12.28217	0.0005	Rejected
There is no GCR btw LnGDP & Trade Balance. LnGDP→Trade Balance	0.010274	0.9193	Not Rejected
There is no GCR btw Trade Balance & LnGDP. Trade Balance→LnGDP	0.2069	0.6492	Not Rejected
There is no GCR btw LnExchange rates & Trade Balance. LnExchange rates→ Trade Balance	0.63153	0.4268	Not Rejected
There is no GCR btw Trade Balance & LnExchange rates. Trade Balance→LnExchange rates	0.279774	0.5968	Not Rejected
There is no GCR btw LnDEFSPEN & Dummy. LnDefSpn→ Dummy	0.770172	0.3802	Not Rejected
There is no GCR btw Dummy & LnDEFSPEN. Dummy →LnDefSpn	1.231131	0.2672	Not Rejected
There is no GCR btw LnDefExp & Dummy. LnDefExp → Dummy	0.286367	0.5926	Not Rejected
There is no GCR btw Dummy & LnDefExp. Dummy → LnDefExp	1.17174	0.2790	Not Rejected
There is no GCR btw LnDefImp & Dummy. LnDefImp→ Dummy	0.00378	0.951	Not Rejected
There is no GCR btw Dummy & LnDefImp. Dummy →LnDefImp	0.521377	0.4703	Not Rejected
There is no GCR btw LnGDP & Dummy. LnGDP→ Dummy	2.45E-06	0.9988	Not Rejected
There is no GCR btw Dummy & LnGDP. Dummy →LnGDP	2.272153	0.1317	Not Rejected
There is no GCR btw LnExchange rates & Dummy. LnExchange rates→Dummy	0.055548	0.8137	Not Rejected
There is no GCR btw Dummy & LnExchange rates Dummy →LnExchange rates	2.119546	0.1454	Not Rejected
There is no GCR btw LnDefExp & LnDEFSPEN. * LnDefExp→LnDefSpn	4.211587	0.0401	Rejected
There is no GCR btw LnDEFSPEN & LnDefExp. LnDefSpn→LnDefExp	0.290356	0.5900	Not Rejected
There is no GCR btw LnDefImp & LnDEFSPEN. LnDefImp→LnDefSpn	0.373161	0.5413	Not Rejected
There is no GCR btw LnDEFSPEN & LnDefImp. LnDefSpn→ LnDefImp	0.172801	0.6776	Not Rejected
There is no GCR btw LnGDP & LnDEFSPEN. LnGDP→LnDefSpn	0.876519	0.3492	Not Rejected
There is no GCR btw LnDEFSPEN & LnGDP. LnDefSpn→LnGDP	0.757987	0.3840	Not Rejected
There is no GCR btw LnExchange rates & LnDEFSPEN. * LnExchange rates→ LnDefSpn	5.499745	0.0190	Rejected

There is no GCR btw LnDEFSPEN & LnExchange rates LnDefSpen→LnExchange rates	0.30563	0.5804	Not Rejected
There is no GCR btw LnDefImp & LnDefExp. * LnDefImp → LnDefExp	8.591929	0.0034	Rejected
There is no GCR btw LnDefExp & LnDefImp. * LnDefExp → LnDefImp	6.80466	0.0091	Rejected
There is no GCR btw LnGDP & LnDefExp. * LnGDP→ LnDefExp	4.72447	0.0297	Rejected
There is no GCR btw LnDefExp & LnGDP. LnDefExp →LnGDP.	2.42534	0.1194	Not Rejected
There is no GCR btw LnExchange rates & LnDefExp. * LnExchange rates→ LnDefExp	39.80565	0.0000	Rejected
There is no GCR btw LnDefExp & LnExchange rates. LnDefExp →LnExchange rates	1.204694	0.2724	Not Rejected
There is no GCR btw LnGDP & LnDefImp. LnGDP→ LnDefImp	0.641532	0.4232	Not Rejected
There is no GCR btw LnDefImp & LnGDP. LnDefImp →LnGDP.	0.158118	0.6909	Not Rejected
There is no GCR btw LnExchange rates & LnDefImp. LnExchange rates→ LnDefImp	0.006719	0.9347	Not Rejected
There is no GCR btw LnDefImp & LnExchange rates. LnDefImp →LnExchange rates	0.348195	0.5551	Not Rejected
There is no GCR btw LnExchange rates and LnGDP * LnExchange rates→ LnGDP	3.164919	0.0752	Rejected
There is no GCR btw LnGDP and LnExchange rates LnGDP→ LnExchange rates	0.058113	0.8095	Not Rejected

* Significant.

The significant hypotheses are shown as highlighted and with an asterix on the Table 4. The results according to this Table 4 are on the Table 5.

Table 5: Granger Causality Test Results



The following information can be drawn from Table 5.

Concerning the relations of Turkey's economic situation and its defense industry data; the result of the analysis is defense industry export affects the foreign trade balance.

While the foreign trade balance affects the defense industry import, the defense industry export affects defense spending.

Defense industry export interacts with defense industry import. It is observed that a triangular cycle (Defense Industry Exports - Defense Industry Imports - Foreign Trade Balance) triggered by GDP and the exchange rate. Defense export affects the trade balance and the defense import in the same time. So we can assume that increasing the export will have a positive effect on the trade balance. Higher defense export will restrain the defense import so that using national defense products. We may claim that less defense export will increase the defense import and the trade balance will be affected negatively.

The foreign exchange rate affects the defense spending, defense industry export, and GDP. Finally, it is observed that GDP affects defense industry export. When GDP grows, the defense export will be increasing as well, or vice versa.

Taking into consideration the 2000-2018 period, Turkey's Defense industry export gets more effective results and increase the defense export. So it means; the defense export affects on the foreign trade balance as a result of Turkey's leap made in the defense industry, 18 years later reveals that changed, unlike Sezgin's findings.

4. Conclusion

The most important reasons for researchers not to agree on the effects of defense spendings are; The difference of the periods, the adequacy of the data available, the criteria and the difference of the models used are the main reasons for achieving different results.

Defense spending is made from the same budget as education and public health spending. Therefore, while making these expenditures, the problem of “guns vs butter” arises. A large budget devoted to defense can lead to a smaller budget for education, healthcare and social transfer expenditures that have corrective effects on income distribution. ASELSAN, the most valuable public company in Turkey, is operating in the defense industry. It will increase gradually that this kind companies operating in the field of defense industry will continue to produce high value-added technology, weapons, and equipment and meet the needs of our country in this field from domestic markets. Being able to export them in the international arms market will positively affect the foreign trade balance and contribute to the economy.

According to the result we reached in our study; The increase in defense spendings will increase the export of Defense Goods, it will increase the foreign exchange input and it will be possible to decrease the imports of the defense industry. This will have a positive impact on the Foreign Trade Balance. Turkey's geopolitical environment in which, prior to the development of foreign trade is possible with the establishment of international peace and mutual trust. Relying on import-based defense infrastructure or foreign aid from strategic partnerships such as NATO, it is not possible to provide security that is consistent with national interests. The Turkish Armed Forces should use weapons, tools, and equipment, in which software and code programs can be used nationally. In order to support the advanced high tech defense industry, and for having independent state policy; future investments and incentives should be continued in the defense sector so that pave the way for more export income and GDP.

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