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-RESEARCH PAPER-

AN ANALYSIS OF THE EFFECTS OF COMPLEXITY LEVEL OF THE TARIFFS ON TRADE OPENNES

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Abstract

States may need to intervene in international trade for economic, political and social reasons. In this study, the effects of tariffs on international trade were investigated by using statistical techniques. According to the test results, the average of trade openness for countries with medium and high tariff complexity is equal. On the other hand, for countries with low tariff complexity, the average of trade openness score is statistically higher than those with a commercially clear score of middle and high tariff complexity. As a result, it can be concluded that the level of complexity of tariffs adversely affects trade openness, which should be taken into account when designing international trade policy.

Keywords: *Trade Openness, International Trade, The Tariffs.*

JEL Codes: *F10, F13, F14.*

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TİCARİ AÇIKLIK ÜZERİNDE TARİFLERİN KARMAŞIKLIK DÜZEYİNİN ETKİLERİNİN BİR ANALİZ

Öz

Devletlerin, ekonomik, politik ve sosyal nedenlerden dolayı uluslararası ticarete müdahale etmesi gerekebilir. Bu çalışmada, tarifelerin uluslararası ticaret üzerindeki etkileri istatistiksel teknikler kullanılarak incelenmiştir. Test sonuçlarına göre, orta ve yüksek düzeyde tarife karmaşıklığına sahip ülkeler için ticari açıklık ortalaması eşittir. Öte yandan, tarife karmaşıklık düzeyi düşük olan ülkeler için dış ticaret açıklık puanı ortalaması, tarife karmaşıklığı orta ve yüksek olan ticari açıklık puanına sahip ülkelerden istatistiksel olarak daha yüksektir. Sonuç olarak, tarifelerin karmaşıklık seviyesinin, ticari açıklığı olumsuz yönde etkilediği, bunun uluslararası ticaret politikası tasarlanırken göz önünde bulundurulması gerektiği sonucuna varılabilir.

Anahtar Kelimeler: *Ticari Açıklık, Uluslararası Ticaret, Tarifeler*

JEL Kodları: *F10, F13, F14*

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1. INTRODUCTION

National governments may need intervene the international trade because of economic, political and social reasons. One of the measure to intervene to the international trade is the complexity of the tariffs on the international trade. The effects of the tariffs on the international trade depends on the supply and demand conditions and elasticities among the countries.

In this study, it is analyzed the effects of the tariffs on the international trade for the 140 countries across the world by using statistical techniques to compare the means of the country groups imposing different level of the tariffs.

In the international trade literature, there are lots of studies on the reasons and effects of trade tariffs on international trade and social welfare. Tariffs as a measure on trade deficit have different economic results such as costs, gains and losses on both producer, consumer, government and the society living in the both exporter and importer countries. (see Jones, 1967, Busch and Reinhardt, 2003, Jackson, 1967, Nye, 1991, Jones, 1969, Bagwell and Staiger, 2005, Venables, 1982, Baier and Bergstrand, 2001, Reitz, 1996, Cline, 1983, Brander and Spencer, 1984, Jackson, 1969, Findlay and Wellisz 1982, Anderson and Neary, 1992, Bhagwati and Ramaswami 1963, Baldwin, 1987, Metzler, 1949, Brown, 1987, Hoekman and Nicita, 2008, Lipsey, 1957, Nam, 1987, Gatti, R 1999, Bohara et al, 2004, Dos Santos et al, 2005, Edwards, 1988, Debaere and Mostashari, 2010, Bureau et al, 2019, Lindé and Pescatori, 2019, Nagurney et al, 2019, Amiti at al, 2019).

2. DATA AND METHODOLOGY

The data used in the study is from The World Economic Forum, The Global Competitiveness Report 2018 for the 140 countries across the world.

The methodology used in the study is Kruskal-Wallis test that is one of the statistical techniques to compare the means of the country groups imposing different level of the tariffs.

Definition of the variables used in the study is as follows *(Schwab, 2018: Appendix C).*:

Complexity of tariffs is a score on an index that measures the complexity of a country's tariff regime. The index ranges from 1 (very complex) to 7 (not complex). | 2017. Tariff complexity is assessed on four criteria: tariff dispersion, the prevalence of tariff peaks, the prevalence of specific tariffs and the number of distinct tariffs. This index is calculated as the simple average of the normalized score of these four criteria.

"Trade openness is a measure of the international trade volume which are sum of exports and imports as a share of GDP for a country."

The hypothesis tested in study as follows:

H_0*: there is no significant difference among the groups (the mean of trade openness score*

for the country groups by complexity of tariffs level is equal)
H_1: there is at least one significant difference among the groups (the mean of trade openness score for the country groups by complexity of tariffs level is not equal)

3. EMPIRICAL RESULTS

Table 1. shows the trade openness descriptive statistics by countries. The mean of trade openness by complexity level of the tariffs. According to the results, the mean of trade openness is 63.32 for the countries with low complexity level of the tariffs, 58.46 for the countries with medium complexity level of the tariffs and 59.95 for the countries with high complexity level of the tariffs.

Table 1. Trade openness Descriptive Statistics by Countries

	Complexity Level of the Tariffs		
	Low Countries	Medium Countries	High Countries
Mean	**63.32**	**58.46**	**59.95**
5% Trimmed Mean	64.16	58.00	59.43
Median	65.00	65.29	59.00
Variance	54.18	8.08	103.72
Std. Deviation	7.36	39.00	10.18
Minimum	33.00	81.00	40.00
Maximum	72.00	42.00	88.00
Range	39.00	8.50	48.00
Interquartile Range	7.00	0.02	13.50
Skewness	-2.07	0.99	0.77
Kurtosis	5.97		0.89

Table 2. shows tests of normality for trade openness by country groups. According to test results, normality assumption is invalid some sub-groups. For this reason, we test the null hypothesis by using Kruskal-Wallis Test

Table 2. Tests of Normality for Trade openness by country groups

Complexity Level tariffs	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Low	0.185	47	0.000	0.822	47	0.000
Medium	0.131	49	0.036	0.969	49	0.229
High	0.095	44	0.200*	0.955	44	0.086
*. This is a lower bound of the true significance. a. Lilliefors Significance Correction						

Table 3. shows the Kruskal-Wallis test results, according to the test results, the null hy-

pothesis is rejected at 0.01 significant level, meaning that there is at least one significant difference among the mean of trade openness score for the country groups by complexity of tariffs level.

Table 3. Kruskal-Wallis Test Results

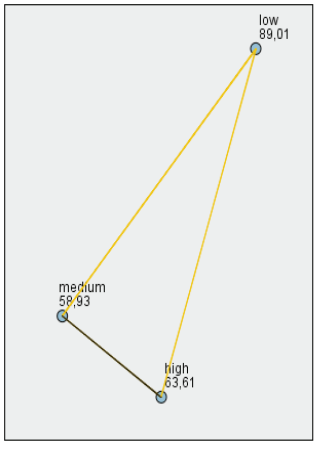
Null Hypothesis	Test	Sig.	Decision
Distribution is the same across the categories	Kruskal-Wallis	0.001	Reject the Null Hypothesis
Asymptotic significances are displayed. The significance level is 0.05			

Table 4. shows the test results for the pairwise comparisons of the distributions. According to the test results, the mean of trade openness score for the countries with the medium and high complexity of tariffs level is equal. The mean of trade openness score for the countries with low complexity of tariffs level is statistically higher than the mean of trade openness score for with the medium and high complexity of tariffs level (also see the Figure.1.)

Table 4. Test Results for the Pairwise Comparisons of the Distributions

Sample1 Sample2	Test statistic	Std.Error	Sig.	Adj.Sig.
Medium-High	-4.685	8.414	0.578	1. 000
Medium-Low	30.082	8.272	0.000	0.001
High-Low	25.397	8.499	0.003	0.008

Figure 1. Test Results for the Pairwise Comparisons of the Complexity Level of the Tariffs



4. DISCUSSION

International trade presents many socio-economic-political advantages and disadvantages for the firms and countries. On the other hand, there are many factors affecting international trade not only economic but also political and socio-cultural factors. In this study, we found that the mean of trade openness score for the countries with the medium and high complexity of tariffs level is equal. On the other hand, the mean of trade openness score for the countries with low complexity of tariffs level is statistically higher than the mean of trade openness score for with the medium and high complexity of tariffs level. It is clear that as the barriers for international trade increase then the volume of the international trade decreases. Governments must consider the competitiveness level of the country and the firms when designing international trade policy, if the competitiveness level of the country and the firms are not strong enough to compete in international trade, they must be protecting their country and firms by implementing optimal protection strategies and policies.

CONCLUSION

Trade openness may provide many socio-economic-political advantages and disadvantages for the firms and countries. Governments design optimal international trade policy to benefit maximum gain from international trade by considering the competitiveness level of the country and the firms in both in short run and in the long run.

In this study, it is analyzed the effects of the tariffs on the international trade for the 140 countries across the world by using statistical techniques to compare the means of the country groups imposing different level of the tariffs. According to the test results, the mean of trade openness score for the countries with the medium and high complexity of tariffs level is equal. On the other hand, the mean of trade openness score for the countries with low complexity of tariffs level is statistically higher than the mean of trade openness score for with the medium and high complexity of tariffs level. As a result, it can be concluded that the complexity level of tariffs affects negatively trade openness, this must be considered when designing international trade policy.

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1. GİRİŞ

Ulusal hükümetlerin ekonomik, politik ve sosyal nedenlerden dolayı uluslararası ticarete müdahale etmesi gerekebilir. Uluslararası ticarete müdahale etmenin önlemlerinden biri, uluslararası ticaretin tarifelerinin karmaşıklığıdır. Tarifelerin uluslararası ticaret üzerindeki etkileri ülkeler arasındaki arz ve talep koşullarına ve esnekliklerine bağlıdır. Bu çalışmada, farklı tarifeler uygulayan ülke gruplarının araçlarını karşılaştırmak için istatistiksel teknikler kullanılarak dünya genelinde 140 ülke için tarifelerin uluslararası ticaret üzerindeki etkileri incelenmiştir.

1.1. Literatür Özeti

Uluslararası ticaret literatüründe, ticaret tarifelerinin uluslararası ticaret ve sosyal refah üzerindeki sebepleri ve etkileri konusunda birçok çalışma bulunmaktadır. Ticaret açığının bir ölçüsü olarak tarife, hem ihracatçı hem de ithalatçı ülkelerde yaşayan üretici, tüketici, hükümet ve toplumda maliyet, kazanç ve kayıplar gibi farklı ekonomik sonuçlara sahiptir (bakınız, Jones, 1967, Busch and Reinhardt, 2003, Jackson, 1967, Nye, 1991, Jones, 1969, Bagwell and Staiger, 2005, Venables, 1982, Baier and Bergstrand, 2001, Reitz, 1996, Cline, 1983, Brander and Spencer, 1984, Jackson, 1969, Findlay and Wellisz 1982, Anderson and Neary, 1992, Bhagwati and Ramaswami 1963, Baldwin, 1987, Metzler,

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2. YÖNTEM

Araştırmada kullanılan metodoloji, farklı tarifeler uygulayan ülke gruplarının ortalamasını karşılaştırmak için istatistiksel tekniklerden biri olan Kruskal-Wallis testidir.

3. BULGULAR

Test sonuçlarına göre, orta ve yüksek tarife karmaşıklığı seviyesine sahip ülkeler için dış ticaret açıklık puanı ortalaması eşittir. Öte yandan, tarife karmaşıklığı düşük olan ülkeler için dış ticaret açıklık notu ortalaması, orta ve yüksek tarife karmaşıklığı seviyesine sahip ticaret açıklık notu ortalamasından istatistiksel olarak yüksektir.

4. TARTIŞMA

Uluslararası ticaret, şirketler ve ülkeler için birçok sosyo-ekonomik-politik avantaj ve dezavantaj sunmaktadır. Öte yandan, uluslararası ticareti etkileyen sadece ekonomik değil, aynı zamanda politik ve sosyo-kültürel faktörleri de etkileyen birçok faktör vardır. Bu çalışmada, orta ve yüksek tarife karmaşıklığı seviyesine sahip ülkeler için dış ticaret açıklık puanı ortalamalarının eşit olduğunu bulduk. Öte yandan, tarife karmaşıklığı düşük olan ülkeler için dış ticaret açıklık notu ortalaması, orta ve yüksek tarife karmaşıklığı seviyesine sahip ticaret açıklık notu ortalamasından istatistiksel olarak yüksektir. Uluslararası ticaretin önündeki engellerin artmasıyla birlikte uluslararası ticaretin hacminin azaldığı açıktır. Uluslararası ticaret politikasını tasarlarken hükümetler, ülkenin rekabet gücü seviyesini göz önünde bulundurmalı, eğer ülkenin rekabet gücü seviyesi ve firmaların uluslararası ticarette rekabet edebilecek kadar güçlü değilse, ülkelerini ve firmalarını optimal koruma uygulayarak korumalıdırlar.

SONUÇ

Ticaret açıklığı, şirketler ve ülkeler için birçok sosyo-ekonomik-politik avantaj ve dezavantaj sağlayabilir. Hükümetler, hem kısa vadede hem de uzun vadede ülke ve firmaların rekabet edebilirlik düzeyini göz önüne alarak uluslararası ticaretten maksimum kazanç elde etmek için optimal uluslararası ticaret politikası tasarlar.

Bu çalışmada, farklı tarifeler uygulayan ülke gruplarının araçlarını karşılaştırmak için istatistiksel teknikler kullanılarak dünya genelinde 140 ülke için tarifelerin uluslararası ticaret üzerindeki etkileri incelenmiştir. Test sonuçlarına göre, orta ve yüksek tarife karmaşıklığı seviyesine sahip ülkeler için dış ticaret açıklık puanı ortalaması eşittir. Öte yandan, tarife karmaşıklığı düşük olan ülkeler için dış ticaret açıklık notu ortalaması, orta ve yüksek tarife karmaşıklığı seviyesine sahip ticaret açıklık notu ortalamasından istatistiksel olarak yüksektir. Sonuç olarak, tarifelerin karmaşıklık seviyesinin ticari açıklığı

olumsuz yönde etkilediği, bunun uluslararası ticaret politikası tasarlanırken göz önünde bulundurulması gerektiği sonucuna varılabilir.