



## Trade Openness, Income Levels, Economic Growth, and Current Account Balances

Murat Çetrez<sup>1,a,\*</sup>

<sup>1</sup>R&D Department, Ford Otomotiv San. A.Ş., İstanbul, Türkiye

\*Corresponding author

### Research Article

#### History

Received: 10/04/2022

Accepted: 07/06/2022

#### ABSTRACT

This study aims to investigate if trade openness influences income levels, economic growth, and current account balances together at the same time. Two different trade openness measures are used in the study. 134 countries are added into 4 different income groups between the period 1990 and 2019. There is a negative and statistically significant association between trade openness and current account balances for the group of low-income and lower-middle-income countries. For the lower-middle-income countries group, negative associations are identified for 20 lower-middle-income countries, 11 of them are significantly negative. Positive associations are identified for 15 lower-middle-income countries, 8 of them are significantly positive. For upper-middle-income and high-income countries, it is not identified any significant associations between trade openness and current account balances. Trade openness increases the economic growth for all country groups except the upper-middle-income countries. This is valid for both trade openness measures. Results show trade openness widens the current account deficits of many of the low-income and lower-middle-income countries. Sustainability of the current account deficits and external debts might be potentially an issue for many low-income, lower-middle-income, and for some of the upper-middle-income countries especially if the growth rates decrease.

**Keywords:** Trade openness, Economic growth, Current account balances, Panel data analysis.

## Serbest Ticaret, Gelir Düzeyleri, Ekonomik Büyüme ve Cari İşlemler Dengesi

#### Süreç

Geliş: 10/04/2022

Kabul: 07/06/2022

#### Öz

Bu çalışma, serbest ticaretin, gelir düzeyleri, ekonomik büyüme ve cari işlemler dengesine olan etkisinin olup olmadığının eş zamanlı olarak araştırılmasını amaçlamıştır. Çalışmada iki farklı serbest ticaret indeksi kullanılmıştır. Çalışmaya 1990 ve 2019 zaman aralığı için, 4 farklı gelir grubundan 134 ülke dahil edilmiştir. Düşük gelirli ülkeler ve alt orta gelirli ülkelere oluşan ülke gelir grupları için serbest ticaret ve cari işlemler dengesi arasında negatif, anlamlı bir ilişki tespit edilmiştir. Alt orta gelirli ülkeler grubunda 20 alt orta gelirli ülke için negatif ilişki tespit edilmiştir. Bunların 11'i anlamlı negatif ilişkilidir. 15 alt orta gelirli ülke için pozitif ilişki tespit edilmiştir. Bunların 8'i anlamlı pozitif ilişkilidir. Üst orta gelirli ve yüksek gelirli ülkeler için serbest ticaret ile cari işlemler dengesi arasında anlamlı bir ilişki tespit edilememiştir. Artan serbest ticaret, ekonomik büyümeyi üst orta gelirli ülkeler hariç tüm ülke gelir grupları için artırmaktadır. Bu her iki serbest ticaret indeksi için de geçerlidir. Sonuçlar serbest ticaretin düşük gelirli ve alt orta gelirli birçok ülkenin cari işlemler açığını artırdığını göstermektedir. Bu ülkeler için artan serbest ticaret ile artan cari işlemler açıkları ve yüksek dış borçlar özellikle ekonomik büyüme oranları da düşerse sürdürülebilirlik sorunu oluşturabilir. Bu durumun bazı üst orta gelirli ülkeler için de geçerli olabileceği görülmektedir.

**Anahtar Kelimeler:** Serbest ticaret, Ekonomik büyüme, Cari işlemler dengesi, Panel veri analizi

#### Copyright



This work is licensed under  
Creative Commons Attribution 4.0  
International License

<sup>a</sup> [mcretrez@ford.com.tr](mailto:mcretrez@ford.com.tr)

<sup>ORCID</sup> 0000-0001-9567-7644

**How to Cite:** Çetrez M. (2022) Trade Openness, Income Levels, Economic Growth, and Current Account Balances, Journal of Economics and Administrative Sciences, 23(3): 760-773

## Introduction

Current account imbalances were higher than 5% of the world GDP (gross domestic product) in 2006, globally. In 2020, it became 3% (Fig.1). Especially, the United States of America's current account deficit has widened significantly. In 1997, it was only less than 2.0% of its GDP. In 2006, it has reached 5.8% of its GDP. After the financial crisis in 2009, it has decreased to 2.3% of GDP. In 2020, America's current account deficit has increased to 3.1% of GDP which was a 12-year high. The United States of America has been running deficits for 30 years. China has been running surpluses for 28 years. The Foreign Trade of China has enlarged rapidly after it has been accepted the World Trade Organization in 2001. In 2019, the trade volume between the United States of America and China was approximately US\$559 billion. But this trade has been occurred completely unbalanced. There has been a massive trade deficit between the United States of America and China. The USA's deficit has increased to US\$375.6 billion in 2017 just before the beginning of the trade war between the two countries. In 2002, the deficit has occurred only at US \$103.1 billion. It has reached to US \$378 billion in 2018. In 2019, it has narrowed marginally to US \$345.6 billion. Eventually, it has closed year 2020 with US \$301.3 billion, which has been 9.9% decrease compared with the year 2019.

Xi Jinping has defended economic globalization and free trade at Davos 2017 World Economic Forum, saying that nobody will win a trade war. He has delivered a strong defense of economic globalization and free trade, showing that China is willing to have the USA's traditional role as the champion of trade openness. He has also added that China did not aim to increase its export by devaluing the Renminbi by starting a currency war. Trump has campaigned on a strongly protectionist platform. He has said, he would protect US companies from unfair trade of Chinese and Mexican companies. When the data from 1990 until 2019 has been checked, more trade openness has increased the deficits of the USA and current account surpluses of China. It is not only the trade between two countries, but the direction of the current account balances has been affected in opposite direction. China seems to be one of the winners of trade openness. Trade openness in the USA has also created a lot of income distribution problems, especially for the people in lower-income groups.

Innovation, R&D, and human capital have played a key role for some of the developing countries, especially in Far East Asia with the help of strong export performance in the free trade environment. Japan, South Korea, Malaysia, and Singapore have been showing strong trade performance with massive current account surpluses for many years in Far East Asia. China had current account surpluses since 1994. When viewed globally, The USA has been running deficits for 30 years. New Zealand, Canada, and Australia have been running deficits for many years. Similarly, in Europe Italy, the United Kingdom, Greece, Portugal, and France have run deficits for years among industrial countries group. On the other hand, Germany

has been running significant surpluses since 2002. In Latin America, most of the developing countries have been running deficits, for instance, Brazil had deficits since 2008. Mexico had deficits since 1988. Some of the countries like Germany, Japan, South Korea, China, Malaysia, Singapore, Denmark, Netherlands, and Switzerland were able to run current account surpluses, and they were also able to increase the amount of the surpluses with the rise of trade openness.

Neoclassical exogenous and endogenous economic growth models explain the benefits of trade openness for economic growth, which run through technological progress and expanded international and domestic competition. Many empirical studies also support when the trade openness increases economic growth will also increase. In literature, trade openness is generally discussed without considering the effect of current account balances. Many developing countries generally export labor-intensive products, raw materials, and low and medium technology goods. This creates a terms of trade problem for them and forces them to run current account deficits. Higher trade openness may increase many developing countries' current account deficits. Unsustainable, high current account deficits can be one of the main reasons for the economic crises in a lot of developing countries. Eventually, high current account deficits may limit or lower economic growth.

In this paper, there are two main questions that are investigated. The first question is if trade openness increases the economic growth for all country income groups? Especially there are different results for the developing countries in the literature. The second question is if trade openness increases the current account deficits again, especially for the developing countries. So, this study aims to investigate the influence of trade openness on the income levels, growth rate, current account balances, and external debts together for a large country group. Two different trade openness measures are used. 134 countries are added to the study in 4 income levels between 1990 and 2019. 49 countries are from high-income, 37 countries are from upper-middle-income, 35 countries are from lower-middle-income, and 13 countries are from low-income countries groups.

A negative and statistically significant association between trade openness and current account balances for the group of LI (low income) and LMI (lower-middle-income) countries is found. There are positive and significant associations between trade openness and economic growth for both trade openness indexes. For the UMI (upper-middle-income) countries, it is not identified any significant associations between trade openness and economic growth or between trade openness and current account balances. For HI countries there is not a statistically significant association between trade openness and current account balances. There are significant and positive associations between economic growth and both trade openness measures. Results show

trade openness widens the current account deficits of many of the LI and LMI countries. Trade openness increases economic growth for all country groups except UMI countries. This is valid for both trade openness measures. Aromi (2021) studied with 46 advanced and emerging economies over 1990-2017 and found out that large current account deficits are reversed significantly faster than what forecasters anticipate. In addition, larger current account deficits are followed by negative surprises in economic growth, low asset returns, and drops in sentiment. Sustainability of the current account deficits and external debts might be potentially an issue for many LI and LMI countries especially if the growth rates decrease. This is also valid for some of the UMI countries.

## Literature Review

Neoclassical exogenous and endogenous economic growth models explain the benefits of trade openness for economic growth, which run through technological progress and expanded international and domestic competition. (Grossman and Helpman, 1990, 1991; Rivera-Batiz and Romer, 1991; Young, 1991; Ben-David and Loewy, 1998, 2000, 2003; Spilimbergo, 2000; Perera-Tallo, 2003; Falvey et al., 2004). Higher trade openness can accelerate economic growth by facilitating the diffusion of knowledge and technology from imported high-tech goods (Barro and Sala-i-Martin, 1997; Almeida and Fernandes, 2008). For Young (1991), Redding (1999), and Perera-Tallo (2003) trade openness may affect the level of income positively, but the effect on economic growth might be negative or not positive robustly because of their human capital level to get the advantage from technology transfers. For this kind of countries, selective protection may raise faster technological advances.

Empirical studies show mixed and inconclusive results about the influence of trade openness on income and economic growth. Many studies support the positive association (Vamvakidis, 2002; Irwin and Tervio, 2002; Brunner, 2003; Lee et al., 2004; Noguer and Siscart, 2005; Salinas and Aksoy, 2006; Rassekh, 2007; Freund and Bolaky, 2008; Wacziarg and Welch, 2008; Chang et al., 2009; Kim, 2011; Squalli and Wilson, 2011; Sakyi et al., 2012; Sakyi et al., 2015; Iyke, 2017). Some other empirical studies do not support the positive association, especially for the developing countries (Dowrick and Golley, 2004; Kim and Lin, 2009; Kim, 2011; Kim et al., 2011; Tekin, 2012; Menyah et al., 2014; Manwa et al., 2019). Kim et al. (2011) have explained that rich countries benefit from international trade openness more than the poor developing countries. Because they are not able to exploit knowledge buildup and technology spillovers. Manwa et al. (2019) have shown that there is little if any, compelling evidence that trade openness has had a positive effect on economic growth in 5 Southern African Customs Union countries. Tekin (2012) has found no significant causality relation between trade openness and economic growth for the Least Developed African countries for the period between 1970 and 2010. Menyah et al. (2014) have found

out trade openness does not seem to have made a significant effect on economic growth for 21 African countries for the period between 1965 and 2008. Zahonogo (2017) has shown that there is a trade threshold which higher trade openness has a positive impact on economic growth and above that threshold trade openness impacts on economic growth decreases. This study has been completed for 42 sub-Saharan African countries between 1980 and 2012.

Altayligil and Çetrez (2020) have investigated the association between current account balances and trade openness for 97 developing and developed countries between 1986 and 2013. Negative significant associations for 4 country groups have been identified including developing countries. For high-income and industrial countries, they could not find any significant associations although the signs are still negative. Chinn and Prasad (2003) have found a significant negative association only for developing countries. They completed this study for 89 industrial and developing countries between 1971 and 1995. Chinn and Ito (2007) have studied with 89 industrial and developing countries between 1971 and 2004 and showed a positive significant association for industrial countries. Less developed and less developed without African countries have insignificant negative signs.

Ito and Chinn (2007) have found significant positive associations for three country groups which are emerging markets, less developed countries, and less developed countries without African countries between 1986 and 2005 for 19 industrial and 70 developing countries. Das (2016) has completed his study for 106 countries over the period 1980-2011. He has found positive and significant associations for developed countries, emerging countries, developing countries, and all countries groups. Cheung et al. (2013) have added 94 countries from 1973 to 2008 in their study. And they have found significant positive signs for the industrial and full sample without African countries. Chinn et al. (2014) has included 23 industrial and 86 developing countries between 1970 and 2008 in their study. For less developed and emerging countries, they have found negative significant associations. For full sample and industrial countries, they have not been able to find out any significant associations. As seen results are mixed. But developing countries have more significant negative signs in these empirical studies.

## Data And Methodology

This study investigates the association between trade openness and economic growth, between trade openness and current account balances together at the same for a large country group. Two different trade openness measures are used. 134 countries are added to the study for the time between 1990 and 2019. 49 countries are from HI, 37 countries are from UMI, 35 are countries from LMI, and 13 countries are from LI countries groups.

### Data and Model

In this study two different trade openness measures are used. The first one is the sum of exports and imports of goods and services measured as a share of GDP. In most empirical studies, the standard summary measure of trade openness is given by  $(X + M) / GDP$ . It is called the old trade openness index in this study. Squalli and Wilson (2011) have criticized the use of this measure because it sometimes overestimates, and sometimes underestimates the trade openness degree of small and large trading countries. They have shown that some of the world's largest trading countries such as the USA, Germany, France, UK, India, and China are almost closed economies when this measure is used. Squalli and Wilson (2011) have proposed to use a new measure, the composite trade shares (CTS) measure, capturing the two aspects. In the first dimension, an open economy must trade heavily. The second dimension, it must be a substantial contributor to world trade. In this study, both measures have been used.

Current account balances, trade openness, GDP per capita based on purchasing power parity (PPP) and the data needed to compute new trade openness index data are collected from the World Bank. PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. Data are in constant 2017 international dollars. To find out the role of trade openness on income levels, income levels regressed on two different trade openness indexes. Where INCOME is the GDP per capita based on purchasing power parity (PPP), OPENNESS is a vector of trade openness. In is the logarithm operator. Sakyi et al. (2015) have had the similar approach. To identify the role of trade openness in current account balances, current account balances regressed on trade openness which is the sum of exports and imports of goods and services measured as a share of GDP. CA represents current account balances. Only the old trade openness measure is used for current account balance regression because both variables must be divided by gross domestic product for a good comparison.

$$\ln \text{INCOME}_{it} = \alpha_{it} + \beta \ln \text{OPENNESS}_{it} + u_{it} \quad (1)$$

$$\text{CA}_{it} = \alpha_{it} + \beta \text{OPENNESS}_{it} + u_{it} \quad (2)$$

### Econometric Methodology

Panel data analysis is used to investigate the associations between trade openness and economic growth, trade openness, and current account balances. Annual data is used in the models. The panel data set is not balanced. Pesaran test (2004) is applied to check the cross-sectional dependence between the variables. Second-generation root tests must be applied when cross-sectional dependence is found. Pesaran (2007), one of the second-generation panel root tests is applied in this study.

If Pesaran's (2007) unit root test results prove that variables are stationary, fixed-effects models are used. Heteroskedasticity is checked with the modified Wald test (Greene, 2000). Autocorrelation is checked with modified

Durbin-Watson (Bhargava et al., 1982) and Baltagi-Wu (1999) tests. Frees (1995, 2004) test is used to check for serial correlation. If autocorrelation, heteroskedasticity, and serial correlation are observed at the same time in the models, fixed effect models are re-estimated with Driscoll and Kraay (1998) robust estimator.

If Pesaran's (2007) unit root test results prove that variables are not stationary, but the first differences of the variables are stationary, cointegration tests are applied. If time series are nonstationary, cointegration tests are used to understand if they have long-run associations. According to the parameters' homogeneity and cross-sectional dependency, cointegration tests and estimation methods must be selected. For this purpose, Pesaran's (2004) cross-sectional dependency and Swamy's (1971) S homogeneity tests are applied in this study. Second-generation panel cointegration tests must be used if cross-sectional dependency is observed. There are homogenous and heterogeneous second-generation panel cointegration tests (Tatoğlu, 2017). If cross sectional dependency is identified and parameters are not homogenous at the same time Gengenbach, Urbain and Westerlund (Gengenbach et al., 2016) cointegration test will be selected to use. If there are cross-sectional dependencies second-generation estimators must be used. There are homogenous and heterogeneous second-generation estimators (Tatoğlu, 2017). Second generation DOLSMG estimator can be used for the long-run estimation of the cointegration model when there is cross-sectional dependency, and the models are heterogeneous.

If cointegration tests' results prove, there are no long-run relationships and the results of Pesaran's (2007) unit root tests also show that the first differences of the variables are stationary, OLS models are preferred to use with the first differences of all the variables. One way of controlling unobserved heterogeneity (or common errors) is known to use first differences ordinary least squares models (Wooldridge, 2002). Autocorrelation and heteroscedasticity for all the models are checked by using White (1980) and Wooldridge (2002) tests. If heteroscedasticity is found out in the models, they are re-estimated by Huber (1967), Eicker (1967) and White (1980) robust estimators. If the heteroscedasticity and autocorrelation are identified at the same time in the models, Arellano (1987). Froot (1989) and Rogers (1993) estimators are used.

### Results

The cross-sectional dependence among all the variables is investigated by using Pesaran test (2004). Results show there are always cross-sectional dependencies among all the variables (table1). The CAB represents current account balances, OP1 represents the old trade openness measure, OP2 represents the new openness measure.

Table 1. Pesaran Cross Sectional Dependency Test Results

Variables	HI	UMI	LMI	LI	LI+LMI
	Countries	Countries	Countries	Countries	Countries
	CD-test	CD-test	CD-test	CD-test	CD-test
CAB	(7.61)***	(3.73)***	(6.72)***	(3.00)***	(9.58)***
OP1	(60.00)***	(6.35)***	(11.34)***	(9.61)***	(18.58)***
LnGDP	(132.49)***	(106.05)***	(101.01)***	(9.65)***	(105.00)***
LnOP1	(60.97)***	(7.38)***	(12.66)***	(9.61)***	(19.79)***
LnOP2	(19.75)***	(3.66)***	(11.77)***	(13.03)***	(21.85)***

\*, \*\*, \*\*\* indicate significance at 10%, 5%, 1%.

Table 2. Pesaran Unit Root Test Results

Variables	HI	UMI	LMI	LI	LI+LMI
	Countries	Countries	Countries	Countries	Countries
I(0)	Z[t-bar]	Z[t-bar]	Z[t-bar]	Z[t-bar]	Z[t-bar]
CAB	(1.285)	(0.034)	(0.040)	(-1.323)*	(-0.919)
OP1	(-2.440)***	(1.086)	(0.248)	(-2.145)**	(-1.704)**
LnGDP	(-2.720)***	(-5.352)***	(-3.158)***	(-0.995)	(-2.784)***
LnOP1	(-2.914)***	-0.654	(-1.926)**	(-2.630)***	(-3.070)***
LnOP2	(-3.355)***	-0.713	(-1.662)**	(-2.937)***	(-4.365)***
I(1)	Z[t-bar]	Z[t-bar]	Z[t-bar]	Z[t-bar]	Z[t-bar]
CAB	(-4.444)***	(-4.324)***	(-6.408)***	-	(-15.972)***
OP1	(-3.021)***	(-6.168)***	(-2.694)***	-	(-12.832)***
LnGDP	-	(-4.224)***	-	(-2.145)**	-
LnOP1	-	(-7.107)***	-	(-2.875)***	-
LnOP2	-	(-6.355)***	-	(-5.012)***	-

\*, \*\*, \*\*\* indicate significance at 10%, 5%, 1%.

Table 3. Trade Openness and CABs for LI Countries

	LI Countries
CAB-OP1	(-0.1156163)*
R-sq	0.0508
Observations	377

\*Indicate significance at 10%.

Table 4. Trade Openness and Economic Growth for LI Countries

	LI Countries	LI Countries	
LnGDP-LnOP1	(0.0293962)*	LnGDP-LnOP2	(0.0423609)***
R-sq	0.0096	R-sq	0.0645
Observations	377	Observations	377

\*, \*\*, \*\*\* indicate significance at 10%. 5%. 1%.

So, second-generation Pesaran (2007) panel root test is used after the identification of cross-sectional dependence. Pesaran (2007) unit root test results show that some of the variables are not stationary. Cointegration analysis will be conducted for these variables if the first differences of them are stationary (table 2).

#### Low-Income Countries

Low-income countries group, only with 13 countries, is analyzed in this section for trade openness, economic growth, and current account balances.

#### Trade Openness and Current Account Balance for LI Countries

Pesaran's (2007) unit root test results prove that variables are stationary, so the fixed effects model is decided to be used. Heteroskedasticity is checked with the modified Wald test (Greene, 2000). Autocorrelation is checked with modified Durbin-Watson (Bhargava et al., 1982) and Baltagi-Wu (1999) tests. Frees (1995, 2004) test is used to check for serial correlation. Autocorrelation, heteroskedasticity, and serial correlation are observed at the same time for the model. Fixed effect

models are re-estimated with Driscoll and Kraay's (1998) robust estimator. There are negative significant associations between trade openness and current account balances for the LI countries (table 3). Uganda, Burundi, Guinea, Malawi, Niger, Sierra Leone, Sudan, and Togo all have high current account deficits, and increased trade openness makes their current account deficits worse. Although there are positive and significant associations between trade openness and economic growth for both measures, economic growth might not be sustainable because of high and increased current account deficits. High current account deficits will end up with even higher external debts especially if growth rates decrease.

#### Trade Openness and Economic Growth for LI Countries

The results of Pesaran's (2007) unit root tests prove that all the variables are not stationary, but all the first differences of the variables are stationary. So, OLS models are used with the first differences of the variables. Autocorrelation and heteroskedasticity are checked by using White (1980) and Wooldridge (2002) tests for all the models.

Table 5. Pesaran Cross Sectional Dependency Test Results



LMI Countries	
	CD-test
CAB-OP1	(8.89)***

\*\*\* indicate significance at 1%.

Table 6. Swamy S Homogeneity Test Results

LMI Countries	
	Prob>chi2=
CAB-OP1	0.0000

Table 7. Gengenbach, Urbain and Westerlund Panel Cointegration Test Results

LMI Countries	
	P-val*
CAB-OP1	<=0.01

Table 8. DOLSMG Estimation Results

LMI Countries			
	Beta	t-stat	p value
CAB-OP1	-0.01612	-1.618	0.105666

Only heteroscedasticity is found in the models. And, they are re-estimated by Huber (1967), Eicker (1967), and White (1980) robust estimators. Result show, that there are positive and significant associations between and

trade openness and economic growth for both trade openness measures for LI countries (table 4).

#### Lower-Middle-Income Countries

The lower-middle-income countries group, only 35 countries, is analyzed in this section for trade openness, economic growth, and current account balances.

#### Countries

Current account balances and trade openness variables are not stationary but the first differences of them are found out stationary. And cointegration analysis is applied. The cointegration test and estimation method must be decided based on the parameters homogeneity and cross-sectional dependency test results. So, cross-sectional dependency and homogeneity must be completed first.

#### Trade Openness and Current Account Balances for LMI

According to Pesaran's (2004) cross-sectional test result, there is cross-sectional dependence for the equation (table 5). Swamy S homogeneity test is used. According to Swamy (1971) S test result, parameters are not homogenous for the equation (table 6).

Table 9. DOLSMG Results for Trade Openness and CAB for all LMI Countries

#	Countries	Beta	t-stat	2019	2018	2017	2016	2015
1	Benin	0.1444	(6.218)***	-4.03	-4.55	-4.18	-3.00	-5.96
2	Bolivia	0.3466	(4.561)***	-3.24	-4.53	-5.06	-5.62	-5.87
3	Comoros	0.2948	(7.977)***	-3.21	-2.86	-2.13	-4.35	-0.26
4	Egypt. Arab Rep.	0.2456	(4.484)***	-3.37	-3.08	-3.37	-6.16	-5.24
5	Nicaragua	0.2041	(2.837)**	6.04	-1.86	-7.16	-8.48	-9.87
6	Senegal	0.1927	(1.716)*		-9.53	-7.27	-4.18	-5.32
7	Solomon Islands	0.1421	(3.337)***	-9.69	-3.00	-4.23	-3.54	-2.76
8	Ukraine	0.3856	(1.995)**	-2.68	-4.91	-3.10	-2.00	5.53
9	Bangladesh	0.1195	(1.561) <sup>0.1185</sup>	-0.97	-2.59	-2.40	0.42	1.32
10	Congo. Rep.	0.136	(0.8404)				-34.77	-38.72
11	Cabo Verde	0.05236	(0.4032)	-0.38	-5.17	-7.89	-3.86	-3.17
12	Sri Lanka	0.01319	(0.7315)	-2.15	-3.17	-2.64	-2.11	-2.34
13	Mongolia	0.1789	(0.3368)	-15.44	-14.51	-10.11	-6.25	-8.07
14	Vietnam	0.004663	(0.08537)	5.00	2.41	-0.74	0.30	-1.06
15	Zambia	0.2266	(0.5762)	0.62	-1.30	-1.68	-4.55	-3.61
16	Cameroon	-0.408	(-1.617)*	-4.35	-3.64	-2.71	-3.18	-3.79
17	India	-0.1025	(-7.142)***	-1.04	-2.42	-1.44	-0.53	-1.07
18	Cambodia	-0.07345	(-2.941)**	-15.00	-11.78	-8.15	-8.66	-8.86
19	Morocco	-0.2486	(-4.974)***	-4.11	-5.25	-3.35	-4.05	-2.14
20	Moldova	-0.08639	(-2.381)**	-9.35	-10.35	-5.73	-3.50	-5.98
21	Nepal	-0.3335	(-3.376)***	-5.59	-9.51	-4.10	-0.79	11.43
22	Philippines	-0.1413	(-4.555)***	-0.90	-2.56	-0.65	-0.38	2.37
23	West Bank and Gaza	-0.5899	(-3.373)***		-13.15	-13.21	-13.91	-13.88
24	Eswatini	-0.08426	(-1.639)*	4.38	1.30	6.20	7.79	13.13
25	Tunisia	-0.226	(-2.247)**	-8.46	-11.17	-10.25	-8.84	-8.92
26	Tanzania	-0.2253	(-6.663)***	-2.06	-3.27	-3.99	-5.50	-9.45
27	El Salvador	-0.2174	(-1.495) <sup>0.1349</sup>	-2.06	-4.69	-1.86	-2.27	-3.22
28	Vanuatu	-0.02232	(-0.09453)		9.33	-6.40	0.95	-0.51
29	Ghana	-0.01086	(-0.1659)	-2.78	-3.12	-3.39	-5.15	-5.81
30	Honduras	-0.07397	(-1.199)	-1.38	-5.62	-1.25	-3.14	-4.67
31	Kenya	-0.01121	(-0.1368)	-5.82	-5.75	-7.20	-5.83	-6.91
32	Kyrgyz Republic	-0.05166	(-0.7076)	-12.91	-11.63	-6.95	-11.63	-15.76
33	Lao PDR	-0.1426	(-0.8695)	-5.21	-9.18	-7.48	-8.76	-15.76
34	Nigeria	-0.0581	(-0.2737)	-3.80	0.98	2.77	0.67	-3.17
35	Pakistan	-0.1437	(-1.383)	-2.57	-6.00	-5.31	-2.58	-1.04

t- statistics are in parenthesis. \*, \*\*, \*\*\* indicate significance at 10%. 5%. 1%. t=1.645  $\alpha=0.1$

If there is cross-sectional dependency and parameters are not homogenous at the same time Gengenbach, Urbain, and Westerlund (Gengenbach et al., 2016) cointegration test can be selected to use. Gengenbach, Urbain and Westerlund panel cointegration (Gengenbach et al. 2016) test results can be seen in (table 7). There is a significant cointegration association between current account balances and trade openness for lower-middle-income countries at the 0.01% level.

DOLSMG estimator is used to determine the long-term estimation of the cointegration model. Trade openness is found to have a negative (0.105666% significant) long-run association with current account balances for LMI countries (table 8).

Table 9 shows the results for lower-middle-income countries. From 35 countries there are 15 positive associations, 8 of them are significant positive associations. And there are 20 negative relationships and 11 of them are significant negative relationships. Cameroon, Cambodia, Morocco, Moldova, Nepal, Philippines, West Bank and Gaza, Tunisia, and Tanzania all have extremely high current account deficits each year (table 9). Long-term relationship constant beta values are also extremely high for them (table 9). Even for India with increased trade openness, current account balances are affected negatively. Increased trade openness makes the current account deficits higher. Fig 2). It can be easily seen that with increased trade openness external debts of these countries will increase rapidly. Although, there are significant positive associations between economic growth and both trade openness measures for lower-middle-income countries. Economic growth might not be sustainable because of high and increased current account deficits. High current account deficits will end up with even higher external debts especially if growth rates decrease.

#### *Trade Openness and Economic Growth for LMI Countries*

Pesaran's (2007) unit root test results prove that variables are stationary, so the fixed effects model is decided to be used. Heteroskedasticity is checked with the modified Wald test (Greene, 2000). Autocorrelation is checked with modified Durbin-Watson (Bhargava et al.,1982) and Baltagi-Wu (1999) tests. Pesaran's (2004) test is used to check for serial correlation. Autocorrelation, heteroskedasticity, and serial correlation are observed at the same time for the model. Fixed effect models are re-estimated with Driscoll and Kraay's (1998) estimator. There are significant positive associations between economic growth and both trade openness measures for the LMI countries (table 10).

#### *Low-Income and Lower-Middle-Income Countries*

LI and LMI countries groups together, only 48 countries, are analyzed in this section for trade openness, economic growth, and current account balances.

#### *Trade Openness and Current Account Balances for LMI and LI Countries*

Only the first differences of the variables are stationary so, it is decided to use the first differences OLS

model. Autocorrelation and heteroscedasticity are checked by using White (1980) and Wooldridge (2002) tests for the model individually. Heteroscedasticity and autocorrelation are identified in the model. Arellano (1987), Froot (1989), and Rogers (1993) estimators are used. There is a significant association between trade openness and current account balances for LI and LMI countries group (table 11).

#### *Trade Openness and Economic Growth for LMI and LI Countries*

Pesaran's (2007) unit root test results prove that variables are stationary, so the fixed effects model is decided to be used. Heteroskedasticity is checked with the modified Wald test (Greene, 2000). Autocorrelation is checked with modified Durbin-Watson (Bhargava et al.,1982) and Baltagi-Wu (1999) tests. Frees (1995,2004) test is used to check for serial correlation. Autocorrelation, heteroskedasticity, and serial correlation are observed at the same time for the models. Fixed effect models are re-estimated with Driscoll and Kraay's (1998) estimator. There are positive significant associations between trade openness and economic growth for LI and LMI countries for both trade openness measures (table 12).

#### *Upper-Middle-Income Countries*

UMI countries group, with 37 countries, is analyzed in this section for trade openness, economic growth, and current account balances.

#### *Trade Openness and Current Account Balances for UMI Countries*

Cointegration tests' results show, that there are no long-run relationships and the results of Pesaran's (2007) unit root tests also show that the first differences of the variables are stationary, OLS models are used with the first differences of the variables. Autocorrelation and heteroscedasticity are checked by using White (1980) and Wooldridge (2002) tests for all the models individually. Heteroscedasticity and autocorrelation are identified in the model so, it is re-estimated by Arellano (1987), Froot (1989), and Rogers (1993) robust estimators. There is not a significant association between trade openness and current account balances for UMI countries (table 13). Positive trends are seen for China and Mexico, negative trends for Türkiye, Argentina, and Brazil.

Table 10. Trade Openness and Economic Growth for LMI Countries

	LMI Count.		LMI Count.
LnGDP-LnOP1	(0.353732)***	LnGDP-LnOP2	(0.31884)***
R-sq	0.0873	R-sq	0.3462
Observations	1020	Observations	1019

\*\*\* indicate significance at 1%.

Table 11. Trade Openness and CABs for LMI & LI Countries

	LI+LMI Countries
CAB-OP1	(-0.0961101) **
R-sq	0.0250
Observations	1.315

\*\* indicate significance at 5%.

Table 12. Trade Openness and Economic Growth for LI&amp;LMI Countries

	LI and LMI Con.	LI and LMI Con.	LI and LMI Con.
LnGDP-LnOP1	(0.3294619)***	LnGDP-LnOP2	(0.2725576)***
R-sq	0.0937	R-sq	0.3143
Observations	1410	Observations	1409

\*\*\* indicate significance at 1%.

Table 13. Trade Openness and CABs for UMI Countries

	UMI Countries
CAB-OP1	0.0059236
R-sq	0.0001
Observations	1009

Table 14. Trade Openness and Economic Growth for UMI Countries

	UMI Count.	UMI Count.	UMI Count.
LnGDP-LnOP1	-0.0268403	LnGDP-LnOP2	0.0013772
R-sq	0.0037	R-sq	0.0033
Observations	1059	Observations	1.060

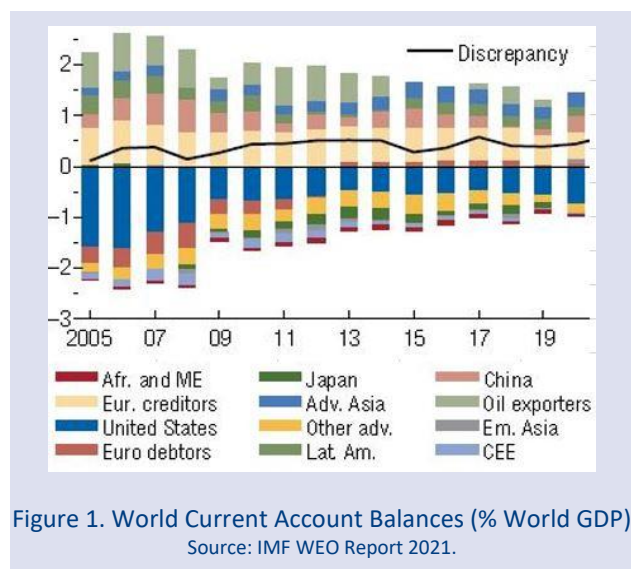
Table 15. Trade Openness and CABs and for HI Countries

	HI Countries
CAB-OP1	-0.2238407
R-sq	0.0388
Observations	1336

Table 16. Trade Openness and Economic Growth for HI Countries

	HI Countries	HI Countries	HI Countries
LnGDP-LnOP1	(0.571365)***	LnGDP-LnOP2	(0.32172)***
R-sq	0.2881	R-sq	0.2801
Observations	1424	Observations	1424

\*\*\* indicate significance at 1%.



### Trade Openness and Economic Growth for UMI Countries

Only the first differences of the variables are stationary, so it is decided to use the first differences OLS model. White (1980) and Wooldridge (2002) tests are applied individually to check autocorrelation and heteroscedasticity for all the models. The

heteroscedasticity is identified in the model. Arellano (1987), Froot (1989), and Rogers (1993) estimators are used. There are not any significant associations between trade openness and economic growth for both trade openness measures for the UMI countries (table 14).

### High-Income Countries

High-income countries group, only with 49 countries, is analyzed in this section for trade openness, economic growth, and current account balances.

#### Trade Openness and Current Account Balance and for HI Countries

Only the first differences of the variables are stationary so, it is decided to use the first differences OLS model. Autocorrelation and heteroscedasticity are checked by using White (1980) and Wooldridge (2002) tests for the model individually. Heteroscedasticity and autocorrelation are identified in the model. Arellano (1987), Froot (1989), and Rogers (1993) estimators are used. There is not any significant association between trade openness and current account balances for high-income countries (table 15). Denmark, Germany, Japan, Netherlands, Sweden, Switzerland, South Korea, Czech Republic, and Hungary can increase their current account surpluses with increased trade openness. For the USA, United Kingdom, Finland, and France higher trade openness does not help their current account balances. For many of the industrial countries positive trend can be seen.

#### Trade Openness and Economic Growth for HI Countries

Pesaran's (2007) unit root test results prove that variables are stationary, so the fixed effects model is decided to be used. Heteroskedasticity is checked with the modified Wald test (Greene, 2000). Autocorrelation is checked with modified Durbin-Watson (Bhargava et al.,1982) and Baltagi-Wu (1999) tests. Frees (1995,2004) test is used to check for serial correlation. Autocorrelation, heteroskedasticity, and serial correlation are observed at the same time for the models. Fixed effect models are re-estimated with Driscoll and Kraay's (1998) estimator. There are positive significant relationships between trade openness and economic growth for high-income countries for both trade openness measures (table 16).

Since the first differences of all the variables are stationary, the first differences pooled OLS models are created with a crisis dummy for all countries to see the effect of the 2008 global financial crisis. 2008 global financial crisis do not affect the overall results.

### Current Account Deficits and External Debts

IMF, WB has debt relief under heavily indebted poor countries initiative which is designed to make sure that no poor country faces a debt burden that it cannot manage. This initiative has been approved for 37 countries, 31 of them are part of African low-income countries. \$76 billion in debt service has been provided until now. Rich nations of Group Eight have agreed to write off \$40 billion to multilateral institutions in July 2005 G-8 Summit.



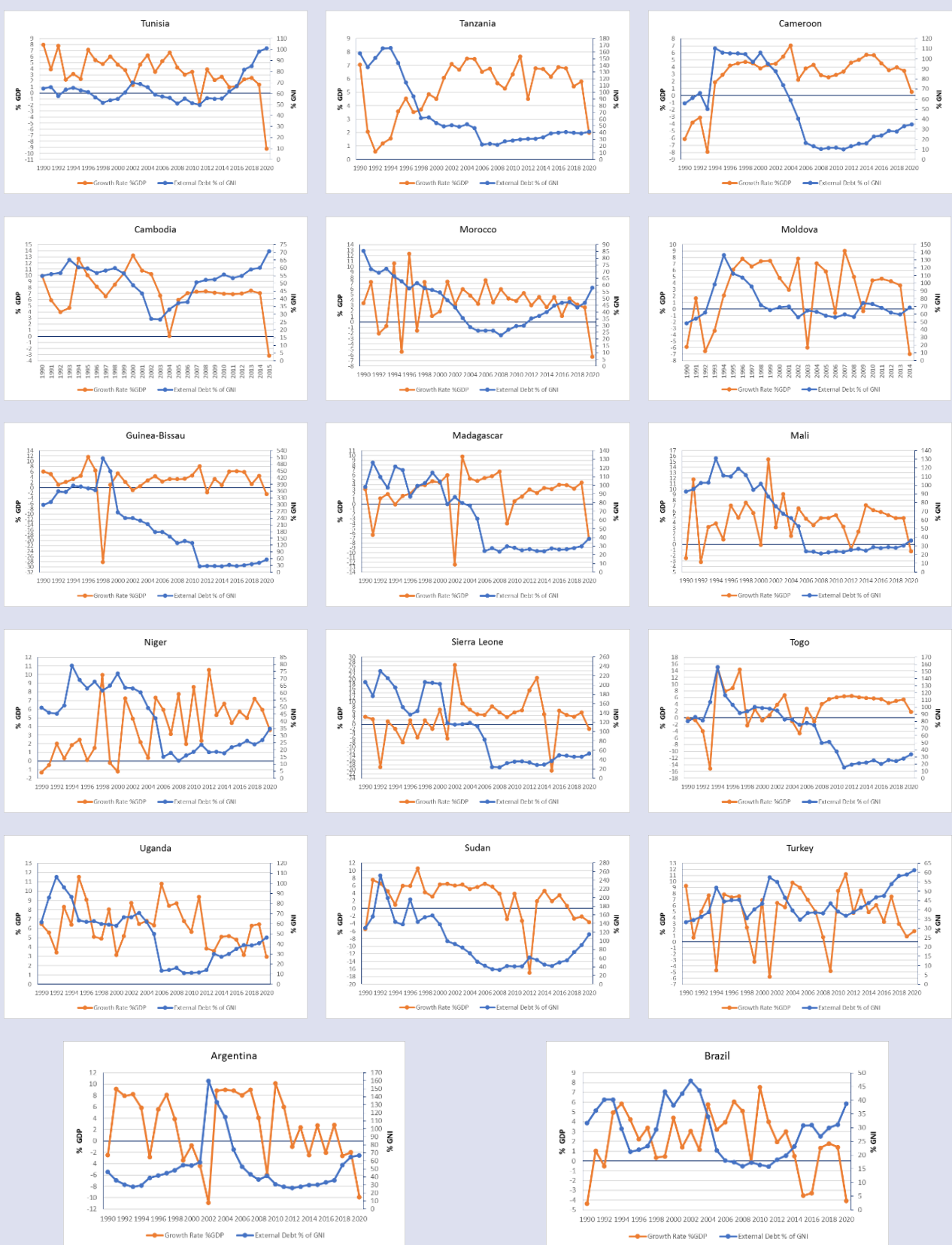


Figure 2. External Debts and Growth Rates

The debt of 18 countries (14 of them African) were owed to the WB, IMF, and regional development banks. Results show (table 9) that for LMI countries like Tunisia, Tanzania, Cameroon, Cambodia, Morocco, and Moldova increased trade openness increases the current account

deficits of these countries. External debt stocks (% of GNI) of Tunisia has reached 101.1% of its GNI in 2020. In 2011 it was 49.7%. Tanzania’s external debt has reached 41.25% of its GNI in 2020 which was 22.1% in 2006. Cameroon’s external debt has reached to 34.7% of its GNI

in 2020 from 10.2% in 2011. Cambodia's highest external debt percentage was 70.82% in 2020, increased every year starting from 27.04% in 2007. Morocco has 58.1% in 2020, which was only 22.75% in 2008. Similarly, Moldova has reached 68.4% of its GNI in 2020. For these countries, external debt levels are quite high and increasing although they have generally high growth rates. If also growth rates decrease, external debt levels may rise even faster.

External debts of LI countries Guinea-Bissau, Madagascar, Mali, Niger, Sierra Leone, Togo, Uganda, and Sudan are increasing again. Guinea-Bissau's external debt increased to 55.34% of its GNI in 2020 from 25.28% in 2011. Madagascar reached 38.45% in 2020 from 23.8% in 2008. Mali has 36.3% external debt level in 2020 which was 21.4% in 2008. Niger has reached 34.9% in 2020 which was 12.3% in 2008. Sierra Leone was 53% in 2020 which was only 23.46% in 2008. Similarly, Uganda reached to 46.53% in 2020. The highest level, Sudan's external debt has reached 115.6% of its GNI in 2020. Madagascar, Mali, and Uganda were part of the 2005 write-off. Increased trade openness increases the current account deficits of these countries and as expected external debts are also all increasing. So, if low-income and some of the lower-middle-income countries cannot carry-on high growth rates, increasing external debts might be an issue in near future one more time.

Although the covid-19 pandemic and the war in Ukraine is not part the analysis in this study, they have accelerated the foreign debt problems all over the world. Growth rates already decreased, and even worse, food and energy price inflation which is a result of the covid-19 pandemic and the war in Ukraine, have already affected especially the current account deficits and the level of the external debts of many low-income and lower-middle-income countries negatively. The WB has estimated in January 2022 that 33 countries were at risk of debt distress. And they must make debt payments of more than \$33 billion only in 2022. Oxfam media briefing 12 April 2022 considers that 60 countries have serious liquidity problems with external debt level more than 15% of GDP. Sri Lanka became the first developing country declared a default on its all-foreign debts. Country's external debt obligations are more than \$7 billion for this year. But Sri Lanka has only \$1.6 billion forex reserves as of March 2022.

Upper-middle-income countries' external debts of Argentina, Brazil, and Türkiye are increasing. Türkiye's external debt reached to 61.29% of its GNI in 2020 which was 34.65% in 2005. Argentina's debt level reached 66.9% in 2020 which was 26.28% in 2012. Finally, Brazil's external debt was 15.85% of its GNI in 2011 which was ended with 38.75% in 2020. Also, for these developing countries trade openness increases current account deficits. Altayligil and Çetrez (2020) explain for the fragile developing countries when political and macroeconomic stability increase with high growth rates, more capital inflows to them. They can finance their current account deficits easily. In this environment, the real effective exchange rate generally affects to increase the current

account deficits. With the high amount of capital inflows, the local currency is overvalued and ends up with larger current account deficits. Eventually when political, macroeconomic stability, and institutional quality gets worse, growth rates decrease, and developing countries with high current account deficits and external debts cannot finance these deficits with financial capital inflows. Increased trade openness does not help the current account balances and external debts of many LI, LMI, and UMI countries.

## Conclusion

This study aims to learn if trade openness influences income levels, economic growth, and the current account balances together at the same time. Two different trade openness measures are used. 134 countries are added in four income groups for the period between 1990 and 2019. There is a negative and statistically significant association between trade openness and current account balances for the group of LI and LMI countries. For UMI and HI countries, it is not identified any significant associations between trade openness and current account balances. Trade openness increases economic growth for all groups except the upper-middle-income countries. Results show trade openness widens the current account deficits of many of the low-income and lower-middle-income countries. Sustainability of the current account deficits and external debts might be potentially an issue for many LI, LMI, and some of the UMI countries especially if the growth rates decrease. Even worse, food and energy price inflation which is a result of the covid-19 pandemic and the war in Ukraine, have already affected especially the current account deficits and the level of the external debts of many low-income and lower-middle-income countries negatively. The World Bank has estimated in January 2022 that, 33 countries were at risk of debt distress. And they must make debt payments more than \$33 billion only in 2022. Oxfam media briefing 12 April 2022 considers that 60 countries have serious liquidity problems with external debt levels of more than 15% of GDP.

From low-income-countries, Uganda, Burundi, Guinea, Malawi, Niger, Sierra Leone, Sudan, and Togo all have high current account deficits, and increased trade openness makes their current account deficits even worse. From lower-middle-income countries, Cameroon, Cambodia, Morocco, Moldova, Nepal, Philippines, West Bank and Gaza, Tunisia, and Tanzania all have extremely high current account deficits each year. Long-term relationship constant beta values are also extremely high for them which means trade openness increases current account deficits rapidly. Even for India with increased trade openness, current account balances are affected negatively.

In literature, trade openness is generally discussed without considering the current account balances. It is assumed in many studies that if the trade openness increases economic growth will also increase. But high

current account deficits do not allow to increase trade volume continuously for many developing countries. If developing countries will get benefit from trade openness, they must control their excessive current account deficits. Many of the developing countries current account deficits increase with increased international trade volumes. Selective protection may help some of them to lower their deficits and prioritize their needs. Current account deficits are also affected by fiscal balance, terms of trade, real effective exchange rate, economic growth rate and financial development for many developing countries (Altayligil, and Çetrez, 2020). Fiscal deficits must be lowered to increase the national savings and lower current account deficits. Competitive real effective exchange is required to promote export and lower import. R&D is key to get benefit for terms of trade. R&D spending is a crucial factor for both developing and developed countries to improve their current account balances positively. 1% increase in R&D spending improves 3.29% current account surplus for all countries, 4.55% for HI countries group (Çetrez, 2021). For LI countries R&D does not mean too much without industrialization. R&D is key for the industries to produce more value-added products. Especially many UMI countries see the benefit of R&D efforts in their current account balances.

Dani Rodrik (2018) explains that Sub-Saharan Africa's economic growth rate increased up to close to 3% per annum per capita after 2000 which was a better performance than Latin America. The region has seen positive total factor productivity growth for the first time since the 1970's. Global commodity prices and low-interest rates helped them a lot. He also explains that China's rapid growth has increased the demand for their naturel resources and foreign direct investments increased. This strong growth performance has limited the increase of external debts. But he is pessimistic for them to achieve sustainable growth rates. Because industrialization is not the growth model of these countries. Agriculture-led or services-led growth might be alternatives but if it happens it will be for the first time in history. LI countries must consider developing industrialization road maps also to be able to export more value-added products and this will also help them not to buy some of the value-added import products.

Denmark, Germany, Japan, Netherlands, Sweden, Switzerland, South Korea, Czech Republic, and Hungary can increase their current account surpluses with increased trade openness. For the USA, United Kingdom, Finland, and France higher trade openness does not help their current account balances. For most of the industrial countries positive trends are identified. For the upper-middle-income countries China and Mexico benefit from trade openness for current account balances. There are negative trends for Türkiye, Argentina, and Brazil. The definition of trade openness is widely discussed in the literature. It is difficult represent trade openness with all aspects. This is one of the limitations of the study. Because of that two different trade, shares-based openness

measures are used in this study. There are also nontrade shares-based measures such as tariff and non-tariff barriers, international trade taxes, and the black-market exchange rate premium. The effect of nontrade shares-based measures on current account balances can be investigated in the next studies.

### Extended Abstract

Current account imbalances were higher than 5% of the world GDP in 2006, globally. In 2020, it became 3% (Fig.1). Especially, the United States of America's current account deficit has widened significantly. In 1997, it was only less than 2.0% of its GDP. In 2006, it has reached 5.8% of its GDP. After the financial crisis in 2009, it has decreased to 2.3% of GDP. In 2020, America's current account deficit has increased 3.1% of GDP which was a 12-year high. The United States of America has been running deficits for 30 years. China has been running surpluses for 28 years. The foreign trade of China has enlarged rapidly after it has been accepted in the WTO in 2001. In 2019, the trade volume between the United States of America and China was approximately US\$559 billion. But this trade has been occurred completely unbalanced. There has been a massive trade deficit between the United States of America and China. The USA's deficit has increased to US \$375.6 billion in 2017 just before the beginning of the trade war between the two countries. In 2002, the deficit has occurred only US \$103.1 billion. It has reached to US \$378 billion in 2018. In 2019, it has narrowed marginally to US\$ 345.6. Eventually, it has closed year 2020 with US\$301.3 billion, which has been a 9.9% decrease compared with the year 2019.

Xi Jinping has defended economic globalization and free trade at Davos 2017 World Economic Forum, saying that nobody will win a trade war. He has delivered a strong defense of economic globalization and free trade, showing that China is willing to have the USA's traditional role as the champion of trade openness. He has also added that China did not aim to increase its export by devaluing the Renminbi by starting a currency war. Trump has campaigned on a strongly protectionist platform. He has said, he would protect US companies from unfair trade of Chinese and Mexican companies. When the data from 1990 until 2019 has been checked, more trade openness has increased the deficits of the USA and current account surpluses of China. It is not only the trade between two countries, but the direction of the current account balances has been affected in opposite direction. China seems to be one of the winners of trade openness. Trade openness in the USA has also created a lot of income distribution problems, especially for the people in lower- income groups. Innovation, R&D, human capital has played key role for some of the developing countries especially in Far East Asia with the help of strong export performance in the free trade environment. Japan, South Korea, Malaysia, and Singapore have been showing strong trade performance with massive current account surpluses for many years in Far East Asia. China had

current account surpluses since 1994. Some of the countries like Germany, Japan, South Korea, China, Malaysia, Singapore, Denmark, Netherlands, and Switzerland were able to run current account surpluses, and they were also able to increase the amount of the surpluses with the rise of trade openness.

Many developing countries generally export labor-intensive products, raw materials, and low and medium technology goods. This creates terms of trade problem for them and forces them to run current account deficits. Higher trade openness may increase many developing countries' current account deficits. Unsustainable, high current account deficits can be one of the main reasons for the economic crises for a lot of developing countries. Eventually, high current account deficits may limit or lower the economic growth. This study investigates the influence of trade openness on the income levels, growth rate, current account balances, and external debts together for the first time in the literature for a large country group. Two different trade openness measures are used. 134 countries are added to the study in 4 income levels between 1990 and 2019. 49 countries are from high-income, 37 countries are from upper middle-income, 35 countries are from lower-middle-income, and 13 countries are from low-income countries groups. A negative and statistically significant association between trade openness and current account balances for the group of low-income and lower middle-income countries is found out. For the upper-middle-income countries, it is not identified any significant associations between trade openness and economic growth or between trade openness and current account balances. For high-income countries there is not a statistically significant association between trade openness and current account balances. There are significant and positive associations between economic growth and both trade openness measures.

Results show trade openness widens the current account deficits of many of the low-income and lower-middle-income countries. Trade openness increases economic growth for all country groups except upper-middle-income countries. This is valid for both trade openness measures. Sustainability of the current account deficits and external debts might be potentially an issue for many low-income and lower-middle-income countries especially if the growth rates decrease. This is also valid for some of the upper-middle-income countries. From low-income-countries, Uganda, Burundi, Guinea, Malawi, Niger, Sierra Leone, Sudan, and Togo all have high current account deficits, and increased trade openness makes their current account deficits even worse. From lower-middle-income countries, Cameroon, Cambodia, Morocco, Moldova, Nepal, Philippines, West Bank and Gaza, Tunisia, and Tanzania all has extremely high current account deficits each year. Long-term relationship constant beta values are also extremely high for them which means trade openness increase current account deficits rapidly. Even for India with increased trade openness, current account balances are affected negatively. Even worse, food and energy price inflation

which is a result of the covid-19 pandemic and the war in Ukraine, have already affected especially the current account deficits and the level of the external debts of many low-income and lower middle-income countries negatively. The WB has estimated in January 2022 that, 33 countries were at risk of debt distress. And they must make debt payments more than \$33 billion only in 2022. Oxfam media briefing 12 April 2022 considers that 60 countries have serious liquidity problems with external debt level more than 15% of GDP. Denmark, Germany, Japan, Netherlands, Sweden, Switzerland, South Korea, Czech Republic, and Hungary can increase their current account surpluses with increased trade openness. For the USA, United Kingdom, Finland, and France higher trade openness does not help their current account balances. For most of the industrial countries positive trends are identified. For the upper-middle-income countries China and Mexico benefit from trade openness for current account balances. There are negative trends for Türkiye, Argentina, and Brazil.

## References

1. Almeida, R., Fernandes A.M. (2008) "Openness and Technological Innovations in Developing Countries: Evidence from Firm-Level Surveys", *The Journal of Development Studies*, 44(5): 701-727.
2. Altayligil, Y.B., Çetrez, M. (2020) "Macroeconomic, institutional and financial determinants of current account balances: a panel data assessment". *Journal of Economic Structures*, 9: 49.
3. Arellano, M. (1987) "Computing Robust Standard Errors for Within-Groups Estimators". *Oxford Bulletin of Economics and Statistics* 49(4): 431-434.
4. Aromí, J.D. (2021) "Large Current Account Deficits and Neglected Vulnerabilities". *IMF Econ Rev* 69: 597-623.
5. Baltagi, B., Wu, P. (1999) "Unequally Spaced Panel Data Regressions with AR (1) Disturbances". *Econometric Theory*, 15(6): 814-823.
6. Barro, R.J., Sala-i-Martin, X. (1997) "Technological diffusion, convergence, and growth", *Journal of Economic Growth*, 2(1): 1-26.
7. Ben-David, D., Loewy, M., (1998) "Free Trade, Growth, and Convergence.", *Journal of Economic Growth* 3: 143-170.
8. Ben-David, D., Loewy, M., (2000) "Knowledge Dissemination, Capital Accumulation, Trade, and Endogenous Growth", *Oxford Economic Papers* 52: 637-650.
9. Ben-David, D., Loewy, M. (2003) "Trade and the Neoclassical Growth Model", *Journal of Economic Integration* 18: 1-16.
10. Bhargava A., Franzini, L., Narendranathan, W. (1982) "Serial Correlation and the Fixed Effects Model", *The Review of Economic Studies*, 49(4): 533-549,
11. Brunner, A.D. (2003) "The Long-Run Effects of Trade on Income and Income Growth", IMF Working Paper WP/03/37. Washington, DC: IMF Institute
12. Chang, R., Kaltani, L., Loayza, N.V. (2009) "Openness can be Good for Growth: The role of Policy Complementarities.", *Journal of Development Economics* 90: 33-49.



13. Cheung, C., Furceri, D., Rustecelli, E. (2013) "Structural and Cyclical Factors behind Current Account Balances", *Review of International Economics* 21: 923-944.
14. Chinn, M., Eichengreen, B., Ito, H. (2014) "A forensic analysis of global imbalances. *Oxford Economic Papers*", 66 (2): 465-490.
15. Chinn, M., Prasad, E. (2003) "Medium-term determinants of current accounts in industrial and developing countries: an empirical exploration", *Journal of International Economics*. 59: 47-76.
16. Chinn, M., Ito, H. (2007) "Current Account Balances. Financial Development and Institutions: Assaying the World Saving Glut", *Journal of International Money and Finance*. 26(4): 546-569.
17. Çetrez, M. (2022). The Long-Run Relationship Between R&D Spending and Current Account Balances: A Panel Data Analysis. *İktisadi İdari ve Siyasal Araştırmalar Dergisi*, 7(17): 1-12.
18. Das, D.K. (2016) "Determinants of current account imbalance in the global economy: a dynamic panel analysis", *Journal of Economic Structures* 5: 8.
19. Dowrick, S., Golley, J. (2004) "Trade Openness and Growth: Who Benefits?", *Oxford Review of Economic Policy* 20: 38-56.
20. Driscoll, J.C., Kraay, A.C. (1998) "Consistent covariance matrix estimation with spatially dependent panel data", *Review of Economics and Statistics*, 80(4): 549-560.
21. Eicker, F. (1967) "Limit Theorems for Regression with Unequal and Dependent Errors", *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability*. 59-82. Berkeley. Ca: University of California Press. Retrieved from <https://projecteuclid.org/>.
22. Falvey, R., Foster, N., Greenaway, D. (2004) "Imports, exports, knowledge spillovers and growth", *Economics Letters*, 85(2): 209-213.
23. Frees, E.W. (1995) "Assessing cross-sectional correlation in panel data", *Journal of Econometrics*, 69(2): 393-414.
24. Frees, E.W. (2004) "Longitudinal and panel data: analysis and applications in the social sciences", Cambridge University Press.
25. Freund, C., Bolaky, B. (2008) "Trade, Regulations, and Income.", *Journal of Development Economics* 87: 309-321.
26. Froot, K.A. (1989) "Consistent Covariance Matrix Estimation with Cross-Sectional Dependence and Heteroskedasticity in Financial Data", *Journal of Financial and Quantitative Analysis*, 24: 333-355.
27. Gengenbach, C., Urbain, J., Westerlund, J. (2016) "Error correction testing in panels with common stochastic trends", *Journal of Applied Econometrics*. 31: 982-1004.
28. Green, W. (2000) "Econometric Analysis", Upper Saddle River, New Jersey, Prentice Hall.
29. Grossman, G.M., Helpman, E. (1990) "Comparative Advantage and Long-Run Growth.", *American Economic Review* 80: 796-815.
30. Grossman, G.M., Helpman, E. (1991) "Innovations and Growth in the Global Economy", Cambridge: MIT Press.
31. Gruber, J., Kamin, S. (2005) "Explaining the Global Pattern of Current Account Imbalances", *Journal of International Money and Finance*. Volume 26. Issue 4.
32. Huber, P.J. (1967) "The Behavior of Maximum Likelihood Estimates under Non-Standard Conditions", *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability*. 1. 221-223. Berkeley. Ca: University of California Press. Retrieved from <https://projecteuclid.org/>.
33. IMF World Economic Outlook (2021). "Recovery During a Pandemic", <https://www.imf.org/en/Publications/WEO/Issues/2021/10/12/world-economic-outlook-october-2021> (Retrieved from. 05.02.2022).
34. Ito, H., Chinn M. (2007) "East Asia and Global Imbalances: Saving, Investment, and Financial Development", no 13364, NBER Working Papers, National Bureau of Economic Research, Inc.
35. Irwin, D.A., Tervio, M. (2002) "Does Trade Raise Income? Evidence from the Twentieth Century", *Journal of International Economics* 58: 1-18.
36. Iyke, B.N. (2017) "Does Trade Openness Matter for Economic Growth in the CEE Countries?", *Review of Economic Perspectives*, vol.17, no.1, pp.3-24.
37. Kim, D. (2011) "Trade, Growth, and Income", *The Journal of International Trade and Economic Development* 20: 677-709.
38. Kim, D., S. Lin. (2009) "Trade and Growth at Different Stages of Economic Growth", *Journal of Development Studies* 45: 1211-1224.
39. Kim, D.H., Lin, S.C., Suen, Y.B. (2011) "Nonlinearity Between Trade Openness and Economic Development", *Review of Development Economics* 15: 279-292.
40. Lee, H.Y., Ricci, L.A., Rigobon, R. (2004) "Once Again, Is Openness Good for Growth?", *Journal of Development Economics* 75: 451-472.
41. Manwa, F., Wijeweera, A, Kortt, M.A. (2019) "Trade and growth in SACU countries: A panel data analysis", *Economic Analysis and Policy*, Volume 63: Pages 107-118.
42. Menyah, K., Nazlioglu, S., Wolde-Rufael, Y. (2014) "Financial development, trade openness and economic growth in African countries: new insights from a panel causality approach", *Economic Modelling*, Volume 37: Pages 386-394.
43. Noguera, M., Siscart, M. (2005) "Trade raises income: a precise and robust result", *Journal of International Economics*, Volume 65, Issue 2, Pages 447-460.
44. Oxfam. (2022) "First Crises, Then Catastrophe" Oxfam Media Briefing. Retrieved from <https://www.oxfam.org/en/research/first-crisis-then-catastrophe>.
45. Perera-Tallo, F. (2003) "Growth due to Globalisation", *International Economic Review* 44: 651-676.
46. Pesaran, M.H. (2004) "General Diagnostic Tests for Cross Section Dependence in Panels" CESifo Working Paper. 1229: 1-40. Retrieved from <https://www.cesifo.org/>.
47. Pesaran, M.H. (2007) "A Simple Panel Unit Root Test in the Presence of Cross-Section Dependence", *Journal of Applied Econometrics*. 22(2): 265-312.
48. Rassekh, F. (2007) "Is International Trade More Beneficial to Lower Income Economies? An Empirical Inquiry", *Review of Development Economics* 11: 159-169.
49. Redding, S. (1999) "Dynamic comparative advantage and the welfare effects of trade", *Oxford Economic Papers*, 51(1): 15-39.
50. Rivera-Batiz, L.A., Romer, P.M. (1991) "International Trade with Endogenous Technological Change", *European Economic Review* 35: 971-1001.
51. Rodrik, D. (2018) "An African Growth Miracle?", *Journal of African Economics*, 27(1): 10-27.
52. Rogers, W.H. (1994) "Regression Standard Errors in Clustered Samples", *Stata Technical Bulletin*, vol. 3, issue 13.
53. Sakyi, D., Villaverde, J., Maza, A., Chittedi, K.R. (2012) "Trade Openness, Growth and Development: Evidence from Heterogeneous Panel Cointegration Analysis for Middle-Income Countries", *Cuadernos de Economía Special Issue*, 31(57): 21-40.

54. Sakyi, D., Villaverde, J., Maza, A. (2015) "Trade openness, income levels, and economic growth: The case of developing countries, 1970–2009", *The Journal of International Trade and Economic Development*, 24(6): 860-882.
55. Salinas, G., Aksoy, A. (2006) "Growth Before and After Trade Liberalisation.", *World Bank Policy Research Paper No. 4062*. Washington, DC: World Bank.
56. Squalli, J., Wilson, K. (2011) "A New Measure of Trade Openness", *World Economy* 34(10): 1745–1770.
57. Spilimbergo, A. (2000) "Growth and Trade: The North Can Lose", *Journal of Economic Growth* 5(2): 131–146.
58. Swamy, P. (1971) "Statistical Inference in A Random Coefficient Regression Model", *Econometrica* 38(2): 311-322.
59. Tatoğlu, F.Y. (2017) "Panel Zaman Serileri Analizi". Beta Basım Yayım Dağıtım.
60. Tekin, R.B. (2012) "Economic growth, exports, and foreign direct investment in Least Developed Countries: A panel Granger causality analysis", *Economic Modelling*, Volume 29, Issue 3, Pages 868-878.
61. White, H. (1980) "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity", *Econometrica*. 48: 817-838.
62. Vamvakidis, A. (2002) "How Robust Is the Growth-Openness Connection? Historical Evidence", *Journal of Economic Growth* 7(1): 57–80.
63. Wacziarg, R., Welch, K.H. (2008) "Trade Liberalisation and Growth: New Evidence", *The World Bank Economic Review* 22(2): 187–231.
64. Wooldridge, J.M. (2002). "Econometric Analysis of Cross Section and Panel Data", Cambridge. MA: MIT Press.
65. Young, A. (1991) "Learning by Doing and the Dynamic Effects of International Trade.", *The Quarterly Journal of Economics* 106(2): 369–405.
66. Zahonogo, P. (2017) "Financial Development and Poverty in Developing Countries: Evidence from Sub-Saharan Africa,", *International Journal of Economics and Finance*, Canadian Center of Science and Education, vol. 9(1): pages 211-220.