

Investigating the Role of Economic Risk, Foreign Direct Investment, Exchange Rate, Economic Growth and Globalization on Trade Balance in E7 Economies

Received: 27.07.2025

Available online: 30.09.2026

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Abstract

In recent years, globalization has drastically increased exposure to economic risk for the whole world. Our study investigates the impact of economic risk (ERI), exchange rate (EXR), foreign direct investment (FDI), economic growth (EG), and globalization index (KOF) on the trade balance (TB) in E7 namely, China, India, Indonesia, Mexico, Brazil, and Turkey for the period 1990-2018. The substantial positive correlation between TB and ERI is confirmed by CS-ARDL, both over the short and long terms. Conversely, EXR has a beneficial effect on TB. EG has an insignificantly negative effect on TB. Both FDI and KOF have detrimental long-term effects on TB; however KOF's effect is insignificant. According to the findings of FGLS and Kao DOLS approach trade balance

is positively impacted by economic risk. Results indicate that EG has a detrimental effect on TB, but insignificant under DOLS. However, effect of FDI on TB is unfavorable. In contrast, EXR have a positive impact on TB but insignificant under DOLS. Lastly, KOF shows a negative impact on TB. Furthermore, the second-generation JKS test is employed to check the causality among the variables. The results show the unidirectional causality between economic risk and trade balance. The policy insinuation is that the government should take the initiative to predict the various potential impacts of economic risk on trade balance. In addition, policymakers should focus on economic risk management to safeguard trade balance.

Keywords: Economic risk, Trade balance, Globalization, Foreign direct investment, Exchange Rate, Economic growth, E7 economies, CS-ARDL

JEL: F17, F31, G12, H12

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1. Introduction

Since the world economic crisis (2008-2009), there is increasing attention to explore the economic uncertainty (i.e., risk) influence on the macroeconomic performance such as investment, consumption, EG (Bloom, 2014). Those studies also deliberate the effect of several types of uncertainty like economic risk (uncertainty) and political risk, which have different influence on the country economy (Kaya, Gozgor, & Demir, 2019). However, the existing research overlooked these uncertainties effect on trade balance. Trade balance is also the core indicator of macroeconomic performance which cannot be overlooked. Therefore, this research investigates the impact of economic risk on trade balance. China is a suitable example in this case as it became the world's largest exporter due to the globalization, according to *World Integrated Trade Solution* WITS, China's exports of G&S as a percentage of GDP was 19.94% in 2021.

Economic risk, or economic instability, has been defined in various ways by economists, leading to the development of multiple risk rating systems since the 1980s. Prominent among these are: Economist Intelligence Unit, Euromoney, Institutional Investor, International Country Risk Guide, Moody's, Political Risk Services, and Standard & Poor's (Oetzel, Bettis, & Zenner, 2001). This study specifically adopts the ICRG's definition of economic risk, which refers to the possibility of suffering negative consequences as a result of the host nation's difficulties achieving macroeconomic objectives, such as slower GDP growth, elevated inflation, and budget balance deficits (ICRG, 2018). Beyond definition, economic risk or turmoil within an economy often manifests in the form of declining confidence in currency stability,

rising inflation and unemployment, and, in some cases, negative pressure on the trade balance (Babatunde, Bashir, & Ganiyu, 2019; Novy & Taylor, 2020). The behavior of an economy under high economic risk differs significantly from that of a low-risk economy. In a high-risk environment, output tends to fall rapidly and even declines international trade by twofold. This was evident during the global trade collapse of 2008 that world trade volume fell by 12%, a fall of this magnitude has not been experienced by the world since the great depression of 1930 (Eichengreen & O'Rourke, 2010). In contrast, nations with a lower level of economic uncertainties and risks are better equipped to maintain economic stability and secure stronger position in global economy (Hoti & McAleer, 2002).

In addition to economic risk, TB is also affected by various other variables including exchange rate, FDI, EG and globalization. The exchange rate is considered significant in determining the international competitiveness of a country and is expected to have strong impact on trade balance (Lotfalipour & Bazargan, 2014). During the 16th-18th century mercantilists dominated international trade by focusing on hoarding precious metals. Possessions of metals were increased by encouraging exports and restricting imports due to the excessive import tariff. This theory was later named as the standard theory of international trade (Wilson, 1959). It describes the negative impact of the exchange rate on trade balance. As the exchange rate depreciates, one unit of imported G&S becomes expensive relative to domestic G&S. Thereby, domestic households will buy fewer imported commodities, in contrast, foreign households will buy more of imported commodities from exchange rate depreciating country (Abbas Ali, Johari, & Haji Alias, 2014;

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W.-B. Zhang, 2008). Hence, the trade balance increases under exchange rate depreciation. Initially, Krueger (1983) described the theoretical relationship among exchange rate and trade balance, later empirically supported by Igue and Ogunleye (2014), Trinh (2014), Baharumshah (2001), Bahmani-Oskooee (1991), Stucka (2004), Brada, Kutan, and Zhou (1993), and Rajković, Bjelić, Jaćimović, and Verbić (2020).

Developing countries take benefit of foreign direct investment as it increases employment opportunities, capital inflow, increases production and determines trade balance (Hailu, 2010). There are two major types of investment that strongly affect the trade balance of the host country. First raw material-seeking investment increases the production of raw material in the host country. Later this raw material is exported to the home country (Root, 1998). Secondly, the investment made in the host country due to low cost factors is known as production-seeking investment. Investors take advantage of low cost factors of production to increase the production of commodities, which can be exported to home country (Phongpaichit, 1990). Consequently, increasing the trade balance of the host country. However, Anwar and Nguyen (2011) and Lipsey (2000) described that trade balance can be improved if FDI is made in the sector of host country's comparative advantage.

Further, EG is considered to effect trade balance in a negative way as EG is positively related to imports (Falk, 2008). When the EG of any country increases, their purchasing power increases as well leading to increased demand which consequently increases the imports volume and decreases the trade balance Adeniyi, Omisakin, & Oyinlola, 2011; Keho, 2020). Increasing globalization

of the world has drawn the attention of various researchers to determine its impact on economic indicators. In some cases, globalization increases trade, trade increases EG, EG further helps in elevating poverty. In contrast, globalization often negatively effects the economy as it increases within country income inequality (Lee & Vivarelli, 2006). Similarly, impact of globalization on trade balance is a controversial topic as some researchers find it favorable toward trade balance N. Ahmed, 2000; Santos-Paulino, 2002; Thomas & Nash, 1991). While, others consider it as an economic curse Santos-Paulino & Thirlwall, 2004; Taylor & Smith, 2007).

E7 economies are specifically chosen for the study due to several reasons. Firstly, the E7 group is diverse in nature and includes countries from different economic backgrounds that vary in risk exposure. Secondly, E7 countries are on a pathway of development and they are more susceptible to economic risk including exchange rate volatility, and foreign direct investment uncertainty they play a crucial role on the international level as well due to their large contribution to international trade. Moreover, emerging economies tend to face economic risk comparatively greater than developed countries (Brown, Cavusgil, & Lord, 2015; Damodaran, 2023). Neumeyer and Perri (2005), showed it is riskier to invest in developing countries as compared to developed countries due to currency in-convertibility, civil unrest, institutional instability, expropriation, and extreme corruption levels. Therefore, the E7 group is considered perfect.

This study aims to analyze the impact of economic risk, EG, foreign direct investment, exchange rate, and globalization on trade balance in E7 countries. Previously, scholars

neglected the empirical investigation of economic risk on trade balance in terms of E7 as they only considered terms of trade, effective exchange rate, FDI, and GNP/GDP as a major determinant of trade balance (AFM, 2006; Bahmani-Oskooee, 1992; Calderon, Chong, & Loayza, 2000; Özmen, 2005). Some studies merely considered exchange rate risk as an indicator of economic risk to determine its impact on trade (Bakhromov, 2011; Bibi, Awan, & Khan, 2020; Lotfalipour & Bazargan, 2014; Monacelli & Perotti, 2006). Some other studies employed economic crisis to identify its relationship with trade flow (Liu, Pannell, & Liu, 2009; Novy & Taylor, 2020). While, some authors explored the impact of political risk on trade by overshadowing economic risk (Afolabi & Bakar, 2016; Qadri, Shah, & Nadeem Qureshi, 2020). Concerning this neglect, our study is the first one to investigate the relationship in E7 economies. Secondly, this study to measure economic risk used the International Country Risk Guide Methodology (ICRG) economic risk index. While, GDP per capita, real GDP growth, inflation rate, budget balance, and current account balance are major components of this index. Thirdly, previous studies provide narrow insight of globalization as they solely consider trade liberalization as an indicator (Ju, Wu, & Zeng, 2010; Pacheco-López, 2005). In contrast, our study widens the scope of the study by adopting KOF as a proxy (Gygli, Haelg, Potrafke, & Sturm, 2019).

This paper is divided into 5 parts. The 1st part is dedicated to the introduction, the 2nd discusses the theoretical framework and literature review. The 3rd part is associated with data and methodology, the 4th part is dedicated to the results and discussion while

the 5th and last part includes the conclusion and policy implications.

2. Theoretical Framework

Theoretically, economic risk exerts a noticeable influence on the balance of trade (henceforth, BOT) by various paths. Firstly, exchange rate risk being a part of economic risk reduces the value of the currency, increases import prices, and reduces export prices, which consequently puts upward pressure on the trade balance (Baharumshah, 2001; Bahmani-Oskooee, 1992; Rajković et al., 2020; Stucka, 2004). Secondly, economic uncertainty leads to a reduction in the confidence of consumers and producers, decreasing investment inflow and consumption which declines trade flow (Hassan, Shabi, & Choudhry, 2018a). Thirdly, sovereign default is taken as a proxy of economic risk by Gu (2021), he states that an increase in sovereign default risk increases foreign debt, and tightens budget constraints, which causes a reduction in terms of trade due to contraction in demand of final goods on international level leading to trade deficit. The absence of FDI can lead to a dearth of capital inflow, causing a reduction in the overall development of the country and reducing production levels. This in turn can result in fewer exports, potentially contributing to the trade deficit. The high economic uncertainty conduces to a lack of confidence among individuals which results in low domestic investment within a country (Carruth, Dickerson, & Henley, 2000). This, too, has the potential to reduce production and exports, further exacerbating the trade deficit.

Although, globalization is considered beneficial for economies in terms of trade flow but in some cases, nations fail to

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maintain their trade balance by importing more than exporting which increases the trade imbalance (Santos-Paulino & Thirlwall, 2004). However, studies have shown that an increase in the GDP of countries increases the desire for imported commodities among individuals due to their escalating purchasing power resulting in a trade imbalance (Keho, 2020). On the other hand, FDI inflow can contribute to growth in exports and improve trade balance only when capital is invested in a sector of comparative advantage that can act as a substitute for imports (Lipsey, 2000).

- Exchange rate risk $\uparrow \rightarrow$ Domestic currency depreciation $\uparrow \rightarrow$ imports prices $\uparrow \rightarrow$ exports prices $\downarrow \rightarrow$ trade volume $\uparrow$ (Muzammil, Ali, Bagh, & Khan, 2024; Rajković et al., 2020)
- Economic uncertainty $\uparrow \rightarrow$ consumer and producer confidence $\downarrow \rightarrow$ investment $\downarrow \rightarrow$ consumption $\downarrow \rightarrow$ trade flow $\downarrow$ (Hassan et al., 2018a)
- Globalization $\uparrow \rightarrow$ countries interconnections $\uparrow \rightarrow$ imports more than exports $\uparrow \rightarrow$ trade imbalance $\uparrow$ (Dix-Carneiro, Pessoa, Reyes-Heroles, & Traiberman, 2023).
- EG $\uparrow \rightarrow$ Purchasing power $\uparrow \rightarrow$ demand for imported commodities $\uparrow \rightarrow$ trade balance $\downarrow$ (Keho, 2020; Nguyen, Thuy, Van Chien, & Huong, 2020)
- FDI inflow (in sector of comparative advantage) $\uparrow \rightarrow$ production $\uparrow \rightarrow$ exports $\uparrow \rightarrow$ trade $\uparrow$ (Ali, Ahmad, & Sadiq, 2019)

2.1 Literature Review

Early research on profit and risk-bearing within distribution theory in the 1890s helped to shape the idea of economic risk, which subsequently developed with the use of statistical techniques in economics. By separating quantifiable uncertainty from

"risk," (Knight, 1921; Xu, Reniers, & Yang, 2024) further codified this and established the groundwork for contemporary economic risk analysis. The past 60 years of economic globalization are considered as a source of economic risk but it is a multifaceted concept and has gone under various terminologies in history. It has been alternatively defined as a macroeconomic instability and foreign exchange. Authors till the end of 1970 were merely interested in analyzing the political side of the risk because at the time countries were just liberated from colonization and powerful international firms working in their countries were highly appreciated (Clark, 2018).

Economic risk influences the trade balance through various channels, a relationship that has been widely examined in numerous research studies. The detailed literature review is given in Table 1.

Among economists international trade is considered extremely volatile to economic shocks, increasing economic uncertainty results in proportional cuts in importing raw materials from foreign countries, potentially decreasing international trade flow (Novy & Taylor, 2020). Hassan, Shabi, and Choudhry (2018b), explained the negative impact of economic uncertainty on the US trade with Canada, China, Germany, Japan, and the United Kingdom. Liu et al. (2009), explained the negative impact of economic risk on China's exports under the shadow of the financial crisis of 2008 and the results showed that China spared the worst effects of the crisis but did not leave unscathed. In parallel to this, Ahmed, Al-Gasaymeh, and Mehmood (2017), Berman and Martin (2012), Chor and Manova (2012), have also investigated the same results for various countries.

Tam (2018) shows the negative impact of the US and China's economic policy uncertainty on global trade flow using the GRAV approach on a multilateral environment. Data is collected from the Economic Policy Uncertainty website and analysis is made on the quarterly data of the period 1998-2016. H. Zhang, Wang, Yang, and Guo (2021), specifically investigated the relationship between energy trade volume and the risks faced by countries, using data from 2000 to 2016 across various nations. The results revealed that exporting countries tend to face higher political risks compared to importing countries, while importing countries are relatively more exposed to economic risks. Jovanovic, Caric, and Jovanovic (2013), provided the comparative analysis of Balkan countries during 2007-2011. Results showed the negative impact of economic instability on the trade balance during the economic crisis of 2008 and showed a remarkable recovery, transitioning from a negative to a positive trade balance in post-crisis years.

Before analyzing the empirical results, it is essential to review the existing literature on the control variables that includes FDI, exchange rate, trade globalization and GDP per capita. A review of earlier research on foreign direct investment (FDI) shows conflicting results. Some studies claim a favorable influence, while others show a negative association between FDI and trade balance. This fluctuation implies that the impact of foreign direct investment (FDI) on the trade balance may vary depending on the economic structure of the host nation. In their more recent analysis of East Asian nations, (Majumder & Rahman, 2020) discovered that FDI inflows caused export growth to surpass import growth, strengthening the current account balance. Furthermore,

export-oriented foreign direct investment (FDI) in the industrial and technology sectors considerably improves trade balances because of knowledge spillovers and increased productivity, according to (Epor, Yua, & Terhemba lorember, 2024) who used panel data from Southeast Asia (2000–2020). On the other hand, an increasing amount of research identifies situations in which FDI could make the trade balance worse. FDI in industries not aligned with comparative advantage might enhance import substitution rather than export promotion, according to (Kojima, 1973) "anti-trade-oriented" FDI thesis. In their analysis of West African economies, (Asongu & Eita, 2024) discovered that increased import demand for capital and intermediate products is linked to FDI inflows and rising current account deficits.

On the other hand, according to Khouiled, Chini, and Benrouina (2023) a panel ARDL research of North African nations from 1990 to 2019 reveals that exchange rate depreciation has long-term detrimental consequences on trade balances, improving deficits over time with response lengths varying by country. Similarly, Muzammil et al. (2024) suggested that exchange rate appreciation and depreciation have a considerable impact on the trade balance, with no overall bias toward improvement or deterioration; the connection is symmetrical, in contrast to numerous research that demonstrate that depreciation clearly improves the trade balance.

Economic growth is also an important determinant and thus added in the model. Although GDP growth increases aggregate demand in all seven E7 nations, it has a generally negative and insignificant effect on the trade balance unless it is coupled with structural changes that increase export competitiveness or lessen reliance on imports

(Keho, 2020; Nguyen et al., 2020). Lastly, the research conducted on the impact of globalization on the trade balance also shows ambiguous results, studies like (Bosone, Dautović, Fidora, & Stamato, 2024; Cevik, 2025; Qiu, Xia, & Yetman, 2024) investigated that trade balance improvements were originally encouraged by globalization, these gains are now undermined by growing geopolitical fragmentation, protectionist policies, and strategic economic strategy, which frequently leads to lower trade balances or ongoing deficits. However some other panel studies by IMF suggests that trade openness and globalization are positively correlated with improved trade performance and, consequently, tend to support trade balance improvements, particularly in export-oriented economies (Cevik, 2025; Georgieva & Okonjo-Iweala, 2023; Zhao, 2023). To the best of my knowledge, direct empirical analysis of the connection between economic risk and trade balance is lacking in the literature currently in publication, particularly when it comes to emerging economies. Instead of using rigorous empirical modeling, the majority of research have overlooked the use of the economic risk index as a standardized proxy and have instead relied on statistical approaches. Additionally, rather than looking at the trade balance as a discrete component of external sector dynamics, academics frequently utilize the current account balance as a proxy to evaluate the impact of economic risk. This disparity is especially pertinent to E7 economies, which are exposed to a great deal of economic volatility but are still not well understood in this particular setting. To improve policy responses and strengthen the

resilience of the external sector, a targeted investigation is required.

3. Data and methodology

3.1. Data

To explore the relationship between economic risk and trade balance, our research employed data from 1990-2018. Regressand of this study is trade balance (TB) while economic risk (ERI) is taken as regressor. To measure economic risk there is vast range of organizations that provide economic risk index based on various macroeconomic indicators, including *Economist Intelligence Unit*, *Euromoney*, *Institutional Investor*, *International Country Risk Guide*, *Moody's*, *Political Risk Services*, and *Standard & Poor's*. However, following Hye, Ul-Haq, Visas, and Rehan (2023) *International Country Risk Guide (ICRG)* economic risk index is used in this study as a measure of economic risk due to its credibility. The IMF, World Bank, United Nations, and other international organizations, according to the ICRG, have used its risk ratings as a benchmark for evaluating other ratings¹. Moreover, Various publications like Barron's and The Wall Street Journal have also praised the ICRG for the quality of its research and rating methodology (Howell, 2011). ICRG indices are used by numerous researchers to investigate the impact of risk on various variables, including Musonera (2008) and Nordal (2001), who explained the relationship between country risk and FDI using *ICRG* indices. Economic Risk index of *ICRG* includes the aggregate effect of GDP per capita, real GDP growth, inflation rate, budget balance, and current account balance. Overall, an economic risk rating of

¹ International Country Risk Guide, <http://www.icrgonline.com>

Table 1. Summary of Literature

Authors	Country Sample	Period	Variables	Methods	Results
Novy and Taylor (2020)	United States	1962-2012	Industrial production Employment Stock market volatility S&P stock market index	VARs	Negative
Hassan et al. (2018a)	UK, China, Germany, Japan, Canada	1989-2016	Economic policy Uncertainty index	ARDL	Negative in long run and short run
Liu et al. (2009)	China	1980-2008	Global financial crisis	Statistical analysis	Negative
Ahmed et al. (2017)	Global analysis	2008-2016	Global financial crisis	Statistical analysis	Negative
Georgescu (2007)	Romania	2002-2007	Country risk index	Statistical analysis	Negative
(Tam (2018))	45 Economies	1998-2016	Economic policy uncertainty index	GVAR	Negative
H. Zhang et al. (2021)	54 Importing countries 39 Exporting countries	2000-2016	Economic and political risk index	Static panel regression model Dynamic panel regression model	Negative
Bachman (1992)	US	1974-1987	Risk premium	VAR	Slightly negative
Rajković et al. (2020)	Western Balkan and Central Eastren Europe	1990-2016	Exchange rate	FGLS	Positive during the whole period Insignificant during economic crisis
Ju et al. (2010)	39 and 77 developing countries	1970-2001	Trade liberalization	GMM	Positive
Keho (2020)	Cote d'Ivoire	1980-2017	FDI	ARDL	Negative

Note: S&P stock market index refers to standard and poor's market index, FDI refers to foreign direct investment, VARs is used for vector autoregressive test, ARDL signifies autoregressive distributed lag, GVAR refers to global vector autoregressive test, FGLS refers to feasible generalized least square while GMM means generalized methods of moments.

Source: Author's own construction

0% represents extremely high risk while 50% shows low risk.

There are some other independent variables used in this model. The variables include exchange rate (EXR), GDP per capita (GDPPC), and foreign direct investment (FDI) (Falk, 2008; Hailu, 2010). Moreover, the trade globalization index (KOF) is also used to analyze the impact of globalization on TB

as suggested by Hye et al. (2023). However, data of all the variables is collected from WDI except ERI which is taken from *ICRG*. All variables used in this paper are defined in Table 2. Descriptive statistics of the variables are mentioned in Table 3.

Descriptive statistics provide a brief summary of a dataset used in the model. The names of the variables are listed in column 1,

Table 2. Description of variables and sources

Variables	Definition	Source
ERI	Economic risk index	ICRG
TB	[Goods net exports (BOP, current US\$)]/GDP=(Goods Exports-Goods Imports)/GDP	WDI
FDI	Foreign direct investment, net inflows (% of GDP)	WDI
EXR	Official exchange rate (LCU per US\$, period average)	WDI
EG	GDP per capita (constant 2015 US\$)	WDI
KOF	KOF trade globalization index	WDI

Source: Author's own construction

Table 3. Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
TB	203	0.0133	0.0638	-0.1103	0.3193
ERI	203	32.4463	7.4789	10	46.5
EG	203	8.342103	0.8551	6.2708	9.3875
FDI	203	1.972623	1.4183	-2.7574	6.1869
EXR	203	1160.509	3181.066	0.0000296	14236.94
KOF	203	42.07154	10.77784	18	64

Source: Author's calculations

column 2 shows the number of observations. The third column shows the average of the data known as the mean. However, standard deviation (Std. Dev.) is the most often used as a measure of dispersion mentioned in column 3. The last two columns show the minimum and maximum values of the data.

3.2 Model for Estimation

To analyze the impact of economic risk, EG, foreign direct investment, exchange rate, and globalization on trade balance, we ran a panel regression model. Economic risk has been affecting trade balance from decades but economies recover from it soon after the period of economic risk is over (Jovanovic et al., 2013). To assess the validity of the model, we have developed a model incorporating economic risk, EG, FDI, exchange rate,

globalization and trade balance. The model of the study is presented as:

$$TB_{it} = \alpha_{it} + \beta_1 ERI_{it} + \beta_2 EXR_{it} + \beta_3 FDI_{it} + \beta_4 EG_{it} + \beta_5 KOF_{it} + e_{it} \quad (1)$$

TB is a trade balance, which represents the difference of exports and imports as a ratio of GDP. ERI represents the economic risk index. EXR represents the official exchange rate of a country. FDI represents foreign direct investment inflow. EG represents economic growth taken as GDP per capita and lastly, KOF represents a trade globalization index. In this equation α_{it} represents the average value of TB when all the independent variables are equal to zero while, e_{it} is an error term. The subscript i is given for the country whereas, t represents the period. The ERI impacts TB depending on the different signs given as;

Here, β_1 captures the coefficient of economic risk, with subscript i representing countries under the E7 group and t signifies time. Whereas, the hypothesis of this model is specified as; Null Hypothesis (H_0): there is a positive significant impact of economic risk on the trade balance or $H_0: \beta_1 > 0$, here, β_1 represents the coefficient for economic risk in a regression model that predicts the trade balance. While, $H_a: \beta_1 < 0$, here, β_1 represents economic risk that negatively affects the trade balance, leading to a deficit in trade when economic risk increases.

The expected sign of the β_1 will be negative to indicate the negative impact of economic risk on the trade balance (Hassan et al., 2018b), and β_2 is expected to be negative to indicate the positive impact of currency depreciation on TB during economic risk (Engel, Mark, West, Rogoff, & Rossi, 2007). On the other side, β_3 is expected to be positive if the FDI is in a sector of comparative advantage (Anwar & Nguyen, 2011). β_4 is expected to have a negative sign as mentioned by Falk (2008) and Keho (2020). Lastly, mixed signs are expected for β_5 as the negative impact of globalization is mentioned by Dix-Carneiro et al. (2023).

Formally the hypotheses of this study for all indicators are stated as;

H1: $\beta_1 > 0$; economic risk (ERI) has a positive effect on the trade balance (TB).

H2: $\beta_2 < 0$; exchange rate (EXR) depreciation negatively affects the trade balance (TB).

H3: $\beta_3 < 0$; foreign direct investment (FDI) negatively influences the trade balance (TB).

H4: $\beta_4 < 0$; EG negatively affects the trade balance (TB).

H5: $\beta_5 < 0$; trade globalization (KOF) negatively affects trade balance (TB).

3.3. Methodology

Panel Unit Root

We commence our analysis by the most common unit root test to examine the stationarity of variables. Since, Pesaran and Smith (1995), noted that various panel unit root tests are frequently used among researchers but conventional tests including Dickey and Fuller (1979) and Phillips and Perron (1988) are considered outdated as they lack in differentiating null hypothesis from alternative. Therefore, in this study, a cross-sectionally augmented second generation (CIPS) panel unit root test is used that is advanced by Pesaran (2007), well suited for analyzing cross-sectional interdependence that other researchers often overlooked. In most of the cross-country models, residual series are likely to be correlated for individual time series hence, the CIPS unit root test is applied. Along with that first generation IPS (Im, Pesaran, & Shin, 2003) unit root is used to diversify the stationarity results of the model. The general form of unit root tests is given below.

$$Y_t = \alpha_i + \beta_t + Y_{it} + e_{it} \quad (2)$$

$$Y_t = \alpha_i + \beta_t + Y_{it-1} + e_{it} \quad (3)$$

$$Y_t - Y_{it-1} = \alpha_i + \beta_t + e_{it} \quad (4)$$

$$\Delta Y_t = \rho(Y_{it-1} - Y_{it-2}) + \alpha_i + \beta_t + e_{it} \quad (5)$$

Where Y_{it} is a dependent variable

α_i represents individual specific fixed effects or intercepts for entity i

β_t represents time-specific fixed effect or trend at time t .

ρ is a coefficient that tests for the presence of a unit root. If ρ is equal to 1, it suggests the presence of unit root (non-stationarity) while, $\rho < 1$, indicating stationarity.

Y_{it-1} is the lagged value of the dependent variable for entity i and time $t-1$.

ε_{it} is the error term, which includes any random shocks or unexplained variation in the data.

CIPS regression equation is mentioned as followed, based on cross sectional augmented Dickey fuller (CADF).

$$\Delta y_{it} = \alpha_i + g_i t + b_i y_{i,t-1} + c \bar{y}_{t-1} + \sum_{j=0}^p d_{ij} \Delta \bar{y}_{t-j} + \sum_{j=1}^p \delta \Delta y_{i,t-j} + e_{it} \quad (6)$$

Where, $y_{i,t-1}$ and $\bar{y}_{t-1}$ are the lagged parameters of the model while, CIPS is estimated by the average of CADF as represented below:

$$CIPS = \frac{1}{N} \sum_{i=1}^N CADF_i \quad (7)$$

While t-statistics of CIPS are taken as:

$$Z^\mu = \frac{N^{1/2} \{\bar{\varepsilon}^\mu - E(t_0^\mu)\}}{\sqrt{V(t_0^\mu)}} \quad (8)$$

Autocorrelation test

In the realm of linear panel data, it is common to face the problem of autocorrelation which makes the results spurious. To assess the autocorrelation among the variables we turn to Wooldridge (2010) as it is flexible, easy to implement, and has fewer assumptions as compared to other tests.

$$y_{it} = \alpha + X_{it}\beta_1 + Z_i\beta_2 + \mu_i + \varepsilon_{it} \quad i \in \{1, 2, \dots, N\}, \quad t \in \{1, 2, \dots, T\} \quad (9)$$

Here, y is a dependent variable, X is an independent variable, Z is a controlled variable. Where i represent categories such as country and t indicates time. In this model α , β are parameters while μ and ε show the error terms of distinct variables and the model as a whole. If the μ_i 's are correlated with their concerned variables it will cause inefficient parametric estimates. To mitigate the issue of

autocorrelation Wooldridge test is employed which is represented in equation 10. It takes a first difference of the model to lessen the autocorrelation among the variables.

$$y_{it} - y_{it-1} = (X_{it} - X_{it-1})\beta_1 + \epsilon_{it} - \epsilon_{it-1} \quad (10)$$

$$y_{it} = \Delta X_{it}\beta_1 + \Delta \epsilon_{it} \quad (11)$$

Heteroscedasticity test

According to the classical assumptions of linear regression error term must have constant variance. In mathematical form, it is expressed as $\text{var}(\varepsilon_i) = \sigma^2$ where, ε_i is an error term while σ^2 is a constant. This condition is likely to be violated in the case of panel data as error term may be homoscedastic within cross-sectional units but it may differ across units this condition is named as GroupWise heteroscedasticity. Modified WALD test for group-wise statistics is used to diagnose the heteroscedasticity of the model proposed by Greene (2000) represented as;

$$V_i = T_i^{-1} (T_i - 1)^{-1} \sum_{t=1}^{T_i} (e_{it}^2 - \hat{\sigma}_i^2)^2 \quad (12)$$

Where σ_i^2 's represents variances, N indicates cross-sectional units, while T represents time.

$$W = \sum_{i=1}^N g \frac{(\hat{\sigma}_i^2 - \bar{\sigma}^2)^2}{v_i} \quad (13)$$

Panel Co-integration Tests

In this case panel cointegration tests are used to investigate the presence of cointegration among the variables. These tests are residual-based panel cointegration tests; Pedroni (1999). Equation 14 shows the general equation of this model.

$$y_{it} = \alpha_i + \beta_1 X_{it} + \delta_1 Y_{it-1} + \delta_2 X_{it-1} + \dots + \delta_p Y_{it-p} + \delta_q X_{it-q} + \varepsilon_{it} \quad (14)$$

ADF statistics in terms of panel-p and panel-t are given to show the within-dimension versions that can be compared. However, they are computed by taking the first difference series that can be represented as;

$$\Delta y_{it} = \alpha_i + \Delta\beta_1 X_{it} + \Delta\beta_2 X_{it} + \dots + \Delta\beta_n X_{it} + \varepsilon_{it} \quad (15)$$

In addition to the Pedroni test, Kao and Westerlund's tests are used proposed by Kao and Chiang (2001) and Westerlund (2007), are commonly used to enhance the robustness of the model and to gain a better insight of the relationship among the variables. In this study, the second-generation Westerlund co-integration test is used. Westerlund's co-integration model is divided into two group statistics, namely group (G) and panel (P) statistics, with *t* representing a time series variable with a representing statistics related to both groups and panels that measure maximum eigenvalue. Westerlund's group and panel statistics are represented as follows:

Group statistics (G_t and G_a): These statistics are designed to assess the existence of co-integration relationships within a group of time series variables. 'G_t' pertains to the group statistics for time series variables, while 'G_a' relates to group statistics that consider the maximum eigenvalue

Panel statistics (P_t & P_a): panel statistics evaluate co-integration relationships across both time series and cross-sectional dimensions. 'P_t' denotes panel statistics for time series variables, while 'P_a' represents panel statistics that take into account the maximum eigenvalue.

$$G_t = \frac{1}{N} \sum_{i=1}^N \frac{\hat{\alpha}_i}{SE(\hat{\alpha}_i)} \quad (16)$$

$$G_a = \frac{1}{N} \sum_{i=1}^N \frac{T \hat{\alpha}_i}{\hat{\alpha}_i} \quad (17)$$

$$P_T = \frac{\hat{a}}{SE(\hat{a})} \quad (18)$$

$$p_a = T \hat{a} \quad (19)$$

Cross-sectional Autoregressive Distributed Lag Model

Pesaran and Smith (1995) and Chudik and Pesaran (2015) presented the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model, which is used in this study. It includes lagged dependent/independent variables to capture dynamic feedback, partially addressing reverse causality. By adding cross-sectional averages of both the dependent and independent variables as additional regressors, the estimator absorbs common shocks and reduces omitted variable bias.

Additionally, (Eberhardt & Teal, 2011; Pesaran, 2006) highlighted the robustness of CS-ARDL to deal with endogeneity as compared to static panel models (Voumik & Sultana, 2022). It also excels at handling simultaneity and feedback effects, such as reverse causality, in which trade balance may affect foreign direct investment (FDI) or economic risk. The CS-ARDL model's error correction framework offers a more nuanced perspective on the direction of causation and adjustment speeds by differentiating between short-term dynamic adjustments and long-term equilibrium relationships (Halwan et al., 2022).

Function of trade balance is specified as:

$$TB_{i,t} = f(ERI_{i,t}, EXR_{i,t}, FDI_{i,t}, EG_{i,t}, KOF_{i,t}) \quad (23)$$

Where the subscript *i* and *t* denote the sample countries (*i*=1, 2,...,7) and years (sample size). CS-ARDL model is based on the following regression:

$$\begin{aligned} \Delta y_{it} = & \mu_i + \alpha_i(y_{it-1} - \theta_i x_{i,t-1} + \\ & + \alpha_i^{-1} n_i \bar{y}_t + \alpha_i^{-1} y_i \bar{x}_t) + \\ & + \sum_{j=1}^{p-1} \phi_{ij} \Delta y_{i,t-j} + \\ & + \sum_{j=0}^{q-1} \delta_{ij} \Delta x_{i,t-j} + \\ & + \sum_{j=0}^{p-1} v_{ik} \Delta \bar{y}_{t-j} + \\ & + \sum_{j=0}^{q-1} y_{ik} \Delta \bar{x}_{t-j} + \varepsilon_{it} \end{aligned} \quad (24)$$

Where, y_{it} and x_{it} represents cross-sections of averages y_{it} and x_{it} . In the given equation short-term and long-term behavior of cross-sectional correlations are separated by parenthesis. While, θ_i and α_i represents long-run coefficients associated with y_{it} and x_{it} whereas, ϕ_{ij} and δ_{ij} indicate short-run estimates.

Pool Mean Group

With heterogeneous panels, the Pooled Mean Group (PMG) estimator, which was created by (Pesaran, Shin, & Smith, 1999), is used to guarantee robustness in both short- and long-term dynamics. Together with the CS-ARDL estimation, this approach explicitly accounts for unobserved common factors and reverse causality by permitting individual-specific short-run dynamics, which enhances the CS-ARDL's ability to verify the stability and dependability of the model's findings.

Feasible generalized least squares (FGLS) and dynamic ordinary least square (DOLS)

To explore the impact of economic risk on trade balance FGLS in contrast with the PCSE technique is used by following Maddala and Lahiri (1992), Hoechle (2007), and Davidson and MacKinnon (1993), as it addresses the problem of heteroscedasticity and first-order autocorrelation. Represented as;

$$\begin{aligned} B_{GLS} &= (\hat{X}\Omega^{-1}X)^{-1}\hat{X}\Omega^{-1}Y \\ \text{Var}(B_{GLS}) &= (\hat{X}\Omega^{-1}X)^{-1} \\ \Omega &= \sum_{n \times n} \Theta I_{T_i \times T_i} \\ \sum \hat{\varepsilon}_i \hat{\varepsilon}_j &= \frac{\varepsilon_i \varepsilon_j}{T} \end{aligned}$$

Limiting distribution and finite sample properties of OLS was examined by Kao and Chiang (2001). He showed the non-negligible finite bias in OLS and consequently Kao DOLS approach was introduced.

$$y_{it} = \alpha_i + \hat{x}_{it} + \beta \sum_{j=-q}^q C_{ij} \Delta x_{it} + j + v_{it}$$

Panel Causality Test

As an alternative to Dumitrescu and Hurlin (2012) and Hassan et al. (2018a), we employ second-generation Juodis, Karavias, & Sarafidis, (2021) (JKS) causality test to estimate the causal relationship between ERI and TB. DH test is not a suitable causality test because it shows the heterogeneous slopes both under null and alternative hypotheses and is only acceptable for models where $N/T^2 \rightarrow 0$, T is relatively smaller than N . On the other hand, JKS is considered efficient for both homogeneous and heterogeneous panels. JKS causality equation is mentioned below. Whereas, $X_{i,t-k}$ represents scalar, δ_{pi} is an autoregressive effect while, ϕ_{qi} is a granger causality effect.

$$\begin{aligned} y_{it} = & \pi_{0i} + \sum_{k=1}^k \delta_{pi} y_{i,t-k} + \\ & + \sum_{q=1}^Q \phi_{qi} + \varepsilon_{it} \end{aligned} \quad (25)$$

4. Results and Discussions:

4.1. Unit Root

IPS unit root test results are mentioned in Table 4 which shows that only two of the variables (TB & FDI) are stationary at level without trend while with trend only FDI is stationary. When stationarity is checked at first difference with and without trend all variables are stationary at 1% significance level. Table 5 shows the second-generation panel unit root estimates (CIPS). Results indicate the

presence of stationarity where the absolute value of CIPS > significance values at 1%, 5% and 10%. In case of intercept TB and FDI are stationary at level on all significance levels while ERI, EG, EXR, and KOF are non-stationary. Intercept and trend results on level shows the stationarity of TB on all significance levels while FDI is stationary only at 5% and 10%. While the remaining variables are non-stationary. While, stationarity results on the first difference for constant and trend both shows significance on 1%, 5%, and 10%.

Table 4. IPS Unit root test

IPS	Level		First Difference	
	Intercept	Intercept + trend	Intercept	Intercept + trend
	Statistics	Statistics	Statistics	Statistics
TB	-2.53330 ***	-1.29950*	-5.71130 ***	-4.28440***
ERI	-0.2042	1.0875	-5.2294***	-4.7613***
EG	3.25620	-0.60140	-4.89420 ***	-3.45170***
FDI	-2.14520**	-1.81470**	-8.91400***	-7.56130***
EXR	2.73510	1.02870	-4.90300***	-3.55290***
KOF	-0.74110	-0.81700	-6.19850***	-4.92530***

Note: All *, ** and *** rejects null hypothesis of non-stationarity series and are statistically significant at 10%, 5% and 1%.

Source: Author's estimations

Table 5. CIPS Unit root test

CIPS	Level		First Diff.	
	Intercept	Intercept + Trend	Intercept	Intercept + Trend
TB	-3.202***	-3.847***	-5.113***	-4.854***
ERI	-2.109	-2.510	-5.116***	-5.079***
EG	-2.11	-2.034	-3.301***	-3.582***
FDI	-2.947***	-3.053**	-5.122***	-5.119***
EXR	-1.775	-2.392	-3.975***	-4.073***
KOF	-1.395	-2.22	-4.823***	-4.744***

Note: **, ***, * are stationary where CIPS > significance value at 1%, 5% and 10%.

Source: Author's estimations

Table 6. Autocorrelation and Heteroskedasticity

Wooldridge test for autocorrelation		Wald Groupwise heteroskedasticity	
Statistics	Probability	Statistics	Probability
37.188	0.0009	332.56	0.0000

Source: Author's estimations

According to the results of Wooldridge autocorrelation we accept null hypothesis at 1% significance level indicating that autocorrelation exists. While on the other hand we have applied the Wald GroupWise heteroskedasticity test to ensure the presence of constant variance among the variables. Similar to the Wooldridge results of the Wald test are significant at 5% which shows that there is no issue of heteroskedasticity among the variables. The absence of heteroscedasticity and autocorrelation in a model verifies the efficiency, validity, and accuracy of the results.

4.2. Panel Co-integration Results

In order to estimate the co-integration among the variables Kao and Chiang (2001), (Pedroni, 2004) and (Westerlund, 2005), are used. All co-integration test results depict the presence of a significantly strong relationship among the economic risk and trade balance except the Westerlund method. All of the variables are statistically significant at 5%, so the null hypothesis of no co-integration in panels is strongly rejected. Consequently, the panel co-integration results prove presence of a long run relationship among economic risk and trade balance. Results of the Westerlund panel co-integration test are represented in Table 7 confirming the presence of co-integration at 5% significance level among times series variables Gt and Pt.

4.3. Pool Mean Group

To assess the heterogeneity and cointegration among variables the PMG technique is utilized. Results of PMG are represented in table 9 which shows that in the long run the economic risk has a statistically significant negative impact on the trade balance; however, the magnitude of the effect is relatively small, with a 1% increase in economic risk leading to only a 0.0022% decline in TB. These results are supported by Bachman (1992), Liu et al. (2009), Ahmed et al. (2017) and Novy and Taylor (2020). While exchange rate shows that a 1% increase in EXR causes 7.31% decrease in TB, which expresses the negative impact of exchange rate depreciation on TB, supported by Engel et al. (2007), Bibi et al. (2020) and (Rajković et al., 2020). While, a 1% increase in economic growth leads to 0.332352% increase in TB. Lastly, a 1% increase in KOF leads to 0.0017657% in TB supported by (Cevik, 2025; Dix-Carneiro et al. (2023)). All the independent variables show significant results according to our expectations except FDI as its results are insignificant. While the signs of EG and FDI are not according to the expectations of the model.

In the short run, economic risk exerts positive pressure on trade balance. It is depicted through the results that a 1% increase in economic risk causes a very small increase of 0.00103% in trade balance. A 1% increase in exchange rate leads to 0.0022065% increase in TB. While, a 1% increase in FDI causes

Table 7. Co-integration Results (First generation tests)

	Statistics	P-values
Pedorni Method		
Modified Phillips-person t	1.7121**	0.0434
Phillips-Perron t	-2.8991***	0.0019
Augmented Dicky-Fuller t	-2.4136***	0.0079
Westerlund Method		
Variance Ratio	-1.3865*	0.0828
Kao test for cointegration		
Modified Dicky-Fuller t	-6.3149***	0.0000
Dickey-Fuller t	-4.1351***	0.0000
Augmented Dickey-Fuller t	-3.8662***	0.0001
Unadjusted modified Dickey-Fuller t	-6.3149***	0.0000
Unadjusted Dickey-Fuller t	-4.1351***	0.0

Note: A **, ***, *** represents the rejection of null hypothesis of no co-integration at 5%, 10% and 1% significance levels

Source: Author's estimations

Table 8. Westerlund Co-integration test (Second generation tests)

Statistics	Value	Z-value	P-value	Robust P-value
Gt	-4.450	-5.007	0.000	0.000
Ga	-9.995	1.598	0.945	0.185
Pt	16.960	-9.882	0.000	0.000
Pa	15.041	-1.183	0.118	0.015

Source: Author's estimations

0.0048959% decrease in TB, supported by (Asongu & Eita, 2024). The negative impacts of economic growth and FDI are consistent with the findings of Keho (2020). Coefficients of EG and KOF are negative and insignificant. Overall, the ECT value of the short run model is negative and significant at a 5% significance level which shows the presence of an inverse relationship among the economic risk and trade balance. Negative and significant ECT in the short run implies that deviation from the long run due to economic shocks will move the model away from an equilibrium.

4.4. Cross-Sectional Autoregressive Distributed Lag Model

The findings of the CS-ARDL in the long run shows that a 1% increase in economic risk will significantly result in a **minor** reduction of 0.0006767% in **TB**. Similarly, a 1% appreciation in exchange rate causes a minor rise of 0.00196% in TB, which is contradictory to our expected results. A 1% increase in FDI causes a fall of 0.0023557% in TB, supported by (Asongu & Eita, 2024). Whereas, all the variables in the long run are significant except EG and KOF.

Table 9. Results of long and short-run effects.

	PMG		CS-ARDL	
	Coef.	Std. error	Coef.	Std. error
Long run				
ERI	-0.0022622***	0.0005312	-0.0006767***	0.0002367
EG	0.332352***	0.007692	-0.0428085	0.0768103
FDI	-0.0008086	0.0025006	-0.0023557***	0.0008121
EXR	-7.31**	3.52	0.0019617**	0.0009026
KOF	0.0017657***	0.003466	-0.0001832	0.0001692
Short run				
ECT	-0.3958961**	0.1434899	-1.628645***	0.124765
ERI	0.0010337**	0.0003576	0.0012088***	0.0004016
EG	-0.0134139	0.1652326	-0.0568259	0.1263074
FDI	-0.0048959**	0.0016176	-0.0042146***	0.0015767
EXR	0.0022065***	0.000692	0.0032265*	0.0016529
KOF	-0.0011456	0.0007465	-0.0004032	0.0002863

Note: A **, ***, *** represents the rejection of null hypothesis of no Co-integration at 5%, 10% and 1% significance levels.

Source: Author's estimations

While, in the short run the adjustment term ECT shows that the shocks must be adjusted by 1.60 units per time in a damping manner in the long term, negative sign implies rapid adjustment when the dependent variable moves away from equilibrium. In the short run, economic risk which is the main variable of the study has a significantly positive impact on TB, increasing economic risk in an economy increases TB. The results indicate that a 1% increase in ERI would significantly result in negligible rise of 0.0012088% in TB, which is **contrary to our expected outcome** of a negative relationship. The results of FDI (-0.0042146) shows the statistical significance for FDI. The coefficients of FDI are negative for E7 countries which shows that low FDI inflow will result in deteriorating TB, these results are supported by Asongu and Eita (2024) and Keho (2020). The exchange

rate shows statistical significance at 10% with a positive impact of 0.032265% on TB. These findings also indicate that the currency strengthening has the tendency to increase the trade balance. The results of exchange rate appreciation and its positive influence on trade balance is supported by Babatunde et al. (2019). All the concerned variables in the short run are statistically significant except EG and KOF.

In summary, both PMG and ARDL results indicate that the variable of interest, **economic risk (ERI)** — has a **negative impact on the trade balance in the long run**, while exerting a **positive impact in the short run**. Although the positive impact of economic risk on the trade balance is often theoretically grounded, a clear explanation is provided by (Bosupeng, Naranpanawa, and Su (2024); Muzammil et al., 2024; Rajković

Table 10. Juodis, Karavias, and Sarafids (2021) Granger Non causality Test

	Collectively	
ERI, EXR, EG, FDI and KOF does not granger cause TB	150.3459***	0.000
	Individually	
ERI does not granger cause TB	10.04**	0.0066
EG does not granger cause TB	17.4474***	0.0006
EXR does not granger cause TB	139.5179*	0.000
FDI does not granger cause TB	21.6463***	0.0001

Note: A **, ***, represents the rejection of null hypothesis of no granger causality at 5%, 10% and 1% significance levels.

Source: Author's estimations

et al., 2020). They argue that rising economic risk heightens exchange rate volatility, leading to currency depreciation. This depreciation makes exports relatively cheaper and imports more expensive, thereby contributing to an improvement in the trade balance. On the other hand, control variables including LGDPPC and KOF seem to be consistently insignificant in the short and long term across both models. FDI is significant in the short term but insignificant in the long term in CS-ARDL, and it is likewise minor in the PMG model (both short and long run). Only in the long term is the exchange rate (EXR) negligible for PMG. This implies that, FDI, globalization, and EG might not have a strong or consistent impact on the trade balance in the particular setting.

Nevertheless, the results show that the direct quantitative impact of economic risk on trade balance is limited, policy interventions should not merely focus on the mitigation of economic risk, but rather trade partners should be diversified and economic resilience of the country should be improved. Frequent monitoring mechanism of economic risk should be introduced because even a small accumulated but untreated economic risk can cause huge destructions to the economic

systems especially to the vulnerable markets including the E7 Group. Moreover, it is crucial for the policy makers to introduce the early warning systems and flexible trading policies.

4.5. JKS panel causality test

For identifying the causality among the variables the JKS causality test is employed, the results of which are represented in Table 10. The results of the collective causality test are significant at 1% which shows that independent factors collectively play a crucial role in influencing TB. However, individual JKS causality suggests that all the independent variables including ERI, EXR, EG, FDI and KOF are independently and significantly causing TB.

5. Conclusion

This study investigates the impact of economic risk, EG, foreign direct investment, exchange rate, and globalization on trade balance using panel data from 1990-2018 for E7 economies. The results of CS-ARDL both in the short and long run, FGLS, and DOLS show a significantly positive impact of economic risk on trade balance. The results of CRS-ARDL show that in both the long run and short run EG and FDI have a negative

impact on TB but EG is insignificant. EXR has a positive impact on TB while, KOF on the other hand has a negative and insignificant impact on TB. However, FGLS and DOLS show the positive impact of EG on TB while the results of DOLS are insignificant. FDI puts negative pressure on TB under both FGLS and DOLS. EXR has a positive impact on TB but insignificant in the case of DOLS. Lastly, KOF has a negative impact on TB under both FGLS and DOLS. As, E7 group is comprised of emerging economies, including nations that have strong trade positions globally therefore, the impact of ERI is positive on TB yet negligible. The results of this model are supported by the behavior of E7 economies during the global economic crisis. Under various global crises, due to the strong trade flow, E7 economies faced negligible downfalls in trade balance which later swiftly got recovered. Countries should also keep a close eye on economic risk by introducing upgraded risk management tools to safeguard their trade balance. Moreover, policymakers should guide investors to conduct thorough risk assessments and develop an effective plan to mitigate the effect of economic risk on trade balance. In this study, GDP per capita, real GDP growth, inflation rate, budget balance, and current account balance are used as major components of the economic risk index (ERI). Therefore, policymakers should ensure the EG, averting the risks of deflation, hyperinflation, budget and current account deficit, to ensure the positive trade balance. The limitations of this study include the constraints arising from limited data availability. This may affect the comprehensiveness and generalizability of the results. Future studies could expand the sample period and add other risk indicators such as political risk and institutional risk.

References:

- Abbas Ali, D., Johari, F., & Haji Alias, M. (2014). The effect of exchange rate movements on trade balance: A chronological theoretical review. *Economics Research International*, 2014.
- AFM, K. H. (2006). Determinants of current account deficit in developing countries: The case of Bangladesh, *Studies in Business and Economics*, 12(1)
- Afolabi, L. O., & Bakar, N. A. A. (2016). Causal link between trade, political instability, FDI and economic growth–Nigeria evidence. *Journal of Economics Library*, 3(1), 100-110.
- Ahmed, G., Al-Gasaymeh, A., & Mehmood, T. (2017). The global financial crisis and international trade. *Asian Economic and Financial Review*, 7(6), 600-610.
- Ali, M., Ahmad, T. I., & Sadiq, R. (2019). Empirical investigation of foreign direct investment and current account balance in East Asian economies. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 13(3), 779-795.
- Anwar, S., & Nguyen, L. P. (2011). Foreign direct investment and trade: The case of Vietnam. *Research in International Business and Finance*, 25(1), 39-52.
- Asongu, S. A., & Eita, J. H. (2024). Promoting Renewable Energy Consumption in Sub-Saharan Africa: How Capital Flight Crowds Out the Favorable Effect of Foreign Aid. *Journal of Applied Social Science*, 18(1), 78-95.
- Babatunde, O. A., Bashir, A. O., & Ganiyu, Y. O. (2019). Exchange rate, trade balance and growth in Nigeria: An asymmetric cointegration analysis. *The Journal of Developing Areas*, 53(4).
- Bachman, D. D. (1992). Why is the US current account deficit so large? Evidence from

- vector autoregressions. *Southern Economic Journal*, 232-240.
- Baharumshah, A. Z. (2001). The effect of exchange rate on bilateral trade balance: new evidence from Malaysia and Thailand. *Asian Economic Journal*, 15(3), 291-312.
- Bahmani-Oskooee, M. (1991). Is there a long-run relation between the trade balance and the real effective exchange rate of LDCs? *Economics letters*, 36(4), 403-407.
- Bahmani-Oskooee, M. (1992). What are the long-run determinants of the US trade balance? *Journal of Post Keynesian Economics*, 15(1), 85-97.
- Bakhromov, N. (2011). The exchange rate volatility and the trade balance: case of Uzbekistan. *Journal of Applied Economics and Business Research*, 1(3), 149-161.
- Berman, N., & Martin, P. (2012). The vulnerability of sub-Saharan Africa to financial crises: the case of trade. *IMF Economic Review*, 60(3), 329-364.
- Bibi, S., Awan, T., & Khan, M. Y. (2020). Exchange Rate Risk and International Trade: The Role of Third Country Effect in Emerging vs. Developing countries. *NUML International Journal of Business & Management*, 15(2), 35-52.
- Bloom, N. (2014). Fluctuations in uncertainty. *Journal of economic Perspectives*, 28(2), 153-176.
- Bosone, C., Dautović, E., Fidora, M., & Stamato, G. (2024). How geopolitics is changing trade. *ECB Economic Bulletin Box*, 2, 2024.
- Bosupeng, M., Naranpanawa, A., & Su, J.-J. (2024). Does exchange rate volatility affect the impact of appreciation and depreciation on the trade balance? A nonlinear bivariate approach. *Economic modelling*, 130, 106592.
- Brada, J. C., Kutun, A. M., & Zhou, S. (1993). China's exchange rate and the balance of trade. *Economics of planning*, 26, 229-242.
- Brown, C. L., Cavusgil, S. T., & Lord, A. W. (2015). Country-risk measurement and analysis: A new conceptualization and managerial tool. *International Business Review*, 24(2), 246-265.
- Calderon, C., Chong, A., & Loayza, N. (2000). *Determinants of current account deficits in developing countries* (Vol. 51): World Bank, Policy Research Dissemination Center.
- Carruth, A., Dickerson, A., & Henley, A. (2000). What do we know about investment under uncertainty? *Journal of economic surveys*, 14(2), 119-154.
- Cevik, S. (2025). Long live globalization: geopolitical shocks and international trade. *International Economics and Economic Policy*, 22(2), 1-20.
- Chor, D., & Manova, K. (2012). Off the cliff and back? Credit conditions and international trade during the global financial crisis. *Journal of international economics*, 87(1), 117-133.
- Chudik, A., & Pesaran, M. H. (2015). Common correlated effects estimation of heterogeneous dynamic panel data models with weakly exogenous regressors. *Journal of econometrics*, 188(2), 393-420.
- Clark, E. (2018). Evaluating country risks for international investments: tools, techniques and applications. *World Scientific Books*.
- Damodaran, A. (2025). Country Risk: Determinants, Measures and Implications-The 2025 Edition. *SSRN*. doi: <http://dx.doi.org/10.2139/ssrn.5354459>
- Davidson, R., & MacKinnon, J. G. (1993). *Estimation and inference in econometrics* (Vol. 63): Oxford New York.
- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the*

- American statistical association*, 74(366a), 427-431.
- Dix-Carneiro, R., Pessoa, J. P., Reyes-Heroles, R., & Traiberman, S. (2023). Globalization, trade imbalances, and labor market adjustment. *The Quarterly Journal of Economics*, 138(2), 1109-1171.
- Dumitrescu, E.-I., & Hurlin, C. (2012). Testing for Granger non-causality in heterogeneous panels. *Economic modelling*, 29(4), 1450-1460.
- Eberhardt, M., & Teal, F. (2011). Econometrics for grumblers: a new look at the literature on cross-country growth empirics. *Journal of Economic Surveys*, 25(1), 109-155.
- Eichengreen, B., & O'Rourke, K. (2010). A tale of two depressions: What do the new data tell us? *VoxEU.org*, 8.
- Engel, C., Mark, N. C., West, K. D., Rogoff, K., & Rossi, B. (2007). Exchange rate models are not as bad as you think [with comments and discussion]. *NBER macroeconomics annual*, 22, 381-473.
- Epor, S. O., Yua, H., & Terhembra lorember, P. (2024). Foreign direct investment and economic growth in developing countries: The role of international trade and foreign debt. *Modern Finance*, 2(1), 1-17.
- Falk, M. (2008). Determinants of the trade balance in industrialized countries: FIW-Research Reports.
- Georgescu, G. (2007). Current account deficits and implications on country risk of Romania. *Romanian Journal for Economic Forecasting*, 4(4), 88-96.
- Georgieva, K., & Okonjo-Iweala, N. (2023). World trade can still drive prosperity. *Finance & Development Magazine*. [https://www.imf.org/en/Publications/fandd\(2023/06\)](https://www.imf.org/en/Publications/fandd(2023/06)).
- Greene, W. H. (2000). Econometric analysis 4th edition. *International edition*, New Jersey: Prentice Hall, 201-215.
- Gu, G. W. (2021). Sovereign default, trade, and terms of trade. *Macroeconomic Dynamics*, 25(6), 1346-1380.
- Gygli, S., Haelg, F., Potrafke, N., & Sturm, J.-E. (2019). The KOF globalisation index-revisited. *The Review of International Organizations*, 14, 543-574.
- Hailu, Z. A. (2010). Impact of foreign direct investment on trade of African countries. *International Journal of Economics and Finance*, 2(3), 122-133.
- Halwan, M. M., Bin, Z. Y., Ameer, W., Mumtaz, N., Mumtaz, A., & Amin, A. (2022). Research methods in a multinational business environment and implications for capital formation: Application of cross-sectional autoregressive distributed lag methods. *Frontiers in Psychology*, 13, 867891.
- Hassan, S., Shabi, S., & Choudhry, T. (2018a). Asymmetry, uncertainty and international trade. *Swansea University, School of Management*.
- Hassan, S., Shabi, S., & Choudhry, T. (2018b). Asymmetry, uncertainty and international trade. *Swansea University, School of Management, Working Paper*, 24.
- Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *The Stata Journal*, 7(3), 281-312.
- Hoti, S., & McAleer, M. (2002). Country risk ratings: an international comparison. *Seminars of Department of Economics of University of Western Australia*, 218.
- Howell, L. D. (2011). International country risk guide methodology. *East Syracuse, NY: PRS Group*, 7.
- Hye, Q. M. A., Ul-Haq, J., Visas, H., & Rehan, R. (2023). The role of eco-innovation, renewable energy consumption, economic risks, globalization, and economic growth in achieving sustainable environment

Articles

- in emerging market economies. *Environmental Science and Pollution Research*, 30(40), 92469-92481.
- ICRG. (2018). International Country Risk Guide Methodology (Publication no. <https://www.prsgroup.com/wp-content/uploads/2012/11/icrg/>).
- Igue, N. N., & Ogunleye, T. S. (2014). Impact of real exchange rate on trade balance in Nigeria. *African Development Review*, 26(2), 347-358.
- Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of econometrics*, 115(1), 53-74.
- Jovanovic, V., Caric, M., & Jovanovic, M. (2013). Impact of economy instability on trade balance of Balkan countries-comparative analyse. *Metalurgia International*, 18(8), 80.
- Ju, J., Wu, Y., & Zeng, L. (2010). The impact of trade liberalization on the trade balance in developing countries. *IMF Staff Papers*, 57(2), 427-449.
- Juodis, A., Karavias, Y., & Sarafidis, V. (2021). A homogeneous approach to testing for Granger non-causality in heterogeneous panels. *Empirical Economics*, 60(1), 93-112.
- Kao, C., & Chiang, M.-H. (2001). On the estimation and inference of a cointegrated regression in panel data *Nonstationary panels, panel cointegration, and dynamic panels* (pp. 179-222): Emerald Group Publishing Limited.
- Kaya, H., Gozgor, G., & Demir, E. (2019). Does Economic and Policy Uncertainty Affect External Trade Balance? Evidence from the United States. *Central Asian Review of Economics and Policy*, 1(2), 1-18.
- Keho, Y. (2020). Impact of foreign direct investment on trade balance: Evidence from Cote d'Ivoire. *International Journal of Economics and Finance*, 12(7), 113-124.
- Khouiled, B., Chini, S.-E., & Benrouina, M. (2023). Dynamic relationship between exchange rate and trade balance.
- Knight, F. H. (1921). Risk, uncertainty and profit. *Hart, Schaffner and Marx*.
- KOF. (2019). KOF Globalisation Index-KOF Swiss Economic Institute (Publication no. <https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html>). 49.
- Kojima, K. (1973). A macroeconomic approach to foreign direct investment. *Hitotsubashi Journal of economics*, 14(1), 1-21.
- Krueger, A. O. (1983). *Exchange-rate determination*: Cambridge University Press.
- Lee, E., & Vivarelli, M. (2006). The social impact of globalization in the developing countries. *Int'l Lab. Rev.*, 145, 167.
- Lipsey, R. E. (2000). Affiliates of US and Japanese multinationals in East Asian production and trade *The role of foreign direct investment in East Asian economic development* (pp. 147-189): University of Chicago Press.
- Liu, W., Pannell, C. W., & Liu, H. (2009). The global economic crisis and China's foreign trade. *Eurasian Geography and Economics*, 50(5), 497-512.
- Lotfalipour, M. R., & Bazargan, B. (2014). The impact of exchange rate volatility on trade balance of Iran. *Advances in Economics and Business*, 2(8), 293-302.
- Maddala, G. S., & Lahiri, K. (1992). *Introduction to econometrics* (Vol. 2): Macmillan New York.
- Majumder, S. C., & Rahman, M. H. (2020). Impact of foreign direct investment on economic growth of China after economic

Articles

- reform. *Journal of Entrepreneurship, Business and Economics*, 8(2), 120-153.
- Monacelli, T., & Perotti, R. (2006). Fiscal policy, the trade balance and the real exchange rate: Implications for international risk sharing. *manuscript, IGIER, Universita Bocconi*, 6, 1-57.
- Musonera, E. (2008). Country risk factors: An empirical study of FDI determinants in SSA. *Journal of International Management Studies*. doi: <http://ssrn.com/abstract=1921503>
- Muzammil, M., Ali, M. M., Bagh, T., & Khan, M. A. (2024). Exchange rate movements and trade balance in developing economies: Evidence of symmetry and country-specific asymmetries. *The Journal of International Trade & Economic Development*, 1-39.
- Neumeyer, P. A., & Perri, F. (2005). Business cycles in emerging economies: the role of interest rates. *Journal of monetary Economics*, 52(2), 345-380.
- Nguyen, T. T., Thuy, N. T., Van Chien, N., & Huong, V. T. T. (2020). Energy consumption, economic growth and trade balance in East Asia: A panel data approach. *International Journal of Energy Economics and Policy*, 10(4), 443-449.
- Nordal, K. B. (2001). Country risk, country risk indices and valuation of FDI: a real options approach. *Emerging Markets Review*, 2(3), 197-217.
- Novy, D., & Taylor, A. M. (2020). Trade and uncertainty. *Review of Economics and Statistics*, 102(4), 749-765.
- Oetzel, J. M., Bettis, R. A., & Zenner, M. (2001). Country risk measures: How risky are they? *Journal of World Business*, 36(2), 128-145.
- Özmen, E. (2005). Macroeconomic and institutional determinants of current account deficits. *Applied Economics Letters*, 12(9), 557-560.
- Pacheco-López, P. (2005). The effect of trade liberalization on exports, imports, the balance of trade, and growth: the case of Mexico. *Journal of Post Keynesian Economics*, 27(4), 595-619.
- Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and statistics*, 61(S1), 653-670.
- Pedroni, P. (2004). Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. *Econometric theory*, 20(3), 597-625.
- Pesaran, M. H. (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica*, 74(4), 967-1012.
- 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.
- Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American statistical Association*, 94(446), 621-634.
- Pesaran, M. H., & Smith, R. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics*, 68(1), 79-113.
- Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *biometrika*, 75(2), 335-346.
- Phongpaichit, P. (1990). *The new wave of Japanese investment in ASEAN: determinants and prospects*: Institute of Southeast Asian, Singapore
- Qadri, N., Shah, N., & Nadeem Qureshi, M. (2020). Impact of political instability on international investment and trade in Pakistan. *European Online Journal of*

- Natural and Social Sciences*, 9(2), pp. 283-305.
- Qiu, H., Xia, D., & Yetman, J. (2024). Deconstructing global trade: the role of geopolitical alignment. *BIS Quarterly Review*, 33-48.
- Rajković, M., Bjelić, P., Jaćimović, D., & Verbič, M. (2020). The impact of the exchange rate on the foreign trade imbalance during the economic crisis in the new EU member states and the Western Balkan countries. *Economic research-Ekonomska istraživanja*, 33(1), 182-203.
- Root, F. R. (1998). *Entry strategies for international markets*: John Wiley & Sons.
- Santos-Paulino, A., & Thirlwall, A. P. (2004). The impact of trade liberalisation on exports, imports and the balance of payments of developing countries. *The Economic Journal*, 114(493), F50-F72.
- Stucka, T. (2004). *The effects of exchange rate change on the trade balance in Croatia*: International Monetary Fund Washington.
- Tam, P. S. (2018). Global trade flows and economic policy uncertainty. *Applied Economics*, 50(34-35), 3718-3734.
- Trinh, P. T. T. (2014). The impact of exchange rate fluctuation on trade balance in the short and long run: the case of Vietnam. *Journal of Southeast Asian Economies*, 432-452.
- Voumik, L. C., & Sultana, T. (2022). Impact of urbanization, industrialization, electrification and renewable energy on the environment in BRICS: fresh evidence from novel CS-ARDL model. *Heliyon*, 8(11).
- Westerlund, J. (2005). New simple tests for panel cointegration. *Econometric Reviews*, 24(3), 297-316.
- Westerlund, J. (2007). Testing for error correction in panel data. *Oxford Bulletin of Economics and statistics*, 69(6), 709-748.
- Wilson, C. (1959). The other face of mercantilism. *Transactions of the Royal Historical Society*, 9, 81-101.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*: MIT press.
- Xu, Y., Reniers, G., & Yang, M. (2024). A Multidisciplinary Review into the Evolution of Risk Concepts and Their Assessment Methods. *Processes*, 12(11), 2449.
- Zhang, H., Wang, Y., Yang, C., & Guo, Y. (2021). The impact of country risk on energy trade patterns based on complex network and panel regression analyses. *Energy*, 222, 119979.
- Zhang, W.-B. (2008). *International trade theory: Capital, knowledge, economic structure, money, and prices over time*: Springer.
- Zhao, T. (2023). The impact of financial inclusion and natural resource endowment on China's carbon emissions in the post-covid-19 period. *Resources Policy*, 86, 104198. doi: <https://doi.org/10.1016/j.resourpol.2023.104198>