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## **THE IMPACTS OF DEGLOBALIZATION ON MANUFACTURING VALUE ADDED IN COMPARATIVE PERSPECTIVES**

### **Abstract:**

This paper intends to investigate the impact differentials of de facto and de jure deglobalization on manufacturing value added across least developed nations, developing nations, and developed nations before and after the 2008 global financial crisis over the period 2001-2021, aiming to provide insights for policymakers to address future uncertainties arising from deglobalization trends. It shows that de facto and de jure deglobalization's impacts on manufacturing value added vary across different developmental contexts. It is worth noting that this paper employs a panel error correction model and an autoregressive distributed lag-error correction model to examine the impact differentials in both the long run and the short run across two distinct periods of 2001-2008 & 2009-2021, in addition, this study considers 2008 global financial crisis as the "watershed" for the rising of deglobalization according to academic literature. Developed nations experienced greater short-run impacts from deglobalization than developing and least developed nations, especially post-global financial crises. Therefore, policymakers in developed nations should pay more attention to mitigating trade disruptions, stabilizing stock markets, strengthening supply chain resilience, and protecting the benefits of domestic consumers from rising prices and inflation in the short run. In general, the impacts of deglobalization on least developed nations had greater impacts than those of developed nations and developing nations due to their limited infrastructures, weaker legal and economic policy buffers, and dependence on international trade and aid. The greater impacts on least developed nations due to deglobalization emphasize enhancing resilience through industrialization policies and international cooperation for least developed nations.

### **Keywords:**

Deglobalization, Manufacturing Value Added, Panel Error Correction Model, Autoregressive Distributed Lag-Error Correction Model

**JEL Classification:** A10, F00, F10

## 1. Introduction

This research paper aims to investigate the impact differentials of deglobalization on manufacturing value added (MVA) of least developed (LDCs), developing, and developed nations and regions before and after the 2008 global financial crisis (GFC) over the period 2001-2021.

MVA is the total value of goods and services net of intermediate inputs (United Nations Industrial Development Organization, 2025). Similarly, globalization, as defined by Gygli et al. (2019), is the process of integrating economies in cultures, technologies, and governance beyond national borders, creating networks of connections through the flows of people, ideas, capital, and goods. Globalization has fostered bilateral and multilateral investments and, hence, has significantly reduced barriers to foreign direct investment (FDI) (Fournier, 2015); in the process, FDI inflows facilitate technology transfer (Baltabaev, 2014, as cited in Le et al., 2024) and enhance MVA. However, since the 2008 GFC, developed economies have implemented reshoring policies to protect domestic manufacturing industries and jobs, marking the move towards protectionism (Cazurra et al., 2020, as cited in Garg & Sushil, 2024; Constantinescu et al., 2020a, 2020b, as cited in Zahoor et al., 2023; Farndale et al., 2021; James, 2018). In addition, the GFC stalled the free flow of trade, capital, and human (Garcia-Herrero, 2019).

Conversely, Kim, Li, and Lee (2020) defined deglobalization as the opposite context of globalization and as the process of diminishing interdependence and integration between economies. Furthermore, Kim, Li, and Lee (2020) discussed that deglobalization has been found empirically since the GFC and further indicated that political and trade tensions are some of the drivers that facilitate deglobalization. Fournier (2015) discussed that the government's practice of protectionism reduces cross-border investments and highlighted how regulatory divergence (such as differentials in trade policies, taxation, environmental standards, or other regulations) adversely affects FDI. The decrease in FDI reduces business production processes. It hinders technology transfer (Baltabaev, 2014, as cited in Le et al., 2024), compounding the challenges to MVA.

Factually speaking, the complexities of the current world landscape have been aggravated by a series of deglobalization incidents, including the refugee crisis, the coronavirus pandemic in 2019, the trade war between the United States (the U.S.) and China, the conflicts and wars in various regions, and the disintegration of economic unions. In 2020, the United Kingdom (the U.K.) officially left the European Union (EU), representing a setback for globalization. It was clear that Brexit brought tariff and non-tariff barriers between the EU and the U.K., detrimental to cross-border investments (European Central Bank, 2020). Moreover, since the beginning of the Russia-Ukraine war in February 2022, the U.S. and its allies have taken various measures aimed at isolating Russia economically and politically, further hindering the progress of globalization. The Russia-Ukraine war caused a significant setback to FDI, undermining both bilateral and multilateral trade relations and cutting off supply chains (Ajeigbe, 2023). Jordaan (2020) and Yücesan (2025) stated that the share of the global value chain (GVC) in global trade, which accesses a country's exports that flow through at least two borders, has recently stagnated or even declined. In 2018, the President of the United States, Donald Trump, imposed tariffs on Chinese imports, prompting retaliatory measures from China, which had a global adverse effect (Aslam, 2019). The deglobalization trend has continued into 2025, characterized by increased tariffs on China and potential reciprocal tariffs on some nations. Besides, policymakers in the U.S. have also emphasized the importance of reshoring

policies to revitalize the domestic manufacturing industry (Gur & Dilek, 2023). As a result, understanding the impact differentials of deglobalization on MVA in least developed, developing, and developed nations before and after the rise of protectionism since 2008 GFC is vital for providing insights to policymakers in an uncertain and unpredictable world.

## 2. Review of Literature

From the ancient Silk Road to the modern age of open trade, globalization has been a driving force of economic, social, cultural, and political exchange. However, the post-2008 global financial crisis (GFC) shifted towards deglobalization (Constantinescu et al., 2020a, 2020b, as cited in Zahoor et al., 2023; Kim, Li, & Lee, 2020), which posed exceptional obstacles for the least developed, developing, and developed nations. This literature review first maps the historical waves of globalization, deglobalization, and trade. It then delves into classifying nations and regions by manufacturing development stages according to the IDP framework. Next, it identifies the measures of globalization and deglobalization. Then, it consolidates existing studies on the impacts of deglobalization in the context of energy, agriculture, and political economics, as well as its effects on various economies and economic regions. Finally, it examines the channels through which deglobalization can pass onto MVA. By synthesizing these perspectives with existing theories, this literature review establishes the contribution of this study.

### 2.1. Waves of Globalization, Deglobalization, and Trade

**Table 2.1 Waves of Globalization, Deglobalization, and Trade**

<i>TYPE</i>	<i>PERIOD</i>	<i>PROPELLER</i>	<i>TRADE</i>
<i>EARLY GLOBALIZATION</i>	<i>Pre-19th Century</i>	<i>Silk Road Colonization Expansion</i>	<i>Growing Trade (Mercantilism) (16th-18th) (Absolute Advantage) (1776)</i>
<i>GLOBALIZATION I</i>	<i>1870–1914</i>	<i>Global Flows of Capital, Goods, and Migrants</i>	<i>Trade Boom (Comparative Advantage) (1817)</i>
<i>DEGLOBALIZATION I</i>	<i>1914–1939 1939–1946</i>	<i>World War I Great Depression World War II</i>	<i>Protectionism/Trade Recession (Heckscher-Ohlin Model) (1919–1933)</i>
<i>GLOBALIZATION II</i>	<i>1944–1971</i>	<i>Post-War Recovery Bretton Woods System</i>	<i>Trade Revival Leontief Paradox (1953) (New Trade Theory) (1970s–80s) (Gravity Model) (1962)</i>
<i>GLOBALIZATION III</i>	<i>1980s–2008</i>	<i>Neoliberal Globalization</i>	<i>Trade Boom (Melitz Model)/(GVCs) (2000s)</i>
<i>DEGLOBALIZATION II</i>	<i>2008–Present</i>	<i>Global Financial Crisis Trade Wars COVID-19 Pandemic Geopolitical Tensions Economic Disintegration</i>	<i>Trade Disruption Trade Fragmentation (Melitz Model)/(GVCs) (2000s)</i>

Source: Own Adjustment

Table 2.1 shows a brief history of globalization, deglobalization, and trade waves. Early globalization was propelled by ancient trade routes, such as the Silk Road, which linked Asia and Europe and facilitated the exchange of trade in goods such as spices, silk, tea, and ceramics. Alongside the rise of Mercantilism in 16th-18th-century Europe came the belief that wealth was viewed as finite. At the same time, trade was a zero-sum game, prompting mainly European nations to augment their trade at the expense of other nations. Adam Smith's absolute advantage in 1776 emphasized that countries should specialize in producing goods they can produce efficiently. This specialization boosted international trade. In 1817, David Ricardo expanded trade theory by demonstrating that even if a country is at a disadvantageous position in producing both goods, it can still gain from trade by focusing on producing the good with the lower opportunity cost. As discussed by O'Rourke and Williamson (1999), the first wave of globalization (1870-1914) focused on the evolution of a nineteenth-century Atlantic economy, examining the interactions between Europe, Africa, and the Americas.

Dollar (2004), Karunaratne (2012), O'Rourke and J. G. Williamson (1999), Sevinç, Polat, Sevil, and Sevil (2023) identified 1914-1930 and 1939-1946 periods as deglobalization I and II, with this study considering the period of 1914-1946 as deglobalization I. Exemplarily, the Smoot-Hawley Tariff Act of 1930 raised tariffs on imported goods, causing a decline in world trade due to international retaliation. During this period, Eli Heckscher and Bertil Ohlin further expanded trade theory, stating that countries export goods heavily using their abundant factors, indicating that trade stems from differences in factor endowments.

The second wave of globalization was driven by the expansion of trade openness through institutions like the Bretton Woods system, the World Bank, and GATT (now WTO), which fostered global economic integration (Sevinç, Polat, Sevil, & Sevil, 2023). The gravity model trade theory, introduced by Jan Tinbergen in 1962, posits that trade volume between two countries depends on the economic size and the distance. This model is analogous to Newton's law of gravitation; countries with similar economic size tend to have stronger pull of trade flows between them, while greater distances between economies create trade flow frictions and reduce trade flow dynamics.

The third wave of globalization shifted the focus to East Asia-Pacific countries (Karunaratne, 2012, as cited in Sevinç, Polat, Sevil, & Sevil, 2023). This era was characterized by deregulation and trade liberalization, with the establishment of free trade agreements like NAFTA and China's WTO entry in 2001 accelerating globalization. In 2003, the Melitz model emphasized the importance of productivity in firms and posited that the most productive firms export. Thus, trade liberalization benefited productive firms but ended inefficient ones.

The second deglobalization since the GFC has seen a rise in protectionist trade policies, such as the trade war, reshoring policies to revitalize domestic manufacturing industry, supply chain disruptions from the COVID-19 pandemic, regional conflicts and wars, humanitarian and refugee crises, which signaling the trend of deglobalization. During this era of fragmented trade, global value chain models emerged and developed the idea of fragmented productions across several nations. Thus, by linking the period of deglobalization II with the current global landscape discussed in the introduction, this study underscores the importance of researching and understanding the varying impact differentials of deglobalization in an uncertain and unpredictable world.

## 2.2. Classification of Nations and Regions by Manufacturing Development Stages

This study groups nations and regions into different developmental manufacturing stages based on the investment development path (IDP) theory propounded by John H. Dunning in 1979. The IDP suggests that an economy's net outward investment tends to go through five main stages of development (Dunning & Dunning, 1997).

During the first stage of the IDP path, the economies are in a disadvantageous position regarding location-specific factors; these countries are rich in natural resources but lack the abilities and capabilities to transform natural assets into valued-added assets. Therefore, these nations have relatively low MVA. The issue is compounded by low per capita income, flawed economic and political systems, and insufficient infrastructure (Dunning & Dunning, 1997). Attracting FDI is an issue for these countries with little or no manufacturing capacity. Thus, this study identifies the least developed nations according to the first stage of the IDP, nations such as Burkina Faso and Sierra Leone. At stage two, inward direct investment starts to rise, mainly in natural resource-intensive sectors and labor-intensive, low technology, and light manufacturing industries. In contrast, outward investment remains low or negligible (Dunning & Dunning, 1997), for instance, in countries such as Nigeria (oil-abundant), Bolivia (gas-abundant), and Vietnam (labor-abundant). Economies in stage three begin to experience outward direct investment to countries at lower stages in their IDP, driven by rising domestic incomes. Meanwhile, their comparative advantage in labor-intensive activities deteriorates (Dunning & Dunning, 1997). At stage four, nations continue experiencing increased outward FDI due to technological advancements, allowing these countries to offshore (Dunning & Dunning, 1997), such as China. Hence, this study groups developing and advanced developing countries within the developmental stages of two, three, and four. At stage five, the economies have advanced infrastructure and service-based industries, with inward FDI in high-value sectors and high outward FDI focusing on strategic expansion. Therefore, developed nations such as the U.S. and the U.K. are grouped into stage five.

## 2.3. Measures of Globalization and Deglobalization

Gygli et al. (2019) pointed out that globalization reflects openness and the free flow of capital and people. A framework was introduced by Dreher (2006) and updated by Dreher et al. (2008) to measure globalization, namely, the KOF globalization index (the KOF index). The KOF index measures the level of globalization in terms of economic, social, and political dimensions through de facto and de jure elements of globalization. In 2019, Gygli et al. (2019) revised the KOF index. They included new components by disentangling trade and financial globalization within the economic dimension, allowing the underlying variables to vary over time; further, they defined cultural globalization more broadly. The KOF index has been used in more than 100 studies. It is a widely used indicator of globalization in academic literature (Potrafke, 2015). Table 2.2 in Appendices shows the KOF index revisited by Gygli et al. (2019).

In contrast, deglobalization, characterized by retreats from globalization (Gao & Teo, 2023) and first used by Walden Bello in Bello (2002), is the inverse of the KOF globalization index. Choi and Pyun (2019) utilized (1- KAOPEN) to measure capital controls, where KAOPEN represents financial openness on a scale from 0 (closed) to 1 (open). This approach was adopted by Sevinç, Polat, Sevil, & Sevil (2023) to measure deglobalization using (1- KOF Index). This approach aligns with

and supports the notion that weak globalization results in strong deglobalization (Kim, Li, and Lee, 2020). This study will use the same approach to measure deglobalization de facto and deglobalization de jure.

*Deglobalization De Facto = 1 – Globalization De Facto Index*

*Deglobalization De Jure = 1 – Globalization De Jure Index*

## 2.4. The Impact of Deglobalization in Existing Studies

In particular, Nonthapot & Watchalaanun (2023) researched the impacts of deglobalization on food and energy insecurity, concluding that deglobalization has a mixed impact on Greater Mekong Subregion (GMS) countries regarding food insecurity but is expected to increase energy insecurity. Over and above that, another interesting research examined the impacts of deglobalization on renewable energy usage in ASEAN, finding that deglobalization hinders the change to renewable energy usage in ASEAN because of the availability of resources to shift from primary energy consumption to renewable energy consumption (Putra, Najmah, & Ardhana, 2024). Moreover, Hayes and Weber (2021) investigated the impacts of deglobalization on human security from the perspective of Myanmar. The study demonstrated that declining social and technological advancements in the face of deglobalization may allow countries to ignore international norms and violate human rights. In addition, a comparative study of China and Myanmar in the context of the impacts of deglobalization on technological advancements and the role of international organizations in the education sector was conducted, concluding that China benefits enormously from educational technologies. At the same time, Myanmar encounters setbacks due to its dependence on international aid (Baldwin & Nasırcı, 2024).

Of particular significance, the impacts of deglobalization have been studied from the perspectives of international trade, including trade flow dynamics and global value chains (GVC). Imran-ur-Rahman, Shafi, Fauzi, & Fettu (2024) examined the impacts of deglobalization on trade flow dynamics, focusing on trade patterns and trends by comparatively analyzing the developed and developing countries through the use of panel data of 85 countries from the period of 2000-2022. The findings suggest the criticality of considering the ramifications of deglobalization and indicate the decline in trade between some countries and the shift of trade to other countries and partners. Yücesan (2025) also discussed that the attractiveness of GVC offshoring is reversed with the increased tariffs and sanctions, resulting in protectionism and reshoring.

Equally important, the impacts of deglobalization on the Chinese economy and the Western Balkan countries were investigated. The analysis on China showed that international economic integration and investments have a substantial impact on China's economy (Stanojević & Zakić, 2023), while the Western Balkan countries have an inverse relation with FDI share in the world economy (Stanojević, 2020). Not only that, Sevinç, Polat, Sevil, & Sevil (2023) studied the impacts of deglobalization on economic growth in 34 OECD (Organisation for Economic Co-operation and Development) countries during the period 2000-2019 by regressing all categories of deglobalization indexes on economic growth, concluding that trade and social deglobalization have a negative impact on economic growth while financial deglobalization has positive impact, surprisingly, political deglobalization has insignificant results. Similarly, Adjei, L. Grega, & D. I. Grega (2023) researched the impact of trade globalization on economic growth in ECOWAS (Economic Community of West

African States) countries by separating the de facto measure of trade globalization from the de jure measure. It is proven that trade globalization de facto significantly and positively affects economic growth in ECOWAS, while trade globalization de jure does not. Put differently, trade deglobalization de facto adversely affects the economic growth of ECOWAS countries.

While previous studies have contributed to the understanding of deglobalization in several sectors, different economies, and various economic regions, there is limited research on how the impacts of deglobalization vary across least developed, developing, and developed nations before and after the rising of protectionism in 2008 GFC over the period 2001-2021, particularly in the context of MVA. This study aims to fill the gap in the literature by investigating the impact differentials of deglobalization on MVA before and after the 2008 GFC over the period 2001-2021 between least developed, developing, and developed nations and then by offering insights to policymakers in various countries on addressing the potential instability caused by future deglobalization shocks.

## **2.5. Deglobalization and MVA: Transmission Channels**

Anyanwu (2017) analyzed the key drivers of manufacturing value added in North Africa. Firstly, the study mentioned that trade openness positively impacted MVA in the subregion. Accordingly, trade closeness or trade deglobalization could have negative impacts on MVA. Secondly, the study indicated that FDI inflows significantly positively impacted manufacturing development in the subregion. Thus, this shows that MVA could be reduced through financial deglobalization by measures such as reduced inward FDI, categorized in de facto financial deglobalization, and capital restrictions or reduced international investment agreements, categorized in de jure financial deglobalization.

Thirdly, the study further showed that political globalization negatively impacted MVA in the subregion. Conversely, this demonstrates that political deglobalization could have positive impacts on MVA. Fourthly, the study also illustrated that information and communication technology and infrastructure had a statistically positive effect on manufacturing development in the subregion. Labrar and Hassainate (2025) also emphasized the importance of technology in high-performing MVA in Morocco. Nnadozie and Raifu (2020) illustrated the essential role of infrastructure in improving MVA in Sub-Saharan African countries. For this reason, informational deglobalization could have negative impacts on manufacturing development. Fifthly, civil violence in North African nations significantly affected manufacturing development. It is worth noting that civil violence threatens civil liberties, which is a subsection of cultural globalization; thus, de jure cultural deglobalization due to weakened civil liberties could potentially harm MVA. Sixthly, secondary education enrollment and population significantly impacted MVA, indicating that de jure cultural deglobalization in reduced human capital and de facto interpersonal deglobalization in reduced international tourism, international students, and reduced migration could potentially hurt MVA. The impacts of deglobalization can affect MVA through either de facto or de jure deglobalization channels in economic, social, and political deglobalization.

### 3. Hypotheses & Methodology

This section discusses the hypotheses & methodology used to conduct this research, starting by presenting hypotheses based on IDP, followed by a discussion of variables and data transformation, then addressing the empirical models, and last but not least, using tools such as cross-sectional dependence tests, stationarity tests, cointegration tests, Panel Error Correction Model (ECM), Autoregressive Distributed Lag (ARDL)-ECM to study the impacts.

#### 3.1. Hypotheses

##### **Developed & Developing Nations:**

*H<sub>1</sub>*: The impact of both de facto and de jure deglobalization on MVA in developing nations is expected to have bigger impacts than in developed nations. According to the IDP, the manufacturing sector is more prominent in developing nations due to their labor abundance and the prominence of manufacturing production processes, as discussed in the literature review.

##### **Least Developed (LDCs) & Developing Nations:**

*H<sub>2</sub>*: The impact of both de facto and de jure deglobalization on MVA in developing nations is projected to have bigger impacts than in LDCs. As per the IDP, LDCs lack the manufacturing infrastructure and capabilities to transform raw materials into value-added products.

##### **Least Developed (LDCs) & Developed Nations:**

*H<sub>3</sub>*: The impact of both de facto and de jure deglobalization on MVA in developed nations is predicted to have bigger impacts than in LDCs. Per the IDP, the impacts on developing nations due to deglobalization will be passed onto developed nations due to developed nations' outward investment and strategic expansion of the manufacturing sector to developing nations.

#### 3.2. Variables

As mentioned in the Review of Literature, the KOF index measures globalization (Dreher, 2006; Dreher et al., 2008; Gygli et al., 2019). The KOF index is calculated and published by the Swiss Economic Institute (2025). The inverse of the KOF globalization index supports the notion that weak globalization results in strong deglobalization (Kim, Li, and Lee, 2020). The two independent variables in this research are deglobalization de facto (KOFDGIDF) and deglobalization de jure (KOFDGIDJ). This research distinguishes between these two measures by analyzing them separately; the de facto and de jure distinctions of deglobalization are used to differentiate the impacts of two types of deglobalization (Adjei, L. Grega, & D. I. Grega, 2023; de Jongh, 2024; Destek, Oğuz, & Okumuş, 2023). The dependent variable is manufacturing value added (\$) (MVA), which is sourced from The World Bank (2025). Regarding the control variable, this study uses the merchandise trade (% of GDP) (MTOFGDP) from The World Bank (2025). Table 3.1 illustrates the table of variables after data transformation.

#### 3.3. Data Transformation

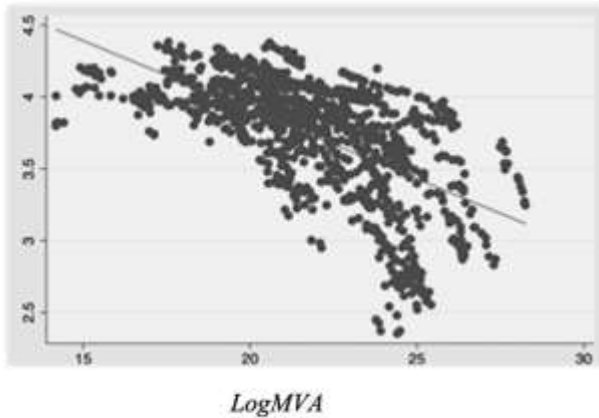
Equation (1) (Yeyati et al., 2007, as cited in Mohapatra & Gopaldaswamy, 2016) accounts for non-linearity for all logarithmic transformations in this study.

$$New Y_{it} = sign ( Y_{it} ) * \log( 1+|Y_{it}| ) \tag{1}$$

Where Y represents variables specified in this research.

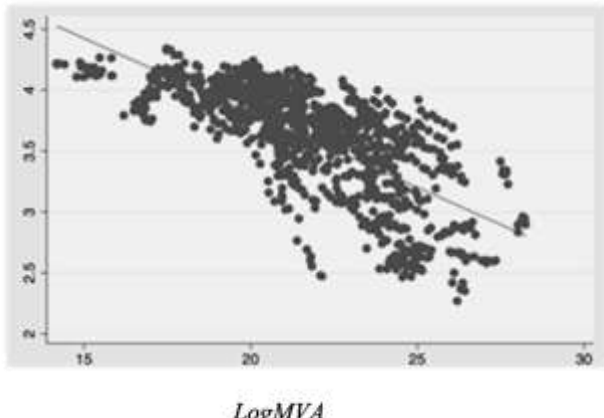
This study utilizes data from 2001-2021, analyzing two separate periods: 2001-2008 and 2009-2021. The data comprises 33 developed nations and regions, 22 least developed nations and regions, and 85 developing nations and regions (United Nations, Department of Economic and Social Affairs, 2024). Other nations and regions are excluded due to missing data entries or incomplete records between 2001 and 2021. Graph 3-1, Graph 3-2, Graph 3-3, and Graph 3-4 show the negative linear relationship between the dependent variable (LogMVA) and the independent variables (LogKOFDGDIF & LogKOFDGDJ ) for two distinct periods of 2001-2008 & 2009-2021.

Graph 3-1



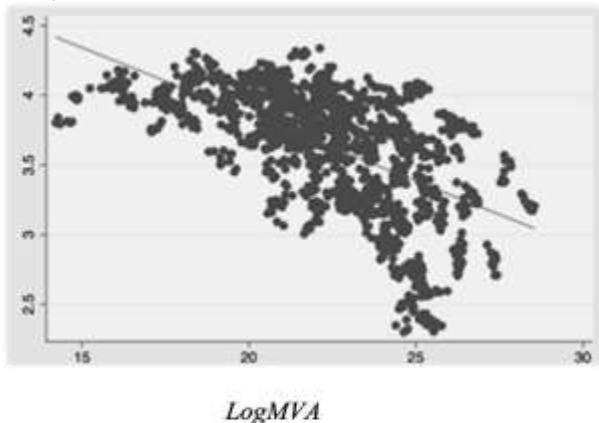
● *LogKOFDGDIF*           *Fitted Values*  
 (2001-2008 *LogKOFDGDIF*)

Graph 3-2



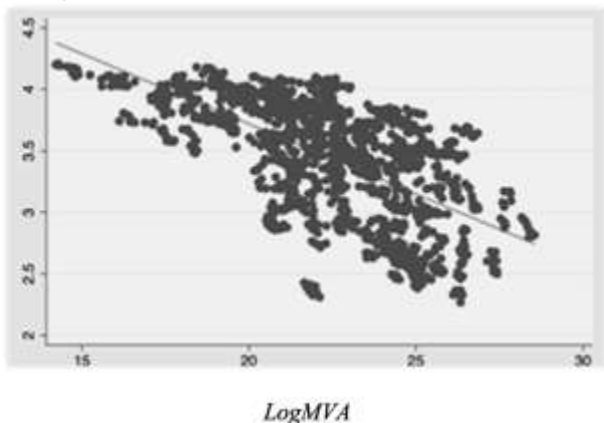
● *LogKOFDGDJ*           *Fitted Values*  
 (2001-2008 *LogKOFDGDJ*)

Graph 3-3



● *LogKOFDGDIF*           *Fitted Values*  
 (2009-2021 *LogKOFDGDIF*)

Graph 3-4



● *LogKOFDGDJ*           *Fitted Values*  
 (2009-2021 *LogKOFDGDJ*)

### 3.4. Empirical Models Specification

#### 3.4.1. Panel Error Correction Model (ECM)

##### ***De Facto Deglobalization Model (Long Run) (2001-2008 &2009-2021):***

$$\begin{aligned} & \text{LogMVA}_{it} \\ & = \alpha_0 + \alpha_1 * \text{LogKOFDGFIDF}_{it} + \alpha_2 * \text{LogKOFDGFIDF}_{it} * \text{DEVELOPING}_{it} \\ & + \alpha_3 * \text{LogKOFDGFIDF}_{it} * \text{DEVELOPED}_{it} + \alpha_4 * \text{LogMTOFGDP}_{it} + \psi_i + \varphi_{it} \end{aligned} \quad (2)$$

##### ***De Facto Deglobalization Model (Short Run) (2001-2008 &2009-2021):***

$$\begin{aligned} & \Delta \text{LogMVA}_{it} \\ & = \beta_0 + \beta_1 * \text{ECT}(-1) + \beta_2 * \Delta \text{LogKOFDGFIDF}_{it} + \beta_3 * \text{LogKOFDGFIDF}_{it} * \text{DEVELOPING}_{it} \\ & + \beta_4 * \text{LogKOFDGFIDF}_{it} * \text{DEVELOPED}_{it} + \beta_5 * \Delta \text{LogMTOFGDP}_{it} + \kappa_i + \xi_{it} \end{aligned} \quad (3)$$

##### ***De Jure Deglobalization Model (Long Run) (2001-2008):***

$$\begin{aligned} & \text{LogMVA}_{it} \\ & = \gamma_0 + \gamma_1 * \text{LogKOFDGFIDJ}_{it} + \gamma_2 * \text{LogKOFDGFIDJ}_{it} * \text{DEVELOPING}_{it} \\ & + \gamma_3 * \text{LogKOFDGFIDJ}_{it} * \text{DEVELOPED}_{it} + \gamma_4 * \text{LogMTOFGDP}_{it} + \eta_i + \mu_{it} \end{aligned} \quad (4)$$

##### ***De Jure Deglobalization Model (Short Run) (2001-2008):***

$$\begin{aligned} & \Delta \text{LogMVA}_{it} \\ & = \sigma_0 + \sigma_1 * \text{ECT}(-1) + \sigma_2 * \Delta \text{LogKOFDGFIDJ}_{it} + \sigma_3 * \text{LogKOFDGFIDJ}_{it} * \text{DEVELOPING}_{it} \\ & + \sigma_4 * \text{LogKOFDGFIDJ}_{it} * \text{DEVELOPED}_{it} + \sigma_5 * \Delta \text{LogMTOFGDP}_{it} + \tau_i + \theta_{it} \end{aligned} \quad (5)$$

#### 3.4.2. Autoregressive Distributed Lag (ARDL)-ECM (De Jure Deglobalization-2009-2021 Model)

##### ***ARDL-ECM-De Jure Deglobalization Model (Long Run) (2009-2021):***

$$\begin{aligned} & \text{LogMVA}_{it} \\ & = \theta_0 + \theta_1 * \text{LogKOFDGFIDJ}_{it} + \theta_2 * \text{LogKOFDGFIDJ}_{it} * \text{DEVELOPING}_{it} \\ & + \theta_3 * \text{LogKOFDGFIDJ}_{it} * \text{DEVELOPED}_{it} + \theta_4 * \text{LogMTOFGDP}_{it} + \chi_i + u_{it} \end{aligned} \quad (6)$$

##### ***ARDL-ECM-De Jure Deglobalization Model (Short Run) (2009-2021):***

$$\begin{aligned} & \Delta \text{LogMVA}_{it} \\ & = \delta_0 + \delta_1 * \text{ECT}_{i,t-1} + \delta_2 * \Delta \text{LogMVA}_{i,t-1} + \delta_3 * \text{LogKOFDGFIDJ}_{it} \\ & + \delta_4 * \text{LogKOFDGFIDJ}_{i,t-1} + \delta_5 * \text{LogKOFDGFIDJ}_{it} * \text{DEVELOPING}_{it} \\ & + \delta_6 * \text{LogKOFDGFIDJ}_{it} * \text{DEVELOPED}_{it} + \delta_7 * \Delta \text{LogMTOFGDP}_{it} \\ & + \delta_8 * \Delta \text{LogMTOFGDP}_{i,t-1} \\ & + v_i + \rho_{it} \end{aligned} \quad (7)$$

$\alpha_0, \beta_0, \gamma_0, \sigma_0, \theta_0, \delta_0$  are the constant terms.

$\alpha_1$  is the impact of deglobalization de facto in the long run on the baseline group (LDCs).

$\beta_2$  is the impact of deglobalization de facto in the short run on the baseline group (LDCs).

$\gamma_1$  &  $\theta_1$  are the impacts of deglobalization de jure in the long run on the baseline group (LDCs).

$\sigma_2$  &  $\delta_3$  are the impacts of deglobalization de jure in the short run on the baseline group (LDCs).

$\beta_1$  &  $\sigma_1$  &  $\delta_1$  are speed of adjustment coefficients, which must have a statistically significant coefficient with a negative sign; the highly significant error correction term validates the existence of a stable long-run relationship (Banerjee et al., 1998, as cited in Shittu, Yemitan, & Yaya, 2012).

$\alpha_2$  is the impact differential of de facto deglobalization in the long run between developing countries and LDCs.

$\beta_3$  is the impact differential of de facto deglobalization between developing countries and LDCs in the short run.

$\gamma_2$  &  $\theta_2$  are the long-run impact differentials of deglobalization de jure between developing countries and LDCs.

$\sigma_3$  &  $\delta_5$  are the short-run impact differentials of deglobalization de jure between developing countries and LDCs.

$\alpha_3$  is the impact differential of de facto deglobalization between developed countries and LDCs in the long run.

$\beta_4$  is the impact differential of de facto deglobalization between developed countries and LDCs in the short run.

$\gamma_3$  &  $\theta_3$  are the long-run impact differentials of deglobalization de jure between developed countries and LDCs.

$\sigma_4$  &  $\delta_6$  are the short-run impact differentials of deglobalization de jure between developed countries and LDCs.

$\alpha_4, \beta_5, \gamma_4, \sigma_5, \theta_4, \delta_7$  are the impact of merchandise trade on MVA.

$\psi_i, \kappa_i, \eta_i, \tau_i, \chi_i, \nu_i$  are the time-invariant country-specific effects, which capture unobserved heterogeneity.

$\varphi_{it}, \xi_{it}, \mu_{it}, \omega_{it}, u_{it}, \rho_{it}$  are the error terms.

Where  $i$  and  $t$  are representations of cross-sections (country) and time (year).

DEVELOPING & DEVELOPED are the dummy variables created:

(DEVELOPING = 1 indicates developing nations)

(DEVELOPED = 1 indicates developed nations)

$\text{LogKOFDGD}_{it} \times \text{DEVELOPING}_{it}$  &  $\text{LogKOFDGD}_{it} \times \text{DEVELOPED}_{it}$  are the interaction terms, representing impact differentials of deglobalization de facto between developing countries and LDCs and developed countries and LDCs, respectively.

$\text{LogKOFDGD}_{it} \times \text{DEVELOPING}_{it}$  &  $\text{LogKOFDGD}_{it} \times \text{DEVELOPED}_{it}$  are the interaction terms, representing impact differentials of deglobalization de jure between developing countries and LDCs and developed countries and LDCs, respectively.

Impact differentials of deglobalization de facto between developing and developed nations are calculated by  $(\alpha_2 - \alpha_3)$  in the long run and  $(\beta_3 - \beta_4)$  in the short run.

Impact differentials of deglobalization de jure between developing and developed nations are calculated by  $(\gamma_2 - \gamma_3)$   $(\theta_2 - \theta_3)$  in the long run and  $(\sigma_3 - \sigma_4)$   $(\delta_5 - \delta_6)$  in the short run.

$\Delta$  represents the first difference

ECT is the residual.

**Table 3.1 Table of Variables**

	<b>VARIABLES</b>	<b>SOURCE</b>
<b>DEPENDENT VARIABLE</b>		
$Y_1$ (LONG RUN)	$\text{LogMVA}$	The World Bank
$Y_2$ (SHORT RUN)	$\Delta\text{LogMVA}$	The World Bank
<b>INDEPENDENT VARIABLES-DE FACTO</b>		
$X_1$ (LONG RUN)	$\text{LogKOFDGFIDF}$	Swiss Economic Institute
$X_2$ (LONG RUN)	$\text{LogKOFDGFIDF} \times \text{DEVELOPING}$	Swiss Economic Institute
$X_3$ (LONG RUN)	$\text{LogKOFDGFIDF} \times \text{DEVELOPED}$	Swiss Economic Institute
$X_4$ (SHORT RUN)	$\Delta\text{LogKOFDGFIDF}$	Swiss Economic Institute
$X_5$ (SHORT RUN)	$\text{LogKOFDGFIDF} \times \text{DEVELOPING}$	Swiss Economic Institute
$X_6$ (SHORT RUN)	$\text{LogKOFDGFIDF} \times \text{DEVELOPED}$	Swiss Economic Institute
<b>INDEPENDENT VARIABLES-DE JURE</b>		
$X_1$ (LONG RUN)	$\text{LogKOFDGFIDJ}$	Swiss Economic Institute
$X_2$ (LONG RUN)	$\text{LogKOFDGFIDJ} \times \text{DEVELOPING}$	Swiss Economic Institute
$X_3$ (LONG RUN)	$\text{LogKOFDGFIDJ} \times \text{DEVELOPED}$	Swiss Economic Institute
$X_4$ (SHORT RUN)	$\Delta\text{LogKOFDGFIDJ}$	Swiss Economic Institute
$X_5$ (SHORT RUN)	$\text{LogKOFDGFIDJ} \times \text{DEVELOPING}$	Swiss Economic Institute
$X_6$ (SHORT RUN)	$\text{LogKOFDGFIDJ} \times \text{DEVELOPED}$	Swiss Economic Institute
<b>CONTORL VARIABLES</b>		
$X_1$ (LONG RUN)	$\text{LogMTOFGDP}$	The World Bank
$X_2$ (SHORT RUN)	$\Delta\text{LogMTOFGDP}$	The World Bank

Source: Own Adjustment

MVA: Manufacturing, value added (current US\$).

KOFDGFIDF: De facto Deglobalization.

KOFDGFIDJ: De jure Deglobalization.

MTOFGDP: Merchandise trade (% of GDP).

DEVELOPING & DEVELOPED are dummy variables created.

### 3.5. CSD, Stationarity, and Cointegration Tests: 2001-2008 & 2009-2021

A strongly balanced dataset was analyzed across two distinct periods. Equations (2), (3), (4), (5), (6), and (7) were regressed, spanning 2001-2008, 2009-2021, with a clear distinction between the de facto and the de jure measures of deglobalization. Of considerable importance, first-generation tests such as the Levin–Lin–Chu test, Im Pesaran and Shin test, Breitung test, Fischer-type test, and Harris and Tzavalis test (Mravak, 2023) are not applicable if cross-sectional dependence (CSD) is present, because these tests depend crucially upon the independence assumption across individuals or nations (Barbieri, 2005; Herwartz & Siedenburg, 2008; Senturk, Akbas, & Ozkan, 2014). This study uses Pesaran’s cross-sectional dependence test, which tests for the presence of cross-sectional dependence in panels with many cross-sectional units and few time-series observations (De Hoyos & Sarafidis, 2006). Fundamentally, ignoring cross-sectional dependence (CSD) may lead to biased inferences, as it has a significant impact on the asymptotic and finite sample properties of some important inference processes in panel data models (Andrews, 2005; Demetrescu & Homm, 2016; as cited in Feng, Zhao, Ding, & Liu, 2021; Pesaran, 2015). Feng, Zhao, Ding, and Liu (2021) further state that Pesaran’s CSD test is more reliable when dealing with small  $T$  and large  $N$  than the Lagrange Multiplier (LM) test. As a result, Pesaran’s CSD test is suitable for this study due to the short time spans in both distinct periods. The cross-sectional dependence (CSD) test is particularly relevant in this study because deglobalization shocks, such as the 2008 global financial crisis, the 2019 coronavirus pandemic, and the reciprocal tariffs in 2025, induce cross-country correlations.

Table 3.2 shows the Pesaran’s CSD test-De Facto results for 2001-2008, 2009-2021, and Table 3.3 shows the Pesaran’s CSD test-De Jure results for 2001-2008, 2009-2021. Notably, dummy variables and interaction terms are omitted in the CSD tests but included later in the regression model to ensure a more efficient analysis. The interaction terms are used to analyze the group-specific differences, such as the impact differentials of LDCs and Developed nations. However, they do not contribute to identifying CSD in time-varying factors.

**Table 3.2**

The Pesaran’s CSD Test-De Facto (2001-2008)

VARIABLE	CSD-TEST	P-VALUE	REJECT $H_0$	CSD
LOGMVA	204.0200	0.0000	<input checked="" type="checkbox"/> 1%	YES
LOGKOFDGFIDF	164.7100	0.0000	<input checked="" type="checkbox"/> 1%	YES
LOGMTOFGDP	79.4100	0.0000	<input checked="" type="checkbox"/> 1%	YES

The Pesaran’s CSD Test-De Facto (2009-2021)

VARIABLE	CSD-TEST	P-VALUE	REJECT $H_0$	CSD
LOGMVA	122.1200	0.0000	<input checked="" type="checkbox"/> 1%	YES
LOGKOFDGFIDF	61.3100	0.0000	<input checked="" type="checkbox"/> 1%	YES
LOGMTOFGDP	73.9800	0.0000	<input checked="" type="checkbox"/> 1%	YES

**Table 3.3**

The Pesaran's CSD Test-De Jure (2001-2008)

VARIABLE	CSD-TEST	P-VALUE	REJECT $H_0$	CSD
LOGMVA	204.0200	0.0000	<input checked="" type="checkbox"/> 1%	YES
LOGKOFDGDJ	180.8000	0.0000	<input checked="" type="checkbox"/> 1%	YES
LOGMTOFGDP	79.4100	0.0000	<input checked="" type="checkbox"/> 1%	YES

The Pesaran's CSD Test-De Jure (2009-2021)

VARIABLE	CSD-TEST	P-VALUE	REJECT $H_0$	CSD
LOGMVA	122.1200	0.0000	<input checked="" type="checkbox"/> 1%	YES
LOGKOFDGDJ	162.4100	0.0000	<input checked="" type="checkbox"/> 1%	YES
LOGMTOFGDP	73.9800	0.0000	<input checked="" type="checkbox"/> 1%	YES

According to Table 3.2 and Table 3.3, the presence of cross-sectional dependence indicates that first-generation tests are invalid; given the presence of cross-sectional dependence, this study proceeds with the second-generation tests, such as the cross-sectional augmented IPS (CIPS) test by Pesaran (2007), which aims to overcome the shortcoming of cross-sectional dependence in the first-generation tests (Tugcu, 2018). Beyond that, the CIPS test is robust in the presence of CSD, and the first-generation tests are inefficient in the presence of CSD (Koengkan, Fuinhas, & Vieira, 2024). Moreover, it is worth noting that macroeconomic variables should be non-stationary at level and stationary after the first difference for a cointegrating relationship (Mohapatra & Gopaldaswamy, 2016). Table 3.4 shows the Pesaran's cross-sectionally augmented IPS (CIPS) unit root test-De Facto results at the level and first difference for the period of 2001-2008, 2009-2021, and Table 3.5 shows the Pesaran's cross-sectionally augmented IPS (CIPS) unit root test-De Jure results at the level and first difference for the period of 2001-2008, 2009-2021.

**Table 3.4**

Pesaran's CIPS unit root test-De Facto (2001-2008)

VARIABLE	Z[T-BAR]	STATIONARITY	P-VALUE	REJECT $H_0$
LOGMVA	29.3940	NO	1.0000	<input checked="" type="checkbox"/> 5%
LOGKOFDGDJ	29.3940	NO	1.0000	<input checked="" type="checkbox"/> 5%
LOGMTOFGDP	29.3940	NO	1.0000	<input checked="" type="checkbox"/> 5%
D_LOGMVA	-1.8740	YES	0.0300	<input checked="" type="checkbox"/> 5%
D_LOGKOFDGDJ	-3.0240	YES	0.0010	<input checked="" type="checkbox"/> 5%
D_LOGMTOFGDP	-9.0690	YES	0.0000	<input checked="" type="checkbox"/> 5%

Pesaran's CIPS unit root test-De Facto (2009-2021)

VARIABLE	Z[T-BAR]	STATIONARITY	P-VALUE	REJECT $H_0$
LOGMVA	6.4830	NO	1.0000	<input checked="" type="checkbox"/> 5%

<i>LOGKOFDGFDF</i>	1.3770	NO	0.9160	<input type="checkbox"/> 5%
<i>LOGMTOFGDP</i>	-0.5920	NO	0.2770	<input type="checkbox"/> 5%
<i>D_LOGMVA</i>	-2.2750	YES	0.0110	<input checked="" type="checkbox"/> 5%
<i>D_LOGKOFDGFDF</i>	-6.3320	YES	0.0000	<input checked="" type="checkbox"/> 5%
<i>D_LOGMTOFGDP</i>	-5.1890	YES	0.0000	<input checked="" type="checkbox"/> 5%

**Table 3.5**

Pesaran's CIPS unit root test-De Jure (2001-2008)

VARIABLE	Z[T-BAR]	STATIONARITY	P-VALUE	REJECT $H_0$
<i>LOGMVA</i>	29.3940	NO	1.0000	<input type="checkbox"/> 5%
<i>LOGKOFDGFDF</i>	29.3940	NO	1.0000	<input type="checkbox"/> 5%
<i>LOGMTOFGDP</i>	29.3940	NO	1.0000	<input type="checkbox"/> 5%
<i>D_LOGMVA</i>	-1.8740	YES	0.0300	<input checked="" type="checkbox"/> 5%
<i>D_LOGKOFDGFDF</i>	-6.2840	YES	0.0000	<input checked="" type="checkbox"/> 5%
<i>D_LOGMTOFGDP</i>	-9.0690	YES	0.0000	<input checked="" type="checkbox"/> 5%

Pesaran's CIPS unit root test-De Jure (2009-2021)

VARIABLE	Z[T-BAR]	STATIONARITY	P-VALUE	REJECT $H_0$
<i>LOGMVA</i>	6.4830	NO	1.0000	<input type="checkbox"/> 5%
<i>LOGKOFDGFDF</i>	-2.0490	YES	0.0200	<input checked="" type="checkbox"/> 5%
<i>LOGMTOFGDP</i>	-0.5920	NO	0.2770	<input type="checkbox"/> 5%
<i>D_LOGMVA</i>	-2.2750	YES	0.0110	<input checked="" type="checkbox"/> 5%
<i>D_LOGKOFDGFDF</i>	-8.7960	YES	0.0000	<input checked="" type="checkbox"/> 5%
<i>D_LOGMTOFGDP</i>	-5.1890	YES	0.0000	<input checked="" type="checkbox"/> 5%

According to Table 3.4 and Table 3.5, the estimated unit root statistics indicate that LogMVA, LogKOFDGFDF, LogKOFDGFDF, and LogMTOFGDP are non-stationary at level (at a 5% significance level), except for LogKOFDGFDF (De Jure, 2009-2021), which has a p-value of 0.0200, suggesting stationarity at a 5% significance level. As a result, the De Jure Deglobalization (2009-2021) Model uses the Autoregressive Distributed Lag (ARDL)-ECM model to estimate the impacts. It is worth noting that the ARDL model is preferable when dealing with variables that are integrated of different order:  $I(0)$ ,  $I(1)$ , or a combination of both (Nkoro & Uko, 2016). Notably, the first differences of all variables are significant at a 5% significance level ( $D\_LogMVA$ ,  $D\_LogKOFDGFDF$ ,

D\_LogKOFDGDJ, D\_LogMTOFGDP), confirming stationarity and satisfying I(1) requirements for cointegration for De Facto Deglobalization (2001-2008) Model, De Facto Deglobalization (2009-2021) Model, De Jure Deglobalization (2001-2008) Model. Furthermore, Pedroni's and Kao's panel cointegration regressions were applied to estimate the cointegrating relationship among variables. Table 3.6 shows Pedroni's and Kao's panel cointegration regressions' results de facto for 2001-2008 and 2009-2021, respectively. Table 3.7 shows Pedroni's and Kao's panel cointegration regressions' results de jure for 2001-2008 and 2009-2021, respectively.

**Table 3.6**

Pedroni's and Kao's Panel Cointegration Regressions-De Facto (2001-2008)

TEST	TYPE	VALUE	P-VALUE	REJECT $H_0$
PEDRONI	Modified Phillips–Perron $t$	10.7329	0.0000	<input checked="" type="checkbox"/> 1%
	Phillips–Perron $t$	-15.3284	0.0000	<input checked="" type="checkbox"/> 1%
	Augmented Dickey–Fuller $t$	-18.4279	0.0000	<input checked="" type="checkbox"/> 1%
KAO	Modified Dickey–Fuller $t$	8.1544	0.0000	<input checked="" type="checkbox"/> 1%
	Dickey–Fuller $t$	7.8887	0.0000	<input checked="" type="checkbox"/> 1%
	Augmented Dickey–Fuller $t$	7.1224	0.0000	<input checked="" type="checkbox"/> 1%

Pedroni's and Kao's Panel Cointegration Regressions-De Facto (2009-2021)

TEST	TYPE	VALUE	P-VALUE	REJECT $H_0$
PEDRONI	Modified Phillips–Perron $t$	7.3812	0.0000	<input checked="" type="checkbox"/> 1%
	Phillips–Perron $t$	-4.2701	0.0000	<input checked="" type="checkbox"/> 1%
	Augmented Dickey–Fuller $t$	-2.9609	0.0015	<input checked="" type="checkbox"/> 1%
KAO	Modified Dickey–Fuller $t$	2.7947	0.0026	<input checked="" type="checkbox"/> 1%
	Dickey–Fuller $t$	3.0063	0.0013	<input checked="" type="checkbox"/> 1%
	Augmented Dickey–Fuller $t$	4.5518	0.0000	<input checked="" type="checkbox"/> 1%

**Table 3.7**

Pedroni's and Kao's Panel Cointegration Regressions-De Jure (2001-2008)

TEST	TYPE	VALUE	P-VALUE	REJECT $H_0$
PEDRONI	Modified Phillips–Perron $t$	9.0499	0.0000	<input checked="" type="checkbox"/> 1%
	Phillips–Perron $t$	-14.2664	0.0000	<input checked="" type="checkbox"/> 1%
	Augmented Dickey–Fuller $t$	-19.5905	0.0000	<input checked="" type="checkbox"/> 1%
KAO	Modified Dickey–Fuller $t$	7.4687	0.0000	<input checked="" type="checkbox"/> 1%
	Dickey–Fuller $t$	6.1660	0.0000	<input checked="" type="checkbox"/> 1%
	Augmented Dickey–Fuller $t$	5.7040	0.0000	<input checked="" type="checkbox"/> 1%

Pedroni's and Kao's Panel Cointegration Regressions-De Jure (2009-2021)

TEST	TYPE	VALUE	P-VALUE	REJECT $H_0$
PEDRONI	Modified Phillips–Perron $t$	6.9649	0.0000	<input checked="" type="checkbox"/> 1%
	Phillips–Perron $t$	-9.0660	0.0000	<input checked="" type="checkbox"/> 1%
	Augmented Dickey–Fuller $t$	-4.7827	0.0000	<input checked="" type="checkbox"/> 1%
KAO	Modified Dickey–Fuller $t$	2.7447	0.0030	<input checked="" type="checkbox"/> 1%
	Dickey–Fuller $t$	2.9676	0.0015	<input checked="" type="checkbox"/> 1%
	Augmented Dickey–Fuller $t$	3.5019	0.0002	<input checked="" type="checkbox"/> 1%

Based on the results of Table 3.6 and Table 3.7, both the Pedroni and Kao tests show strong evidence of rejecting the null hypotheses of no cointegration at a 1% significance level, indicating the presence of a long-run cointegrating relationship among the variables. This implies that strong evidence of cointegration affirms the use of the Panel Error Correction Model (ECM). Thus, ECM is used to estimate the long-run and short-run impact differentials of de facto and de jure deglobalization on MVA in LDCs, developing, and developed nations from 2001 to 2008 and 2009-2021 for De Facto Deglobalization (2001-2008) Model, De Facto Deglobalization (2009-2021) Model, De Jure Deglobalization (2001-2008) Model due to short periods.

## 4 Results and Interpretation

### 4.1. Impact Differentials on MVA for 2001-2008 & 2009-2021-De Facto

The Pedroni and Kao tests indicated the presence of long-run cointegrating relationships among variables. The next step was to estimate long-run and short-run impact differentials by including interaction terms using ECM for both periods. The de facto deglobalization results are reported in Tables 4.1 and 4.2 for 2001-2008 and 2009-2021, respectively.

**Table 4.1 Impact Differentials on MVA 2001-2008-De Facto**

VARIABLE	COEFFICIENT (LONG-RUN)
LOGKOFDGDJ	-3.5972***
LOGKOFDGDJ_DEVELOPING	1.4909***
LOGKOFDGDJ_DEVELOPED	1.0864*
LOGMTOFGDP	-0.0402

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

VARIABLE	COEFFICIENT (SHORT-RUN)
L1.E	-0.0863***
D_LOGKOFDGDJ	0.2217*
LOGKOFDGDJ_DEVELOPING	-0.3801***
LOGKOFDGDJ_DEVELOPED	-0.0863
D_LOGMTOFGDP	-0.3862***

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

**Table 4.2 Impact Differentials on MVA 2009-2021-De Facto**

VARIABLE	COEFFICIENT (LONG-RUN)
LOGKOFDGDJ	-2.3795***
LOGKOFDGDJ_DEVELOPING	2.1065***
LOGKOFDGDJ_DEVELOPED	2.1598***
LOGMTOFGDP	-0.3723***

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

VARIABLE	COEFFICIENT (SHORT-RUN)
L1.E	-0.2185***
D_LOGKOFDGDJ	0.0918
LOGKOFDGDJ_DEVELOPING	0.1208*
LOGKOFDGDJ_DEVELOPED	-0.0966
D_LOGMTOFGDP	-0.0301

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

## 4.2. Impact Differentials on MVA 2001-2008 & 2009-2021-De Jure

Table 4.3 reports the estimated long-run and short-run impact differentials using ECM for De Jure models for 2001-2008.

Table 4.4 shows the estimated impact of de jure deglobalization on MVA for 2009-2021, using the ARDL-ECM Model.

**Table 4.3 Impact Differentials on MVA 2001-2008-De Jure**

<i>VARIABLE</i>	<i>COEFFICIENT (LONG-RUN)</i>
<i>LOGKOFDGDJ</i>	-5.0837***
<i>LOGKOFDGDJ_DEVELOPING</i>	1.7781***
<i>LOGKOFDGDJ_DEVELOPED</i>	3.3154***
<i>LOGMTOFGDP</i>	-0.1137*

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

<i>VARIABLE</i>	<i>COEFFICIENT (SHORT-RUN)</i>
<i>L1.E</i>	-0.1324***
<i>D_LOGKOFDGDJ</i>	-0.3853***
<i>LOGKOFDGDJ_DEVELOPING</i>	-0.2759**
<i>LOGKOFDGDJ_DEVELOPED</i>	-0.0113
<i>D_LOGMTOFGDP</i>	-0.3865***

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

**Table 4.4 Impact Differentials on MVA 2009-2021-De Jure**

<i>VARIABLE</i>	<i>COEFFICIENT (LONG-RUN)</i>
<i>LOGKOFDGDJ</i>	-5.8154***
<i>LOGKOFDGDJ_DEVELOPING</i>	4.6748***
<i>LOGKOFDGDJ_DEVELOPED</i>	5.3369***
<i>LOGMTOFGDP</i>	-0.2957***

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

VARIABLE	COEFFICIENT (SHORT-RUN)
L1.LOGMVA	-0.2754***
D_LOGKOFDGDJ	-0.2489
LOGKOFDGDJ_DEVELOPING	0.0989
LOGKOFDGDJ_DEVELOPED	-0.1830
D_LOGMTOFGDP	-0.0261

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

#### 4.3. Interpretation of De Facto Results-2001-2008 (Long Run)

Pre-2008 GFC (2001-2008), in the long run, LDCs were the most severely affected by de facto deglobalization in terms of MVA, compared to developing and developed nations. A 1% increase in de facto deglobalization significantly reduced MVA by 3.5972% in the long run for LDCs; notably, the negative impact of de facto deglobalization pre-2008 GFC was attenuated by 1.4909% in developing nations as compared to LDCs. As for developed nations, the negative impact of de facto deglobalization pre-2008 GFC illustrated a smaller attenuating effect of 1.0864% with marginal significance (at a 90% confidence interval) compared to LDCs than developing nations. Statistically, the impact differential of de facto deglobalization pre-2008 GFC, in the long run, showed a stronger mitigation effect of 0.4045% for developing nations than developed nations; what is more, this interpretation is statistically insignificant by testing linear combinations of coefficients. Thus, the data did not indicate that developing nations responded differently to the impact of de facto deglobalization than developed nations pre-2008 GFC in the long run.

#### 4.4. Interpretation of De Facto Results-2001-2008 (Short Run)

Pre-2008 GFC (2001-2008), in the short run, developing nations were significantly hurt the most due to de facto deglobalization in MVA, compared to LDCs and developed nations. Surprisingly, LDCs showed an increase of MVA by 0.2217% with a 1% increase in de facto deglobalization in the short run, possibly due to adjustment boost before the long-run decline. For instance, firms may ramp up production before anticipated trade restrictions. Additionally, the insignificance of LOGKOFDGDJ\_DEVELOPED implies that the effect on developed nations is the same as that of LDCs. Regarding the impact differential between developing nations and developed nations pre-2008 GFC in the short run, developing nations experienced a 0.2938% greater decline in MVA per 1% increase in de facto deglobalization compared to developed nations; this result was statistically significant at 95% confidence interval with a p-value of 0.0230. Moreover, the model's significant negative ECT(-1) validates a long-run relationship. The coefficient of ECT(-1) indicates that 8.6300% of disequilibrium was corrected annually.

#### 4.5. Interpretation of De Facto Results-2009-2021 (Long Run)

Post-2008 GFC (2009-2021), in the long run, LDCs were also the hardest hit by de facto deglobalization in terms of MVA, compared to developing and developed nations, with a 1% increase in de facto deglobalization reduced MVA by 2.3795% for LDCs. As a salient point, both developing and developed nations showed similar resilience to the impact of de facto deglobalization in the long run post-2008 GFC. However, developed nations demonstrated a

stronger resilience of 0.0533% compared to developing nations. It is worth noting that this trivial difference is statistically insignificant, confirming that treating developing and developed nations with similar resilience due to the impact of de facto deglobalization post-2008 GFC is valid.

#### **4.6. Interpretation of De Facto Results-2009-2021 (Short Run)**

Post-2008 GFC (2009-2021), in the short run, developed nations were the most vulnerable regarding de facto deglobalization's impact on MVA compared to developing nations and LDCs, but this result was statistically insignificant. It is important to highlight that developing nations and LDCs exhibited short-run MVA gains due to de facto deglobalization. However, the effect for developing nations manifested marginal significance at a 90% confidence interval, while LDCs signaled insignificant results. Moreover, the model's significant (at 99% confidence interval) negative ECT(-1) of -0.2185 validates a long-run relationship.

#### **4.7. Interpretation of De Jure Results-2001-2008 (Long Run)**

Pre-2008 GFC (2001-2008), in the long run, similarly, LDCs were the hardest hit by de jure deglobalization in terms of MVA, compared to developing nations and developed nations. A 1% increase in de jure deglobalization reduced MVA by 5.0837% in LDCs, revealing a stronger negative effect as compared to the de facto deglobalization measure. It is imperative to acknowledge that developing nations showed an offsetting effect of 1.7781% due to de jure deglobalization in terms of MVA compared to LDCs. On the impact differential of de jure deglobalization on MVA between developing and developed nations in the long run, developed nations showed a stronger mitigation effect as compared to developing nations, with a statistically significant (at a 99% confidence interval) difference of 1.5373%.

#### **4.8. Interpretation of De Jure Results-2001-2008 (Short Run)**

Pre-2008 GFC (2001-2008), in the short run, analogously, developing nations were significantly affected by de jure deglobalization in terms of MVA as compared to developed nations and LDCs, with a stronger impact as compared to de facto deglobalization measure. It is of particular significance that LDCs faced an immediate decline in MVA of 0.3853% due to de jure deglobalization, with developing nations showing an additional 0.2759% decline in MVA. By contrast, developed nations demonstrated no significant additional effect compared to LDCs. The model's significant negative ECT(-1) validates a long-run relationship. The coefficient of ECT(-1) indicates that 13.2400% of disequilibrium was corrected annually.

#### **4.9. Interpretation of De Jure Results-2009-2021 (Long Run)**

Post-2008 GFC (2009-2021), in the long run, likewise, LDCs were the hardest hit by de jure deglobalization in terms of MVA as compared to developing and developed nations, with a greater negative effect as compared to de facto deglobalization measure. It is essential to recognize that a 1% increase in de jure deglobalization, in this case, reduced MVA by 5.8154% in LDCs. Significantly, both developing and developed countries manifested strong resilience to the impacts of de jure deglobalization on MVA in the long run post-2008 GFC, with developed nations showing a greater differential resilience of 0.6621% (significant) compared to developing nations.

#### **4.10. Interpretation of De Jure Results-2009-2021 (Short Run)**

Post-2008 GFC (2009-2021), in the short run, developed nations were the most vulnerable regarding the impact of de jure deglobalization on MVA as compared to developing nations and LDCs, displaying similar results as compared to de facto deglobalization measure. It is statistically

important to note that de jure deglobalization's impact on MVA in developed nations was insignificant even at a 90% confidence interval. Moreover, developing nations showed resilience to the impact of de jure deglobalization on MVA in the short run post-2008 GFC. However, the result was insignificant even at a 90% confidence interval.

## **5 Conclusion, Potential Policy Discussion, Limitation**

### **5.1. Conclusion, Potential Policy Discussion**

#### **Long-Run vs. Short-Run (Pre-GFC of 2001-2008)**

##### **Developed & Developing Nations:**

In the long run, deglobalization de facto had a greater impact on developed nations than on developing nations, contrary to the hypotheses proposed. Conversely, deglobalization de jure had a bigger impact on developing nations than developed nations. Consequently, in the context of deglobalization pre-GFC, developing nations should have exercised greater caution regarding trade and financial policy implementations and closely monitored the economic policies implemented by developed nations. In the short run, both deglobalization de facto and de jure significantly impacted developing nations more than developed nations. As a result, in the context of deglobalization pre-GFC, developing nations should have cushioned themselves better with policies aimed at reducing the volatilities due to sudden deglobalization shocks. For future policy considerations, developing nations can use export subsidies to ensure trade flows during deglobalization crises (Rotunno & Ruta, 2024) or effectively manage and stabilize the exchange rate to protect local manufacturing.

##### **Least Developed (LDCs) & Developing Nations:**

In the long run, deglobalization de facto and de jure had bigger impacts on LDCs than developing nations, which contradicts our initial hypotheses. These bigger impacts indicate the vulnerabilities of LDCs in economic development concerning manufacturing. Going forward, LDCs should focus on enhancing country infrastructures and strengthening the legalities of economic policies in trade and finance, as well as investment, to attempt to attract FDI inflows and participate in the global value chains. In the short run, deglobalization de facto and de jure had greater significant impacts on developing nations than LDCs, which showed the prominence of the manufacturing industry in developing nations, according to the IDP, confirming the hypotheses proposed previously.

##### **Least Developed (LDCs) & Developed Nations:**

In the long run, deglobalization de facto and de jure had bigger impacts on LDCs than developed nations, which contradicts the hypotheses. These bigger impacts further showed that the impacts of deglobalization were more severe in the long run for LDCs. In the short run, deglobalization de facto and de jure had bigger impacts on developed nations than LDCs. These bigger impacts also affirm the hypotheses proposed in this study.

#### **Long-Run vs. Short-Run (Post-GFC of 2009-2021)**

##### **Developed & Developing Nations:**

In the long run, deglobalization de facto and de jure had bigger impacts on developing nations than developed nations, aligning with the initial hypotheses. In the short run, deglobalization de facto

and de jure had bigger impacts on developed nations than on developing nations. As can be seen, these results are different from those of the pre-GFC era. As a potential policy consideration for the future in the era of the deglobalization trend, policymakers in developed nations should be prudent about policy implementations and ready to counter the potential deglobalization shocks in the short run. Therefore, developed nations should avoid overusing trade barriers because such policies potentially harm the developed nations more in the short run than developing nations.

#### **Least Developed (LDCs) & Developing Nations:**

In the long and short run, deglobalization de facto and de jure had bigger impacts on LDCs than developing nations. The results contradict the initial hypotheses. LDCs need industrialization support to avoid being marginalized or left out amid the increasing trend of protectionism and deglobalization. For instance, the promotion of investments, the support for education, the implementation of policies to assist international trade, and the support for financial sector development and openness are some of the variables that drive the success of industrialization (Haraguchi, Martorano, & Sanfilippo, 2019).

#### **Least Developed (LDCs) & Developed Nations:**

In the long run, deglobalization de facto and de jure had bigger impacts on LDCs than developed nations. The results also contradict the initial hypotheses. In the short run, deglobalization de facto and deglobalization de jure had bigger impacts on developed nations than on LDCs. The results align with the initial hypotheses.

In general, as compared with the results of pre-GFC and post-GFC, LDCs emerged as the most vulnerable group due to deglobalization. As a result, LDCs suffered due to limited infrastructures, weaker legal and economic policy buffers, and dependence on international trade and aid. This finding contradicts the initial hypothesis, which considered developing nations the most vulnerable group due to deglobalization. Thus, policymakers in LDCs should focus on supporting industrialization, regional integration, and diversification into light manufacturing. In addition, regional integration expands the markets for domestic manufacturers. At the same time, diversification into light manufacturing creates jobs, builds the domestic labor force, and provides the basis for broader and wider industrial development. Especially post-GFC, developed nations experienced greater short-run impacts from deglobalization than developing nations and LDCs. Thus, policymakers in developed nations should pay more attention to mitigating trade disruptions, stabilizing the stock market, strengthening supply chain resilience, and protecting consumers' benefits from rising prices and inflation in the short run.

## **5.2. Limitation**

There is possible heteroskedasticity for both de facto and de jure deglobalization models post-GFC. However, this study used clustered robust standard errors at the country level to account for heteroskedasticity and autocorrelation (within the panel). In addition, Arellano–Bond dynamic panel-data estimation was used as a robustness test for the short-run impact differential of de jure deglobalization on MVA from 2009 to 2021. The results provided in the Appendices indicated the uniformity in the sign of the coefficients, except for the impact differential between developing nations and LDCs. Beyond that, it is worth noting that the short-run results were insignificant in both models. It indicates that both models were detecting similar underlying economic relationships.

## Appendices

**Table 2.2 The KOF Globalization Index**

<b>2024 Globalisation Index: Structure, variables and weights</b>			
<b>Globalisation Index, de facto</b>	<b>Weights</b>	<b>Globalisation Index, de jure</b>	<b>Weights</b>
<b><i>Economic Globalisation, de facto</i></b>	<b>33.3</b>	<b><i>Economic Globalisation, de jure</i></b>	<b>33.3</b>
<i>Trade Globalisation, de facto</i>	50.0	<i>Trade Globalisation, de jure</i>	50.0
Trade in goods	38.1	Trade regulations	29.4
Trade in services	42.1	Trade taxes	27.7
Trade partner diversity	19.71	Tariffs	27.2
		Trade agreements	15.7
<i>Financial Globalisation, de facto</i>	50.0	<i>Financial Globalisation, de jure</i>	50.0
Foreign direct investment	25.8	Investment restrictions	31.3
Portfolio investment	14.8	Capital account openness	28.2
International debt	30	International Investment Agreements	30.6
International reserves	0.3		
International income payments	29.1		
<b><i>Social Globalisation, de facto</i></b>	<b>33.3</b>	<b><i>Social Globalisation, de jure</i></b>	<b>33.3</b>
<i>Interpersonal Globalisation, de facto</i>	33.3	<i>Interpersonal Globalisation, de jure</i>	33.3
International voice traffic	20.7	Telephone subscriptions	38.2
Transfers	22.1	Freedom to visit	33.3
International tourism	21.2	International airports	28.5
International students	18.8		
Migration	17.3		
<i>Informational Globalisation, de facto</i>	33.3	<i>Informational Globalisation, de jure</i>	33.3
Used internet bandwidth	37.1	Television access	37.5
International patents	30.4	Internet access	41.9
High technology exports	32.5	Press freedom	20.6
<i>Cultural Globalisation, de facto</i>	33.3	<i>Cultural Globalisation, de jure</i>	33.3
Trade in cultural goods	27.7	Gender parity	23.1
Trade in personal services	23.6	Human capital	41.6
International trademarks	11	Civil liberties	35.2
McDonald's restaurant	20.2		
IKEA stores	17.5		
<b><i>Political Globalisation, de facto</i></b>	<b>33.3</b>	<b><i>Political Globalisation, de jure</i></b>	<b>33.3</b>
Embassies	37.4	International organisations	36.6
UN peace keeping missions	24.4	International treaties	32.6
International NGOs	38.3	Treaty partner diversity	30.9

Notes: Weights in percent for the year 2022. Weights for the individual variables are time variant.  
Overall indices for each aggregation level are calculated by the average of the respective de facto and de jure indices.

Source: Swiss Economic Institute

**Table 5.1 Impact Differentials on MVA 2009-2021-De Jure-Arellano-Bond Dynamic Panel-Data Estimation**

VARIABLE	COEFFICIENT (SHORT-RUN)
<i>D_LOGKOFDGDJ</i>	-0.2729
<i>LOGKOFDGDJ_DEVELOPING</i>	-0.1585
<i>LOGKOFDGDJ_DEVELOPED</i>	-0.4954
<i>D_LOGMTOFGDP</i>	-0.0693**

\* is statistically significant at the 90%, \*\* is statistically significant at the 95%, and \*\*\* is statistically significant at the 99% respectively.

**Table 5.2 List of Countries and Regions****Developing Nations and Regions:**

*Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Azerbaijan, The Bahamas, Barbados, Belarus. Belize, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam. Cabo Verde, Cameroon, Chile, Colombia, Costa Rica, Cuba. Dominica, Dominican Republic. Ecuador, El Salvador, Eswatini. Fiji. Gabon, Georgia, Ghana, Grenada, Guatemala, Guyana. Honduras, Hong Kong SAR (China). India, Indonesia, Iran, Iraq, Israel. Jamaica, Jordan. Kazakhstan, Kenya, Kuwait, Kyrgyz Republic. Lebanon, Lithuania. Malaysia, Marshall Islands, Mauritius, Mexico, Moldova, Mongolia, Morocco. Namibia, Nicaragua, Nigeria, Norway. Oman. Pakistan, Palau, Panama, Paraguay, Peru, The Philippines. Qatar. Samoa, Saudi Arabia, Seychelles, Singapore, South Africa, Sri Lanka, St Kitts and Nevis. St Vincent and the Grenadines, Suriname. Thailand, Tunisia, Turkey. Ukraine, United Arab Emirates, Uruguay. Zambia, Zimbabwe.*

**Least Developed Nations and Regions:**

*Bangladesh, Benin, Burkina Faso.  
Cambodia, The Democratic Republic of Congo.  
Ethiopia.  
The Gambia, Guinea, Guinea-Bissau.  
Haiti.  
Kiribati.  
Lao PDR, Lesotho.  
Mauritania, Mozambique.  
Nepal, Niger.  
Rwanda.  
Senegal, Sierra Leone.  
Tanzania.  
Uganda.*

**Developing Nations and Regions:**

*Australia, Austria.  
Belgium.  
Croatia, Cyprus, Czech Republic.  
Denmark.  
Estonia.  
Finland, France.  
Germany, Greece.  
Hungary.  
Iceland, Ireland, Italy.  
Japan.  
South Korea.  
Latvia, Luxembourg.  
Malta.  
Netherlands, New Zealand.  
Poland, Portugal.  
Romania.  
Slovak Republic, Slovenia, Spain, Sweden, Switzerland.  
United Kingdom, United States.*

## References

- Adjei, R.K., Grega, L., & Grega, D.I. (2023). Economic growth effects of de facto and de jure trade globalization in ECOWAS. *Journal of Competitiveness*.
- Ajeigbe, K. B. (2023). Does the Russia-Ukraine war affects trade relations and foreign Direct investment flows from Europe into Asia and Africa? *International Journal of Research in Business and Social Science*, 12(2), 287-300. <https://doi.org/10.20525/ijrbs.v12i2.2403>
- Anyanwu, J. (2017). Manufacturing Value Added Development in North Africa: Analysis of Key Drivers. *Asian Development Policy Review*, Vol. 5, 281–298. <https://doi.org/10.18488/journal.107.2017.54.281.298>
- Aslam, M. (2019). US-China trade disputes and its impact on ASEAN. *Transnational Corporations Review*, 11(4), 332–345. <https://doi.org/https://doi.org/10.1080/19186444.2019.1691410>
- Baldwin, C. A. & Nasırcı, H. (2024). Technological Advancements and International Organizations in Education: A Comparative Study of China and Myanmar in the Context of Deglobalization. *Anatolian Turkish Education Journal*, 6(3), 313-333.
- Bello, W.F. (2002). Deglobalization: Ideas for a New World Economy.
- Brexit Task Force, I. (2020). *Occasional Paper Series A review of economic analyses on the potential impact of Brexit A REVIEW OF ECONOMIC ANALYSES ON THE POTENTIAL IMPACT OF BREXIT* review of economic analyses on the potential impact of Brexit-Contents. <https://doi.org/10.2866/977526>
- Choi, W. J., & Pyun, J. H. (2019). *Catching up by deglobalization: Capital account policy and economic growth*. SSRN. <https://ssrn.com/abstract=3516385>
- De Hoyos, R., & Sarafidis, V. (2006). Testing for cross-sectional dependence in panel-data models. *Stata Journal*, 6(4), 482–496. <https://EconPapers.repec.org/RePEc:tsj:stataj:v:6:y:2006:i:4:p:482-496>
- de Jongh, J. (2024). *Globalization and employment outcomes in the Southern African Customs Union: A de jure and de facto analysis*. *Global Journal of Emerging Market Economies*, 17(1), 92–115. <https://doi.org/10.1177/09749101241259128>
- Destek, M. A., Oğuz, İ. H., & Okumuş, N. (2023). Do trade and financial cooperation improve environmentally sustainable development? A distinction between de facto and de jure globalization. *Evaluation Review*, 48(2), 251–273. <https://doi.org/10.1177/0193841X231181747>
- Dreher, A. (2006). Does globalization affect growth? Evidence from a new index of globalization. *Applied Economics*, 38(10), 1091–1110. <https://doi.org/10.1080/00036840500392078>
- Dreher, A., Gaston, N., & Martens, P. (2008). *Measuring Globalisation, Gauging Its Consequences*. Springer. <https://doi.org/10.1007/978-0-387-74069-0>
- Dunning, P. J. H., & Dunning, J. H. (1997). *Alliance capitalism and global business* (1st ed.). Routledge. <https://doi.org/10.4324/9780203016527>
- Feng, L., Zhao, P., Ding, Y., & Liu, B. (2021). Rank-based tests of cross-sectional dependence in panel data models. *Computational Statistics & Data Analysis*, 153, 107070. <https://doi.org/https://doi.org/10.1016/j.csda.2020.107070>
- Fournier, J. (2015). The negative effect of regulatory divergence on foreign direct investment. *OECD Economics Department Working Papers*, No. 1268. OECD Publishing. <https://doi.org/10.1787/5jrqqvg0dw27-en>
- Gao, Z., & Teo, T. (2023). Introduction: Theorizing the psychology of deglobalization. *Theory & Psychology*, 33(2), 163-174. <https://doi.org/10.1177/09593543221140874>
- Garcia-Herrero, A. (2019). From globalization to deglobalization: Zooming into trade. *Las claves de la globalización 4.0*. SSRN. <https://ssrn.com/abstract=3496563> or <https://doi.org/10.2139/ssrn.3496563>

- Garg, S., & Sushil, S. (2024). Deglobalization: a systematic enquiry using 5 Ws and 1 H framework. *Benchmarking: An International Journal*, 31(10), 3833–3859. <https://doi.org/10.1108/BIJ-06-2023-0374>
- Gur, N., & Dilek, S. (2023). US–China economic rivalry and the reshoring of global supply chains. *The Chinese Journal of International Politics*, 16(1), 61–83. <https://doi.org/10.1093/cjip/poac022>
- Gygli, S., Haelg, F., Potrafke, N., & Sturm, J. E. (2019). The KOF Globalisation Index – revisited. *Review of International Organizations*, 14(3), 543–574. <https://doi.org/10.1007/s11558-019-09344-2>
- Haraguchi, N., Martorano, B., & Sanfilippo, M. (2019). What factors drive successful industrialization? Evidence and implications for developing countries. *Structural Change and Economic Dynamics*, 49, 266–276. <https://doi.org/https://doi.org/10.1016/j.strueco.2018.11.002>
- Hayes, J., & Weber, K. (2021). Globalization, deglobalization and human security: The case of Myanmar. *International Affairs*, 97(5), 1469–1488. <https://doi.org/10.1093/ia/iab110>
- Herwartz, H., & Siedenbueg, F. (2008). Homogenous panel unit root tests under cross sectional dependence: Finite sample modifications and the wild bootstrap. *Comput. Stat. Data Anal.*, 53, 137-150.
- ILMI SUGIRAHMA PUTRA, RADEN AYU ADINDA SHAFIRA NAJMAH, & SHELA ARDHANA. (2024). IMPACT OF DEGLOBALIZATION ON THE PATH TO RENEWABLE ENERGY USAGE IN ASEAN COUNTRIES. *MANU Jurnal Pusat Penataran Ilmu Dan Bahasa*, 35(2), 140–161. <https://doi.org/10.51200/manu.v35i2.5765>
- Imran-ur-Rahman, Shafi, M., Fauzi, M. A., & Fetuu, E. (2024). Examining trade flow dynamics in the face of deglobalization and decoupling: a comparative analysis of developing and developed nations. *Kybernetes*. <https://doi.org/10.1108/K-02-2024-0503>
- Jordaan, A. (2022). De-Globalization: Fact or Fiction?. *Latin American Journal of Trade Policy*, 5(12), 37–74. <https://doi.org/10.5354/0719-9368.2022.65463>
- Kim, H.-M., Li, P., & Lee, Y. R. (2020). Observations of deglobalization against globalization and impacts on global business. *International Trade, Politics and Development*, 4(2), 83–103. <https://doi.org/10.1108/itpd-05-2020-0067>
- Koengkan, M., Fuinhas, J. A., & Vieira, I. (2024). The asymmetric impact of energy's paradigm transition on environmental degradation: A macroeconomic evidence from Latin American and the Caribbean countries. *Journal of the Knowledge Economy*, 15, 6451–6474. <https://doi.org/10.1007/s13132-023-01189-w>
- KOF Swiss Economic Institute. (2025). *KOF time series database*. ETH Zürich. Retrieved, from <https://kof.ethz.ch/en/data/kof-time-series-database.html>
- Labrar, S., & Hassainate, M. (2025). Determinants of manufacturing value added in Morocco: An application of the bounds testing approach to cointegration. *Journal of Development and Economic Policies*, 27(1), 5–29. <https://doi.org/10.34066/jodep.25.27.1.2>
- Le, H. T. P., Pham, H., Do, N. T. T., & Duong, K. D. (2024). Foreign direct investment, total factor productivity, and economic growth: evidence in middle-income countries. *Humanities and Social Sciences Communications*, 11(1), 1388. <https://doi.org/10.1057/s41599-024-03462-y>
- Mohapatra, L. M., & Gopaldaswamy, A. K. (2016). FDI, domestic investment and 2008 financial crisis: Evidence from emerging nations. *Journal of Developing Areas*, 50(6), 277–289
- Mravak, I. (2023). A Monte Carlo study on the size and power of panel unit root tests: Limitations in small data sets. *Croatian Operational Research Review*, 14(2), 125–135. <https://doi.org/10.17535/crorr.2023.0011>
- Nkoro, E., & Uko, A. K. (2016). Autoregressive distributed lag (ARDL) cointegration technique: Application and interpretation. *Journal of Statistical and Econometric Methods*, 5(4), 1-3.

- Nonthapot, S., & Watchalaanun, T. (2023). Effects of Deglobalization on Food and Energy Insecurity in the GMS Countries. *International Journal of Energy Economics and Policy*, 13(5), 374–381. <https://doi.org/10.32479/ijeep.14698>
- Potrafke, N. (2015). The evidence on globalisation. *The World Economy*, 38(3), 509–552. <https://doi.org/10.1111/twec.12174>
- Rotunno, L., & Ruta, M. (2024). Trade Spillovers of Domestic Subsidies. *IMF Working Papers*, 2024, 1. <https://doi.org/10.5089/9798400269486.001>
- Senturk, M., Akbas, Y., & Ozkan, G. (2014). Cross Sectional Dependence and Cointegration Analysis among the GDP-Foreign Direct Investment and Aggregate Credits: Evidence from Selected Developing Countries. *Asian Economic and Financial Review*, 4, 1485–1501.
- Sevinç, D., Polat, A., Sevil, T., Sevil, G. (2023). How Does Deglobalization Affect Economic Growth?. *Ekonomi Politika Ve Finans Araştırmaları Dergisi*, 8(1), 1-19. <https://doi.org/10.30784/epfad.1255549>
- Shittu, O., Yemitan, R., & Yaya, O. (2012). ON AUTOREGRESSIVE DISTRIBUTED LAG, COINTEGRATION AND ERROR CORRECTION MODEL: An Application to Some Nigeria Macroeconomic Variables. *Australian Journal of Business and Management Research*, 02, 56–62. <https://doi.org/10.52283/NSWRCA.AJBMR.20120208A07>
- Stanojević, N. (2020). Deglobalization of the world economy and its effects on the Western Balkan countries. *Economic Themes*, 58(3), 343–362. <https://doi.org/10.2478/ethemes-2020-0020>
- Stanojević, N., & Zakić, K. (2023). China and deglobalization of the world economy. *National Accounting Review*, 5(1), 67–85. <https://doi.org/10.3934/NAR.2023005>
- Tugcu, C. T. (2018). Chapter 8 - Panel Data Analysis in the Energy-Growth Nexus (EGN). In A. N. Menegaki (Ed.), *The Economics and Econometrics of the Energy-Growth Nexus* (pp. 255–271). Academic Press. <https://doi.org/https://doi.org/10.1016/B978-0-12-812746-9.00008-0>
- United Nations, Department of Economic and Social Affairs. (2024). *World economic situation and prospects 2024*. United Nations. <https://www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-2024/>
- Yücesan, E. (2025). Does deglobalization imply the end of global supply chains? *International Business Review*, 102398. <https://doi.org/10.1016/j.ibusrev.2025.102398>
- Zahoor, N., Wu, J., Khan, H., & Khan, Z. (2023). De-globalization, International Trade Protectionism, and the Reconfigurations of Global Value Chains. *Management International Review*, 63(5), 823–859. <https://doi.org/10.1007/s11575-023-00522-4>