**Regression Specification Proposal 1**

**General and Specific Objective:**

To understand the effect of FTA\_Count on Trade Diversity of a country and the effect of FTA\_Depth\_Index on Trade Diversity of the country

**Regression specifications:**



Ai : Country-fixed effects

Bt : Time fixed effects

The diversity in each country is affected by the cumulative FTA\_count up until that year as shown. The table 1 indicates how the number of FTAs per country at a point of time can be taken into the analysis.

|  |  |  |  |
| --- | --- | --- | --- |
| **Country** | **Time** | **Number of FTA** | **FTA\_Countit (Cumulative FTA count)** |
| A | 1995 | 3 | 3 |
| A | 1996 | 2 | 5 |
| A | 1997 | 4 | 9 |
| A | 1998 | 3 | 12 |

Table 1



The diversity in each country is influenced by the cumulative depth index of the FTAs issued up until that point. The table 2 indicates the same. The variable of interest id FTA\_depth\_weighted

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Country** | **Time** | **Number of FTAs and their depths in (\*)** | **FTA\_Count**  **(cumulative FTA count)** | **FTA\_depth\_total\_per\_year** | **FTA\_depth\_weighted (cumulative count)** |
| A | 1995 | 3 (2,2,1) | 3 | 5 | 5 |
| A | 1996 | 2 (4,3) | 5 | 7 | 12 |
| A | 1997 | 4 (3,2,5,1) | 9 | 11 | 23 |
| A | 1998 | 3 (2,3,4) | 12 | 9 | 32 |

Table 2

**IMPORTANT**: We apply the above concept once to all FTAs, once to bilateral FTAs, once to above medium size FTAs and once to below medium sized FTAs. Medium to be calculated based on the number of countries in each FTA.

The control variables can:

1. **GDP of a country**: A higher GDP often leads to greater trade diversity as countries with stronger economies have more resources to engage in diverse trade activities.

*Reference:* Helpman, E., Melitz, M. J., & Rubinstein, Y. (2008). Estimating Trade Flows: Trading Partners and Trading Volumes. Quarterly Journal of Economics, 123(2), 441-487.

This study investigates the relationship between a country's GDP and its trade diversification, exploring how larger economies may engage in more diverse trade relationships.

1. **Income Inequality**: Income inequality as given by the Gini index, within a country can impact trade diversity, as more equitable distribution of income may result in a broader range of goods and services being produced and consumed.

*Reference:* Martínez-Zarzoso, I., & Nowak-Lehmann, F. (2007). Is the income distribution relevant for explaining market access in international trade? Applied Economics Letters, 14(11), 839-844.

This study investigates the impact of income distribution on a country's market access in international trade, considering how income inequality can affect trade diversification.

Reasoning : In countries with high income inequality, a large segment of the population often has limited purchasing power, restricting them primarily to purchasing basic necessities. This leads to a smaller and less diverse domestic market for goods and services. On the other hand, countries with more evenly distributed income generally have a larger middle class. This results in a broader and more varied domestic market, encouraging the growth of diverse industries and enhancing trade opportunities and lead to higher trade diversification.

1. **World Bank's Logistics Performance Index (LPI)**: The LPI assesses the efficiency of customs and border clearance, quality of trade and transport-related infrastructure (including roads, ports, and rail), ease of arranging shipments, quality of logistics services, and ability to track and trace shipments. It provides a comprehensive view of a country's logistics and infrastructure quality.

*Reference:* Anderson, J. E., & van Wincoop, E. (2004). Trade Costs. Journal of Economic Literature, 42(3), 691-751.

This comprehensive review paper examines the role of trade costs, including infrastructure and transportation, in shaping trade diversification.

*Reasoning* : A higher Logistics Performance Index (LPI) score in the areas of customs and border clearance efficiency and quality of trade and transport infrastructure significantly contributes to trade diversification. Enhanced efficiency in customs and border clearance speeds up the import and export processes, reducing trade-related delays and costs. This improvement makes international transactions more feasible for businesses, encouraging them to venture into new markets and diversify their trade activities. Meanwhile, well-developed trade and transport infrastructure, including efficient roads, ports, and rail systems, facilitate smoother and more cost-effective transportation of a diverse range of goods. This robust infrastructure supports the trade of various product types, especially those requiring special handling or time-sensitive delivery, thereby fostering greater trade diversification.

1. **Political Stability Index**: The World Bank's Worldwide Governance Indicators (WGI) include a Political Stability and Absence of Violence/Terrorism index. It assesses perceptions of the likelihood of political instability or violence within a country. This index is commonly used to measure political stability.

*Reference* : Engemann, Jafari and Heckelei, Institutional quality and the duration of agri‐food trade flows

1. **Population Size**: The size and demographic composition of a country's population can influence the types of goods and services demanded, affecting trade diversity.

*Reference :* TRADE DIVERSIFICATION: DRIVERS AND IMPACTS By Olivier Cadot, Céline Carrère and Vanessa Strauss-Kahn

*Reasoning :* Larger countries often exhibit greater trade diversification, primarily due to their expansive internal markets that accommodate a wide array of consumer preferences. This larger market size leads to a higher degree of product differentiation, catering to diverse tastes and demands. Consequently, larger nations typically experience increased demand for diversified goods, reflecting the varied preferences of a larger population. This scenario underscores the correlation between a country's population size and the breadth of its trade activities, where larger populations contribute to a more dynamic and diverse trading environment.

1. **Resource Endowments and Human Capital**: Dasgupta, S., & Lall, S. V. (2010). Policymaking for Export Diversification: The Case of Mauritius. World Development, 38(5), 705-716. This study explores the role of resource endowments and human capital in trade diversification.

*Reasoning :* Resource endowment and human capital significantly influence a country's trade diversity. Rich natural resources can lead to specialization in certain commodities, but they might also limit the variety of exports if a country becomes too dependent on these resources. Conversely, a high level of human capital, indicated by skilled labor and educational attainment, encourages innovation and the development of diverse industries. This diversification can expand a country's range of exportable goods and services, leading to a more varied and robust trading profile. ( to be discussed if it affects the diversification of imports)

1. **Exchange Rates:** Clark, X., Dollar, D., & Micco, A. (2004). Port Efficiency, Maritime Transport Costs, and Bilateral Trade. Journal of Development Economics, 75(2), 417-450.This study investigates the impact of exchange rates and transport costs on trade diversification.

*Reasoning :* Exchange rates can significantly impact import diversification. A stronger domestic currency makes imports cheaper, encouraging a country to diversify its imports as a broader range of foreign goods becomes more affordable. Conversely, a weaker currency makes imports more expensive, which might limit the variety of imported goods and push the country to seek alternative, potentially less diverse sources. Thus, exchange rate fluctuations can directly influence the range and diversity of products a country imports.

1. **Income Levels (GDP per Capita):** The paper examines how a country's income level influences its export diversification. It considers the idea that countries may experience an "inverted U-shaped" relationship between income and export diversification, often referred to as the "hump."

*Reference:* Cadot, O., Carrère, C., & Strauss-Kahn, V. (2011). Export Diversification: What's behind the Hump? Review of Economics and Statistics, 93(2), 590-605.

*Reasoning :* A higher GDP per capita typically indicates greater wealth and purchasing power within a country. This increased wealth allows for a more varied demand for goods, as consumers can afford a wider range of products, including luxury and specialized items. Consequently, countries with higher GDP per capita often have more diversified import portfolios, as they seek to satisfy the diverse preferences of their wealthier population. Conversely, countries with lower GDP per capita might focus more on essential and affordable imports, leading to less diversification in their import profiles.

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**Regression Specification Proposal 2**

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| --- | --- | --- | --- |
|  | **Country-Product link** | **Trade Intensity** | **Diversity** |
| First order | Yes | Yes | Shanon of first order connectcvity |
| Second order | Yes | Yes | Shanon of first order connectvity of direct partners |
| Eigenvector | Yes | Yes | Shanon of eigenvector of direct partners |

Table 3

The control variables that can be used along with references are:

* + - 1. **GDP per capita:** GDP per capita is often used as an indicator of a country's economic well-being, and it can have implications for factors such as food affordability, access to healthcare, and overall living standards, which in turn can affect nutritional security.

*Reference:* Explaining Child Malnutrition in Developing Countries: A Cross- Country Analysis by Lisa C. Smith and Lawrence Haddad

* + - 1. **Democracy of a country:** We account for the political context within which child malnutrition is determined by using democracy as an indicator. As for national income, we hypothesize that democracy plays a facilitating role in all of the underlying factors considered. The more democratic a government, the greater the percentage of government revenues that may be spent on education, health services, and income redistribution. A more democratic government may also be more likely to respond the needs of all of its citizens, women's and well as men's, indirectly promoting women's relative status. With respect to food security, the work of Drèze and Sen (1989) and others clearly points to the expected importance of democracy in averting famine.

*Reference:* Explaining Child Malnutrition in Developing Countries: A Cross- Country Analysis by Lisa C. Smith and Lawrence Haddad

**11. Income Inequality:** Inequality indices, such as the Gini coefficient or the Human Development Index (HDI), are often used to assess the disparities in income, education, and healthcare within a population. These disparities can have a direct impact on nutritional security. Here are a couple of examples of studies that have explored this relationship:

*Reference:* Kumar, S., & Kumar, N. (2017). Food security, inequality and economic growth in India: An empirical analysis. This research examines the relationship between food security and income inequality in India. It uses various inequality indices, such as the Gini coefficient, and assesses their association with food security outcomes.

Reasoning : High income inequality in a country can adversely affect its nutritional security. In societies with significant income disparities, lower-income groups often struggle to afford a balanced and nutritious diet, leading to issues like undernutrition and malnutrition. Conversely, higher-income groups may have excessive caloric intake, potentially leading to obesity and related health issues. This unequal access to quality food can result in widespread nutritional imbalances across different segments of the population, impacting the overall nutritional security of the country. (can be taken under country-specific effects to be discussed)

**13. Weather shocks :** Research indicates that climate change causing weather shocks, characterized by rising temperatures and changing precipitation patterns, significantly affects food and nutritional security worldwide. The impacts of climate change and weather shocks on crop yields and food supplies are well-documented, with evidence showing substantial reductions in yields of major crops like maize, wheat, and rice under increased temperatures. These changes in agricultural productivity directly influence food availability and accessibility, posing a challenge to nutritional security.

*Reference: "Beyond Yields: Mapping the Many Impacts of Climate on Food Security" by the Center for Strategic and International Studies.*