

The role of G7 on global trade: A qualitative Input-Output perspective (1995-2014)

Original Article

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Abstract

This paper studies the role of the G7 member countries in global trade between 1995 and 2014. The qualitative Input-Output and network analysis techniques were used to illustrate the structure of the trade network. It was found that most of the G7 members maintain significant export relationships. Being Germany and the United States of America the prominent exporters. Besides, it was found that Luxembourg and Malta were the main partners of G7 countries. In addition, it was found that during 2014 the communities made up of the G7 member countries were fragmented but showed evidence that they are made up of geographically close countries.

JEL Classification: F1, F140, R150

Keywords

International Trade, Interregional Trade, Input Output

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Introduction

The Group of Seven (G7) was created in 1975 after the fall of the Bretton Woods system (Fratzscher, 2009). The members of the G7 are Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States of America. Blumenau (2016) argues that the G7 was founded as a club of the most advanced industrialized countries in the world to address macroeconomic issues. According to Fratzscher (2009), the G7 is one of the institutions with the most significant influence in coordinating international policy and global economic governance. However, since the 1990s, the growth rates of the G7 member countries have decreased. While during the same period, developing countries (China, India, Indonesia, Poland, South Korea, and Thailand) have grown rapidly (Sainsbury, 2020). Jakovljevic et al. (2020) add that global economic growth began to accelerate again in 2017 and continued during 2018-2019. Besides, half of the growth is attributed to the Emerging Markets Seven (EM7) and only a quarter to the G7.

In addition, another of the main characteristics of the global economic scenario since the 1990s is hyper-globalization, characterized by rapid increases in international trade and capital flows (Anderson & Obeng, 2021). It is essential to mention that during this period of globalization, some events significantly impacted the international political-economic scenario. Among these events can be found the end of the Cold War and the rise of post-Soviet Russia. The emergence of the European Union, the establishment of free trade agreements in the Western Hemisphere, such as the North American Free Trade Agreement (NAFTA) and the Dominican Republic-Central America Free Trade Agreement, and China's entry into the World Trade Organization (WTO).

However, Stiglitz (2002) points out that globalization has not worked for a good part of the poor in society; in other words, how globalization has been managed has not benefited some of the most vulnerable. The author argues that the International Monetary Fund, the World Bank, and the WTO are responsible for the worst aspects of globalization because these international organizations have established the rules of globalization. While serving the interests of the most advanced and industrialized countries and not the interests of developing countries. Deardorff (2003) adds that in criticism of globalization, not much attention has been paid to the interactions between the public and private sectors since one of the main criticisms of globalization may be that the rules of the international economy have been established to serve the interests of large corporations.

The declines in the growth rates of the advanced countries, the changes in the global political-economic scenario, and critics of globalization make an excellent case to

know: What was the role of the member countries of the G7 in global trade between 1995 and 2014? This paper aims to: Determine the role of the member countries of the G7 in global trade between 1995 and 2014. In addition, analyze and evaluate international trade relations. As a hypothesis for this study, the member countries of the G7 must have a central and fundamental role in global trade.

Knowing the role played by the G7 countries between 1995 and 2014 will be a contribution that will allow the evaluation of how some aspects of globalization have evolved. In addition, it will be possible to evaluate the roles of countries that joined globalization during that period, as China did. This paper will use techniques from the Input-Output model, specifically the qualitative approaches of the Input-Output model and network analysis techniques. This paper is organized as follows: the second and third sections present a literature review on the G7 and international economics and the methodological literature review, the fourth and fifth sections present the methodology used in this paper and the results, and the sixth section discusses the conclusions and policy implications.

Group of Seven and international economics.

The member countries of the G7 represent more than 60% of the world's net wealth and 50% of the world's Gross Domestic Product (GDP) (Li & Haneklaus, 2022; Pata & Yilanci, 2020). Besides, Ploszaj et al. (2020) found a long-term relationship between Foreign Direct Investment inflows, trade openness, and income inequality in all G7 countries except France between 1984 and 2014. Additionally, they found that trade openness reduced income inequality in Germany, Japan, and the United Kingdom. At the same time, the rest of the member countries of the G7 experienced increases in income inequality from trade liberalization. However, Balan et al. (2015) point out that globalization has increased poverty and worsened income distribution in Canada and the United Kingdom. In contrast, they found globalization's positive effects concerning income distribution in France.

According to Gozgor (2014), trade liberalization significantly reduced the unemployment rate in G7 member countries. Furthermore, Gallegati et al. (2016) found that in the G7 countries, unemployment is positively associated with productivity growth in the short and medium term, but unemployment is negatively associated with productivity growth in the long term. Besides, other discussions link the G7 with the global financial system and some of the major global crises of recent decades.

Jiang et al. (2018) argue that unemployment rates in the G7 countries continued to rise after 2007-2008, which suggests that the global financial crisis seriously affected the economies of the G7 members. After the Global Financial Crisis of 2007-2008, the effects of the shocks of this crisis would have been felt until 2012 and could have been felt during subsequent years. In addition, it is essential to note that such a long period could

result from the complex interactions between G7 countries (Garratt et al., 2018). Ortíz & Rodríguez (2020) add that if another financial crisis occurs with characteristics similar to the 2007-2008 crisis, the transmission effects can last up to more than ten years, particularly in Asia and the Pacific region.

The Asian region may be one of the regions most affected due to the economic ties between the G7 countries and Asian countries. For example, in 2020, China's exports to the G7 represented 33.36% of all Chinese exports, and imports from the G7 represented 24.77% of all China's imports (Hu & Wu, 2022). Besides, there is evidence that the G7 member countries are the source of risk in global financial markets, and Brazil, Russia, India, and China are the recipients and affected by that risk (Zhang et al., 2021). Another aspect of the risk generated by the G7 countries is that the indirect effects of volatility in international financial markets increased after the trade war between the United States of America and China and the Covid-19 pandemic.

In summary, the literature on the G7 and the international economy focuses on the effects of trade liberalization and globalization on the domestic economy of the G7 member countries, particularly the effects on unemployment and income distribution. However, there is debate about whether the effects of trade liberalization on income inequality are positive or negative. In addition, the literature focuses on the role of the G7 member countries in the major global economic crises of recent decades and how emerging market economies can be affected by crises and financial risks that emanate from advanced economies. Besides, the literature is much less informative about the roles of G7 countries in global trade during hyper-globalization. We attempted to fill this gap by examining this period.

Models in regional economic analysis

In economics, as a discipline, different methodological approaches try to provide answers to economic phenomena. Interviews with human beings and focus groups can be found within the qualitative approaches. While in quantitative approaches, many applications to mathematical and statistical methods can be found. Within the regional economic analysis can be found applications of the Input-Output model, integrated models of Input-Output and Econometrics, Spatial Econometrics, and Gravitational Models.

In the case of the Input-Output model, it can be noted that it is built from data from a specific geographic space. According to Aroche & García (2018), Input-Output models understand an economy as a system in which individual agents are interconnected through exchanging goods. In addition, the Input-Output model has been used in studies on regional economic issues, such as employment, unemployment, the impact of new industries, and the identification of significant industries in a given economy (Miller & Blair, 2009). Such applications of the Input-Output model have occurred because the model can provide a picture of the entire economy regarding supply and demand

(Okamoto, 2021). Furthermore, it is essential to note that Input-Output models are general equilibrium models (Luciano, 2005; Ortíz & Castro, 2008; Aroche & García, 2018).

In the case of the integrated models of Input-Output and Econometrics, it is possible to highlight that these models allow the estimations of forecasts of the growth, decline, and transformations of the economy or a particular region (West, 1995; Rey, 2000). Due to these characteristics, these models have been used in studies examining a regional economy's structural changes and dynamic behavior (Kim & Hewings, 2012). However, the integration of these models has caused methodological problems and complications (Rey, 2000).

Regarding spatial econometrics, Luciano (2005) points out that these models are applications of time series to a space (such as a city or municipality) and that these models assume disequilibrium or partial disequilibrium. According to Pérez (2006), spatial econometrics can be helpful when variables linked to space are used because spatial data can have multidirectional relationships, translated as dependence on space or spatial autocorrelation. In addition, it is essential to note that Jean H. P. Paelinck and Leo H. Klaassen established guidelines for spatial econometrics. These can be summarized in the role of spatial interdependence, asymmetry in spatial relationships, and distant explanatory factors in space, among other principles (Anselin, 2010).

In the case of Newton's gravitational models, it is possible to comment that these models were first applied in Physics and describe the impact of distance on the interaction between objects in space (Nijkamp & Ratajczak, 2021). In addition, Cafiero (2005) argues that there is an attraction between objects. Besides, that attraction will depend on the size of the objects and the distance between them. Despite initially being applied in physics, gravitational models have subsequently been applied in disciplines of social sciences such as sociology, psychology, and economics (Nijkamp & Ratajczak, 2021).

After considering the characteristics of the above-mentioned methodological approaches, the Input-Output model was chosen for this paper. This decision was made because the Input-Output Model presents a system of interconnected relationships through exchanging goods and provides a picture of an economy's supply and demand relationships. Therefore, it is a model that provides techniques that help answer the research question of this paper. However, Aroche (2003) points out that the quantitative approaches of the Input-Output model have failed to explain some aspects of economic structures because they have failed to describe connections between sectors. Then, the nature of the connections may not be entirely clear.

In contrast, the qualitative approaches of the Input-Output model can present information about the connections that the quantitative approaches cannot present. Therefore, this study will perform a similar analysis as Aroche (2003) discussed, where

the technical coefficients matrix is filtered into a binary matrix. Finally, the binary matrix is used to illustrate the significant relationships in the system.

Besides, other methodological approaches with similar characteristics of the qualitative Input-Output can be used to measure and examine the nature of the relationships in the system; one of those methodologies is network analysis. The analysis of networks is interdisciplinary since sociologists, anthropologists, computer scientists, physicists, and mathematicians, among others, have used it (De Benedictis et al., 2014; Aroche, 2003). According to Amador & Cabral (2017), the interdisciplinary evolution of network analysis has led to using these techniques in studies on econophysics research projects regarding international trade. Also is essential to note that there are even studies that have used network analysis techniques for economic research projects that use international trade Input-Output matrices (Amador & Cabral, 2017; Pacheco, 2018; Vélez, 2020; Romero, 2022); the techniques and measures used by these authors will be used in this paper.

To summarize, the first part of the methodology will use methods commonly used in the qualitative approaches of the Input-Output model, as discussed by Aroche (2003). The second part of the methodology will focus on network analysis techniques as have been used in studies of international trade that used Input-Output data (Amador & Cabral, 2017; Pacheco, 2018; Vélez, 2020; Romero, 2022).

Qualitative Input-Output and Network Analysis

This section presents the qualitative Input-Output and network analysis techniques that illustrate structures, connections, and interactions between countries based on their international trade relations. According to Pacheco (2018), measures have been developed to evaluate a vertex's position in a given network. While Vélez (2020) adds that centrality measures allow for determining which vertices are more significant in the studied network. The Input-Output matrices of 1995, 2005, and 2014 published by the World Input-Output Database will be used; these matrices show international trade between over 40 countries (Timmer et al., 2015).

The first step is to add the transactions by industry of each country; this will allow the creation of the aggregate Transactions Matrix (T) without distinguishing by industry. This Matrix shows the flows of inputs between the countries that participate in international trade in monetary terms and can be defined as:

$$T = \begin{pmatrix} t_{11} & t_{12} & \dots & t_{1n} \\ t_{21} & t_{22} & \dots & t_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ t_{n1} & t_{n2} & \dots & t_{nn} \end{pmatrix} \quad (1)$$

Subsequently, the Total Output Vector (X) will be used to estimate the Technical Coefficients Matrix (A); in this Matrix, each element a_{ij} represents the proportion of merchandise of country i used as an input in the production of a unit of the merchandise of country j . Matrix A can be defined as:

$$A = \begin{pmatrix} \frac{t_{11}}{x_1} & \frac{t_{12}}{x_2} & \dots & \frac{t_{1n}}{x_n} \\ \frac{t_{21}}{x_1} & \frac{t_{22}}{x_2} & \dots & \frac{t_{2n}}{x_n} \\ \vdots & \vdots & \vdots & \vdots \\ \frac{t_{n1}}{x_1} & \frac{t_{n2}}{x_2} & \dots & \frac{t_{nn}}{x_n} \end{pmatrix} = \begin{pmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{pmatrix} \quad (2)$$

The next step is to use a filter that converts Matrix A to a Binary Matrix (W). The filter used in this paper is the one proposed by Aroche (1993). Where n is the number of rows and columns in Matrix A . In this case, n represents the number of countries in the database. The filter of Aroche (1993) is defined as:

$$f = \frac{1}{n} \quad (3)$$

If the value of each cell in Matrix A exceeds f , the cells in Matrix W will count as 1; otherwise, it will count as 0. Where 1 represents a significant relationship in international trade and 0 represents a relationship that is not significant. Therefore, Matrix W will be a Binary Matrix and will be used to illustrate significant relationships in international trade. Matrix W can be defined as:

$$W = \begin{pmatrix} w_{11} & w_{12} & \dots \\ \vdots & \ddots & \\ w_{m1} & & w_{mm} \end{pmatrix} \quad (4)$$

Also, vertices in a network can be used and evaluated to measure degree. Within this analysis, there are two measures Outdegree and Indegree. Outdegree represents the outgoing edges, and Indegree represents the incoming edges (Vélez, 2020). In the case of Outdegree, it should be considered equivalent to a significant export relationship, and Indegree should be considered equivalent to a significant import relationship. Outdegree and Indegree can be defined as:

$$d_i^{out} = \sum_{j=1}^N w_{ij} \rightarrow \quad \text{and} \quad d_j^{in} = \sum_{i=1}^N w_{ij} \rightarrow \quad (5)$$

Another measure used in this paper is Betweenness Centrality, which aims to measure to what extent a vertex is in the path of other vertices (Vélez, 2020). In Betweenness Centrality n_{st}^i represents the numbers of geodesic paths between vertices s and t that pass through i . At the same time, it is considered that g_{st} represents the total number of geodesic trajectories between s and t . Betweenness Centrality can be defined as:

$$x_i = \sum_{st} \frac{n_{st}^i}{g_{st}} \quad (6)$$

Besides, Betweenness Centrality can identify communities or sub-networks in the World Trade Network (Romero, 2022). Also, this measure will be helpful to determine if the communities in international trade are made up of geographically close countries or if, on the contrary, geographical distance is not critical in trade.

Networks: World Trade Network

This section studies the structure of international trade, and matrices from 1995, 2005, and 2014 were used. The structure was obtained from qualitative Input-Output and network analysis techniques. With these techniques, it is possible to summarize international trade data and illustrate the structures that make up the system and the significant relationships between the countries participating in global trade. In addition, it is possible to identify the roles the countries assume in the relationships they maintain among themselves and their evolution over time. It is important to note that a particular emphasis is placed on the members of G7 and the role of these countries in international trade.

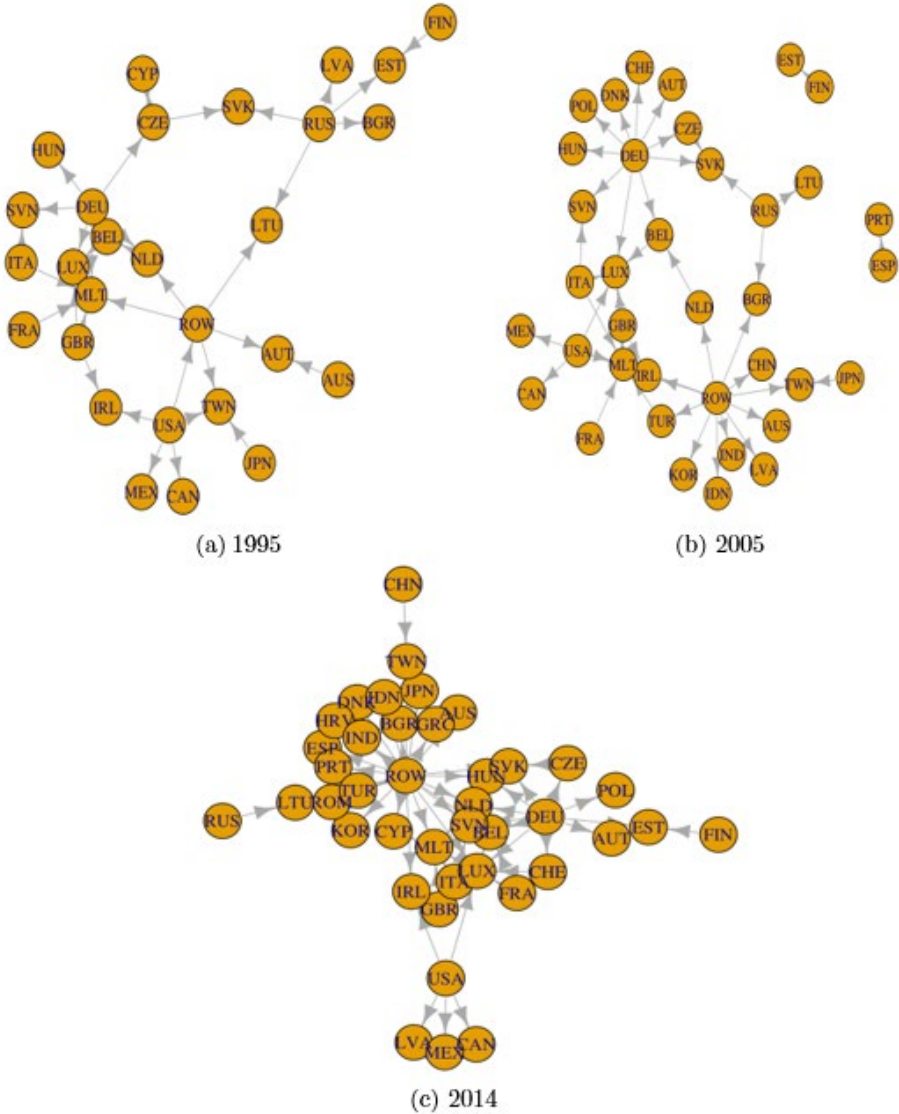
One of the first things seen in Figure 1 is that Canada only had significant relations with the United States of America during the studied period (1995-2014). In addition, it is easy to see how the three member countries of NAFTA (Canada, Mexico, and the United States of America) relate to each other because Canada and Mexico do not have a significant relationship between them. Nevertheless, Canada and Mexico had significant relationships with the United States of America between 1995 and 2014, which is consistent with the findings of Romero (2022). Also, it is possible to observe how the United States of America had significant relations with Taiwan, Ireland, and the Rest of the World in 1995. While for 2005, the United States of America maintained significant relations with Ireland, Luxembourg, and Malta, and in the case of 2014, it maintained significant relations with Ireland, Latvia, and Luxembourg.

In the case of France, it is possible to observe that between 1995 and 2005, it only had significant relations with Malta. However, in 2014 it presented significant relations with Belgium and Luxembourg. While the United Kingdom only maintained significant relations with the same countries during the period studied, these countries were Ireland, Luxembourg, and Malta. A similar result was found for Japan since this country only had significant relations with Taiwan during the studied period. Besides, in the case of Italy, it was found that it had significant relationships with Malta and Slovenia between 1995 and 2014. Also, Italy maintained a significant relationship with Luxembourg in 2005.

Finally, in the case of Germany, by 1995 it had significant relations with Belgium, the Czech Republic, Hungary, Luxembourg, Malta, the Netherlands, and Slovenia. While in the case of 2005 and 2014, Germany maintained significant relations with practically the same countries: Austria, Belgium, Switzerland, the Czech Republic, Hungary,

Luxembourg, Poland, the Slovak Republic, and Slovenia. The only difference was that Germany had significant relations with Denmark during 2005, but no significant relationship was found in 2014. Another difference was that Germany had significant relations with Estonia and the Netherlands in 2014, and no significant relationship was found with these countries in 2005. In summary, the G7 member country that had the most significant relationships was Germany.

Figure 1. World Trade Network (1995-2014)



In addition, most of the significant relations that the member countries of the G7 present are significant export relations. Another important aspect is that the results suggest that Luxembourg and Malta could be the main partners of most of the G7 member

countries. However, it is essential to note that other measures can be used to assess the role of countries in international trade; these measures are Outdegree and Indegree. Where Outdegree represents significant export relationships and Indegree represents significant import relationships.

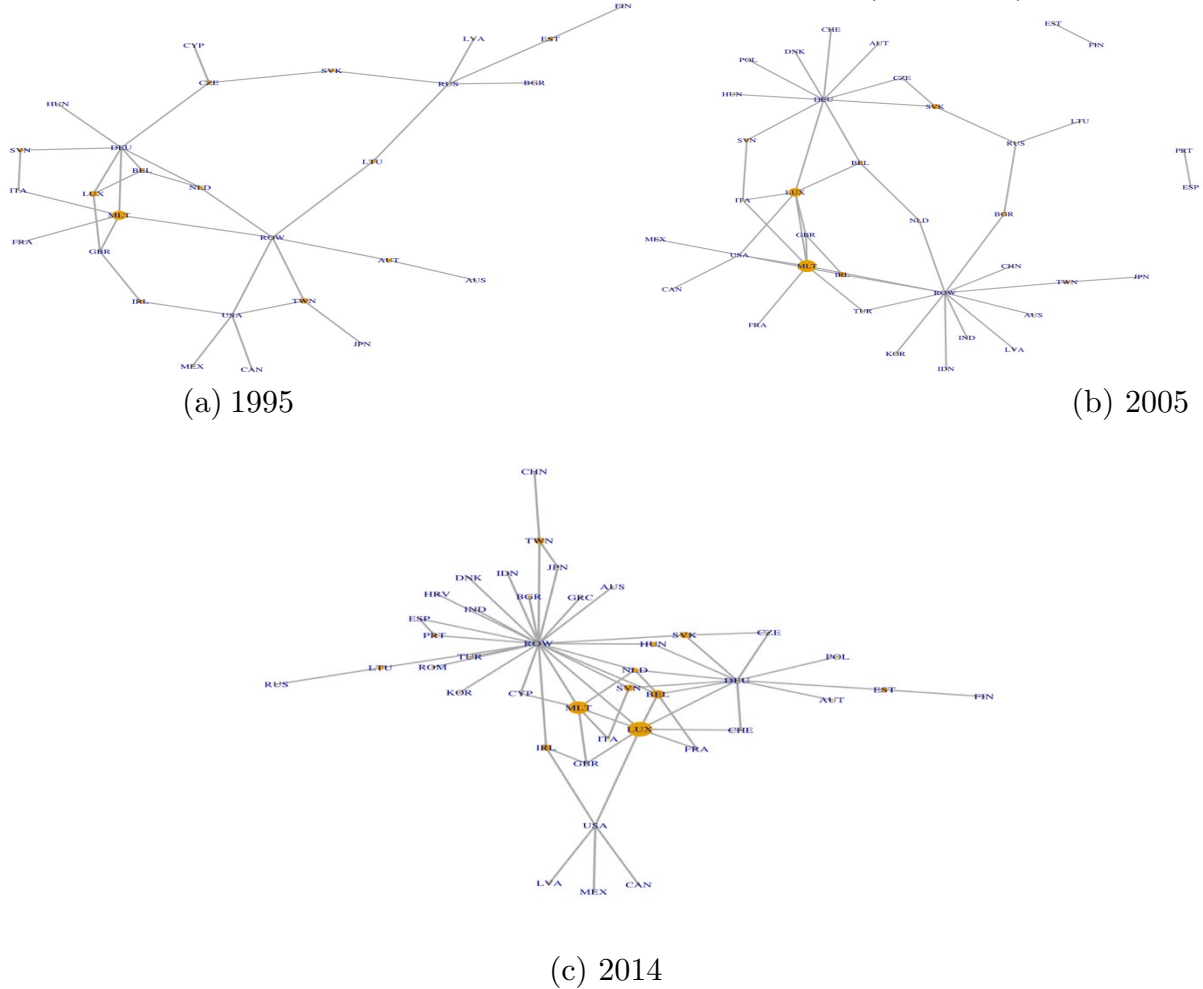
In the case of Figure 2, it is possible to observe the results of Outdegree. These results suggest which are the leading exporters in the World Trade Network. Between 1995 and 2014, the leading exporters were Germany, the United States of America, and the Rest of the World. These results are consistent with those in Figure 1; since Germany and the United States of America were the member countries of the G7 that presented the higher number of significant relationships, these relationships were identified on the export side. The results of the Rest of the World are fictional due to how the database was structured. Since the Rest of the World is the sum of the exports of the countries not explicitly identified by name, therefore, it is impossible to know if any specific country included in the Rest of the World explains these results or if the accumulation of exports in one row explains these Outdegree results.

In addition, it is possible to observe how Canada and France showed minimum Outdegrees between 1995 and 2005. Then in 2014, Canada continued to have a minimum Outdegree, and France slightly increased its Outdegree. Additionally, Japan maintained a minimum Outdegree throughout the period studied. In comparison, the United Kingdom and Italy maintained significant Outdegrees between 1995 and 2014. However, they were always far from having the main Outdegrees.

The results of the member countries of the G7 could be compared with countries of the EM7. In the cases of China, India, Indonesia, and Turkey, it is possible to observe that these countries do not appear in the 1995 graph, so they do not maintain significant relationships in international trade during that year. It is essential to mention that this does not mean that for that year, these countries were not significantly related to any country; the results only imply that when comparing their relationships with those of other countries, it is concluded that China, India, Indonesia, and Turkey did not have significant relationships in 1995.

case of Indegree, this measure identifies which countries are the most important for import purposes in a network. Figure 3 shows the evolution of this measure over time.

Figure 3. Indegree in the World Trade Network (1995-2014)



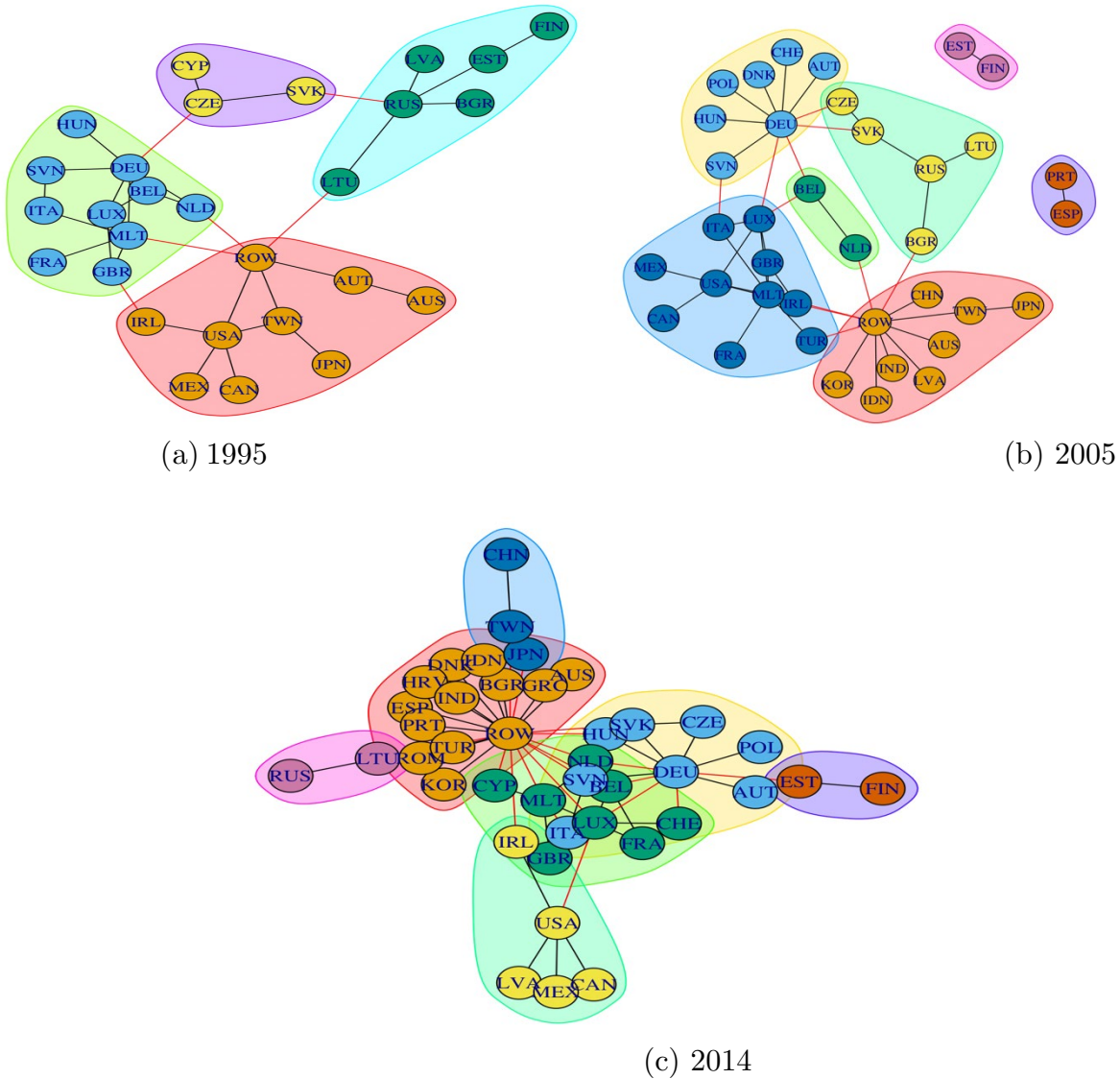
In 1995 it was possible to observe that the countries with the highest Indegree were Malta, Luxembourg, and Taiwan. In the case of 2005, the main Indegrees are in Malta, Luxembourg, Ireland, Belgium, and the Slovak Republic. While during 2014, the countries with the highest Indegree are Luxembourg, Malta, Ireland, Belgium, Slovenia, the Netherlands, Hungary, and the Slovak Republic. The other countries, such as G7 or EM7, have approximately the same Indegree. The results of Indegree are consistent with the results of Outdegree. Since the countries with the highest Indegree during 1995, 2005, and 2014 are some of the main trading partners of the G7 countries.

In Figure 4, the international trade communities' evolution over time can be seen. In the case of the member countries of the G7, Germany, Italy, France, and the United

Kingdom were together in the same community along with other European countries in 1995. At the same time, the United States of America, Canada, and Japan was together in a community with other countries. These results suggest that the European G7 countries and the North American and Asian G7 countries were in communities that showed geographic proximity between these countries.

In 2005 something different happened as the United Kingdom, Italy, the United States of America, Canada, and France were together in a community. Therefore, geographical proximity ceased to segregate the member countries of the G7. In addition, in 2005, Germany was in a community with other non-G7 European countries, such as Austria, Switzerland, Denmark, Poland, Hungary, and Slovenia. In contrast, Japan was in a community of Asian countries, such as Taiwan, China, Korea, Indonesia, and India. Also, Australia, Latvia, and the Rest of the World are in that community. In 2014, a more significant fragmentation of G7 countries in the communities can be observed. However, geographic proximity segregates countries again. This observation is because Japan is in a community with China and Taiwan. At the same time, the United States of America and Canada are in a community with Mexico, among other countries. Besides, it is possible to observe that Germany and Italy are in a community together with Austria, Poland, the Czech Republic, the Slovak Republic, Hungary, and Slovenia. Finally, France and the United Kingdom are in a community with Switzerland, Luxembourg, Belgium, and the Netherlands.

Figure 4. Communities in the World Trade Network (1995-2014)



Regarding the member countries of EM7, it is possible to observe that China, India, Indonesia, and Turkey cannot be found in the graph of the 1995 communities, and Brazil does not appear in any of the communities for the entire period. The explanation for this phenomenon is the same as the Outdegree results. As mentioned earlier, in 2005, China, India, and Indonesia were part of a community with Japan and other Asian countries. However, in 2014, China stopped being in the same community as India and Indonesia since these last two countries moved to another community.

In the case of Mexico, in 1995 it was in a community with several G7 countries, such as the United States of America, Canada, and Japan. Later, in 2005, more G7 countries were integrated into Mexico's community, such as the United States of America,

Canada, France, the United Kingdom, and Italy; Turkey is also in this community. Then in 2014, it can be seen how Mexico remains in a community with the United States of America, and Canada (among others), and Turkey joined the community in India and Indonesia. Regarding Russia, it can be seen how it has always been in communities with some European countries. In these communities, no G7 or other EM7 countries were found. Also, the number of countries in the Russian communities decreased over time. Since 1995, it has been a community of six countries; in 2005, five countries, and in 2014, two countries.

Conclusions and policy implications

Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States of America represent 50% of the world GDP (Li & Haneklaus, 2022; Pata & Yilanci, 2020); for which these countries have a significant role in the world economy. The literature on the G7 countries and the international economy has focused on studying the effects of globalization on unemployment or income distribution. In addition, the literature has focused on the role of the G7 countries in global economic crises or the effects that these countries can have on financial markets. However, the literature seems not to have focused on determining the importance and roles that the G7 member countries could have in international trade. This paper tries to contribute to filling this gap by examining this period. It was possible to illustrate the structure of international trade and determine the role of G7 countries in the World Trade Network between 1995 and 2014.

It was found that the G7 member country that had the most significant relationships in international trade between 1995 and 2014 was Germany. Furthermore, the results suggest that the main partners of the majority of the G7 countries were Luxembourg and Malta. Also, it was found that most of the significant relationships of the G7 member countries were export relationships. The Outdegree results confirmed this since Germany and the United States of America presented the higher Outdegrees. Therefore, these G7 countries were the leading exporters in the World Trade Network between 1995 and 2014. Another important finding was that the countries that showed higher Indegree (significant relationships on the import side) were some of the G7 partners, such as Luxembourg and Malta. All these results show the central role of the G7 countries in international trade between 1995 and 2014. Since these countries are the main exporters and their trading partners are the leading importers.

Additionally, it was found that in 1995 Germany, Italy, France, and the United Kingdom were together in the same community. While Japan, Canada, and the United States of America were together in another community. These results suggest that during 1995 the member countries of the G7 were segregated by geographic proximity. However,

in 2005 most of the G7 countries were no longer separated into distinct communities with clear geographic segregation. Since France, Canada, Italy, the United Kingdom, and the United States of America were in the same community, this happened while Germany was in a community with other European countries and Japan was in another with other Asian countries. Finally, in 2014 the G7 countries began to separate and locate themselves in different communities with certain geographical proximity. For example, Germany and Italy were in a community with other European countries. In comparison, France and the United Kingdom formed another community of other European countries.

In addition, Japan was placed in a community with China and Taiwan. At the same time, Canada and the United States of America were placed in a community with Mexico (along with others). Therefore, the G7 countries were more fragmented in different communities in 2014, but in communities with countries with which they share geographic proximity.

The main limitation of this paper was that the last Input-Output matrix published with the data necessary to carry out this analysis was from 2014. Therefore, it was impossible to know the role of the G7 countries in international trade after 2014. Future projects could study the role of these countries in international trade once matrices are published from 2015 onwards; this would be interesting to study if we consider that as of 2015, protectionist ideas resurfaced with the presidential election won by Donald Trump in the United States of America in 2016 and the United Kingdom's exit from the European Union (Auer et al., 2020). Besides, the World Input-Output Database published international trade matrices between 1965 and 2000 (Woltjer et al., 2021). In the future, other researchers can study the role of the G7 countries in international trade before trade liberalization, during the Cold War, and before the emergence of the European Union. In addition, the qualitative techniques used in this paper can help study inter-industry relationships in a country's domestic economy or other international trade projects.

The findings of this paper demonstrate the importance of the G7 countries in international trade. The role of these countries occurs in a context where international economic institutions such as the WTO shape the rules of globalization. These rules have been established to benefit the interests of the most industrialized countries. This dynamic has led to a form of globalization that does not work for an essential part of the poor in the world, with exceptions in China, Vietnam, and countries of Eastern Europe (Stiglitz, 2002). Therefore, the periphery countries may choose between continuing to participate in globalization or de-globalization. It is recommended that periphery countries continue to participate in international trade. However, its continuity in globalization must incorporate a higher diversification of its trade relations. The purpose of diversifying these relationships is to avoid being highly exposed to any shock in the internal economy of their trading partners (Romero, 2022). Besides, the findings of this paper suggest that

communities have been formed between geographically close countries. Given this situation, peripheral countries are recommended to join the central international trade communities, such as European, Asian, or North American communities. Since these communities are segregated by geographic proximity, the periphery countries must find efficient transportation mechanisms and resources that allow them to integrate into these communities.

It is recommended that the rules and policies of trade followed by the most industrialized countries (such as those of the G7) be reformed in order to have a greater balanced trade agenda in the world; this is important because advanced countries have promoted open markets in developing countries to facilitate the entry of exports from advanced economies. At the same time, they keep their markets closed to exports from developing countries (Stiglitz, 2002). One of the prominent examples of these dynamics is the United States of America, since that country has pressured other countries to open their markets to exports, foreign investment, and multinational companies while maintaining protectionist policies (Hopewell, 2017). Achieving significant change in these power relations requires many efforts and strategies beyond this paper's scope. However, it is recommended that developing countries develop strategies together to join forces and resources. In this way, the imbalances in the power relations in the Core-Periphery system could be addressed.

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