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# CS552: NETWORK SCIENCE

## Evolution Of Trade Network

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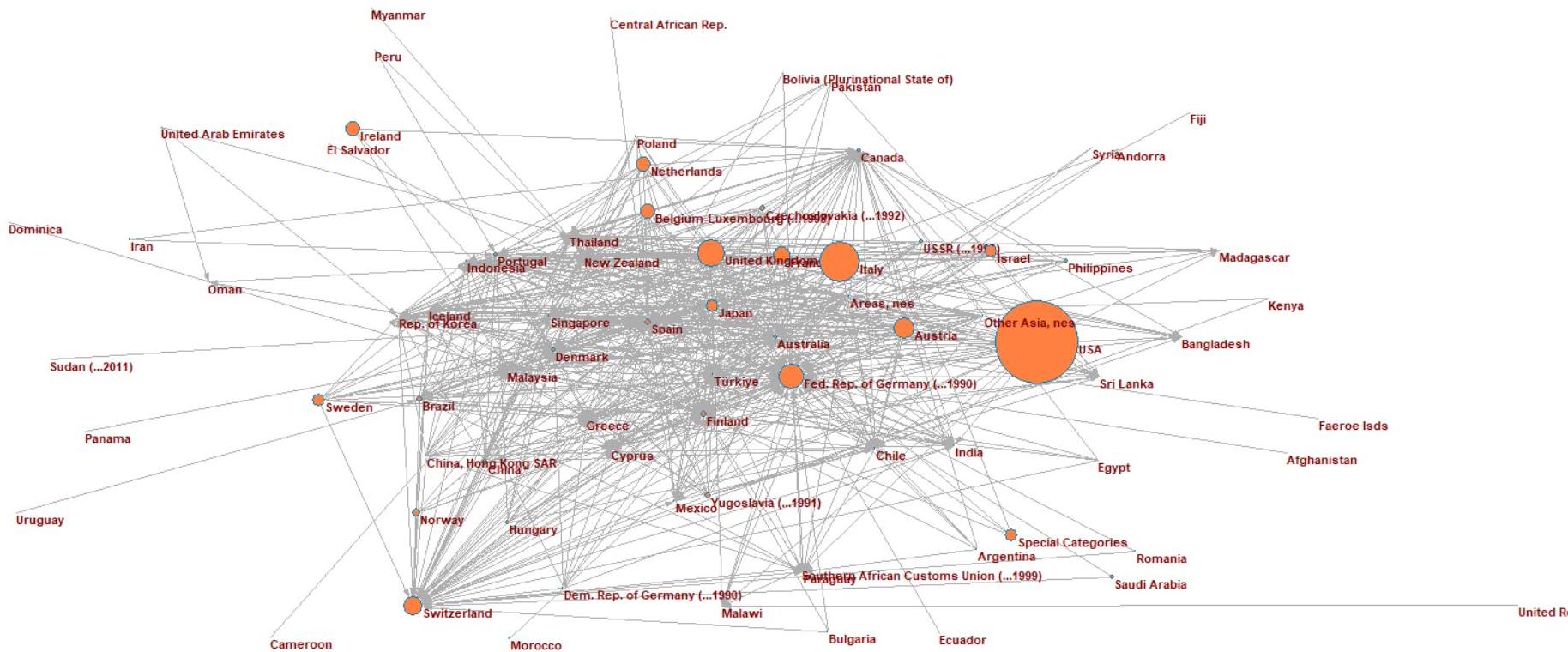
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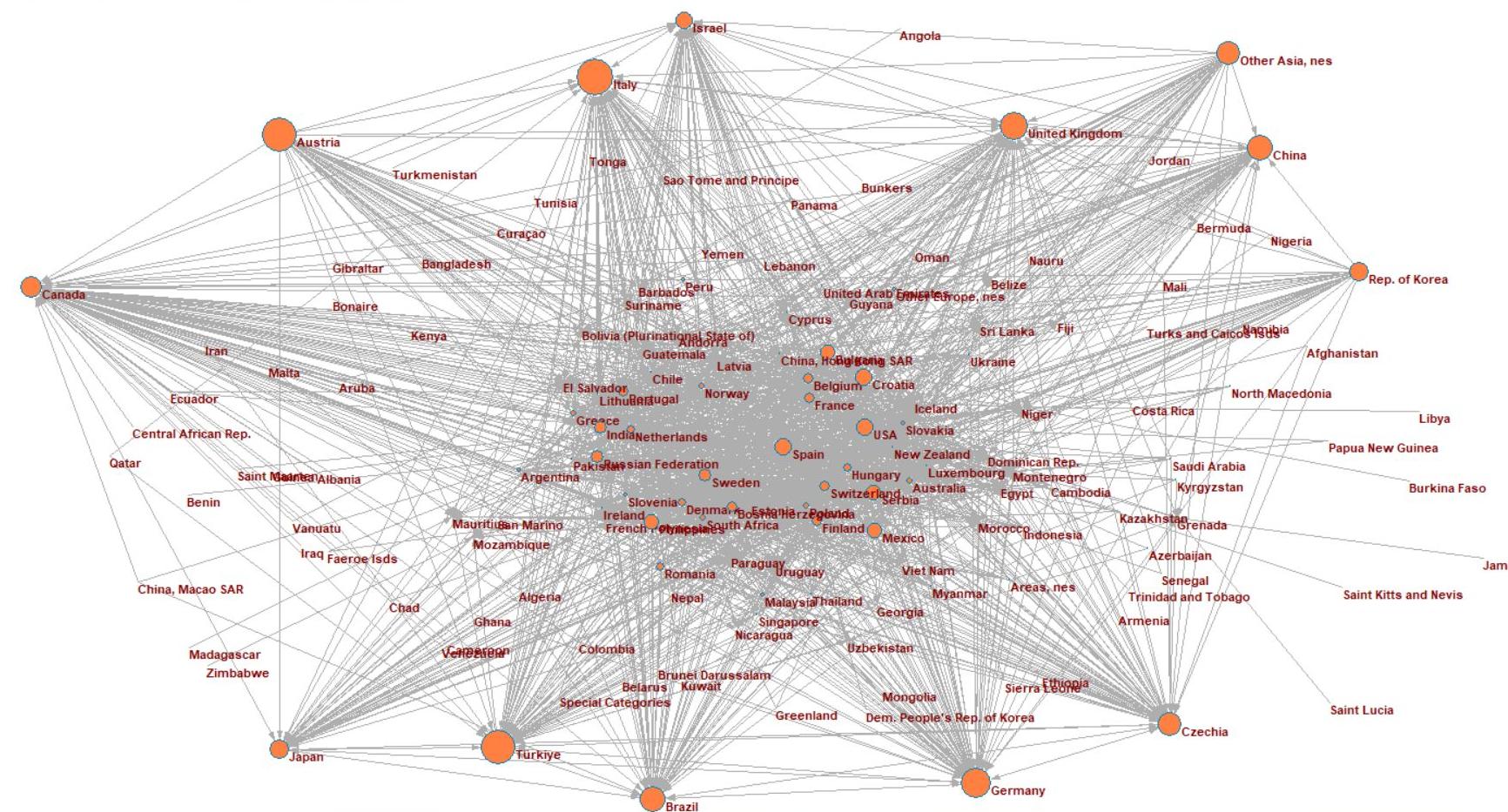
# Trade Network

- ❑ Trade networks are an essential aspect of the global economy, connecting countries, businesses, and individuals across the world
- ❑ The trade network on the world is a complex web of interconnected systems, with different types of trade occurring between different countries and regions.
- ❑ So, In this project we are analyzing the Arms, pharmaceutical , Rice , crude oil and Iron trade network across the world.

# Arms and Ammunition Trade

year	Clustering coefficient
1990	0.447
1994	0.548
1998	0.524
2002	0.526
2006	0.542
2010	0.556
2018	0.587
2022	0.625





## Reasons:

The spread of the arms and ammunition network from European countries to other parts of the world is due to economic interests, political influence, security concerns and technological expertise .

From our analysis , we find that USA , Italy , Germany , UK were the hubs in the starting

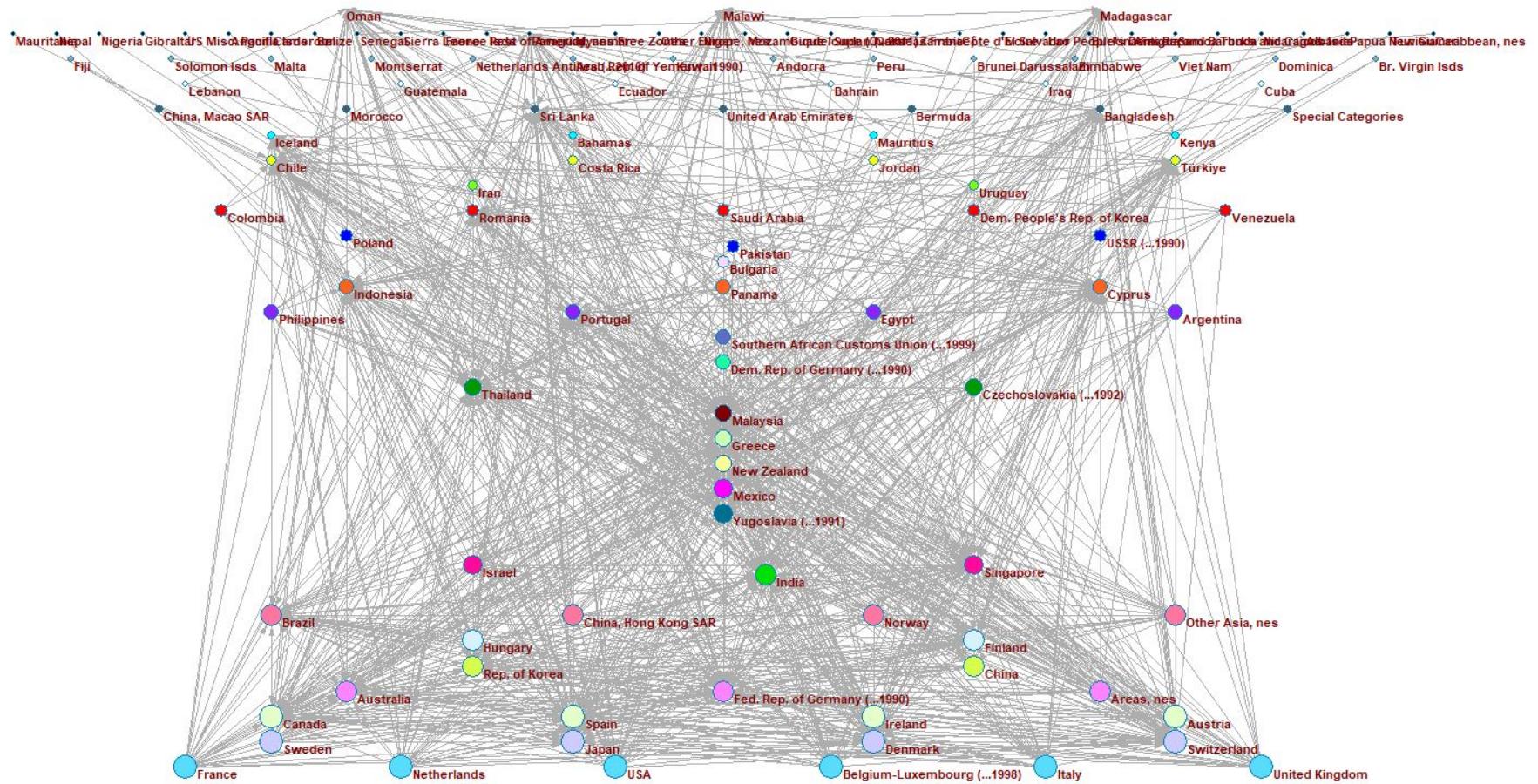
New countries like Japan , Korea , Canada , India emerged as the hubs

# **Analysis of Pharmaceutical Trade**

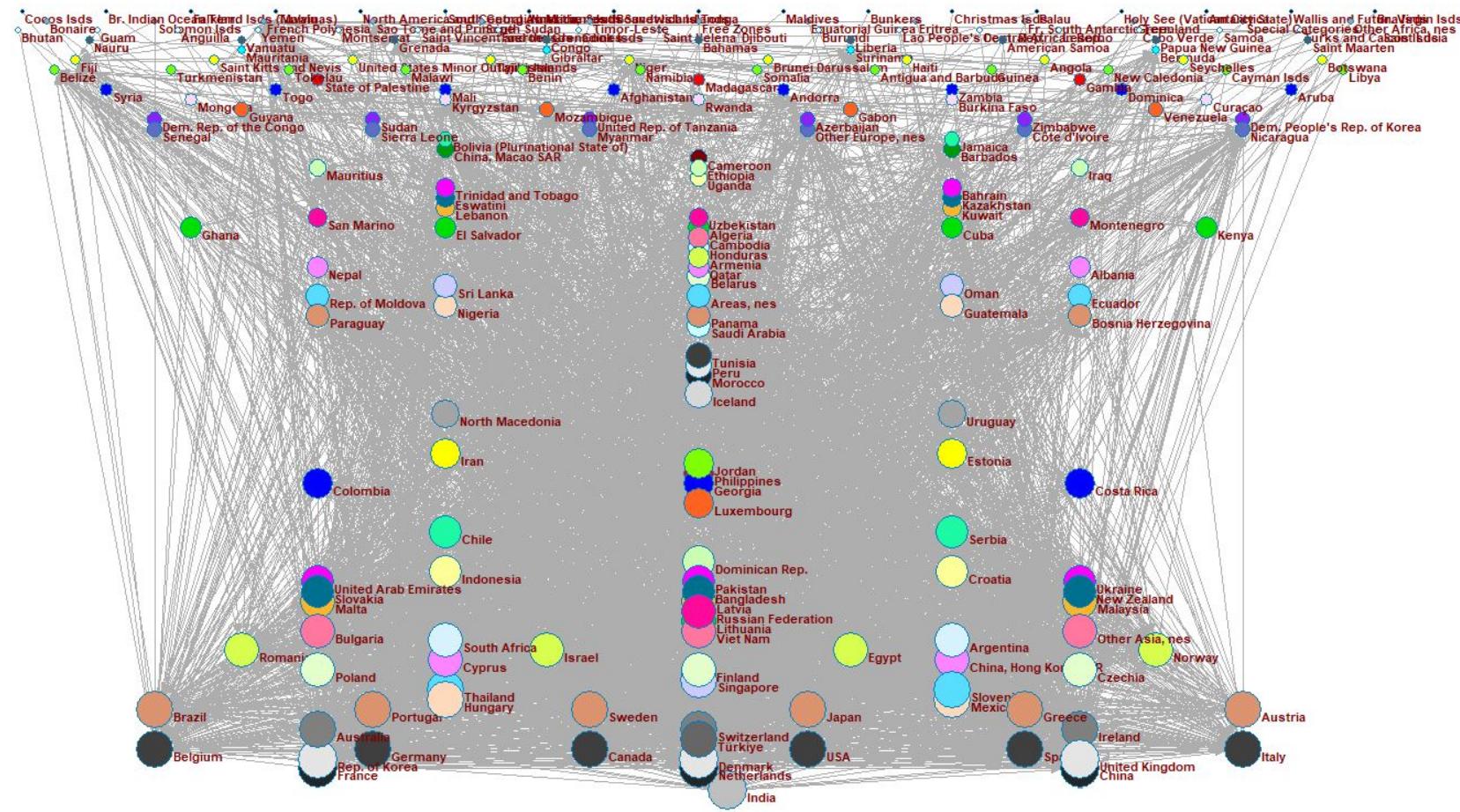
# Pharmaceutical Trade :

Year	Clustering coefficient
1990	0.544
1994	0.518
1998	0.541
2002	0.545
2006	0.543
2010	0.566
2014	0.572
2018	0.603
2022	0.690

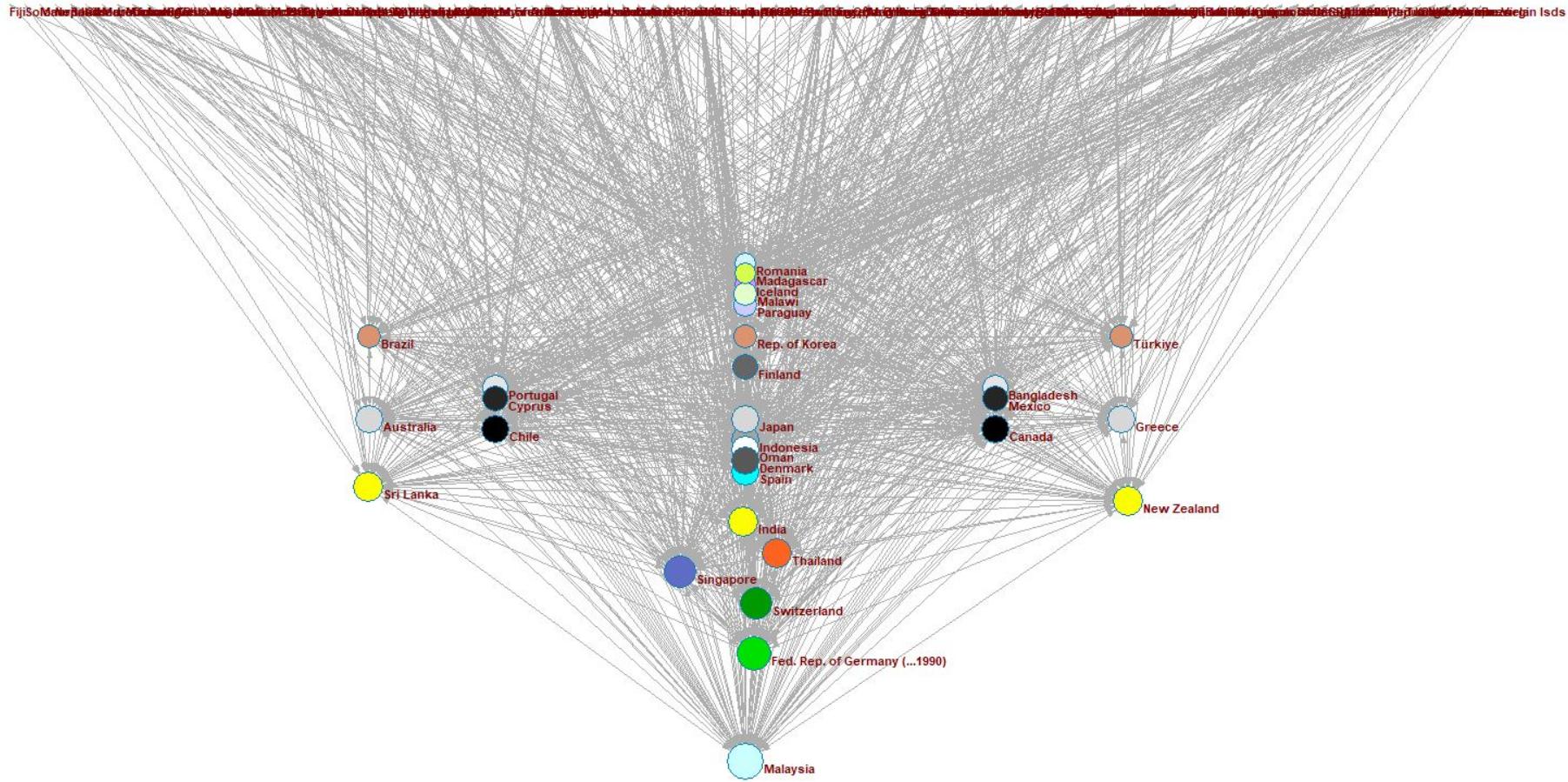
# 1990 Hubs of Pharmaceutical Trade



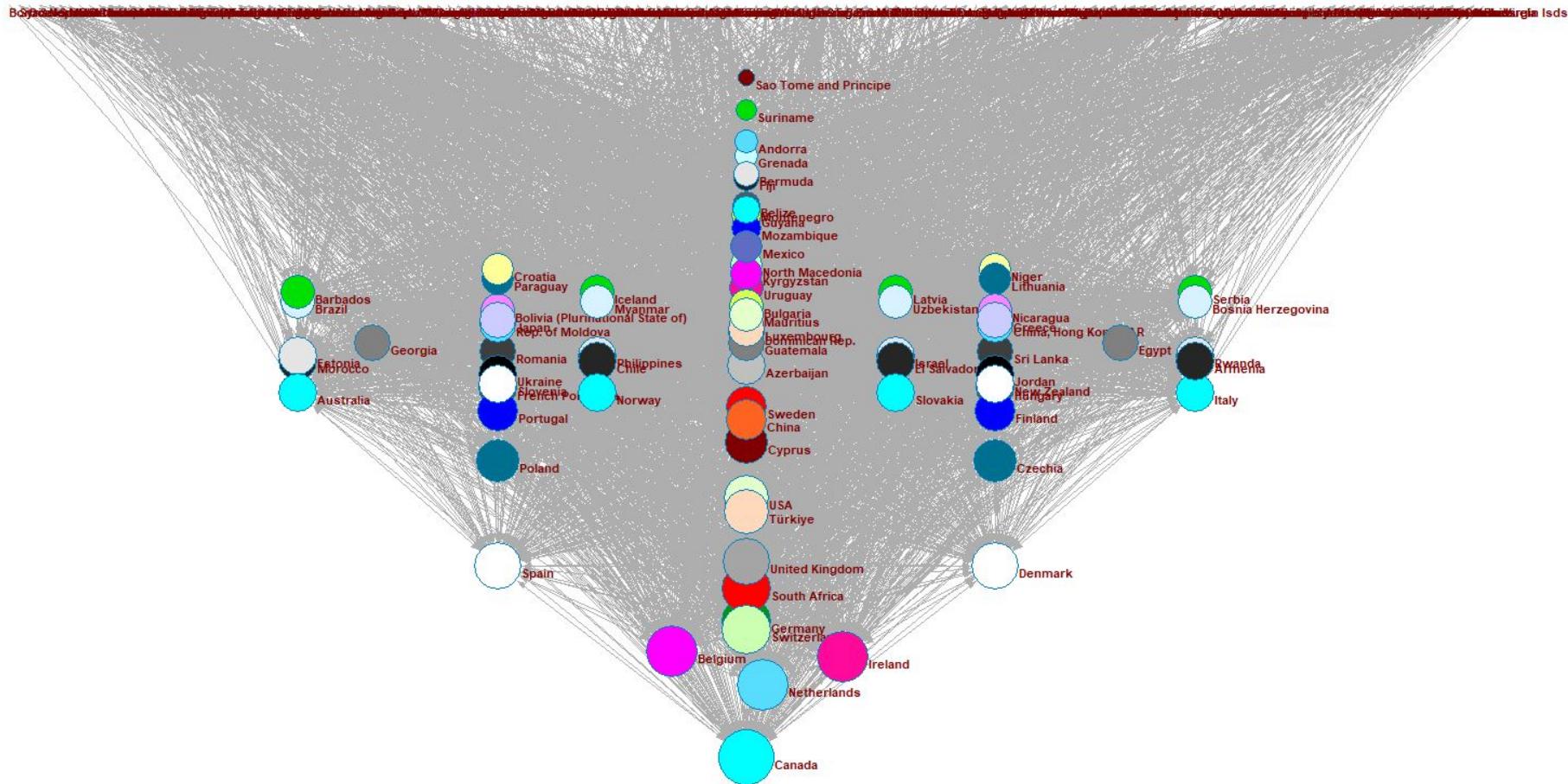
# 2022 Hubs of Pharmaceutical Trade

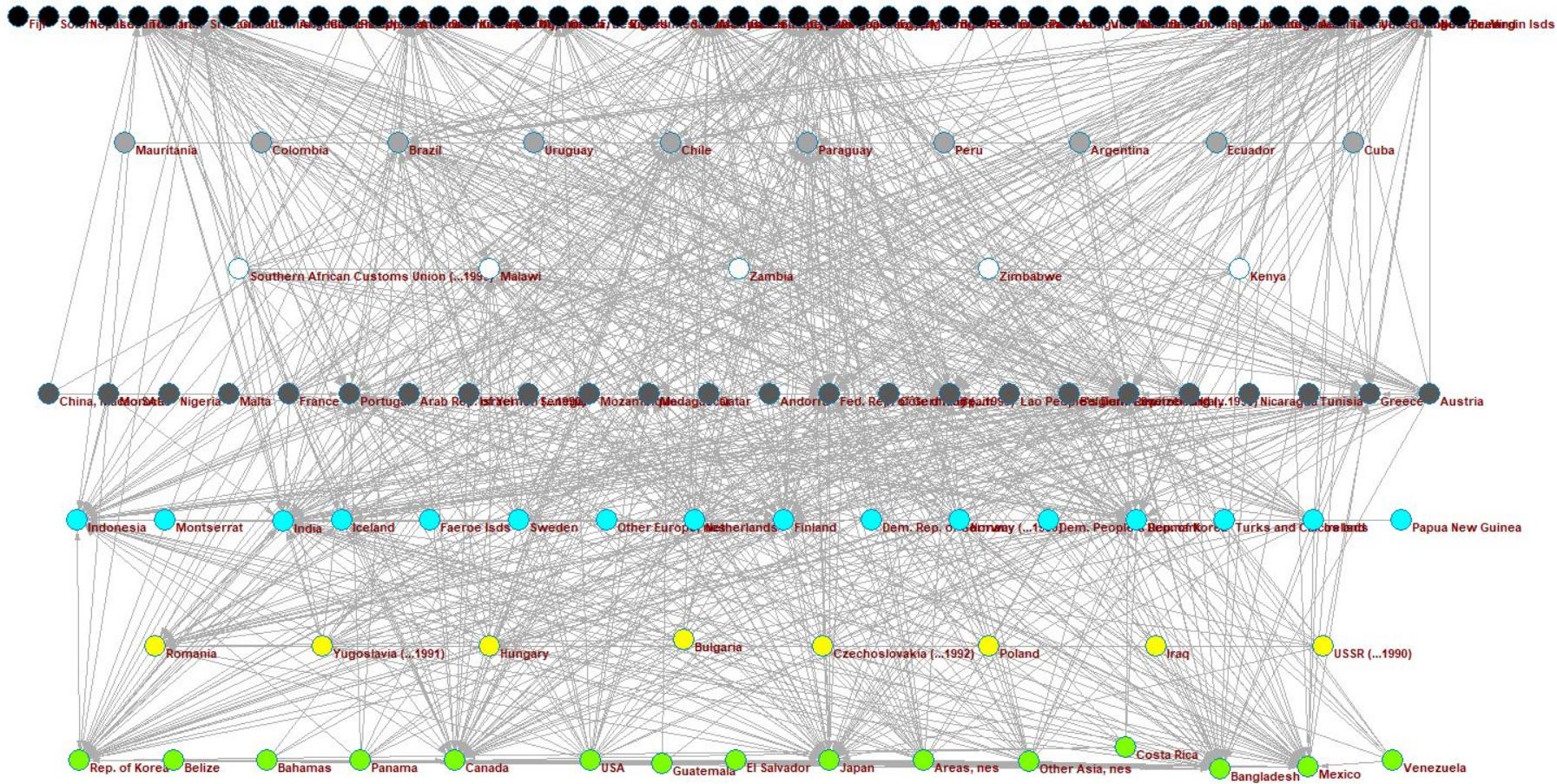


# 1990 Major Importers in Pharmaceutical Trade

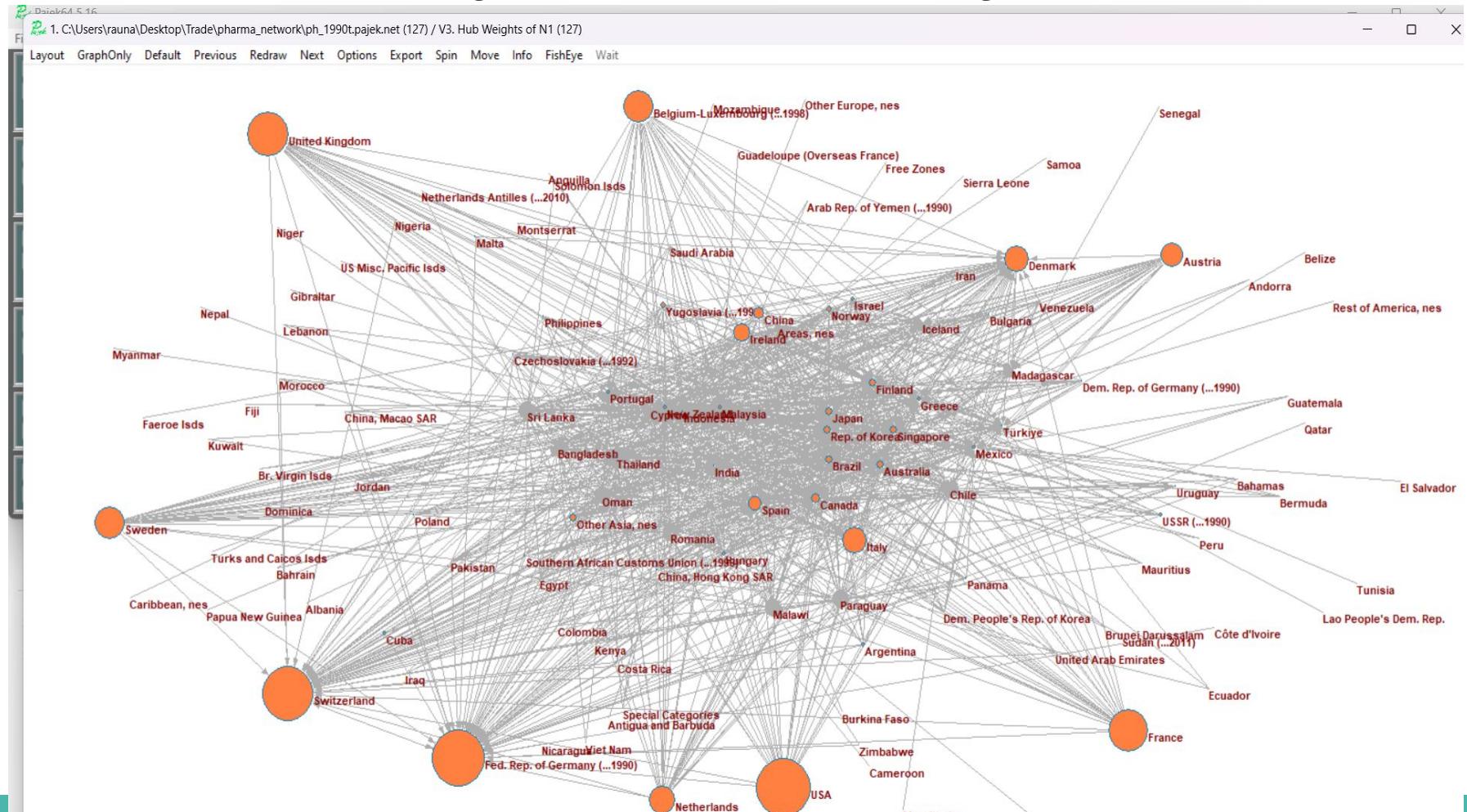


# 2022 Major importers of Pharmaceutical Trade

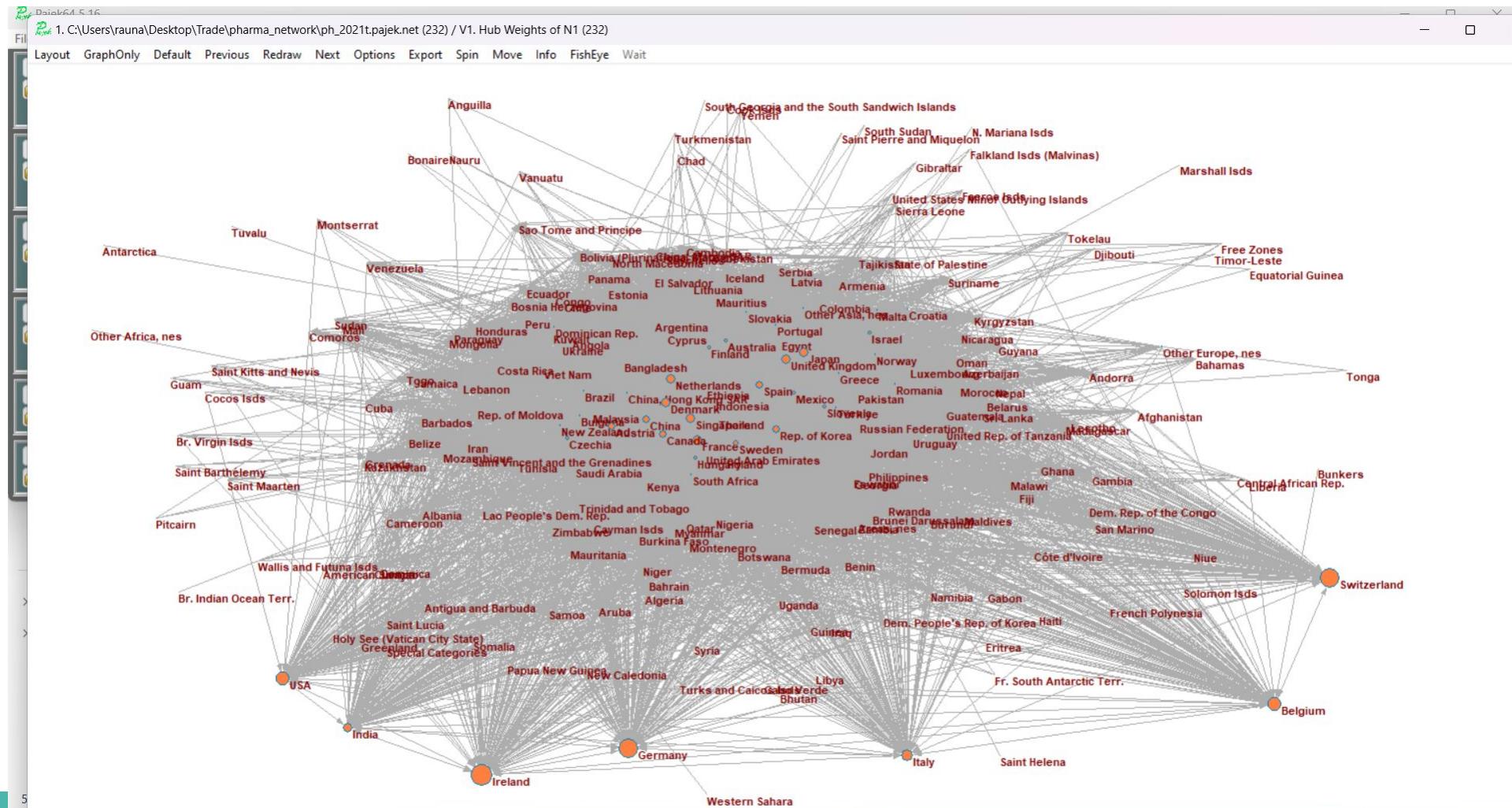




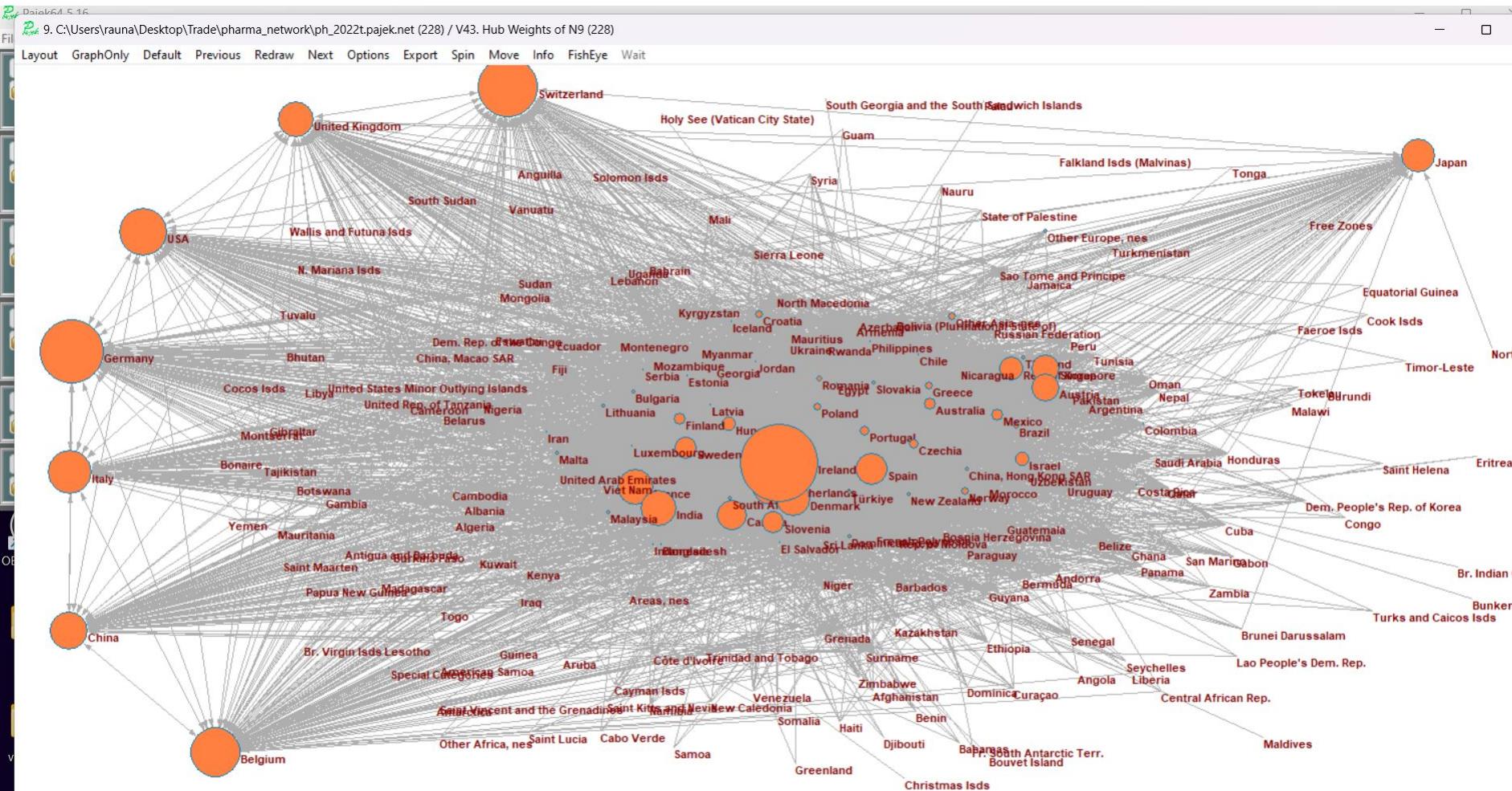
# Ranking Countries on the basis of Hub Weights in 1990



# Ranking Countries on the basis of Hub Weights in 2021



# Ranking Countries on the basis of Hub Weights in 2022



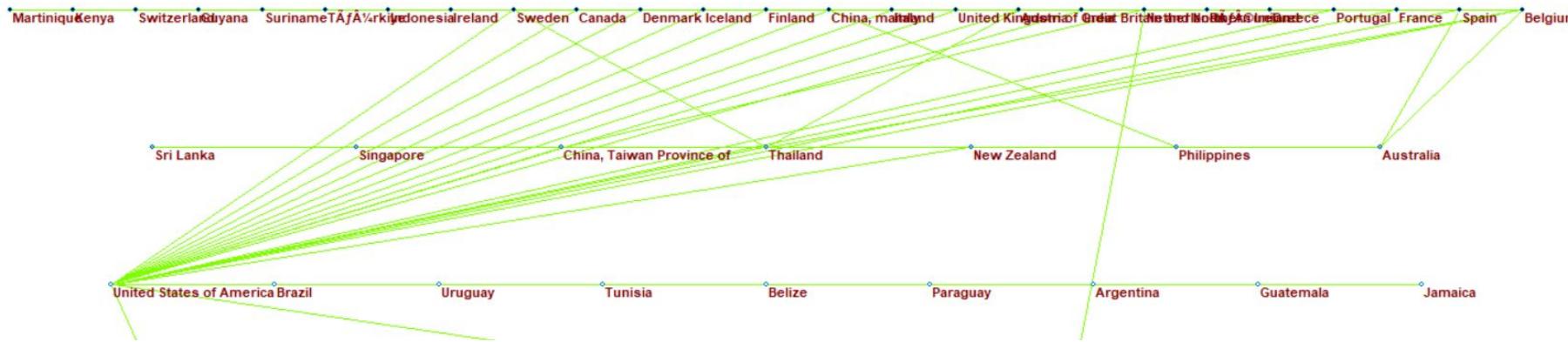
## Reasons:

The pharmaceutical network has grown significantly from 1990 to 2023, due to globalization, biotechnology, research and development, regulatory changes, and technological advancements.

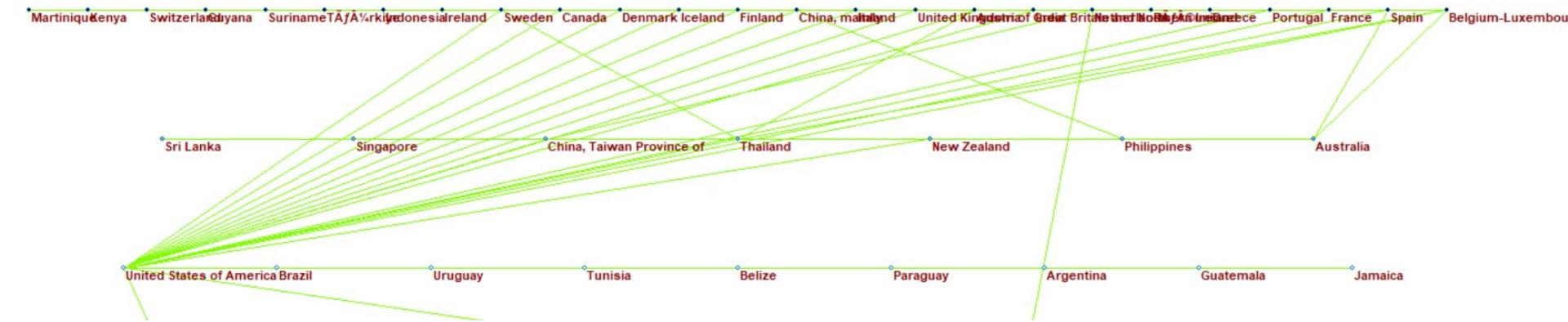
Covid has significantly affected the trade in pharmaceutical goods

# Rice Trade Analysis

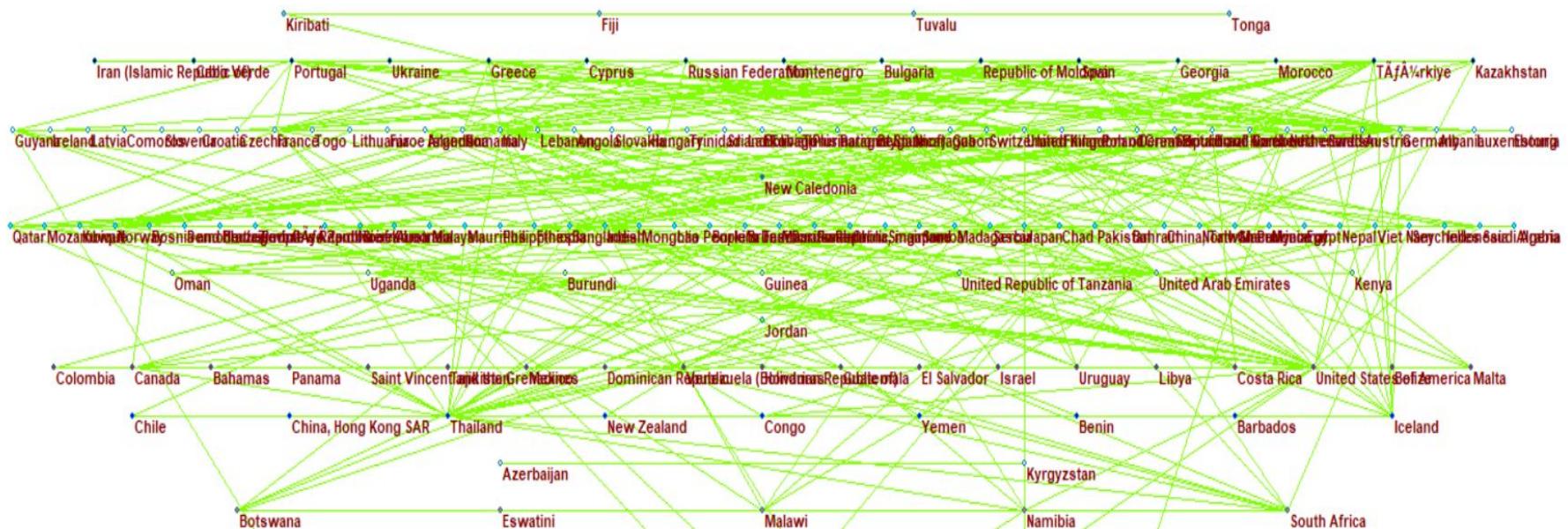
## 1986 : communities of Rice trade



## 1990 : communities of rice trade

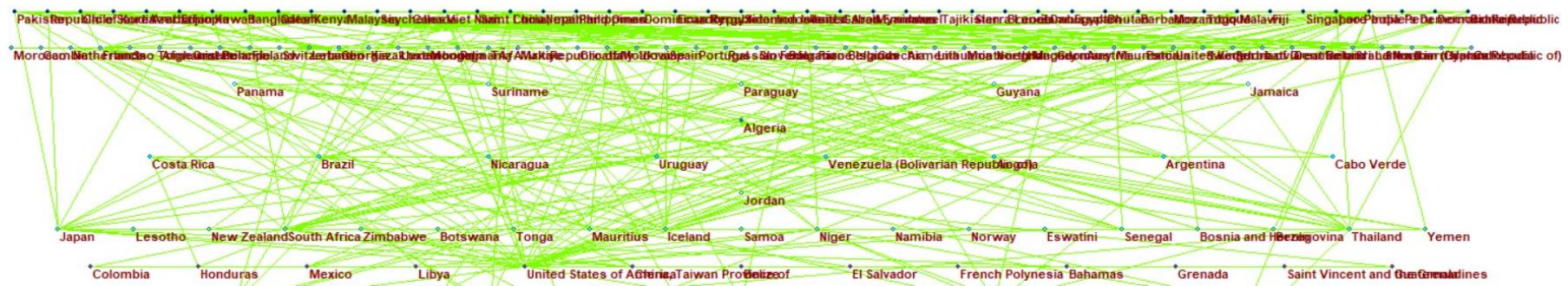


## 2015: Rice communities



# 2018: Rice communities

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# Reasons:

Distance plays an important role in Rice trade because it affects the cost of transportation and therefore the price of rice.

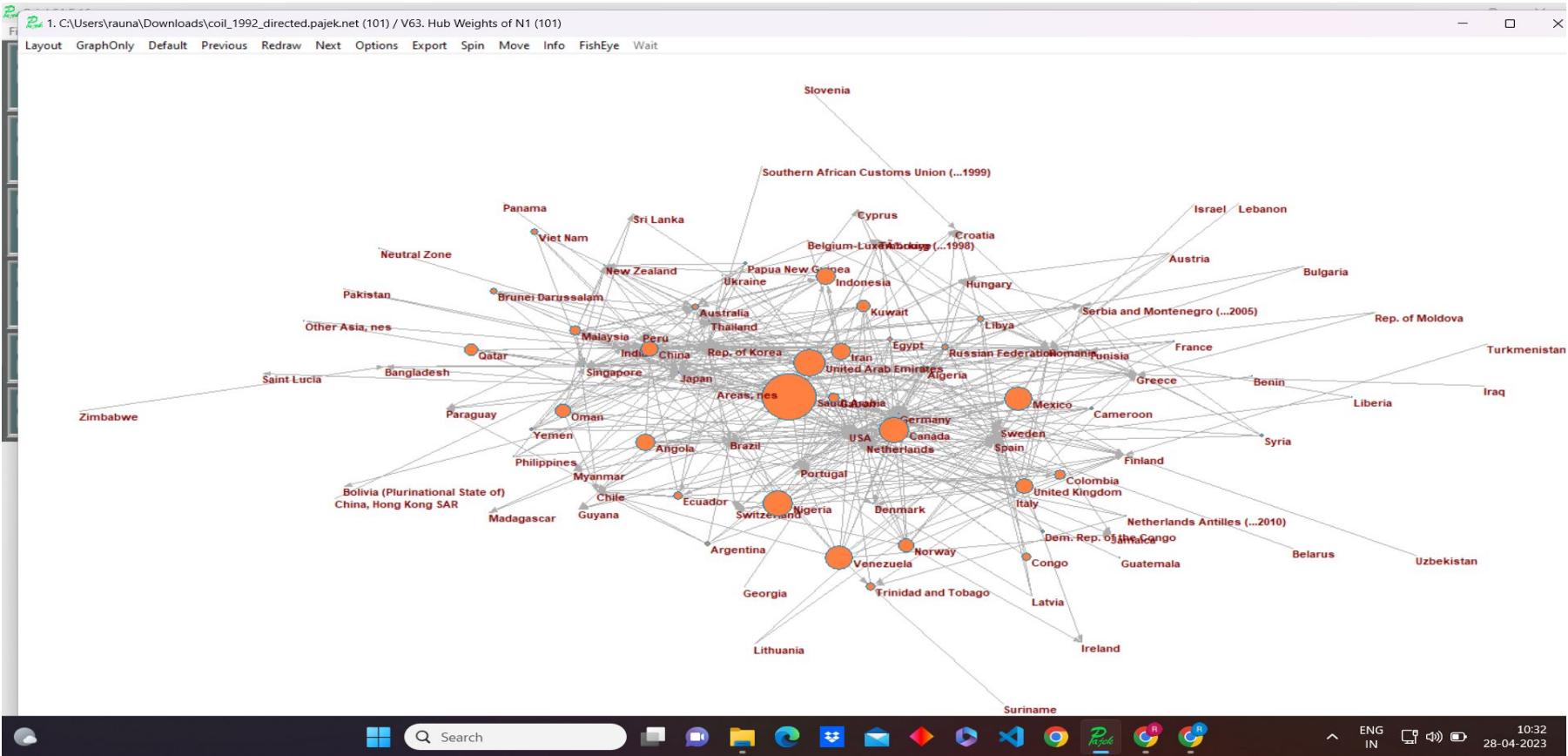
Rice is a bulky commodity that is produced in certain regions and consumed in others. The cost of transporting rice from the producing regions to the consuming regions depends on the distance between them.

This means that rice produced in regions closer to the consuming regions will have a competitive advantage over rice produced in regions farther away.

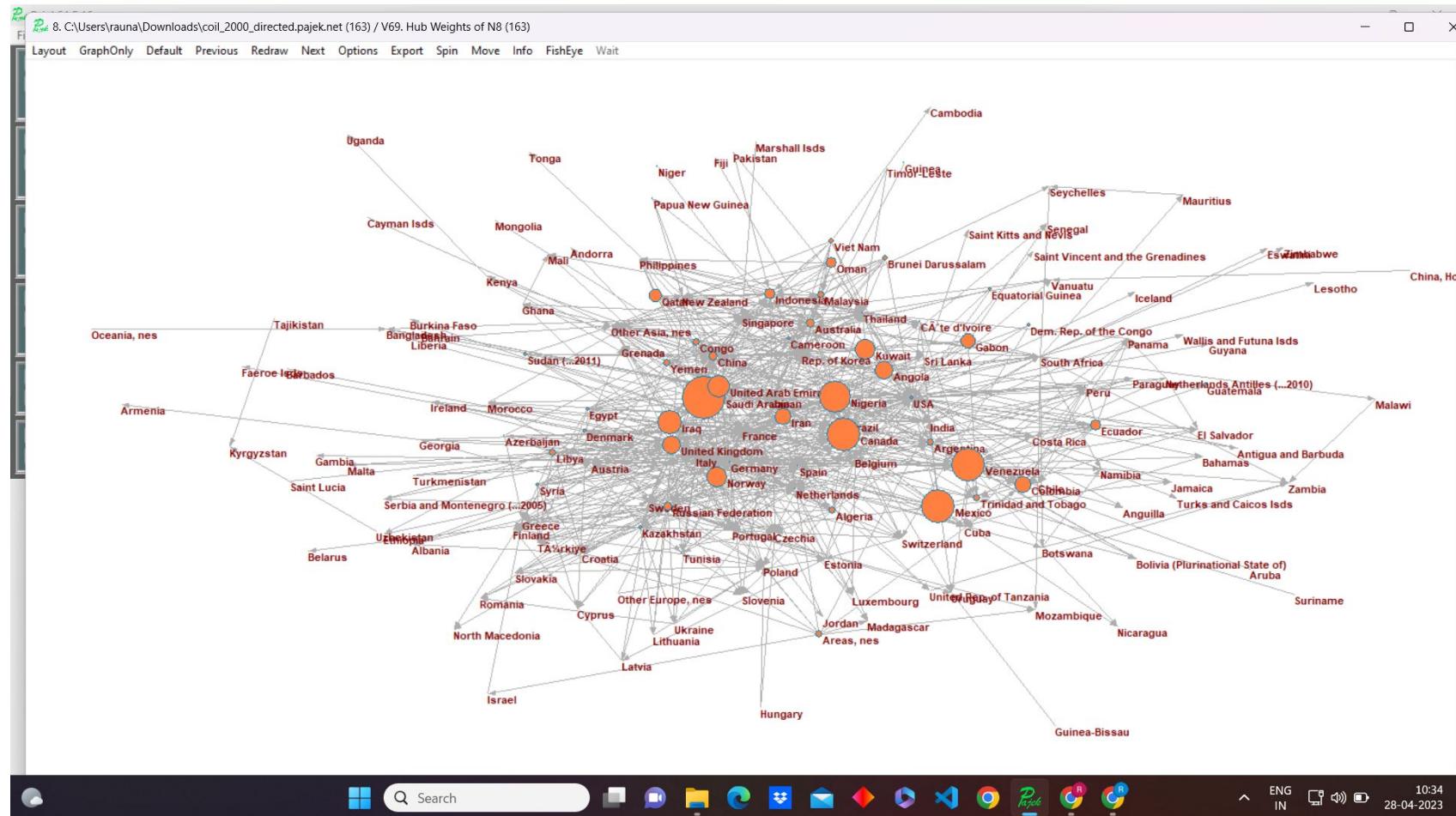
# **Crude Oil Trade Network**

1992	0.188
1994	0.212
1996	0.236
1998	0.238
2000	0.312
2002	0.290
2004	0.254
2006	0.256
2008	0.281
2010	0.302
2012	0.296
2014	0.280
2016	0.330
2018	0.328
2020	-
2022	0.373

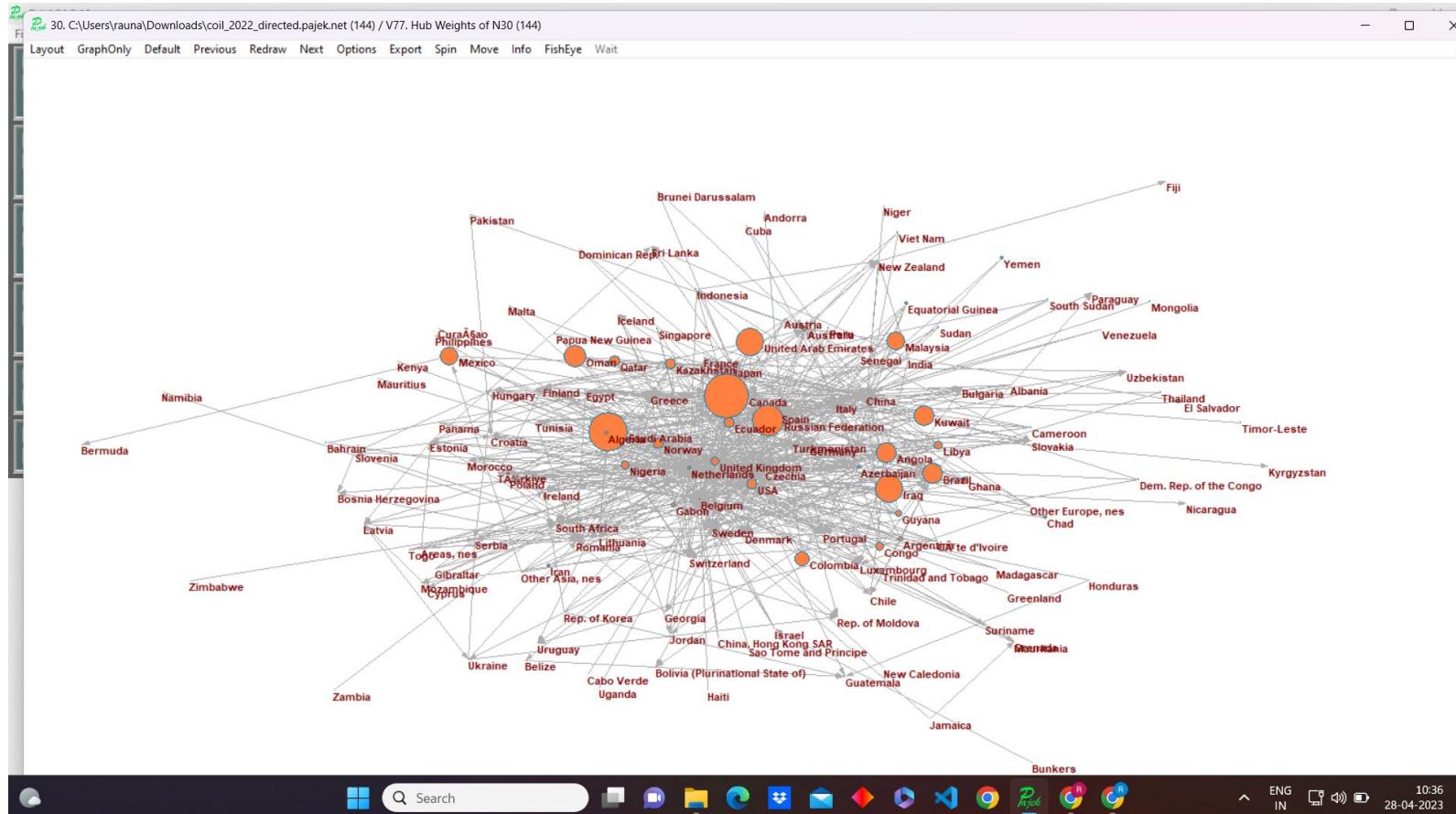
# Hubs in 1992



## Hubs in 2000



# Hubs in 2015



# Reasons:

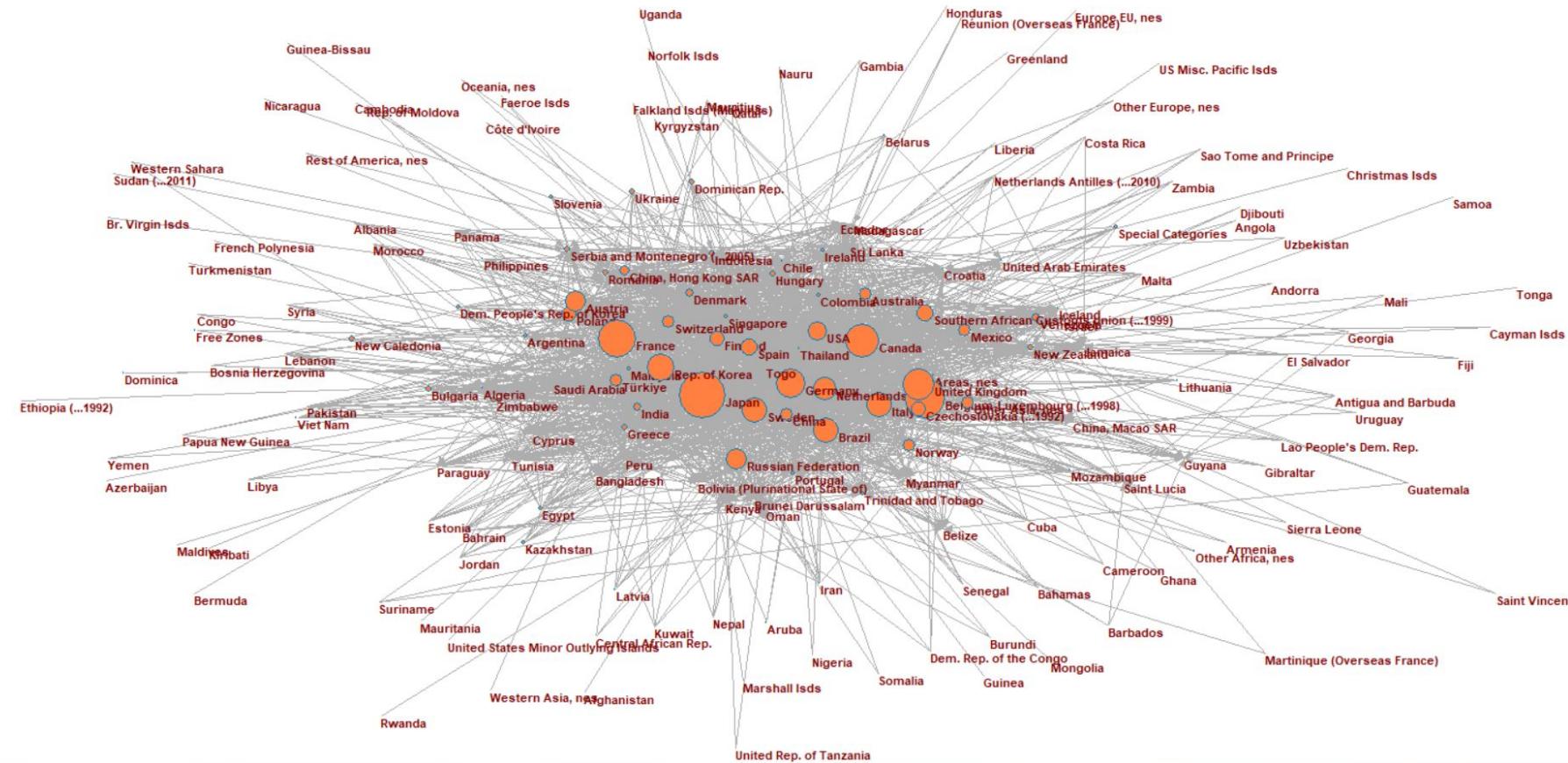
Finding - The clustering coefficient is almost constant. This may be because there are only a few dominant producers

## Hubs

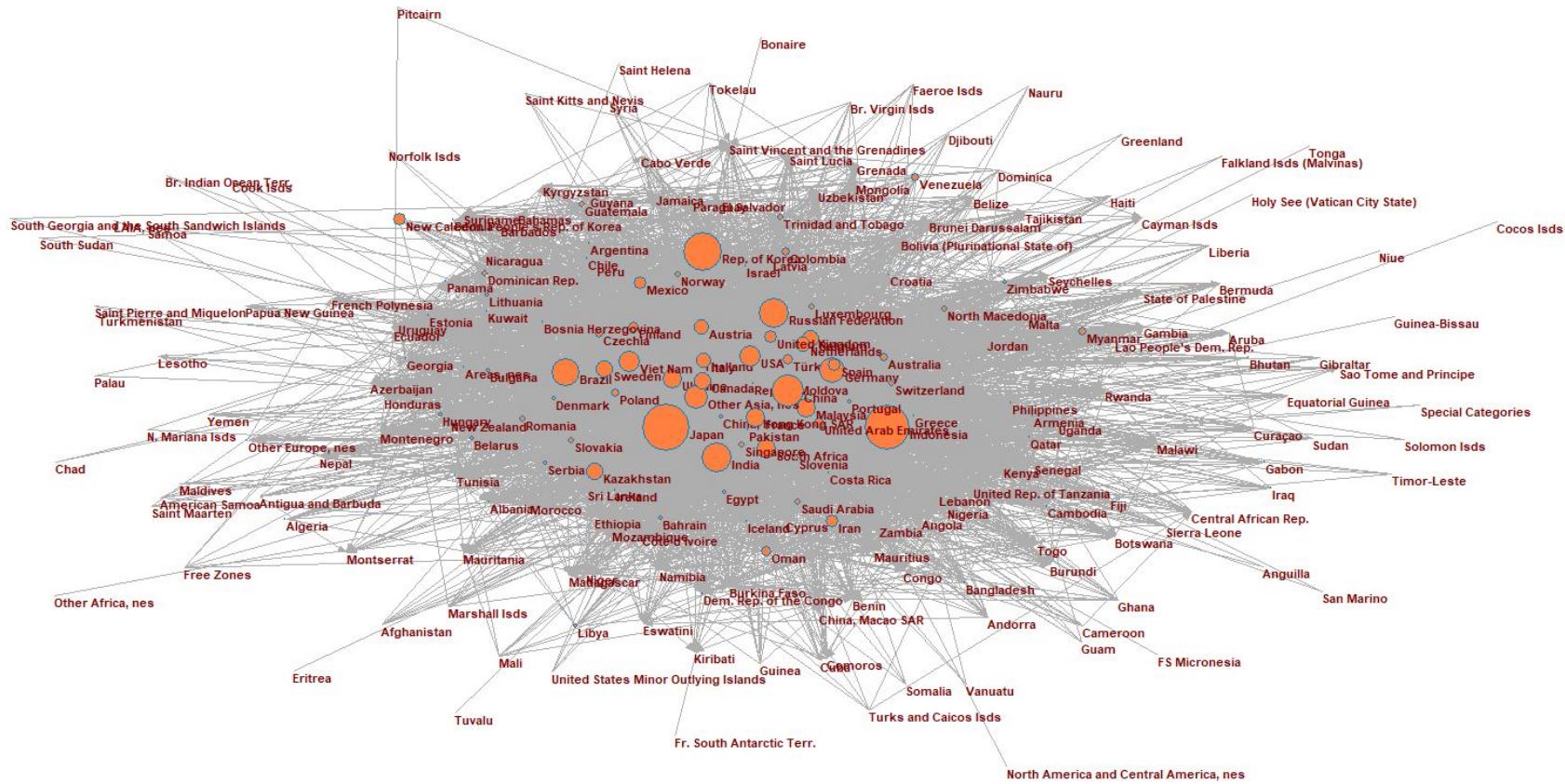
As we saw in the pictures , the major hubs do not change over a period of time. Hence we can reason why the clustering coefficient is constant

# **Iron Trade Network**

# Hubs in 1992



# Hubs in 2020



# Reasons:

Finding -The iron and steel trade is centered around India , France , USA , Germany , Japan. They play important role in iron trade network

It is evident that the developed and developing countries are the important ones as they focus on infrastructural development

**THANK YOU!**