

## **Layers of integration: recent evolution and the current state of the four freedoms in the EU**

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*The Single European Act, signed in 1986 as the first major revision of the Treaty of Rome, proposed steps towards the realization of the single market, as the next level of European integration. The four freedoms – free movement of the factors of production (labor and capital), as well as free movement of goods and services – are the true essence of the whole integration process and with the single market, the vision of the four freedoms became reality. The process of European integration started decades ago and in light of recent events it seems that the integration process has arrived at a crossroads: earlier continuous deepening of integration may have come to a halt, as may have convergence. In my assessment I use statistical methods and graph theory in order to show the level of integration and the closeness of relations, all in a dynamic way.*

*Keywords: European integration, four freedoms, networks*

### **1. Introduction**

European integration began on 9<sup>th</sup> May 1950 when Robert Schuman made his notable speech on how important it is to rebuild Europe after all the disasters the continent had to suffer in the first decades of the 20<sup>th</sup> century. Schuman emphasized the need for cooperation between countries, which soon resulted in the ECSC Treaty (1951) and the Treaties of Rome (1957), founding what we know today as the European Union.

Considering recent events, such as the 2008 financial crisis and the currently ongoing withdrawal process of the United Kingdom from the European Union, integration has arrived at a halt: European decision-makers have been forced to assess their progress and rethink the strategy they have been following over the years. The main decision they had to make was choosing either the path of enhancing further convergence or giving rise to so called differentiated integration or a multi-speed Europe. As a commemoration of the 60<sup>th</sup> anniversary of the Treaties of Rome, leaders of European Union member states made a declaration in 2017 called the Rome Declaration choosing differentiated integration (European Council 2017).

However, assessing probable future scenarios and further convergence or divergence in the European Union is out of the scope of this study, as I am looking into the past instead of the future. In my study, I am analyzing the recent evolution of European integration from an aspect which is considered the greatest achievement of the European project: the free movement of people, capital, goods and services, namely the four freedoms. I have chosen a methodology that can best suit the nature of flows between member states which is network studies. Graph theory and network studies, even though emerging at the beginning of the 20<sup>th</sup> century (Barabási 2016), have really gained momentum in recent years as a result of developments in information technology.

My main research aim in this study is to highlight the most important steps that lead to the realization of the four freedoms, and with the help of network analysis, I am

aiming at uncovering the networks and most important flows in the European Union. Due to the lack of data in certain cases, I am focusing mostly on the free flow of persons, however, I am including results on the free flow of goods and services together and some results for the free flow of capital, however I faced the most difficulties while looking for data on the flow of capital.

The study is structured as follows: in *Section 2*, I take a brief look at the milestones of European integration with special attention on those events that contributed most to the realization of the four freedoms. In *Section 3*, I introduce the chosen methodology and data sources used in making the study. Finally, in *Section 4*, I present my main findings in connection to the recent evolution of the four freedoms in the EU.

## **2. Milestones of European integration**

European integration started at the beginning of the 1950s with the Schuman Declaration and the ECSC Treaty (1951). We regard the Treaties of Rome (1957) as the starting point of the current state of European integration, and the Single European Act (1986) as the treaty consolidating the four freedoms through the realization of the single market.

Despite the integration process being under way for nearly seven decades now, we can see that it has not been following a linear path. In this chapter I highlight the most notable events that helped further ensure the four freedoms in the European Union, for each of the freedoms separately.

### *2.1. Free flow of goods*

Title I of the Treaty of Rome (1957) is addressed at the free movement of goods. As Article I says, the aim of the European project is to create a common market in which all goods can circulate freely among member states without facing any obstacles or customs duties at the borders. As the primary objective of creating the Community was the creation of a customs union, at the early stages of European integration, most emphasis was put on abolishing barriers to trade and prohibiting customs duties and tariffs, as a result of which the Customs Union entered into force on 1<sup>st</sup> July 1968.

European economic integration processes followed the “classic” stages of economic integration, moving from more liberal stages of customs union or common market, towards a deeper level of economic integration, creating stronger bonds between the member states (Balassa 1961). During this deepening of integration, many European Court of Justice decisions contributed to the abolishment of barriers to trade, such as the 1974 ECJ decision on prohibition of trading rules hindering trade within the community, or the 1979 establishment of the principle of mutual recognition, meaning that goods can be recognized equally in all member states regardless of which member state that good has been manufactured.

The Single European Act, signed on 17<sup>th</sup> February 1986 was the first major revision of the Treaty of Rome, establishing the single market which became effective on 1<sup>st</sup> January 1993. This treaty is regarded as having finalized the realization of the four freedoms, however many smaller directives and agreements fine-tuned the free movement of goods, such as the Maastricht Treaty (1992), that eliminated barriers to trade and harmonized product standards, and the European Economic Area

Agreement, effective since 1<sup>st</sup> January 1994, which expanded the single market to non-member countries as well, or the Single Market Act of April 2011 (European Commission 2011), making further amendments in order to boost the growth and competitiveness of member states (NBT, 2015).

## 2.2. Free flow of persons

On the 25<sup>th</sup> March 1957 the six founding members of the European Economic Community signed the Treaty Establishing the European Economic Community (EEC) and the Treaty Establishing the European Atomic Energy Community (Euratom). The first mention of the free flow of persons, services and capitals is in Title III of the EEC treaty, and instructions aimed specifically at workers can be found in Articles 48 to 51 of the treaty, aiming at the free flow of workers between the member states of the Community, prohibiting discrimination against them, and providing them with public rights regardless of which member country they are from (EEC Treaty 1957).

The free movement of workers was therefore established as early as 1957, at a time when nothing and no-one else had the right to circulate freely within the Community. Families of workers had to wait until Council Directive 68/360/EEC of 15 October 1968 which abolished restrictions on the free flow of workers and their families (Council of the EEC 1968).

The upcoming decade was characterized by the enlargement of the Community and deepening monetary integration, as a result of which less emphasis has been put on the free movement of people until 14<sup>th</sup> June 1985, when leaders of the members signed the Schengen Agreement, making a pact on gradually abolishing border control between each other and thus removing obstacles to the free movement of citizens.<sup>18</sup> The Schengen Agreement became effective in 1995 and even though in 1985, only five of the at that time ten member states signed the Agreement, currently the Schengen Area is comprised of 26 countries who share open borders, including both European Union member states and non-member states as well, such as Switzerland, Norway and Iceland.

After the signing of the Schengen Agreement and the 1986 Single European Act established the single market, the process of ensuring the free movement of persons gained new momentum: the next major event providing more opportunities to learn and travel within the Community was none other than the Erasmus program. 2017 was a memorable year in a sense that apart from the 60<sup>th</sup> anniversary of the Treaties of Rome we celebrated the 30<sup>th</sup> anniversary of the setting up the Erasmus program. Despite being a small fraction of the EU budget (currently set at 16.4 billion EUR for the period between 2014 and 2020), the program is considered to be “one of

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<sup>18</sup> EUR-Lex (2018). The Schengen acquis - Agreement between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic on the gradual abolition of checks at their common borders. Online: [http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:42000A0922\(01\)&qid=1526318684121&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:42000A0922(01)&qid=1526318684121&from=EN), Accessed: 07.05.2018.

*the European Union's most successful and iconic programmes*" (European Commission 2017). Just to emphasize how important this program is, in 2016 on a budget of 2.24 billion EUR, the program supported more than 725,000 mobility programs all around Europe (European Commission 2017).

To benefit other groups of people beyond workers and their families, in 1990 the principle of the free flow of economically non-active individuals was implemented, establishing the free movement of students and retirees in the Community as well. Even though previous treaties and directives aimed at the free movement of specific people, the Maastricht Treaty signed on 7<sup>th</sup> February 1992 and effective since 1993, brought another notable milestone, establishing the notion of EU citizenship, that treated all groups of people equally, providing everyone with the same rights to travel and work freely in any member state of the new European Union, the successor of the European Economic Community.

The latest achievement to mention is the 2004 Free Movement Directive (2004/38/EC), further consolidating the rights of EU citizens to move and reside freely in any member states of the European Union.

### *2.3. Free flow of services*

Articles 59 to 66 of the EEC treaty (1957) contain instructions on the free flow of services in the Community, ensuring the freedom of providing services in the Community, however in the case of banks and insurance companies, whose services are bound to capital movements, liberalization had to be implemented in harmony with the progressive liberalization of capital movements, described by Articles 67 to 73 of the Treaty of Rome.

Such as in the case of goods, European Court of Justice decisions and Community directives contributed greatly to the liberalization of the provision of services in all member states: the 1974 ECJ decision prohibited discrimination against citizens setting up businesses and/or providing services within the community, while the 1989 directive on mutual recognition ensured the recognition of different professions in order to provide services. Mutual recognition of those professions that were not covered by the 1989 directive were ensured by the 1992 directive on mutual recognition.

Similarly to the case of the free movement of persons, even though many minor regulations have already existed in the EU to ensure the free movement of services providers, the 2006 Directive 2006/123/EC, or the Services Directive as many know it, brought all services together, establishing a Single Market for services as well, already implemented by all member states no later than 2009 (European Parliament 2006).

### *2.4. Free flow of capital*

The free movement of capital also originates from the Treaty of Rome (1957), as Articles 67 to 73 contained instructions on the free circulation of capital to help countries engaged in economic integration, and to enhance cooperation between economies. The free flow of capital has been mentioned in directives, regulations or

agreements less frequently than the other freedoms, however we can easily recognize those events that contributed the most to the realization of this freedom even without directly specifying this among their aims.

The Barre Plans (1968) by Raymond Barre were the first major plans aimed at the coordination of national economic policies and driving monetary convergence, followed by the 1969 summit in the Hague, where European leaders agreed on the first steps towards establishing economic and monetary union, which resulted in the Werner Report of 1970. As Pierre Werner said:

*“Economic and monetary union will make it possible to realize an area within which goods and services, people and capital will circulate freely and without competitive distortions, without thereby giving rise to structural or regional disequilibrium”* (Commission of the EEC 1970, p. 9).

Despite it not being possible to implement the Werner Plan on time, Pierre Werner has since then been regarded as the person who gave rise to the euro. In 1979, the European Monetary System and the European Currency Unit were introduced, the latter as the reserve currency of the Community (Bates 2002). Then the 1992 Maastricht Treaty eliminated barriers to capital flow, realizing the complete freedom of capital to circulate within the European Union.

As we can see from the above, many larger and smaller events contributed to the realization of the four freedoms of the European Union, step by step. Even though I have mentioned only the most notable ones, many smaller directives and regulations served to amend those mentioned previously, enlarging the scope of the free movement of persons, goods, services and capital.

### **3. Methodology**

In my study I focus on illustrating the flows of those enjoying the benefits of the four freedoms. Due to the lack of data, I shall concentrate mainly on the free movement of persons, as data is available for several groups of European citizens from various sources. In the case of other factors, data was either problematic in itself or hard to acquire.

To illustrate the movement of persons, goods and services and capital, I have chosen graph theory to analyze underlying networks in the European Union. With the help of network studies, I have been able to show in a visually pleasing way the origins and destinations, the strength of flows, and I also discovered certain groupings of countries that might have stronger relations with each other. In this chapter I am introducing my methodological tools and the data sources used.

#### *3.1. Graph theory and network studies*

Graph theory and network science is currently quite a popular area, scientist in many fields apply the tools of network studies and graph theory to assess economic, social, and biological phenomena etc. (Roverato 2017). Graph theory first originated in the early 18<sup>th</sup> century with Euler’s 1736 study entitled the Seven Bridges of Königsberg. The foundations of graph theory originate from this year, however for real breakthroughs the scientific world had to wait until the early 20<sup>th</sup> century. Many Hungarian

mathematicians and scientists contributed to the emergence of graph theory and network studies, such as König, Erdős, Rényi and Barabási (Barabási 2016).

In my study I have chosen to visualize and analyze the flow of persons, goods and services with the help of network study tools. I have used the Gephi 0.9.2 software as the analytic tool at my disposal, creating directed graphs in which the nodes are the different countries and the edges between them indicated the flow of the above-mentioned factors. Apart from simply visualizing these flows, I aimed to analyze certain indicators:

- *Degree*: the degree of nodes can show how many countries a given country is connected to, the higher degree a country has, the more connection it has with other member states. In-degree and out-degree of nodes can also be analyzed: in the case of in-degree we can see from how many countries the flows are coming, and in the case of the latter, we see to how many countries the persons, goods and services flow.
- *Average degree*: average degree shows how many connections countries have on average in a given year.
- *Weighted degree*: the weighted degree shows the intensity of the different flows, in the case of weighted in-degree we can analyze the strength of inflows to a given country, while in the case of weighted out-degree, we can analyze the strength of outflows from a given country. Degree and weighted degree can help to uncover the greatest actors of the system.
- *Average weighted degree*: it shows the average intensity of flows between member states.
- *Graph density*: the density of the graph shows the connectedness of the constituents of the network, the higher the density, the more relations nodes have on average, which can also be understood as European Union member states being more deeply integrated.
- *Modularity*: with the help of the Gephi modularity tool, I was able to uncover homogeneous subsets of countries showing similar characteristics within their own groups, however having more distant relationships with countries outside of their “club”.

As the title of my study says, I aimed at examining the recent evolution and current state of the four freedoms, hence I have chosen to examine the past 20 years as data is mostly available for this period. Apart from that, I would like to emphasize that during my analyses, even though non-member European countries were included in numerous datasets, I omitted them from the analyses, as I wanted to focus purely on European Union processes.

### 3.2. Data sources

For my analyses I obtained data from various sources such as the Eurostat, the European Commission, the United Nations or World Bank, and for some specific datasets, I reached out to the Erasmus+ website, the COMEXT database and the UN Comtrade dataset.

To analyze the free movement of persons, I assessed the following indicators:

- migration in general, expressed as the number of persons migrated in a given year, dataset obtained from the UN Population Division
- student mobility, expressed as the number of students having taken part in mobility programs, data obtained from the EU Open Data Portal
- profession recognition, the number of professions recognized in another member state, dataset obtained from the European Commission
- posted workers, expressed as the number of workers posted from one member state to another, data also obtained from the European Commission.

In the case of goods and services, I relied on trade datasets and assessed trade relations of countries. In trade databases, goods and services could not be separated clearly as many international datasets only comprises aggregated data, thus I decided to analyze the flow of goods and services together. I have assessed trade relations by creating export-import networks based on the methodology of Zhu et al. (2014) and Ermann-Shepelyansky (2015), analyzing export flows obtained from the COMEXT dataset. Even though it was not analyzed in this current study, I obtained data from the ResourceTrade.Earth website<sup>19</sup>, which relies on UN Comtrade data in visualizing trade flows of natural resources, and also some data on the international trade of services between member states, obtained from the Eurostat website.

Analyzing the free movement of capital was where I faced most obstacles, as data was either hard to acquire or non-existent, or in many cases highly insufficient. I tried to obtain data on direct investment flows, including inward and outward FDI, however even though data is available at the member state level, a break-down into the sources and origins of FDI flows is hard to find in official statistical databases.

#### **4. Main findings**

In this chapter I introduce my main findings on the recent evolution of the four freedoms with special attention to the free movement of persons. During my analyses, I was hoping to see some major events in the history of the EU (such as the 2004 enlargements, the 2008 financial crisis and the 2016 Brexit referendum) as perturbations in the flow of integration and even though my results are nothing out of the ordinary, it was pleasing to see how similar my results were to previous studies such as Farkas (2016) by analyzing the same integration process from a different aspect and with different tools.

To highlight my main findings, I found that European integration intensified after the Eastern enlargement and slowed down in the aftermath of the crisis, and the same can be said about intra-EU migration. Concerning the free movement of persons, Erasmus is a highly successful mobility program whose participants tend to grow gradually in number. However, it is also affected by economic shocks, even though shocks have a lagged effect on Erasmus mobility numbers.

The main message of my research is that core-periphery distinction holds for all the aspects examined. Despite in some cases being geographically distant from each other, countries who share common historical ties tend to have stronger bonds,

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<sup>19</sup> Chatham House: ResourceTrade.Earth, Online: <https://resourcetrade.earth>

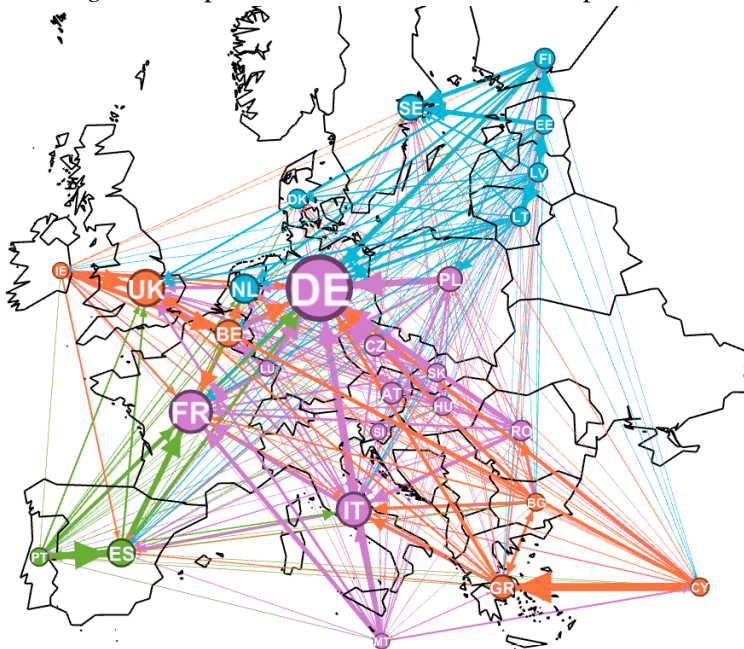
which does not necessarily help in deepening integration between European Union member states.

#### 4.1. Free flow of goods and services

Based on the methodology proposed by Zhu et al. (2014) and Ermann-Shepelyansky (2015) to examine the free flow of goods and services, I obtained intra-EU trade data from the Eurostat COMEXT Database. By assuming that export from one country is an import in another, I created trade network graphs with the help of export volumes expressed in EUR. Even though the COMEXT Database contained detailed data on trade flows, I faced two difficulties: firstly, in the case of intra-EU trade volumes, data is only available for the years 2010 and 2016, hence I could not make a longer time series analysis, despite it being one of my aims, and secondly, data could not be separated for goods and services, as a result of which I could not analyze solely the free flow of goods or services.

The graphs below show the distribution of exports as a percentage of each country's total intra-EU trade. This means that the weight of edges reflects how exports are distributed among member states, the higher weight an edge has, the higher the share of a given country's export is flowing to another country. As an example, in 2010, the highest percentage of Italian exports were flowing to Germany, and the same can be said about Polish exports as well, while the main trading partner of Ireland was the UK, the main partner of Portugal was Spain, and the main partner of Cyprus was Greece. Trade patterns did not really change in the period examined.

Figure 1 Exports as a % of total intra-EU export, 2010

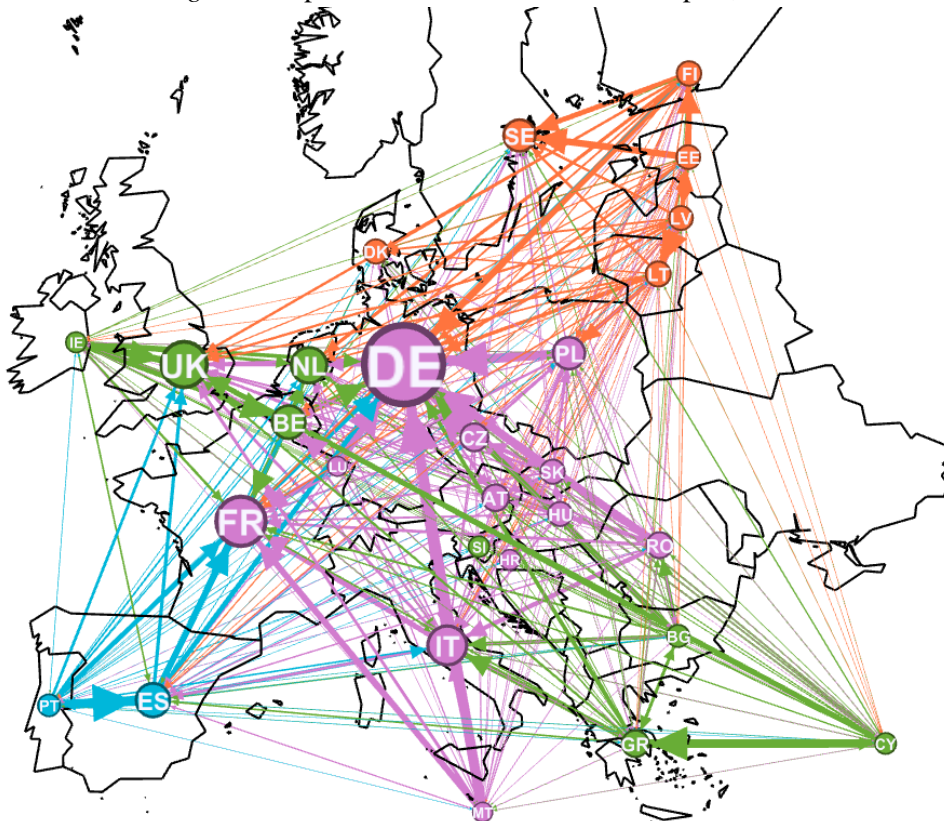


Source: own edition based on Eurostat COMEXT data



For both of the years examined, I was able to identify four clusters: Hispanic countries, Central Europe, Nordic and Baltic countries, and finally, a cluster whose members are geographically less integrated, however are strongly connected economically, composed of the UK, Ireland, Belgium, Greece, Bulgaria and Cyprus. By examining trade networks for both 2010 and 2016, we can see that patterns have not changed, with regards to trade, countries tend to connect more with such members that are historically and geographically closer to them, as the example of Central Europe or the Baltic countries shows quite well.

Figure 2 Exports as a % of total intra-EU export, 2016



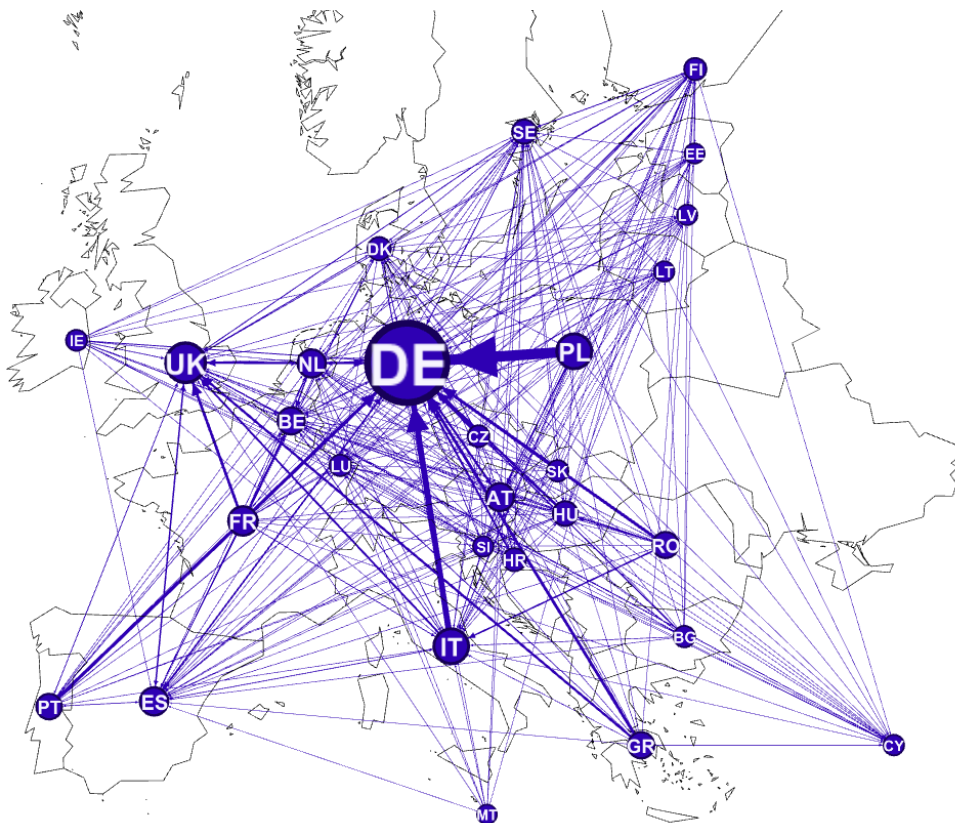
Source: own edition based on Eurostat COMEXT data

To summarize my findings on analyzing trade flows, I determined that with regards to export relations, the behavior of countries had not changed in such a short time period, and that clusters were more or less identical in both of the years examined, meaning that countries favored trading with the same member states. With regards to the free movement of goods and services, we can see from the numerous edges that even though the share of exports between different member states are not equal, countries are trading with more distant partners as well, suggesting that the free movement of goods and services is also well-established in the European Union.

#### 4.1. Free flow of persons

The area I put the most emphasis on during my analyses has been the free movement of persons. To analyze migration in general, I assessed the number of persons migrated intra-EU in the selected years, 1998 and 2013. *Figure 3* shows the 1998 movement of persons in the EU. The nodes of the graph are the member states, and the directed edges show the origins and target countries of people migrating between member states. The weights of the edge indicate the number of people migrating, the thicker an edge, the more people were moving from one country to another. The sizes of the nodes reflect the weighted degree, reflecting on the number of both leaving and arriving people. According to these findings, Germany has been both the greatest recipient and sending country, followed by the UK, Poland and Italy. These countries are among the top sending countries, however in the case of Poland, in 1998 its in-degree was close to zero, indicating that its place among the top most mobile country was due to the fact that many people were leaving for Germany.

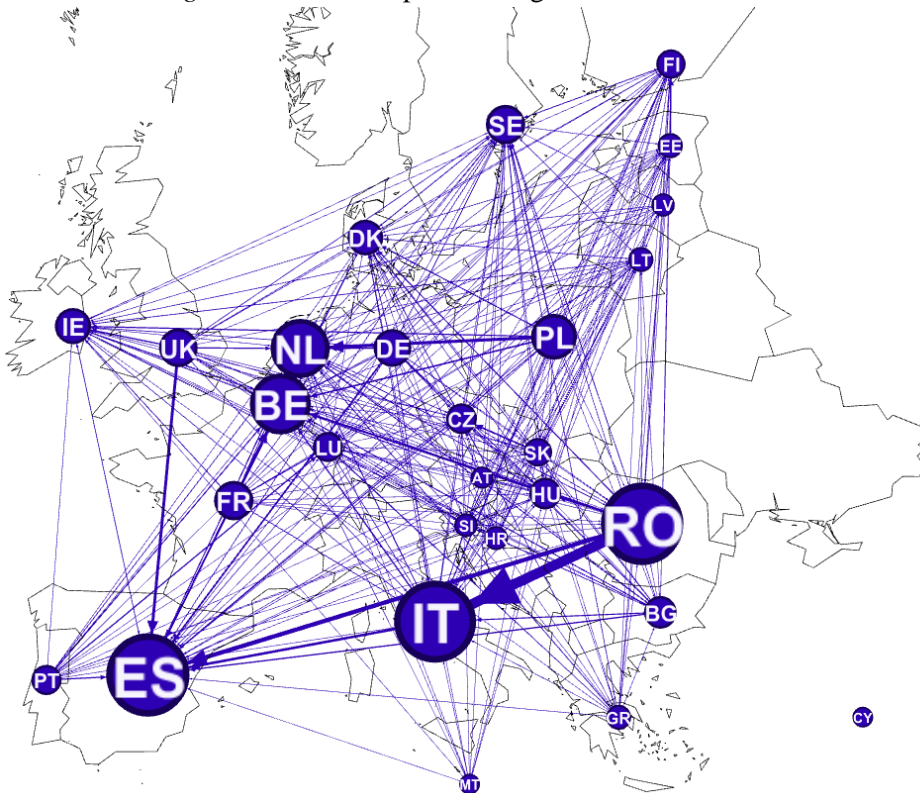
*Figure 3* Number of persons migrated intra-EU, 1998



Source: own edition based on UN DESA Population Division data

Figure 4 shows the same indicator for a much later year, 2013. 15 years after the above graph, migration flows seem to have changed to a system characterized by intensive flows in the southern member states and much lighter flows in Northern Areas. In 2013, the top member states who had the most intensive flows were Italy, Romania and Spain, while Germany is nowhere to be seen among the top mobile countries.

Figure 4 Number of persons migrated intra-EU, 2013



Source: own edition based on UN DESA Population Division data

To see how major events affected integration processes, I calculated the average degree, average weighted degree, and density of such networks for 1998, 2003, 2008 and 2013. The average degree indicated that in 2003 a strengthening was present in migration flows which was due to the fact that new member states had started preparing for the accession to the EU long before it came into effect. This strengthening peaked in 2008, countries having connections with on average 19.75 countries, and in the aftermath of the crisis, countries returned to pre-crisis levels, and indeed, it can be seen from the average weighted degree of the nodes, that intensity of migration flows also slowed down significantly.

The density of the network shows how deeply embedded countries are in the system we call the European Union. The slight increase and then fall process follows the same pattern that we were able to see in the case of the average degree, indicating

that even though integration gained momentum after the Eastern enlargement, the financial crisis hampered further integration and thus, caused divergence (*Table 1*).

*Table 1* Indicators of economic integration (1998–2013)

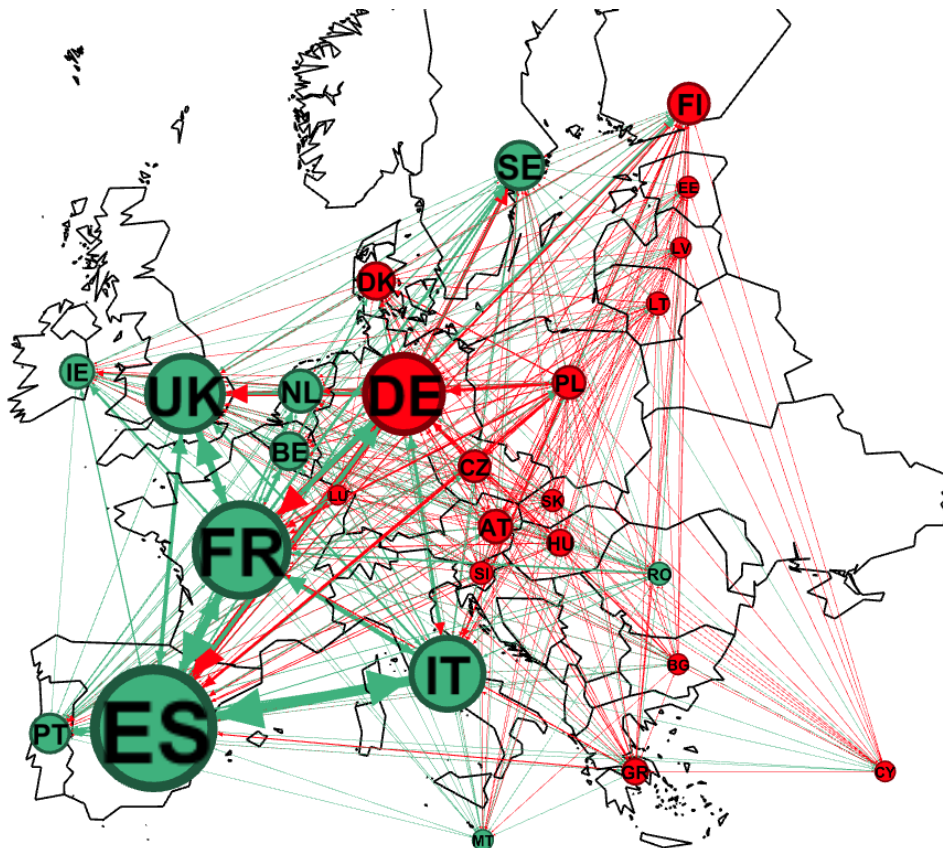
	1998	2003	2008	2013
Average degree, number of countries	13.607	16.786	19.75	16.074
Average weighted degree, number of persons	18444.607	30520.929	38955.393	15287.074
Graph density	0.504	0.622	0.731	0.618

*Source:* own edition based on UN DESA Population Division data

Unfortunately, Erasmus datasets are not as widely available as general mobility data, however I was able to obtain detailed data that contained more than the simple sum of mobility from as early as the 2008-2009 academic year. As *Figure 5* shows, the flow of students has been the strongest between the Western member states, and the weakest between Northern member states and the Baltic countries. However, we cannot make far-reaching conclusions, as in the case of Germany, Spain, France or Italy, the large numbers of student mobilities are due to these countries having larger populations, while those with significantly smaller populations cannot send as many students to participate in mobility programs.

Node sizes represent the most popular destination countries, Spain was the most visited member state in 2008-2009, followed by France, the UK and Germany, meaning that most of the students went to these countries to participate in exchange programs. This graph is colored in two colors: after running the modularity analysis, I was provided with two clusters dividing the European Union into two clubs: Eastern and Western. The western club contained Spain, France, Ireland and most of the Western European countries. The red cluster contained Germany, as it has been a popular destination of students from Central and Eastern Europe.

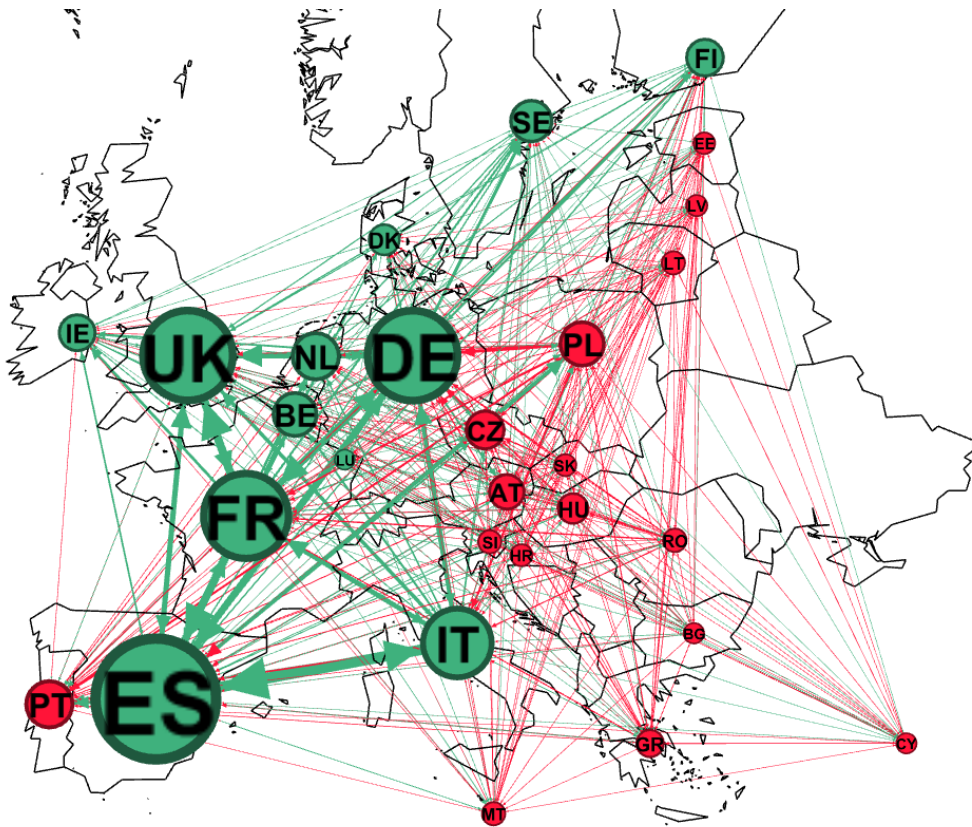
Figure 5 Number of students taking part in Erasmus mobility programs (persons), academic year 2008-2009



Source: own edition based on EU Erasmus mobility statistics

By running the same analysis on data for the 2015-2016 academic year, the situation remained unchanged in as far as the core area was characterized by stronger student flows, more students were taking part in mobility programs in Western-Europe. Running the cluster analysis again, it turned out that Portugal and Germany had changed places: Germany has become rather a destination for Western-European students, while Portugal changed to becoming a possible destination for their Eastern-European counterparts (Figure 6).

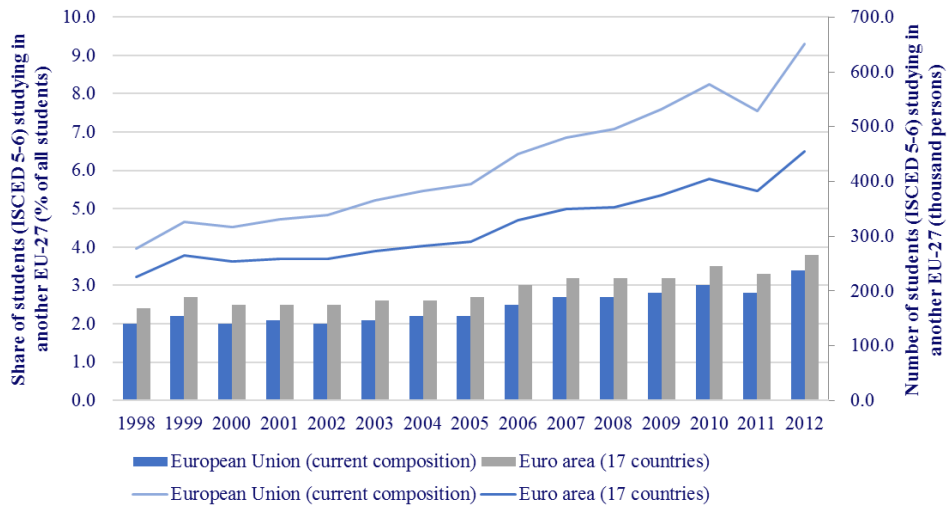
Figure 6 Number of students taking part in Erasmus mobility programs (persons), academic year 2015-2016



Source: own edition based on EU Erasmus mobility statistics

While analyzing the movement of students in the EU, I noticed something interesting in how the number of students taking part in mobility programs increased. *Figure 5* shows the share and number of students studying in another Member State. We can see a few major breaks in the time series. The less noticeable break is in 2005-2006, when the number and share of students studying abroad increased greatly, probably due to EU enlargement. Mobility programs require a lot of administration and it seems that as administration and preparation delays the starting point of mobility programs, economic events and shocks have a lagged or delayed effect on the number of students studying abroad. The second notable break in the time series seem to be the lagged effect of the 2008 financial crisis visible in 2011 (*Figure 7*).

Figure 7 Number and share of students studying in other EU-27 member states



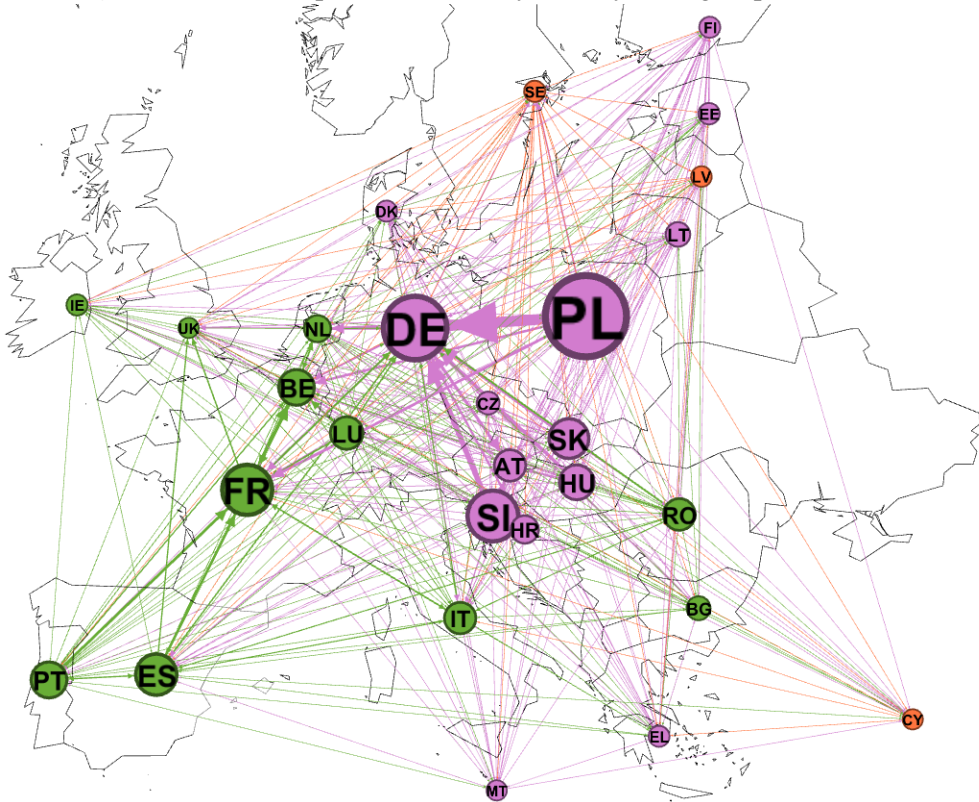
Source: own edition based on Eurostat data

Concerning another group of persons, I assessed the number of posted workers. A posted worker, according to Directive 96/71/EC of the European Parliament is a “a worker who, for a limited period, carries out his work in the territory of a Member State other than the State in which he normally works” (European Parliament 1996). Posting of workers is a relatively new phenomenon, hence I assess only recent data on the posting of workers, the latest available data is for 2015.

Figure 8 shows the flow of posted workers based on countries of origin, the larger node indicating most workers being posted out of the country, while on Figure 9 below, node sizes reflect the most notable target countries. In 2015, more than two million European workers were sent abroad, the four main sending countries being Poland, Germany, France and Slovenia, accounting for nearly half of the posted workers, while the three main receiving countries were Germany, France and Belgium. The most notable flows were from Poland, Slovenia, Slovakia and Hungary to Germany, from Italy to Switzerland and from France to Belgium (European Commission 2016).

The strongest worker migration flow thus can be identified as being between Poland and Germany, highly contributing to Germany being the most popular destination country and Poland being the greatest sending country. The core-periphery distinction also stands in this case with regards to the patterns countries show in the posting of workers. Two large clusters and a third, much smaller one could be identified in the case of posted workers. The Western one comprised of Western European countries, Romania and Bulgaria, while Central-Eastern European and Baltic countries compose the same cluster with Germany that can be explained by the strong flows to Germany.

Figure 8 Number of posted workers by country of origin (persons), 2015

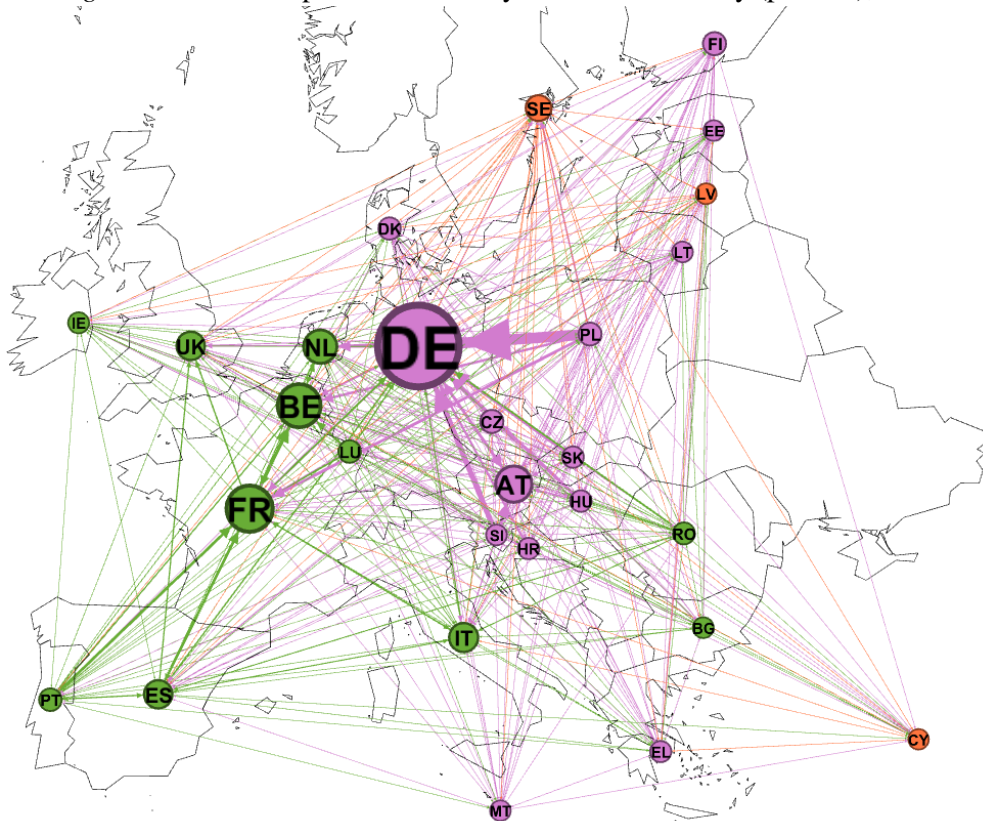


Source: own edition based on European Commission data

As a result of deepening European integration, European citizens became more mobile, and after the Eastern enlargements, intra-EU migration flows intensified. In the aftermath of the financial crisis, as people faced economic and financial difficulties, migration flows fell back to pre-crisis levels, but recovery can be seen, as for several groups intra-EU movement again seems to be a favorable option. Meanwhile, the number of posted workers and students continuously increasing in the European Union. To conclude, the free movement of persons is a freedom all citizens can benefit from and the European Union succeeded in creating an environment that promotes the free movement of people of all ages and professions.



Figure 9 Number of posted workers by destination country (persons), 2015



Source: own edition based on European Commission data

## 5. Conclusion

In my analysis I was aiming at highlighting the most important steps that lead to the realization of the four freedoms with the help of network analysis. I succeeded at uncovering sub-networks and the most important flows of persons, goods and services in the European Union. In the first part of my study, I briefly summarized the most important events of the previous six decades that contributed to the realization of the four freedoms, and in the second part I conducted an analysis using network science tools to best suit the nature of different flows within the European Union.

My results show that the freedom of persons to reside, work and study in any member state of the European Union has been consolidated through decades of gradually abolishing borders to workers, students and other societal groups, and a result of which internal migration intensified greatly between member states, even though certain shocks and crises perturbed the movement of persons, sometimes affecting the flow of people after several years' delay.

Regarding trade networks in the European Union, based on the available data, four main country groups could have been distinguished, that share both strong historical and geographical ties, geopolitical proximity still accounting for stronger

trade relations these days as well. To conclude, the four freedoms are well and truly in place, accounting for intensive movements in the European Union, which are best visualized in a complex, yet easy to understand way with the tools of network science and graph theory.

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