



**Politecnico  
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## **Nearshoring**

An Italian case study of manufacturing firms

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## Abstract

The thesis explores the phenomenon of nearshoring, examining its drivers, consequences, and evolving trends. At first the paper highlights some important contents obtained in the academic literature about offshoring, reshoring and nearshoring. *Offshoring*, the relocation of production processes to foreign locations, has been significantly influenced by globalization and reduced trade barriers. Then, *Reshoring*, the relocation of manufacturing activities back to the home country, has gained prominence in recent years due to several factors, including changes in the competitive environment, strategic repositioning, the correction of previous managerial mistakes and other internal factors.

A new phenomenon called *Nearshoring*, the relocation of manufacturing activities to nearby countries, is gaining importance due to factors such as reduced trade barriers, geopolitical tensions, and supply chain disruptions. The study analyzes the motivations behind nearshoring decisions, including cost savings, improved responsiveness, and intellectual property protection. It also investigates the factors influencing the choice of nearshoring destinations, such as geographic proximity, cultural similarities, and economic conditions. Furthermore, the research examines the types of firms that are more likely to engage in nearshoring, considering factors like size, industry, and prior offshoring experience.

The following parts of the thesis focus on a dataset of import and export transactions of 5.000 Italian manufacturing firms from 2008 to 2019 in three different samples, each one through three different approaches. The approaches change according to three definitions of nearshoring: the first one related to nearby countries in geographic terms, the second one related to only European members as nearby countries and the third one related to political closeness screening the nearby countries as members of the OECD organization. The three databases differ for the definition of Offshoring because the study identifies an offshoring firm when it has at least one import and one export transactions with ateco code of the firm equal to the ateco code of transaction (in 4-, 5- and 3-digit respectively) and the nearshoring is measured only considering the occurrences of offshoring companies. The hypothesis is that the companies

traded their main goods manufactured abroad. The study finds around the 31% of nearshoring companies in respect to all offshoring firms (11% of the original database).

Eventually the analysis focuses on the most important ateco codes of nearshoring companies in order to point out that textile, plastic material and dairy industries are more involved in the phenomenon.

By exploring these aspects, this research aims to contribute to a deeper understanding of the complex phenomenon of nearshoring and its implications for businesses, economies, and societies worldwide.

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# 1.0 INTRODUCTION

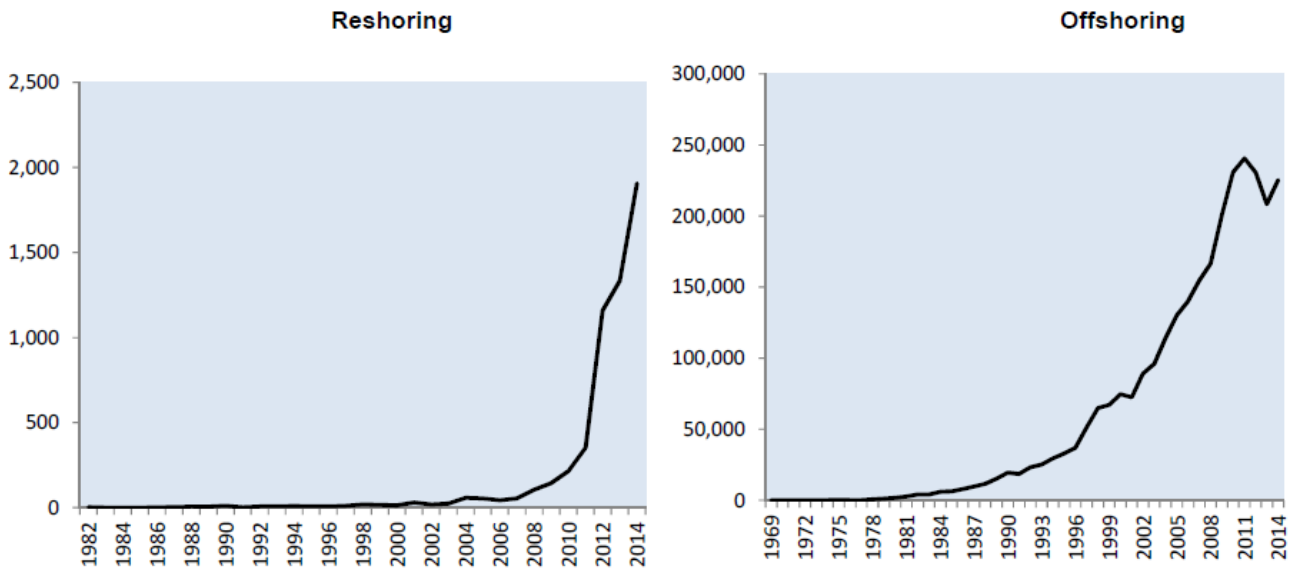
## 1.1 OFFSHORING

During the last century the companies started the process of offshoring thanks to globalization and the reduction of the barriers among countries. The benefits of global economic integration are generally well recognized and include lower transaction costs, lower consumer prices, greater economic efficiency through specialization, faster technology diffusion, faster cross-country income convergence, and a large decline in extreme poverty (IMF 2023).

Offshoring is the process of changing the geographic assignment of the mix of tasks needed to produce a single final good or service (Hummels et Al. 2018). There are three basic channels that boost offshoring (Hummels et Al. 2018). Firms may experience a reduction in trade and coordination costs (lower tariffs or improvements in shipping, information, and communications technology) that lower the penalty associated with disaggregating a given set of tasks. Task requirements (or location comparative advantages for producing tasks) may change. In addition, there may be changes in the ability of the firm to coordinate production at a distance or transfer technological advantages from one location to another.

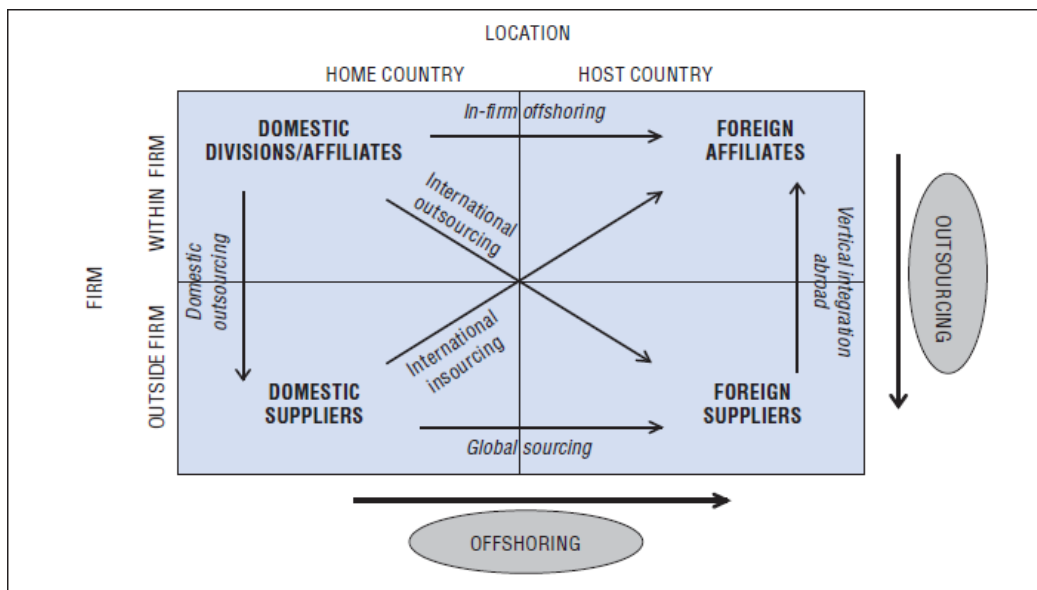
The academic literature is quite advanced because it started in the 1980s and it is quite focused on the consequences of the labor market in developed and developing countries (figure 1). For instance, Botero et Al. 2004 classifies Denmark as having one of the most flexible labor markets in the world, comparable to the United States. In 1995 the average tenure in Denmark was the lowest in continental Europe at 7.9 years, similar to the level in UK (7.8 years) and lower than Germany (9.7 years). For this reason, Hummel et Al. 2014 made a study on data from the Firm Statistics Register which covered the universe of private sector Danish firms for the years 1995 – 2006. The manufacturing firms in the sample account for 21% of total Danish imports and they supply 50% of Danish exports, with service industry firms comprising the remainder. They define “broad offshoring” to be the total value of imports by a given manufacturing firm in a given year and “narrow offshoring” as the sum of imports in the same category as goods sold by the firm (either domestically or in exports). The idea is that the

closer the inputs are to the final outputs, the more likely it is the labor within the firm could have produced those inputs. Imports of raw materials are in broad offshoring but out of narrow offshoring.



**Figure 1:** Count of media articles referencing to reshoring and offshoring  
 Source: Cranfield University 2015. *An Analysis of the UK's Capability to Reshore Production*

Offshoring includes both international outsourcing (where activities are contracted out to independent suppliers abroad) and international in-sourcing (the transfer of particular tasks within the firm to a foreign affiliate). (De Backer et Al. 2016).



**Figure 2:** Firms' strategies of outsourcing and offshoring  
 Source: OECD (2013), *Interconnected Economies: Benefitting from Global Value Chains*, OECD Publishing, Paris.

The international expansion of multinational firms was fueled by labor arbitrage, a substantial lowering of import barriers for intermediate goods, lower cost of cargo transport, and the rapid development of ICTs which supported transborder communication and coordination (Dicken 2014).



## 1.2 RESHORING

### 1.2.1 Definitions

Since the beginning of this century, academics have started to write about a new phenomenon called “reshoring” (figure 1) in contrast of the previous concept of offshoring cause some companies have decided to move the production back to the parent company headquarter country. During time the academic studies showed the reshoring concept in different ways.

The term reshoring indicates the voluntary decision of a firm to partly or fully relocate business operations from previously offshored locations to its home country (Canello et Al. 2022). The vast majority of reshoring strategies are performed by manufacturing firms (Eurofound, 2019).

Some authors call it backshoring as the decision to relocate manufacturing activities back to the home country of the parent company (Kinkel & Maloca, 2009; Arlbjørn & Mikkelsen, 2014; Fratocchi et Al., 2014a). Backshoring can origin from wholly owned production sites of the company (captive backshoring) as well as from foreign suppliers (outsourced backshoring). (Dachs et Al. 2019).

Therefore, manufacturing reshoring can be considered from company boundaries (insourcing and outsourcing) and geographical boundaries (home country and foreign country (perspective)). As a result, there are four possible reshoring strategies (Gray et Al. 2013):

- ➔ In-house reshoring, where companies supply their domestic market by repatriating the entirety or part of their wholly owned manufacturing facilities from the foreign country to wholly owned facilities at home;
- ➔ Reshoring for outsourcing, where companies supply their domestic market by shifting the manufacturing activities from wholly owned manufacturing facilities from the offshored location to a home-country based supplier;
- ➔ Reshoring for insourcing, where companies supply their domestic market by changing the companies’ sourcing strategy from offshored suppliers to wholly owned manufacturing facilities in the home country;

- ➔ Outsourced reshoring, where companies supply their domestic market by converting their supply mode from offshored suppliers to home-country based suppliers.

Gray et Al. (2013) account reshoring as a “where” decision for manufacturing activities independently of “who” is performing the tasks, so they regard it as a location decision.

Fratocchi et Al. (2018) stated that reshoring can differ for:

1. Country where earlier offshored manufacturing activities are reshored; some authors suggested distinguishing back-(re) shoring (Bals et Al. 2016, Foerstl et Al. 2016, Fratocchi et Al. 2014a, Fratocchi et Al. 2014b), that is when the production transfer is directed toward the home country, and near-(re)shoring (Fratocchi et Al. 2014a, Fratocchi et Al. 2015b), if it is oriented toward countries close to the home country.
2. Types of relocated activities; most of papers analyzed are focused on production activities, but some of them refer to Porter’s value chain activities (Bals et Al. 2016, Tate and Bals 2017, Zhai et Al. 2016), “activities or functions” (Gylling et Al. 2015) and “firms’ foreign activities” (Stentoft et Al. 2016a, Stentoft et Al. 2016b).
3. Governance structure adopted in the manufacturing offshoring and reshoring phases: some authors think that reshoring strategies imply insourcing decisions.

Reshoring may be considered as one of the possible evolutions of the “non-linear” (Vissak 2010, Vissak and Francioni 2013, Vissak et Al. 2012) internationalization process of production activities (Fratocchi et Al. 2015b, Fratocchi et Al. 2014a, Fratocchi et Al. 2014b). The “non-linear” internationalization is related to the fact that sometimes the companies do not decide to enter into foreign markets step-by-step through a strategy, they can deal with some projects abroad or they can find new international purchaser with specific needs; these opportunities can be temporary and unique, or they can make the company enter into new markets.

Some authors consider reshoring as comprising backshoring and nearshoring (Foerstl et Al. (2016); Fratocchi et Al. (2018)). More recently some authors consider the reshoring a general concept of relocating after a first offshoring period, as a change in the internationalization strategy including backshoring, nearshoring and further offshoring (Di Stefano et Al. 2023).

Barbieri et Al. (2019) have labelled the further movements of previously offshored manufacturing activities as “Relocations of Second Degree” (RSD), which they have characterized as either “Relocations to the Home Country” (RHC) or “Relocations to a Third Country” (RTC) – the latter assuming a movement towards a second host country, different from home.

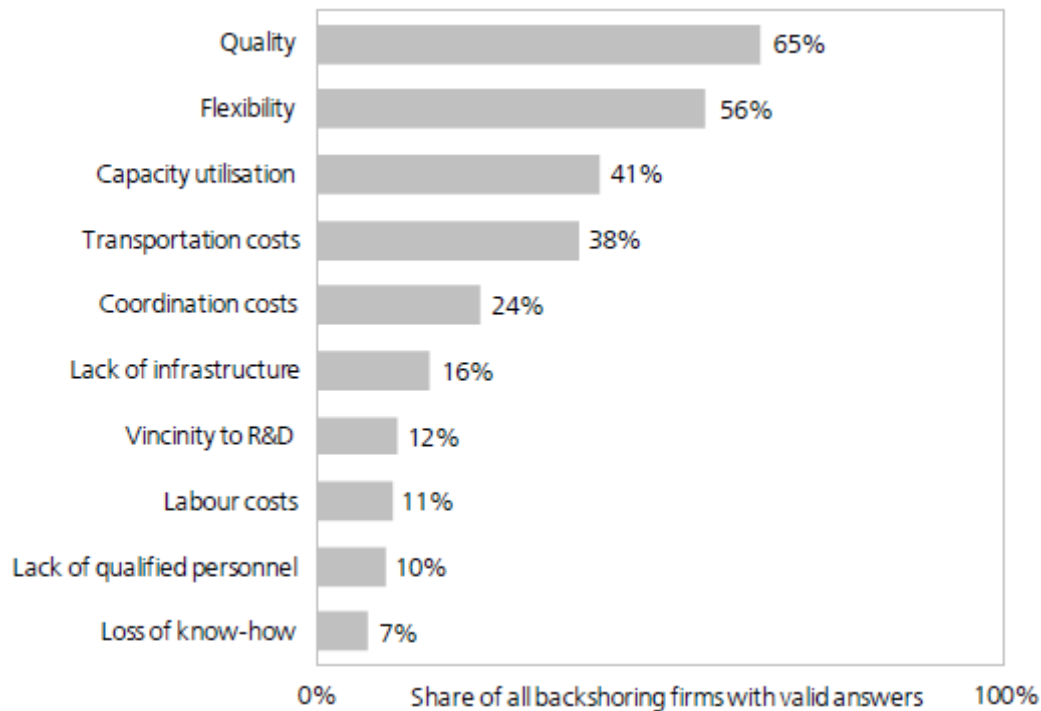
## **1.2.2 Reasons**

According to De Backer et Al. (2016) a multitude of factors play a role in the decision of companies where to locate activities including the size and growth of the local/regional market, (wage) costs, the availability of resources, human capital, the presence of suppliers and scientific infrastructure. The fact that reshoring is gaining in importance implicitly means that developed countries are becoming more attractive for some production activities after decades of losing production activities to emerging countries. In addition, energy costs and building costs in some emerging economies are reported to have risen dramatically in recent years.

Backshoring can be explained by three main conceptual frameworks (Canello 2022). First, this strategy can be the consequence of exogenous or endogenous changes in the competitive environment of the host country, which reduce the attractiveness of the foreign location (Martinez-Mora & Merino 2014). Second, backshoring can be the effect of a strategic shift of the offshoring firm, aimed at repositioning its brand (Boffelli et Al., 2020; Di Mauro et Al., 2018), increasing synergies between manufacturing activities and research and development (Di Mauro et al., 2018), pursuing the triple bottom line (Barbieri et Al., 2018; Fratocchi & Di Stefano 2019) or adopting new production technologies (Ancarani et Al. 2019; Ancarani & Di Mauro 2018; Dachs et Al. 2019). Third, backshoring can be configured

as an error correction of previous managerial mistakes (Gylling et Al. 2015; Kinkel 2014; Kinkel & Maloca 2009).

The European Manufacturing Survey (EMS), organized by a consortium of research institutes and universities coordinated by the Fraunhofer Institute for Systems and Innovation Research ISI and taken every three years, showed that only four percent of all firms have moved production activities back to the home country between 2010 and Mid-2012. This is considerably lower than the share of firms which have offshored production activities in the decade before (17%). Moreover, there are still considerably more firms which offshore than backshore (Dachs & Zanker 2014). They showed that in the last decade China, India and EU members which joined the European Union in 2004 were the main target countries for production offshoring of European Firms. So, they were also the most important source countries for backshoring in the period 2009-2012. EMS results indicate that the most frequent motive for backshoring are problems with the quality of goods produced abroad, more than half of the firms in the sample report quality issues as the reason for backshoring (figure 3). Another important reason which is valid for more than half of all backshoring firms is a loss of flexibility. Production activities spread over several countries make it more difficult to react quickly to changes in market demand or new needs of key customers.



**Figure 3:** Reasons for the backshoring of production activities  
Source: European Manufacturing Survey 2012, Fraunhofer ISI

In addition, while manufacturing offshoring decisions are often motivated by cost elements, reshoring strategies seem to be undertaken also on the basis of strategic elements, such as “made in effect” (Diamantopoulos et Al. 2011), co-location of R&D (because if R&D is in a country and the production in another one there can be problems of communication, coordination and the production facility may lack of skills), engineering and production activities, responsiveness to customer demand (Fratocchi et Al. 2018). The “made in effect” is related to the ability of the country image to affect the brand image because consumers perceive higher quality for specific categories of products if they are produced in specific countries, for instance the Italian clothes are recognized to have a high quality, and the companies are favored in their sales by this reputation. This effect is even thanks to important brands, and it can be a driver in some industries where product consumption is sensitive to this concept like textile, clothing, leather and footwear industry (Ancarani et Al. 2015; Ashby 2016; Fratocchi et Al. 2016).

The main “managerial mistake” reasons for backshoring can be related to miscalculation of actual costs suffered in the offshoring process, mistake correction consequently to misjudgement of foreign locations, lack of knowledge

of host country and the difficulty in transferring the knowledge to the subsidiaries, lack of systematic location planning including evaluation of different scenarios and assessment of different possible results taking different decisions, bandwagon effect/overhasty off-shoring effect when companies offshored only to follow other competitors, bounded rationality because even managers decide according to the information they have, so they can miss some potential contingencies, opportunism when the operators think the other ones behave in an opportunistic way and try to reduce their dependence from specific suppliers (Fratocchi et Al. 2018; Foerstl et Al. 2016; Gray et Al. 2013, Kinkel and Maloca 2009). In reshoring processes management, logistical and operational problems have often resulted in significant 'hidden' costs (i.e. costs which were not taken into account in the decision to offshore) and have in some cases made offshoring unprofitable (Porter and Rivkin, 2012; Boston Consulting Group, 2014).

According to Fratocchi et Al. (2018) the most important external environment drivers of reshoring can be: poor level of quality of offshored manufactured products, production and delivery time impact, reduction of labor cost gap between the host and home country; the most important internal environment ones are: coordination and communication costs, logistic costs, production and delivery time, loss of innovation, potential/vicinity to R&D. Backshoring can be even induced either by customers' higher willingness to pay (Grappi et Al. 2015), when consumers care about buying what is locally produced, or by the increment in the importance of environmental and social sustainability for businesses' strategies (Ashby 2016; Robinson and Hsieh 2016).

The preference toward repatriation instead of near-shoring or further offshoring depends on the careful evaluation of push factors (discouraging remaining in the host country) and pull factors (fostering reshoring) (Fratocchi et Al. 2015b).

According to Porter (1980) it can represent a change from a cost focus to a differentiation focus strategy. In addition, the Intellectual Property Rights protection in developing countries is less feasible (Zhai et Al. 2016) and some patent-sensitive industries offshore less for this reason (Canals and Sener 2014).

In order to recap, while reshoring was initially thought to be a mere correction of an earlier managerial error (Kinkel and Maloca 2009), subsequent research has

revealed that reshoring decisions are frequently made in response to changes in the external environment (for example, changes in the cost advantage of low-cost countries such as China) (Fratocchi et Al. 2018). More recently, several writers (Baraldi et al., 2018; Di Mauro et al., 2018) have maintained that the reshoring choice is the outcome of a "strategic shift" by the corporation, such as a repositioning plan towards higher-value areas.

### **1.2.3 Type of firms**

The types of firms can differ according to the firm's size, industry, export intensity and earlier experience with reshoring strategies (Fratocchi et Al. 2018). In general, the large firms seem to be more inclined than small and medium enterprises (SMEs) to reshore (Fratocchi et Al. 2016) even if there are some single home country studies that show more propensity among SMEs (Kinkel and Maloca 2009, Canham and Hamilton 2013). Ancarani et Al. (2015) pointed out that SMEs repatriate their production activities earlier, compared to large companies.

The manufacturing reshoring implemented by Western companies are more frequent in industries that have been investing more in offshoring, such as clothing and footwear, electronics, mechanical, and furniture (UNCTAD 2013).

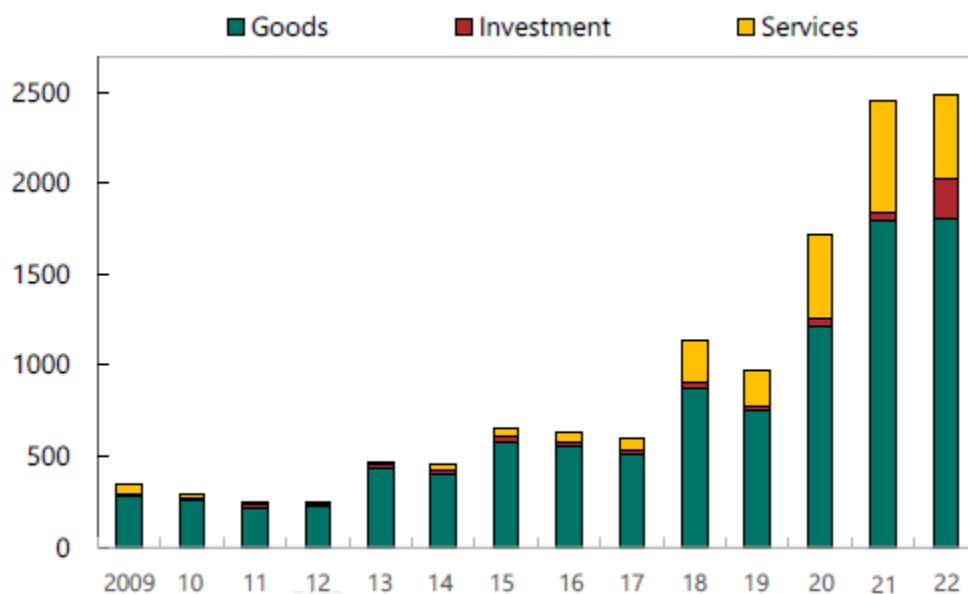
According to Dachs & Zanker (2014) Backshoring is more frequent among large companies (above 150 employees) and the propensity for reshoring increases with firm size; the number of backshoring cases is lowest in low technology manufacturing sectors, and more frequent in high technology ones.

Kinkel (2012) displayed that the export propensity and the earlier experiences in manufacturing reshoring are positively related to the probability of production activities being reshored, at least after the beginning of the economic crisis.

### **1.2.4 Differences Europe and US**

In the United States a report of the Boston Consulting Group showed that more than half of 200 US companies surveyed with sales greater than USD 1 billion either were moving jobs back or were planning to do so within the successive two years

(Boston Consulting Group 2011). The US Multinational Enterprises (MNEs) pointed out no signs of an increasing home share in employment but provide some evidence of a growing concentration of capital investment within the United States (De Backer et Al. 2016). Backshoring by US MNEs does not necessarily translate into a growing number of manufacturing jobs. Nevertheless, the offshoring strategies are expected to change due to changes in global stability (figure 4). Between 2000 and 2011, the Chinese pay rate raised more than the US wage rate. This dynamic, along with investment incentives in the United States, prompted US multinational corporations to transfer their activities back home.



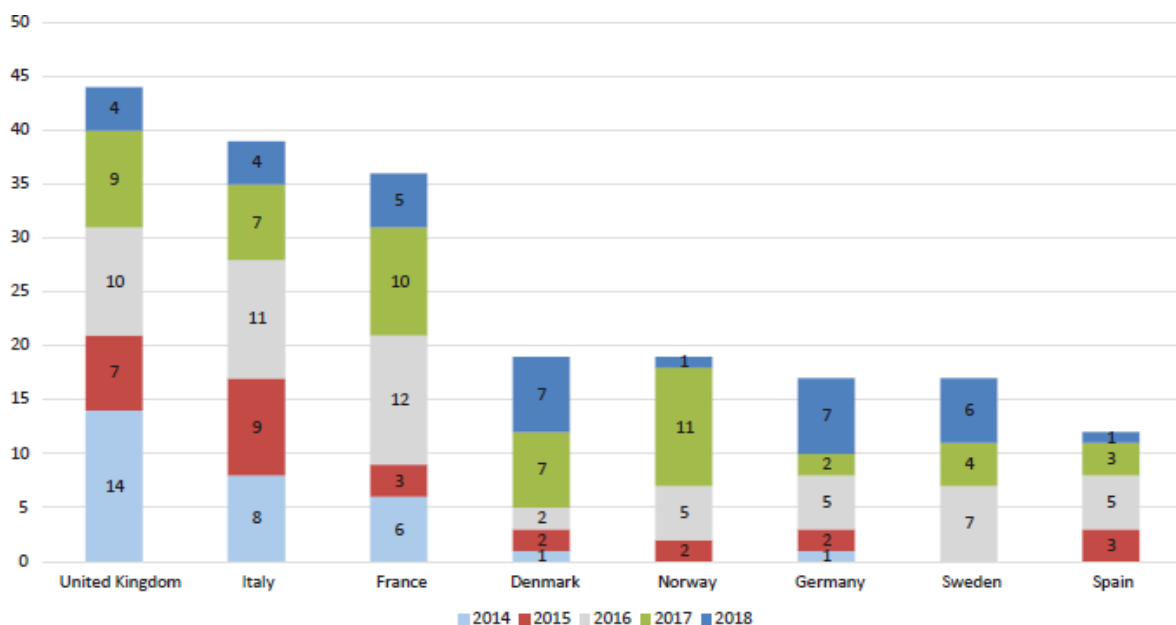
**Figure 4:** Trade restrictions imposed (number)  
 Source: Global Trade Alert (2022). Centre for Economic Policy Research: London.

The reshoring discussion is less prominent in Europe. One reason is that in contrast to the United States, European manufacturing overall has been less affected by the offshoring of activities, especially to China (De Backer et Al. 2016). A study of German manufacturing companies showed that only 2% of them have been active in backshoring between 2010 to mid-2012. Even the number of German manufacturing companies' offshoring activities abroad shows a steady decline but is nevertheless four times larger than the number of backshoring companies in German manufacturing. The majority of repatriations of production



activities by German companies originate in Eastern European countries, with shares close to 50% of all reshoring cases. The data also seem to suggest that backshoring by German companies characterized as a short/mid-term correction of a prior location decision, since around 80% of the backshoring cases followed with a 3–5-year lag after the previous offshoring decision (Kinkel 2014). At the industry level the results do not lend support to a strong tendency for re-industrialization in Europe; the rubber sector is the only one where the propensity to backshore is larger than the propensity to offshore (De Backer et Al. 2016).

The European Reshoring Monitor pointed out that France, the United Kingdom and Italy are the three most important countries considering the number of cases of reshoring (Eurofound 2019) (figure 5). The results show that companies adopting offshore outsourcing techniques tend to go back earlier than those that implement captive offshoring. Finally, offshore projects in Asia had much shorter durations than those in Eastern Europe. Three groups of reshoring countries were identified: ‘earlier reshoring’ (UK), ‘second movers’ (France and Italy) and ‘late reshoring’ (Denmark, Norway and Sweden). More than 85% of reshoring cases occurred in ‘Manufacturing’ (218 cases), followed by ‘Information and communication’ (12) and ‘Financial and insurance activities’ (9) over 253 cases analyzed. The reshoring cases were not able to improve employment so much



**Figure 5:** Number of reshoring cases per home country (only > 10 decisions)  
 Source: Eurofound 2019

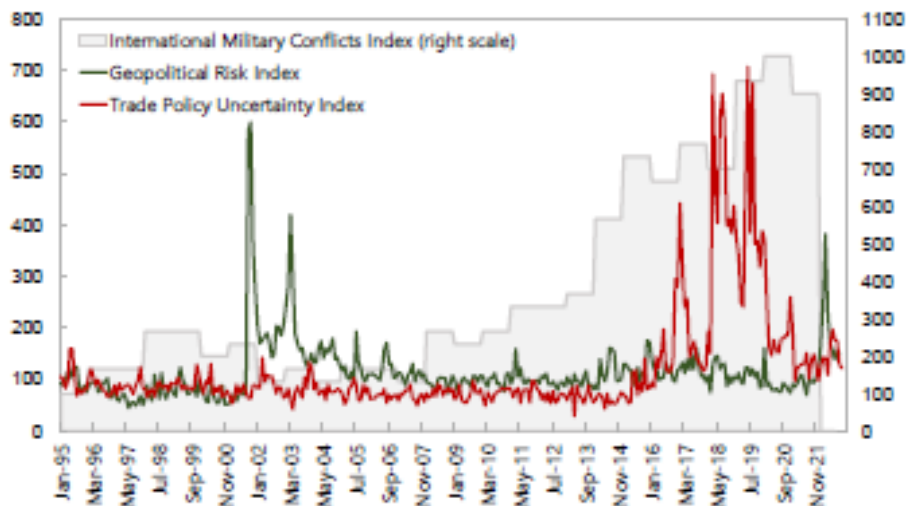
because in 60% of them employment gains were either totally absent or not relevant.

Fratocchi et Al. (2015a) has analysed the differences in reshoring to Europe and the United States and they found that backshoring seems to be a more common phenomenon than nearshoring, with the number of backshoring cases being more than 10 times larger than the number of nearshoring cases in the United States; nearshoring was found to be relatively more important in Europe although backshoring is still seven times as large as nearshoring (number of cases). They pointed out that source countries for reshoring by US companies are especially China and other Asian countries while for European firms, both Eastern and Western European countries have been affected. The US reshoring is more recent cause in Europe this phenomenon has been present since the 1980s. In addition, they noticed backshoring occurs across a broad range of manufacturing industries including lower technology intensive industries (clothing and footwear in Europe and furniture in the United States) and higher technology intensive industries. Nearshoring seems to be more concentrated in a smaller number of industries, with a particularly high number of cases in the European textiles and clothing industry.

### **1.2.5 The boost of reshoring**

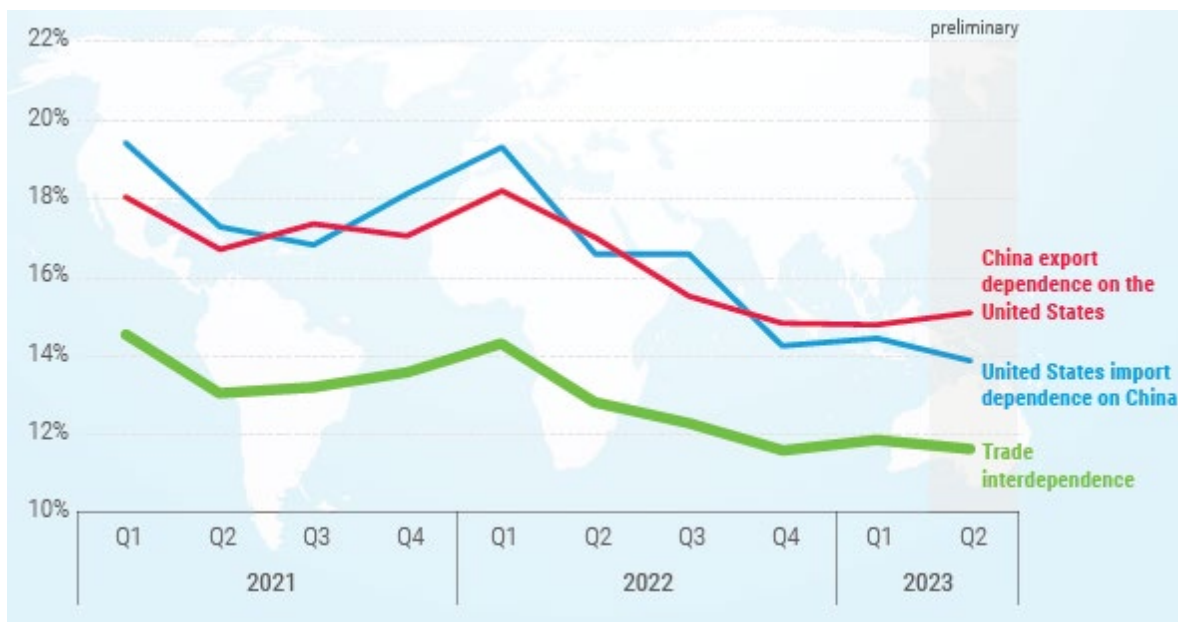
The offshoring seems to be still an important phenomenon even though the global events caused some changes in global trade. The Covid-19 pandemic made many countries impose export restrictions on medical goods and foodstuffs, exports bans accounted for about 90% of trade restrictions. The pandemic has disrupted long-established global supply chains and has induced numerous Western firms to reconsider their international sourcing strategy (Canello et Al. 2022). The war in Ukraine has provoked geopolitical divisions, the war and the related sanctions imposed by western countries on Russia and Belarus led to major dislocations in energy and agricultural commodity markets; more than 30 countries also imposed export bans on agricultural goods and fertilizers. This produced changes in European energy markets, leading to extreme volatility and fears of energy shortages. The United States has

announced measures restricting sales to China of certain high-tech goods, software, and other technology related to advanced computing and semiconductor manufacturing (IMF 2023). The intensification of the US – China trade tensions in 2018 led to a surge in global trade policy uncertainty and contributed to a paralysis of multilateral trade dispute mechanisms (figure 6).



**Figure 6:** Geopolitical Risks, Military conflicts and Trade Policy Uncertainty  
Source: Geopolitical Risk Index (as of October 21, 2022); Trade Policy Uncertainty Index (Caldara, Dario, Matteo Iacoviello, Patrick Molligo, Andrea Prestipino, and Andrea Raffo (2020); Uppsala Conflict Data Program (UCDP) (data up to 2021); and IMF staff calculations.

The European Commission considers the Russia’s military aggression against Ukraine as having a lot of repercussions and related social implications, the potential need to temporarily increase in the use of coal, further pressure on public finances, higher inflation rates, increased cyber risks, issues with supply chains, and impaired access to critical raw materials and technologies. It will add pressure to move to less vulnerable, more diversified, and more reliable supply chains and possibly, “friend-shoring” (European Commission 2022). The countries are searching for global cooperation and rules-based multilateralism to accelerate the development of twinning technologies and to address concerns related to digitalization (European Commission 2022).



**Figure 7.** Trade interdependence between China and the United States is declining  
 Source: "Global Trade Update (June 2023)", UNCTAD

In fact, the developed economies are showing signs of pro-reshoring policies (Canello et Al. 2022). In the USA, the Obama administration allocated USD 40 million to repatriate firms through the 'Make it in America' initiative, including tax deductions, tax credits and incentives (White House 2012); the Biden administration has pledged billions of dollars to a series of US supply chains made vulnerable through extensive offshore production, including semiconductors, pharmaceuticals, advanced batteries and critical minerals (White House 2021). In addition, the recent Inflation Reduction Act (IRA) provides domestic production subsidies (Aiyar et Al. 2024). In the UK the national government designed a policy tool called *Reshore UK*, aimed at encouraging manufacturing firms to move back production that was previously relocated to foreign countries (Pegoraro et Al. 2021). The Japanese government in April 2020 introduced an incentive of USD 2.1 billion to domestic firms willing to reshore their production activities from China (EU Policy Department 2021). In France the ministry of Economics and Finance introduced the Colbert 2.0 software tool to help companies to assess their readiness for repatriation. The Emilia-Romagna region, in Italy, has designed a specific policy tool to encourage reshoring (Eurofound 2019). Nowadays environmental legislation can trigger backshoring

decisions because of the European eco-friendly product and process requirements (Di Stefano et Al. 2023).

These policies can be added to the goal of the European Parliament: “The Renaissance of Industry for a Sustainable Europe Strategy” which aims to increase the share of manufacturing in EU GDP to 20% (De Backer et Al. 2016).

Another factor that can impact positively backshoring is related to the development of Industry 4.0 because the increased productivity provided by I4.0 production technologies may neutralize the factor cost advantages of offshoring locations and make labor arbitrage less engaging (Dachs et Al. 2019). The industry can even increase the flexibility inducing firms to re-locate production close to their European customers and regain some of the flexibility lost in fragmented global production networks. Nowadays the market puts pressure on more customized products, greater flexibility and more responsiveness supply chain leading to reshoring and nearshoring options (Dachs et Al. 2019). The increase productivity can even imply more capacity utilization and make firms more competitive in terms of production costs (Kagermann et Al. 2013; Spath et Al. 2013; Brynjolfsson & McAfee 2014; Bauernhansel et Al. 2014; Jäger et Al. 2015). Dachs et Al. (2019) made an analysis through a survey of 2120 manufacturing firms from Austria, Germany and Switzerland with at least 20 employees taken from the European Manufacturing Survey 2015. They used a probit regression that relates backshoring to the index I4.0 readiness. High level of I4.0 index can be found in electrical, electronics and automotive industries while it is low in food and beverage, textiles and clothing, wood, paper and printing industries. The increase in firm size is related to both higher I4.0 readiness as well as higher backshoring propensity. They noticed that automotive has the highest share of backshoring firms. Their results showed it is too early to say that I4.0 can lead to de-globalisation and backshoring is still confined to a small group of manufacturing firms. Nevertheless, the Industry 4.0 can trigger developments of backshoring; they do not expect huge increases in manufacturing jobs but new high-skilled ones.

Another important study is the one proposed by Elia et Al. (2019). It is based on a sample of 118 RSD (Relocations of Second Degree) undertaken by European firms operating in manufacturing industries between 2002 and 2015. The data was taken from the European Restructuring Monitor (ERM) database. The sample is composed of 77 observations of RTC (Relocations to third countries) and 41 observations of RHC (Relocations to Home countries). Germany and France are the most represented home and final destination countries being responsible for 15 and 8 RHCs, respectively. Spain and Italy are the host countries that mostly suffered the RHC, as they lost 5 subsidiaries each, especially from Germany (as regards Spain) and France (as regards Italy). Most of relocations have been undertaken by company whose home country is in Western Europe (Germany, UK, Sweden, France and Finland). (figure 8).

Years	RHCs		RTCs		RSDs	
	No.	%	No.	%	No.	%
2003	1	2.44	4	5.19	5	4.24
2004	1	2.44	3	3.90	4	3.39
2005	4	9.76	8	10.39	12	10.17
2006	4	9.76	16	20.78	20	16.95
2007	8	19.51	8	10.39	16	13.56
2008	2	4.88	9	11.69	11	9.32
2009	8	19.51	5	6.49	13	11.02
2010	1	2.44	1	1.30	2	1.69
2011	1	2.44	4	5.19	5	4.24
2012	4	9.76	4	5.19	8	6.78
2013	3	7.32	3	3.90	6	5.08
2014	4	9.76	10	12.99	14	11.86
2015	0	0.00	2	2.60	2	1.69
<b>Total</b>	<b>41</b>	<b>100.00</b>	<b>77</b>	<b>100.00</b>	<b>118</b>	<b>100.00</b>

**Figure 8:** Distribution of RHC, RTC and RSDs across the years

Source: Elia et Al. (2019)

The countries that benefited are the Transition Economies, like Poland, Romania, Czech Republic and Hungary; Germany is an exception. The International Monetary Fund defines “transition economies” as those countries that are under transformation from centrally planned economies into market economies. Countries recognized as “transition economies” within Europe are Albania, Bulgaria, Croatia, Czech Republic, Estonia, FYR Macedonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia. Those within Commonwealth of Independent States (CIS) are Armenia, Azerbaijan, Belarus,

Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan (Barbieri et Al. 2019). The results show that efficiency-seeking firms are more likely to implement RTC rather than RHC; firms accumulating knowledge on Industry 4.0 are more likely to undertake an RTC. Firms investing abroad for market-seeking reasons instead are more likely to repatriate rather than relocate in second host countries. If the home country displays an intensive cumulative knowledge on I4.0 technologies and adopts I4.0 policies to incentivize the digital technologies development the RTCs propensity of the cost-saving firms can be inverted into RHC propensity. Eventually it can be seen that either an Industry 4.0 competitive advantage developed by a firm or an I4.0 location advantage supplied by the home country do not foster a de-internationalization process; in fact, companies are even more likely to reinvest in other countries to exploit their I4.0 competitive advantage.

Some countries introduced some programs to encourage firms to adopt the digital technologies offered by the Industry 4.0. Industry 4.0 implies cyber-physical systems, cloud computing, big data and augmented reality (Lasi et Al. 2014; Davies 2015). The first country was Germany that in 2011 launched an initiative to make the country develop a leading position in the industrial manufacturing sector over a period of 10-15 years promoting a structural change towards a digital framework in manufacturing. Then the United Kingdom in 2012 started a series of public-private financing and a series of collaborations with the manufacturers in order to cover the development of 27 different technological areas (Elia et Al. 2019). These policies for the support of application of sensors to increase monitoring and control could help the top 100 European manufacturers to save an estimated €160 billion due to wastes or reworks of defective products (Davies 2015).

### **1.2.6 New phenomenon**

Despite all the incentivizing policies it seems that the internationalization process is changing in other directions because reshoring should imply a shift from import

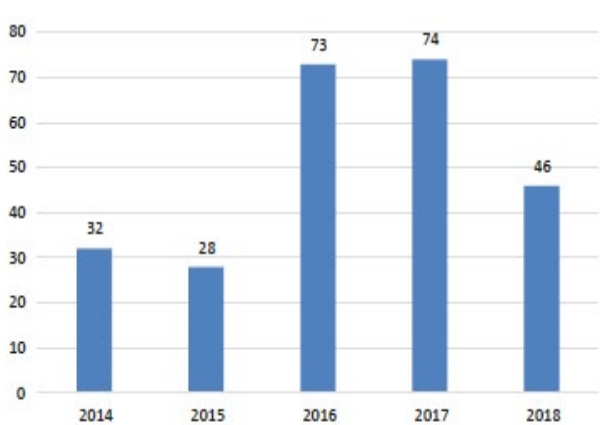
to domestic production over time, but the signs of a real reversal in the share of domestic demand that is met by imports are less solid. In fact, in countries like United States, France, Italy and other Western European countries the share of domestic demand that is covered by imports is still increasing. There are some exceptions like Japan, Germany and the United Kingdom showing a decrease in imports. For instance, the Mexican imports in the United States recently has increased which may be the sign of nearshoring activities (De Backer et Al. 2016).

One explanation for poor government incentives is that, while tax abatements and exemptions are in place, overall tax rates are still higher than in offshore locations like China. Another factor is that these investment incentives are often sporadic and provide minimal profit growth to enterprises. The government could assist businesses in developing long-term competitive strength, such as by providing special incentives for automated manufacturing and process innovation, which would further minimize the total cost difference between home and host nations (Zhai et Al. 2016). Even other academic studies (Elia et Al. 2019) introduced the concept of 'Relocation to third countries' to improve the understanding of the backshoring analysis and to have more significant samples. The low number of reshoring data may be due to the fact that many companies hide information, particularly when this strategy is the result of managers' mistakes in offshoring decisions (Holz 2009).

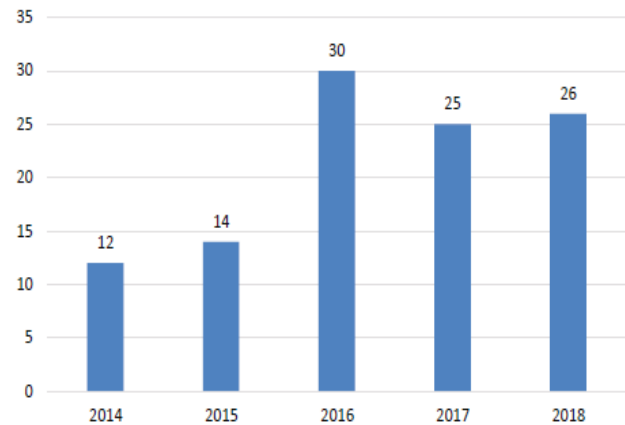
The location advantages can be distinguished among market-seeking, strategic asset-seeking, efficiency-seeking (in terms of cost-saving and productivity-enhancing) and natural resource-seeking opportunities (Dunning 1993). In this way companies can penetrate a new market, compete on prices, innovate and be competitive, gain new natural resources respectively (Barbieri et Al. 2019). The companies that invested abroad for market-seeking location advantages might consider a 'Relocation of Second Degree' (RSD) to reduce the cross-border activities after unsatisfactory sales performance of the foreign markets. The Industry 4.0 can offer complementary or superior assets that imply new RSDs for companies that offshored for asset-seeking location advantages. The I4.0 can even boost RSDs for firms that invested abroad for efficiency-seeking purposes due to improvement in productivity and cost-saving. Barbieri et Al. (2019) made analysis with a sample of 496 RSDs undertaken across European countries from



2002 to 2015 taken from the European Restructuring Monitor database. The sample is composed of 90 RHCs and 406 RTCs, showing high presence of relocations to third countries than reshoring choices. They noticed that while the first offshoring decisions were addressed to ‘other countries’ (no transition economies), the RTCs are generally oriented to ‘transition economies’; most of the companies that initially offshored to ‘transition economies’ moved to another ‘transition economy’. The results show that when offshoring investment is driven by efficiency-seeking reasons companies are more likely to undertake an RTC, in the search of new arbitrage opportunities through frequent relocations across countries. For instance, companies that exploited at first some ‘transition economies’ that developed and increased their costs, then moved to other ‘transition economies’ that could offer more long-lasting cost-saving location advantages (like Romania and Bulgaria). The firms that offshored for market-seeking reasons are more likely to undertake an RHC, in addition the Great Financial Crisis favoured the RHCs in all the analysis conducted. The asset-seeking reasons seem to be not significant for RSD decisions. The limitations of the analysis are related to data referred only to public announcements of relocation initiatives by firms and the relocations considered are only the ones inside the European countries (Barbieri et Al. 2019).



**Figure 9:** Number of reshoring cases per year  
Source: Eurofound 2019



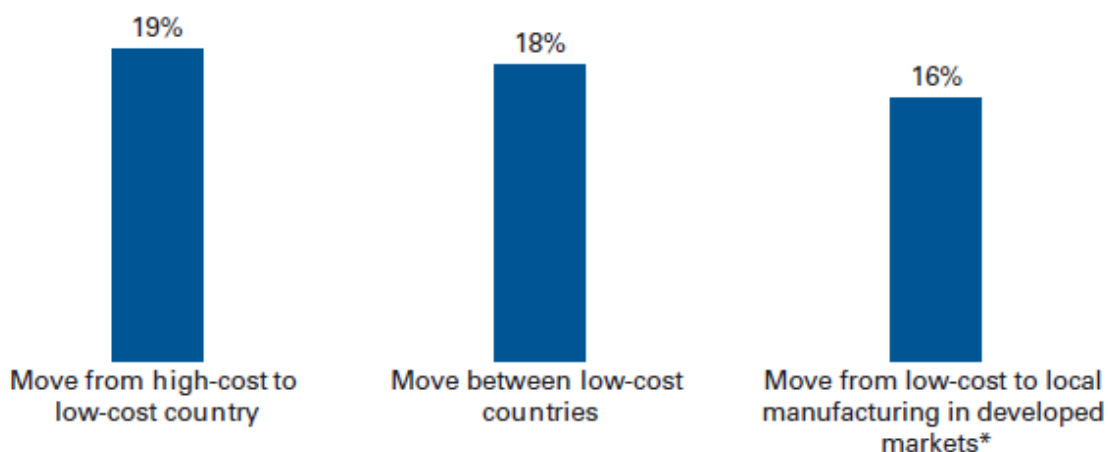
**Figure 10:** Number of offshoring countries affected by reshoring decisions  
Source: Eurofound 2019

In 2018 and 2019 the number of reshoring cases in the clothing/apparel industry reduced significantly while the ones in food, electronic, optical and electrical equipment industries showed a growing trend (Eurofound 2019). At first

backshoring initiatives were motivated by cost and quality factors, now the global reorganization of value chain activities, the need for customer responsiveness and new technologies drive the reshoring decisions (Eurofound 2019).

Another interesting study, in relation to the relative importance of offshoring and reshoring, was undertaken by the Hackett Group in 2012. It was based on a survey data of global sourcing strategies of large companies. The group noticed that China is reducing its competitive position cause the main driver of manufacturing sourcing strategy should be the total landed cost and China is decreasing its cost gap with developed economies due to higher wages, inflation, fuel prices and transportation costs, while in other low-cost countries the total landed costs are expected to remain constant at around the 20%. The study highlights that companies decide to move production whether the cost gap is around the 20%, if the gap is below the 16% the companies could decide to reshore (figure 11).

They expect that the outflow of capacity from developed countries will be more than any capacity being reshored; in fact, 35% of manufacturers studied were actively involved in moving capacity from high-cost to low-cost countries, in respect to 20% of companies actively involved in reshoring. Therefore, the group expects reshoring to increase but they expect more reallocation of manufacturing capacity from China to other emerging countries (Janssen et Al. 2012).

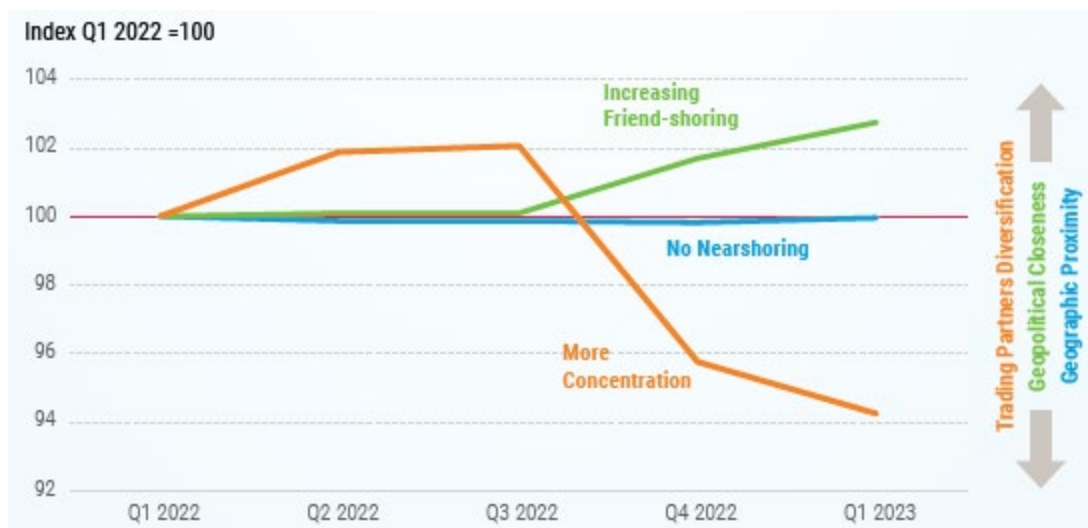


*\*The level at which the cost gap needs to narrow for companies to consider moving work out of low-cost countries and into local developed markets.*

**Figure 11:** Total landed cost gap threshold to trigger change in manufacturing sourcing strategy  
Source: Janssen et Al. (2012)

As already mentioned, the data from the European Manufacturing Survey highlights that for the period 2010 and mid-2012 a sample of firms from Austria, Switzerland, Germany, Denmark, Spain, France, Hungary, Portugal, Netherlands, Sweden and Slovenia counted only a 4% of firms backshoring (De Backer et Al. 2016).

According to some studies (Barbieri et Al. 2019; Elia et Al. 2019) in Europe the RTCs seem to be more important than RHCs, so from a European viewpoint the nearshoring can be more spread than reshoring. In addition, the United Nations noticed an increase in trade among countries that share some political values (Figure 12).



**Figure 12:** Friend-shoring and increasing concentration for global trade  
 Source: "Global Trade Update (June 2023)", UNCTAD

## 2.0 NEARSHORING

### 2.1 Definitions and locations

Nearshoring implies the relocation in a nearby country instead of a backshoring where a firm has its headquarters. This phenomenon can be due to the fact that moving the production back to the home country is not optimal cause the developed countries do not still have competitive conditions in production as other countries (Foerstl et Al. 2016). The Economist (2005) defines nearshoring as the business of moving activities “to countries that are quite cheap and very close rather than very cheap and far away”. The concept of close distance can be related to geographic, temporal, cultural, linguistic, economic, political and historical proximity (Auteserre 2012). The cultural proximity can be considered because for instance Spain and Germany have around the same geographic distance from Mexico, but Spain has some cultural factors in common (e.g. language, religion) (Slepnirov et Al. 2013).

Distance parameter	Cultural	Administrative	Geographic	Economic
Attributes of distance	Languages	Colonial ties	Physical distance	Difference in consumer income
	Religions	Monetary union	Lack of common border	Difference in cost and quality of:
	Social norms	Political situation	Sea access	- Natural resources
		Institutional weakness	Infrastructure links	- Financial resources
		<b>Trading bloc membership</b>		- Human resources
				- Infrastructure
				<b>Presence of trade office</b>
				<b>Labour laws</b>
	↑ ○ Hidden costs (translations, misinterpreted deals ...)	↑ ○ Protectionism, import duties, unreliable procedures ...	↑ ○ Total Logistical Cost (Including transportation cost, stock ...)	↑ ○ Cost advantage production

**Figure 13:** Distance dimensions in outsourcing and nearshoring

Source: Ghemawat. (2001). “Distance still matters – the hard reality of global expansion”. *Harvard Business Review*, 79(8), 137–140.

The countries that can be potential candidates for nearshoring are Mexico, Brazil and other Central- and South American countries for the United States and Central- and Eastern-European countries for Europe (Van Hassel et Al. 2022).

There are some features that played an important role in the choice of country related to good seaports, airports and hinterland connections that can favor logistic distribution and transport. Van Hassel et Al. (2022) compared different scenarios in order to identify the best candidates for nearshoring; they found North-Macedonia like the cheapest option, Benelux is cheap for transport and stock costs, but it implies high wage costs. The transport costs can be important in the choice because they determine even the lead time and the costs related to stocks.

Emerging markets such as the Czech Republic, Hungary, Poland, and the Baltic countries have traditionally served as nearshoring destinations for enterprises from Western Europe's developed countries. These countries have reduced tax loads and lower manufacturing costs; in addition, they provide several other benefits to international enterprises (Slepnirov et Al. 2013). According to recent studies, certain growing nations, such as the Czech Republic, Estonia, and Hong Kong, have been elevated to the rank of developed economies (World Economic Forum 2010). Positive advances in these economies are likely to be related to wage inflation, technology advancements, and environmental improvements, all of which cause changes in the operations strategies of international enterprises based there (Slepnirov et Al. 2013). Slepnirov et Al. (2013) made an analysis over some Scandinavian firms and a survey of 55 Lithuanian vendor companies in the period 2010-2011 only considering Lithuanian firms that traded with the Nordic European regions giving examples of nearshoring processes. There seems to be no "one size fits all" method for nearshoring. They noticed that cost drivers were not so important, while strategic assets, markets and Intellectual Property Rights (IPR) drove nearshoring activity, so the routine task industries are not the only actors of this phenomenon, service and innovation industries can be even included. While Lithuanian enterprises attempt to reach Norway, Denmark, and Sweden using their own brand strategy, subcontracting and private label manufacturing played a significantly larger role in these markets than in Estonia, Latvia, and, to a lesser extent, Finland. Lithuanian enterprises appear to succeed in producing and delivering greater value-added products and services when

they collaborated (nearshoring) with firms from Sweden, Denmark, Norway, and Finland. Lithuania was chosen as a nearshoring destination and the authors expect this process to increase.

Companies nearshore to exploit the advantages of offshoring (for instance low production costs) and of backshoring (quality and low lead time), so they can reduce geographical, cultural and linguistic distances and avoid problems like the lack of specialized labor force. The advantages of nearshoring comprise low labor and transport costs, potential tax breaks, improved coordination, quicker reaction to market changes, faster response to volatile consumers' preferences and geographical and cultural proximity to final customers. The intellectual property right protection can be easier in advanced economies. The disadvantages can be related to fewer potential partners and fewer available options due to the reduction of the geographical extent (Piatanesi & Arauzo-Carod 2019). Therefore, the reasons for nearshoring can be grouped into: shorter time to market, cost savings, product quality, increased control, avoiding supply chain management costs, protecting IP (Simchi-Levi 2013).

Foerstl et Al. (2016) define different types of nearshoring: nearshore sourcing (the main tasks previously outsourced are relocated to the same or alternative suppliers to a nearby location), nearshore partnerships (hybrid forms of governance with a long-term partner close to the home country), nearshore inhouse production (the outsourced tasks are moved to a wholly owned subsidiary in a country alongside).

## **2.2 Industries**

The industries more affected by nearshoring can be clothing, leather goods, electronics and electrical appliances, high-tech services because they need quick adaptation to customer demand, high quality control and intellectual property protection (Piatanesi & Arauzo-Carod 2019).

The supply chain framework seems to be a key element for the valuation of offshoring and outsourcing because the number of suppliers, the number of

layers, the length of the supply chain and its geographic dispersion can increase uncertainty, enhancing coordination and control costs, transportation costs (Choi and Hong 2002). If product changes are frequent and components novelty increase, raising the need for interconnectedness of operations, R&D in contrast to the product modularity, the task uncertainty can affect the nearshoring decision (Manuj and Mentzer 2008).

The managers dealing with the relocation decisions should take care about process complexities included in their outsourced manufacturers. In general, the decrease in the asset specificity also decreases the firm's control over the manufacturing process (Hartman et Al. 2017). There are three main firm-manufacturer relationships: the custom manufacturing where the manufacturer produces according to the specifications (design, engineering, manufacturing) given by the firm; the customization of standardized products where the firm tries to customize the products of a manufacturer's product portfolio (limited control over the manufacturer's processes); standardized products when the firm chooses the manufacturer's products based on a pre-determined quality and price targets and those good will be labeled under the firm's brand (the higher the number of manufacturers with low switching costs, the higher the support of a manufacturing relocation decision) (Hartman et Al. 2017). The higher the control of the firm over the supply chain structure, the higher the asset specificity, the higher the customization. The companies should even understand the manufacturer's upstream supply chain and collect complete information about the supply chain complexity in order to make the right choice among the relocation alternatives.

According to the estimations (Ersahin et Al. 2024), supply chain risk is higher for organizations that report a greater portion of suppliers from other continents, as well as large enterprises with more complicated supply networks. These data indicate that distance and supply chain complexity raise supply chain risk. Supply chain risk appears to be linked to a company's bargaining power with its suppliers. Therefore, organizations that are large in comparison to their suppliers have lower supply chain risk, implying that they may profit from being the most valued clients of their suppliers. In addition, organizations with many sources of the same input should be able to replace suppliers more effectively, so the diversification of suppliers can be advantageous. Companies can even think

about vertical integration when supply chain uncertainty increases, bottlenecks become more likely and hold up problems between a firm and its suppliers enhances (Grossman & Hart 1986).

Keller and Zoller-Rydzek (2019) tried to develop a European Nearshoring Index to identify the most attractive European regions for nearshoring practices of Swiss IT firms. The results show that Western Germany is important due to its geographical and cultural closeness, the UK is important for the availability of highly skilled IT workers. The Eastern Europe is not attractive for this industry, a part for the Central Poland (Warsaw). They gave questionnaires to a group of Swiss IT firms covering five main pillars: economic (corporate taxes, economic environment, market potential of the region and access to financial market), labor (availability of IT workers, quality of IT workers, labor costs in a region), institutional (IP protection, data privacy laws, ease of doing business, openness towards foreign investments and political stability), social (cultural distance, personal contacts, personal safety) and location (reachability of a region, time zone, property rights, ICT infrastructure, language and communication, physical attractiveness of a region); the companies had to give a rate from 1 to 7 to the importance of each factor for the nearshoring decision. The European Nearshoring Index is a weighted average of the five pillars. The overall index points out that the metropolitan areas are favorable locations, London above all, Southern and Western German regions, Madrid and Catalonia. The Eastern Europe is not so attractive a part for some towns in Poland even if the wages of IT workers in this area are considerably lower than in Western Europe; the zone should improve the competitiveness for geographical and cultural distances, and it should potentiate the education to increase the availability of IT workers. After Brexit the UK convenience is expected to change because the IT Nearshoring index decreases by 2.4 points for every UK region, but London is expected to remain the most attractive location.



Sector		Global innovation for local markets	Regional processing	Energy-/raw material intensive goods	Global technologies/innovators	Labour-intensive trading goods
Sub-sector		Chemicals, motorized and other vehicles, machines	Rubber and plastics, finished metal products, food and drinks, tobacco, printing	Wood, refined petrol and cokes, paper, minerals, base metals	Office equipment, semiconductors, electronics	Textile, furniture, toys
Industry share (%)		34	28	22	9	7
Characteristic scores (1 = not important, 2 = slightly important, 3 = important, 4 = very important)	R&D intensity	3.4	2	1.6	4	2
	Labour intensity	1.6	3.5	2.4	1.66	4
	Capital intensity	1.8	2.25	3.4	3.33	1.5
	Energy intensity	2	2.75	4	1	2.5
	Trade intensity	3	1	1.6	4	4
	Value density	2.8	2	1.2	4	3

**Figure 14:** Different nearshoring candidate sectors and their characteristics

Source: McKinsey. (2012). "Manufacturing the future: The next era of global growth and innovation".

## 2.3 Incentive to nearshoring

The geopolitical alignment of the major Western countries nowadays matters because of the aid flows and the foreign direct investments (FDI) (Faye and Niehaus 2012). Aiyar et Al. (2024) analyzed almost 300.000 FDIs between 2003 and 2022 between 186 countries, identifying for each investment the source and destination countries, as well as the industry activity, type of investment, volume and number of jobs created. They measured geopolitical alignment according to the voting patterns at the United Nations General Assembly. They pointed out that FDI flows are increasingly concentrated among countries which are geopolitically aligned, particularly in strategic sectors such as semiconductors, because they showed that the likelihood that FDIs take place between geopolitically aligned countries is about 2.5 times higher. If geopolitical tensions continue to rise, they expect FDI to be even more segregated within blocks of aligned nations; this could be potentially dangerous for developing countries.

After the increase in tensions among countries due to the COVID-19 pandemic for the vaccine trade, the Russia-Ukraine war, the US-China tensions (even due to Taiwan independence), the Israel-Palestine war the world is dividing in blocks

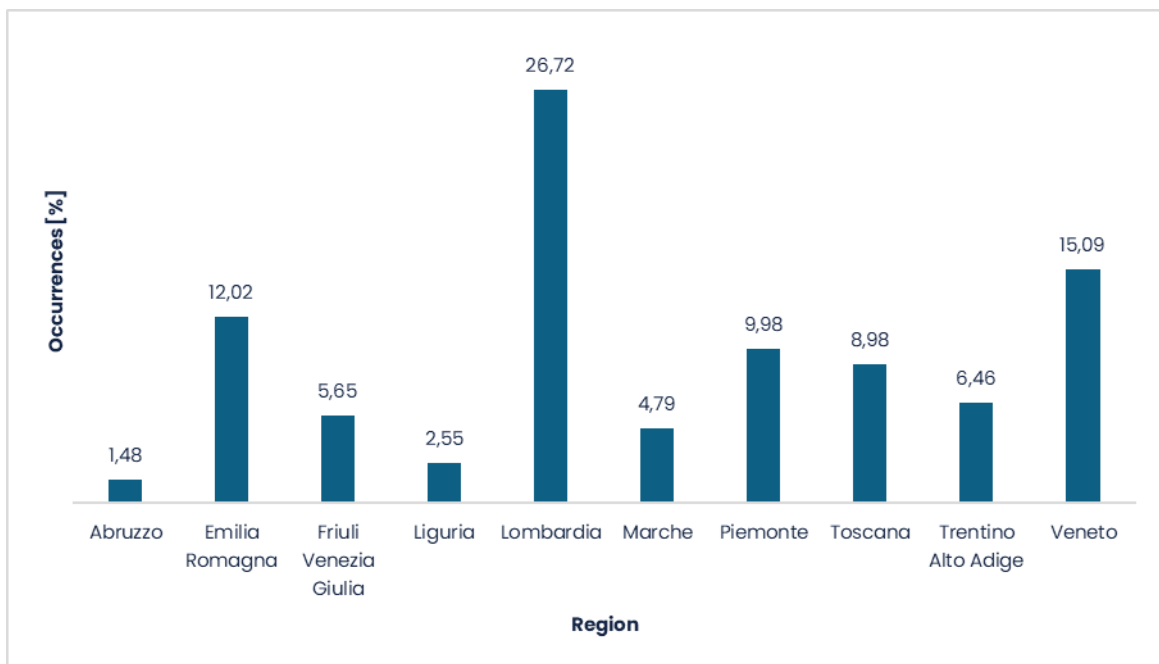
and the trade is expected to be affected. The European countries and the United States are incentivizing policies for the sustainable productions and digitalization in order to reduce their dependence to Russian oil and gas and to Chinese critical raw materials (European Commission 2022).

Lábaj & Majzlíková 2023 exploited the FIGARO (Full International and Global Accounts for Research in input-Output analysis) 2022 database and other sources to study the employment data of OECD countries in the period 2010–2020. They found that manufacturing employment in China and Latin America declined, remaining constant in Europe and North America, considering that the global manufacturing employment decreased in that period. They noticed a reduction by 3.7 percentage points in offshoring from Europe to China and increase in European nearshoring from 67% to 73% in 2020 while in the United States nearshoring raised of 20 percentage points; the European nearshoring is measured as the share of employment in the EU-27 out of the total employment generated by the manufacturing subsystem EU-15 (the first European countries), the American nearshoring is measured as the share of employment generated in the United States, Canada and Mexico over the total employment generated by the US manufacturing.

## 2.4 Case study

### 2.4.1 Data

The data analyzed refers a sum of 2.762.687 operations of import and export of 5.000 Italian manufacturing firms in the period 2008 – 2019. The data is from a trade database. In the sample are included all Italian regions, all Italian provinces and 220 countries or zones of the world.

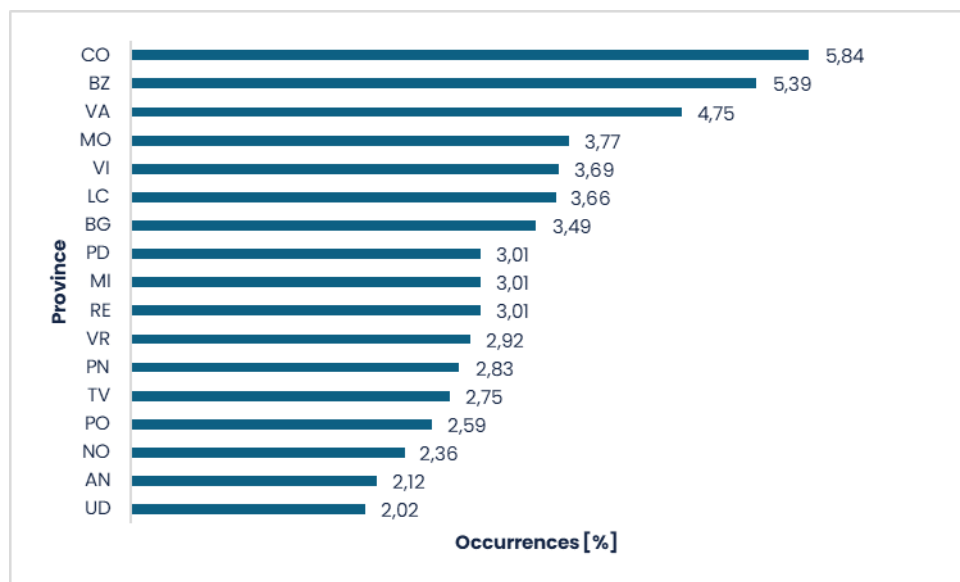


**Figure 15:** Occurrences [%] by region

Source: Excel

The most represented operations are shown in figure 15. Lombardia is the most frequent region (26.72% of operations), followed by Veneto (15.09%), Emilia Romagna (12.02%) and Piemonte (9.98%). Como (Lombardia) highlights the 5.84% of occurrences, then Bolzano (Trentino Alto Adige) the 5.39%, Varese (Lombardia) the 4.75%, Modena (Emilia Romagna) the 3.77%, Vicenza (Veneto) the 3.69% as pointed out in figure 16. From the value viewpoint of operations, the figure 17 shows Arezzo (Toscana) as the most exporting and the most importing province, in fact, the imports exceed the exports, € 23.4 billion (20.5%) and € 21.6 billion (9.5%) respectively; Udine (Friuli Venezia Giulia), Bolzano (Trentino Alto

Adige), Varese (Lombardia) follow the ranking. In Enna (Sicilia), Cosenza (Calabria), Lodi (Lombardia), Catanzaro (Calabria), Matera (Basilicata), Caltanissetta (Sicilia), Bari (Puglia), Rimini (Emilia Romagna), Catania (Sicilia), Reggio Calabria (Calabria), Oristano (Sardegna), Ragusa (Sicilia), Avellino (Campania), Foggia (Puglia), Benevento (Campania), La Spezia (Liguria), Verbano Cusio Ossola (Piemonte), Arezzo (Toscana), so predominantly in the South of Italy the import values are higher than export values. Lombardia is featured by most of value of exports, followed by Toscana and Veneto (Figure 18). Taking into account the difference between exports and imports Lombardia, Veneto, Emilia Romagna produce the highest value, while Calabria and Puglia have negative value cause imports exceed exports.

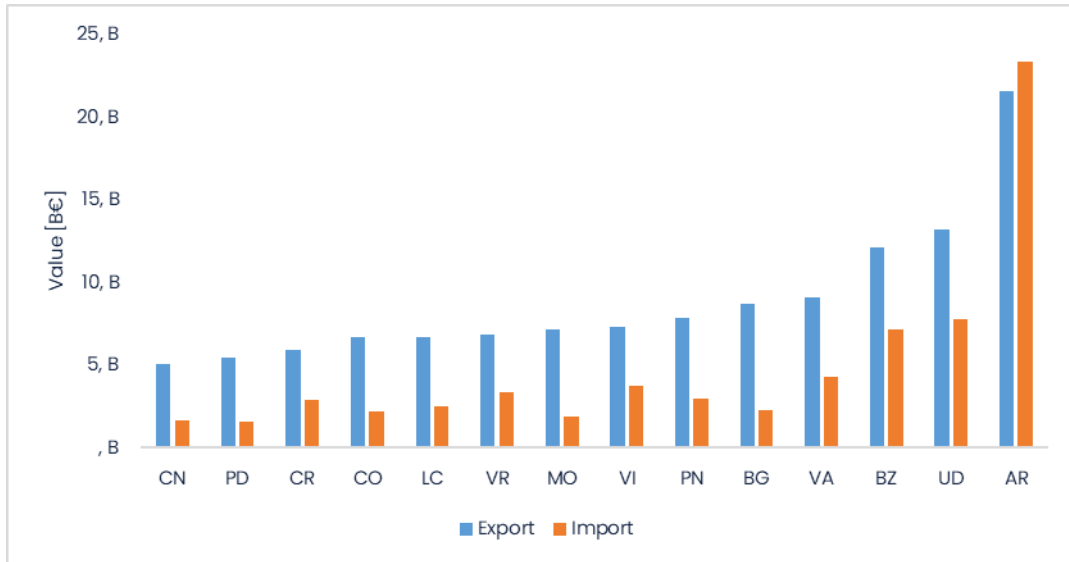


**Figure 16:** Occurrences [%] by Province

Source: Excel

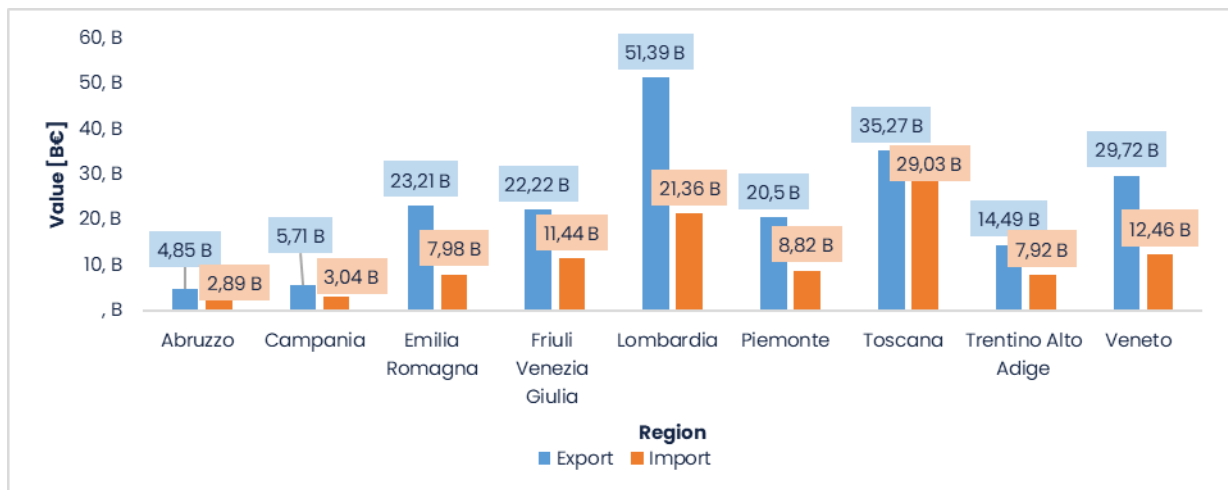
The transactions involve mainly Germany (11.19%), France (6.53%), Spain (4.29%) and Austria (4.05%) as shown in figure 19. Figure 20 displays that most of the operations are destined to Europe (68.06%), Asia with Russia and Turkey (18.67%), North America (6.11%). From the value viewpoint the condition is quite similar cause Germany implies the highest value (16% of exports and imports), followed by France (13% of exports and 11% of imports), United States (7% of exports and 6% of imports) and United Kingdom (6% of exports and 3% of imports) (figure 21). There are some countries that are characterized by more imports than

exports: Hungary, Ukraine, Moldova, Kyrgyzstan, Bosnia and Herzegovina and other countries. The summary per continent does not show different perspectives.



**Figure 17:** Total value of operations per province (main data)

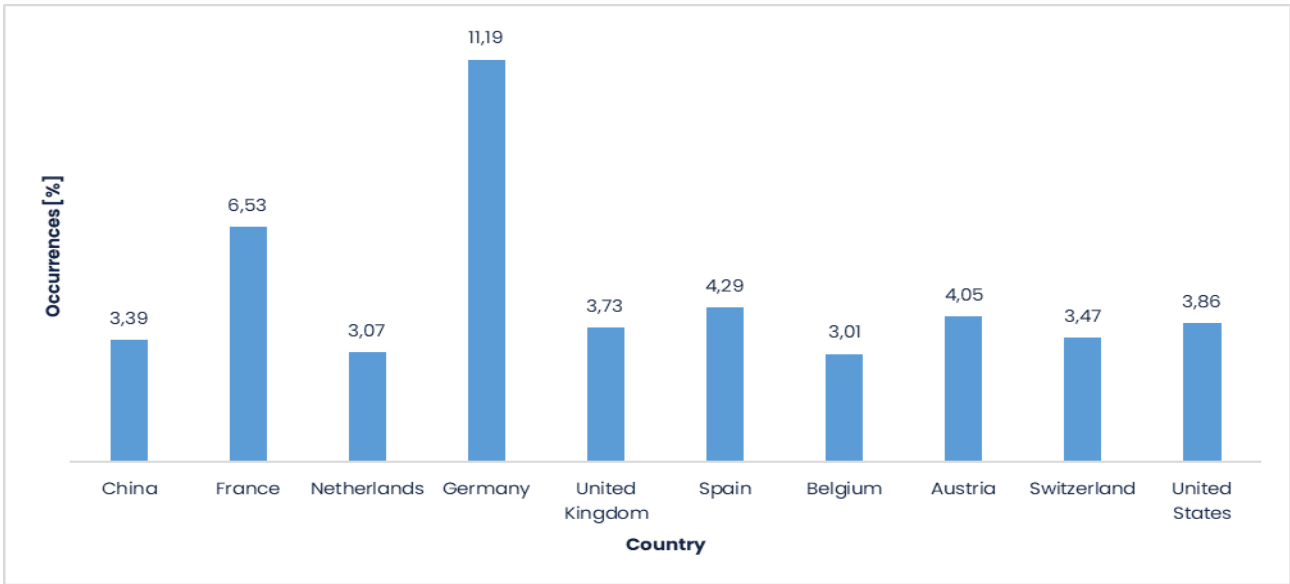
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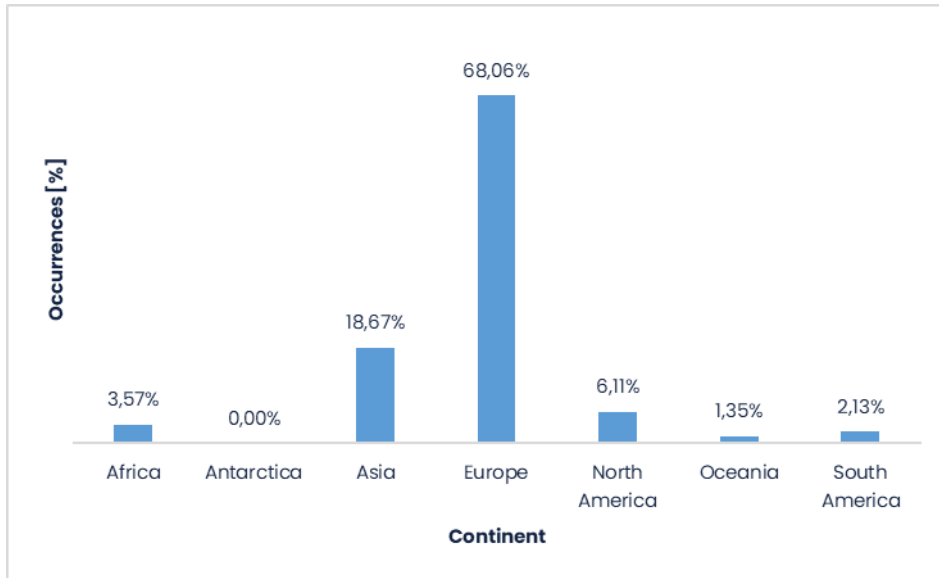
**Figure 18:** Total value of operations per region

Source: Excel

The years involved show similar number of frequency of operations over time, the 2009 highlights a decrease due likely to the Great Financial Crisis (figure 22). Besides the figure 23 points out that, even considering the total value, exports and imports were quite constant over time.



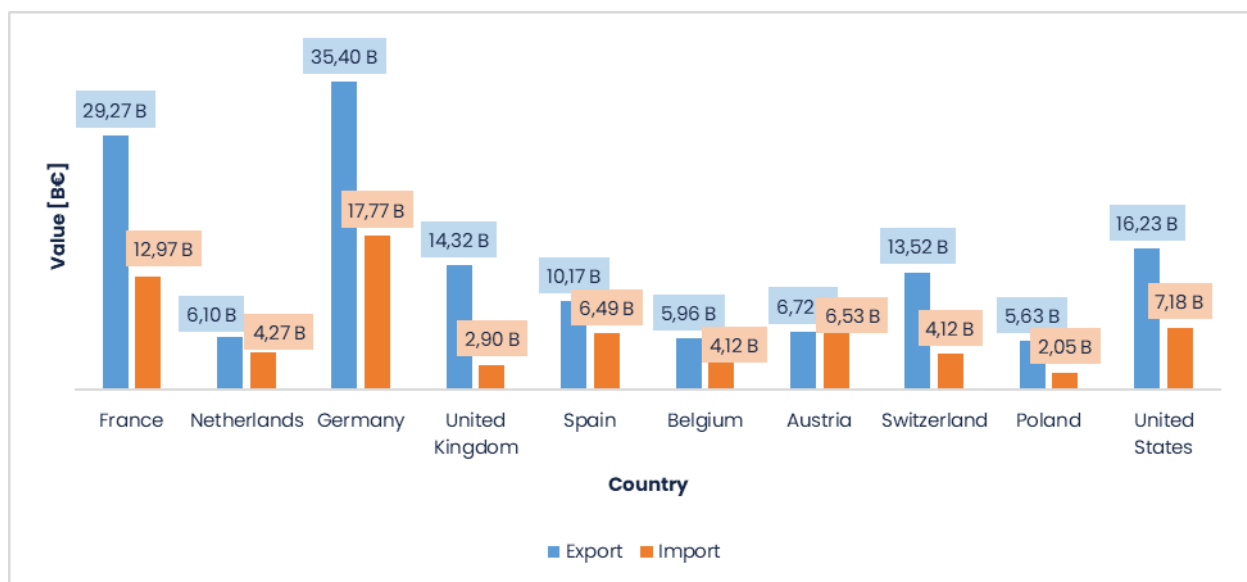
**Figure 19:** Occurrences [%] per country  
 Source: Excel



**Figure 20:** Occurrences [%] per continent  
 Source: Excel

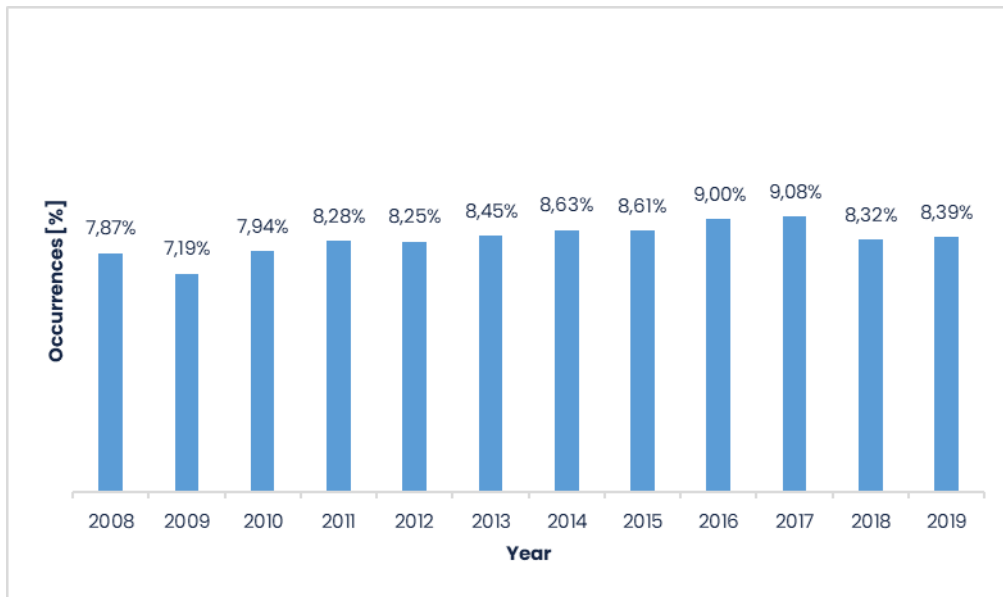
The different countries involved in the transactions show similar trends, considering the occurrences per year. The main pattern is related to an upward trend a part for the period 2017-2018 where a negative one is highlighted (Figure 24). This course has some exceptions like United States, China, India, Bulgaria, Canada, Tunisia, Mexico, Serbia, Albania, Bosnia and Herzegovina, Australia, New

Zealand that point out an upward tendency; in fact, China and United States show the most important increase between 2017 and 2018. At the same time the total value of export and import per year for each country displays a positive trend over time (figure 25 and figure 26). Some European countries like Poland, Hungary, Czech Republic, Romania, Slovenia showed an upward trend in exports and imports steeper than the same for China, Japan and India. The difference between exports and imports highlights similar patterns but Italian companies import more from China, Hungary, Ukraine, Brazil, Paraguay, Uruguay, Vietnam, Laos, Cambodia, Mongolia, Bosnia and Herzegovina, Kyrgyzstan and other African countries than they export.



**Figure 21:** Value operations per country

Source: Excel

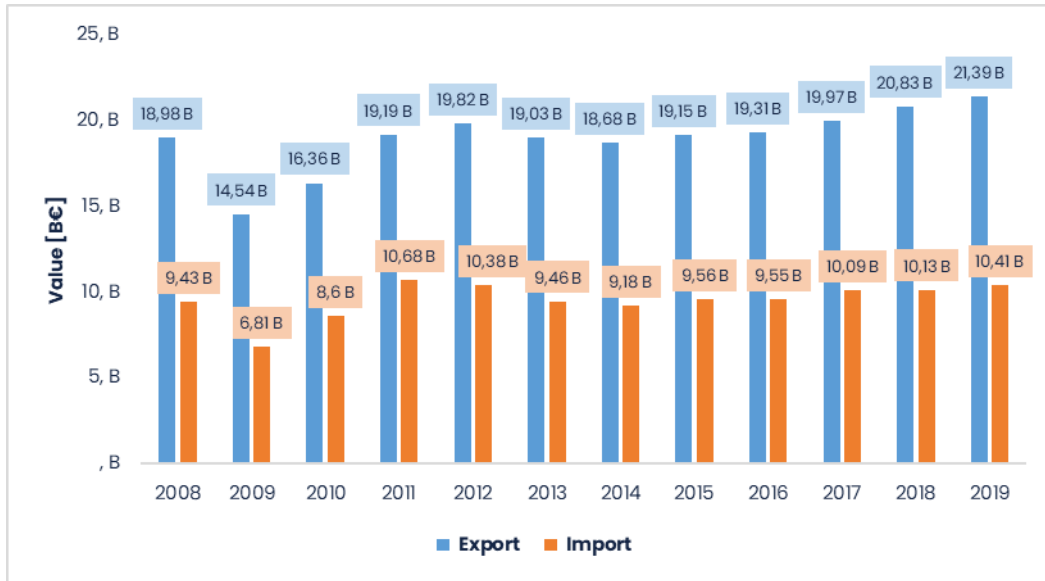


**Figure 22:** Occurrences [%] per year

Source: Excel

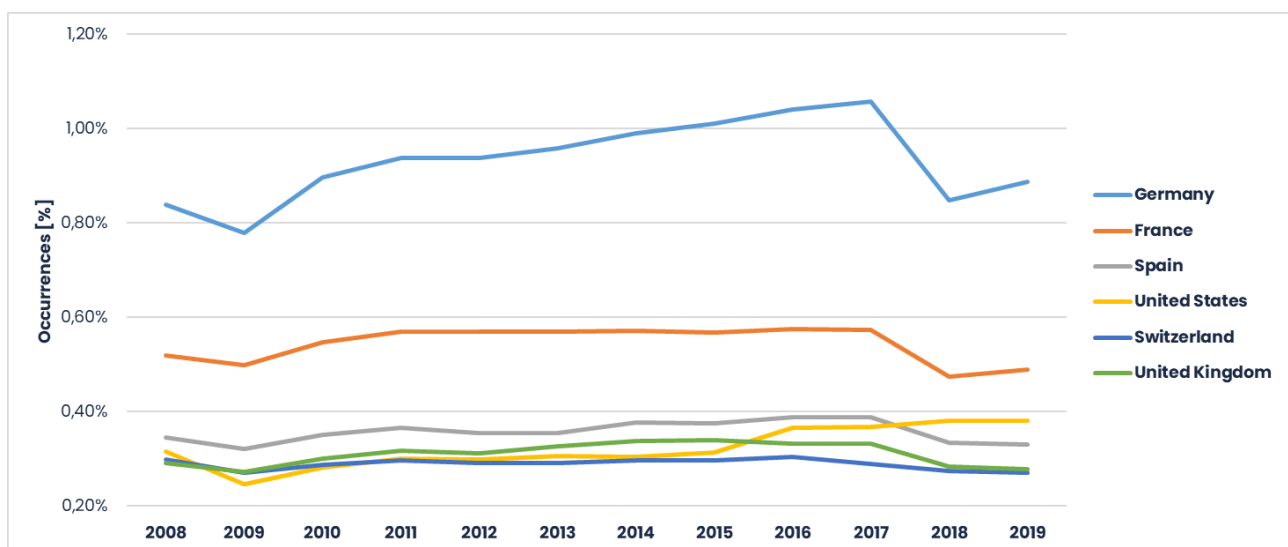
The sample includes a column describing the NC8 codes. They are based on a classification of goods adopted by EU countries in foreign trade surveys. It consists of about 10.000 different types of products defined through 8 digits each. The classification includes every kind of merchandise, from food to garments from glass products to plastic goods, machines, etc. Most of the occurrences are related to transactions of plastic products (0.84%), red wines produced in Europe with a IGP protection (0.82%), loading pallets, simple, and pallet backs, made of wood (0.47%), other red wines produced in Europe with a DOP protection (0.45%) and iron or steel articles (0.45%). From a value viewpoint most of the export operations are related to unwrought gold for non-monetary uses (€11 billion of export, the 5% of the sample), followed by platinum (only 1.5%), red wines produced in Europe with a IGP protection (0.9%) and heat exchangers (0.7%). Most import operations include gold for non-monetary uses, waste and scrap of silver and waste and scrap of iron or steel.





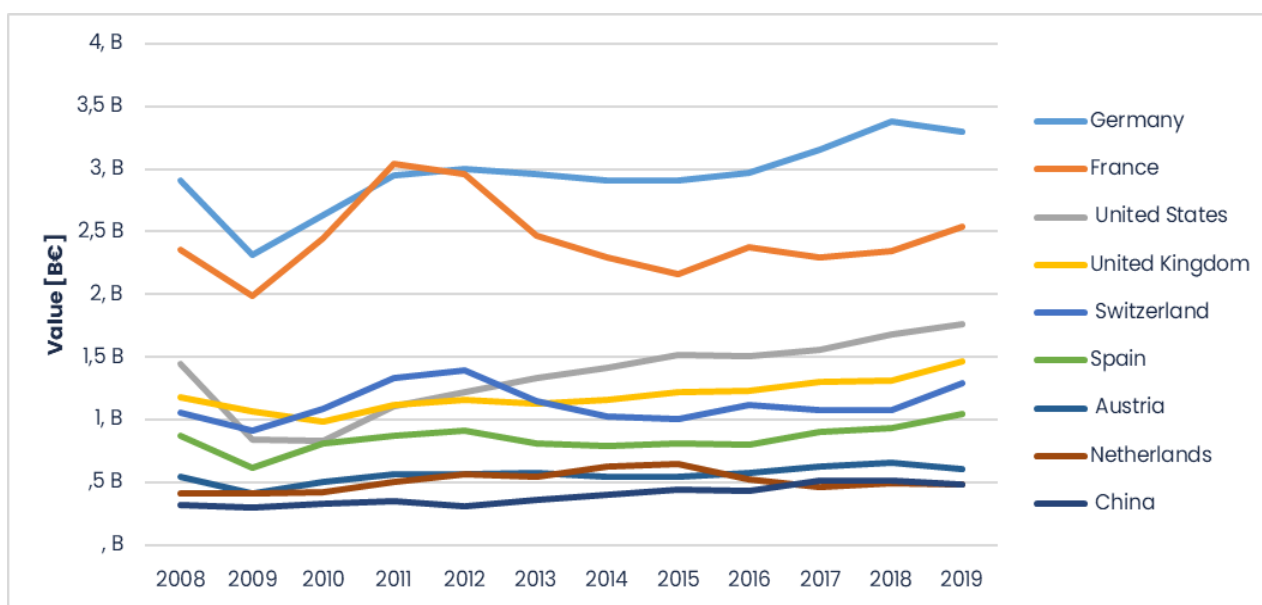
**Figure 23:** Value of operations per year  
Source: Excel

The plastic products are traded mainly with Germany, France, China, United Kingdom, Spain, Austria (figure 27); the transactions of European wines occurred mainly with the United States, Germany, Switzerland, Japan, Netherlands (figure 28). The loading pallets occurrences are primarily sourced from Germany (12.33%), France (7.55%), Austria (5.58%), Netherlands (5.55%), Belgium (5.41%), and Denmark (5.29%). The iron and steel articles are principally traded with Germany (13.34%), France (7.47%), Switzerland (6.22%), Austria (5.08%), Spain (4.62%), China (4.43%).



**Figure 24:** Occurrences [%] of main countries over time  
Source: Excel

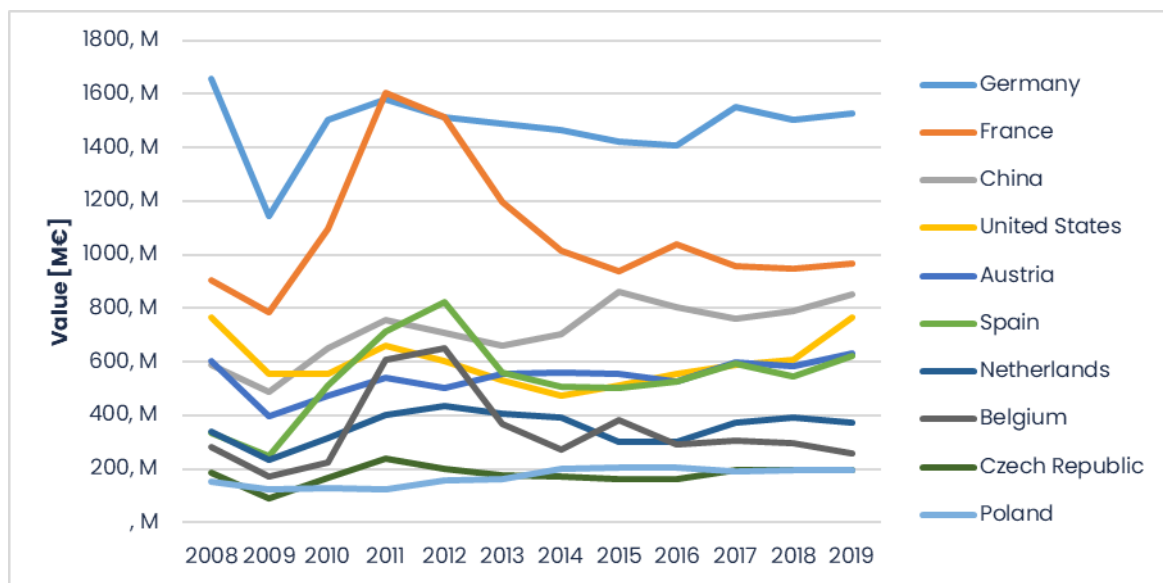
The unwrought gold, for non-monetary uses, transactions are very important, from a value viewpoint, with France, Switzerland, Spain, Belgium (figure 33). The gold semi-finished products are instead imported from France, Belgium, Spain, United Kingdom and Germany. Most of the value of raw or powdered platinum trades are sourced from United States, Switzerland, United Kingdom and Germany (figure 34). The transactions involving the waste and scrap of silver refer primarily to imports with United States (4289.29 M€), Switzerland (809.88 M€), United Kingdom (794.81 M€), Canada (467.74 M€) and others (figure 35). Even the imports of wastes and scraps of steel or iron contribute to the total value of trades, considering 684.55 M€ from Hungary, 562.2 M€ from Austria, 351.54 M€ from Germany, 350.05 M€ from Czech Republic and 246.19 M€ from Slovenia (figure 36).



**Figure 25:** Export value of main countries over time  
Source: Excel

The NC8 classification can be aggregated in less digit in order to identify the industries involved in the analysis. The STATA software was used to find macro products through some commands. First of all, the NC8 variable was converted into string, then a new variable 'NC8\_2d\_str' was generated to comprehend only the first two digits and finally a new numeric variable 'NC8\_2d' was generated destringing the NC8\_2d\_str (figure 29).

Most of the transactions refer to 84 products (Nuclear reactors, boilers, machinery, mechanical appliances and devices; parts of these machines or appliances), followed by 39 (Plastic materials), 22 (Beverages, alcoholic liquids and vinegars), 85 (Electrical machinery, apparatus and equipment; sound recording or reproducing apparatus, television image and sound recording or reproducing apparatus), 62 (Garments and clothing accessories, other than knitted or crocheted) and 73 (Cast iron, iron or steel works) as showed in the figure 30.

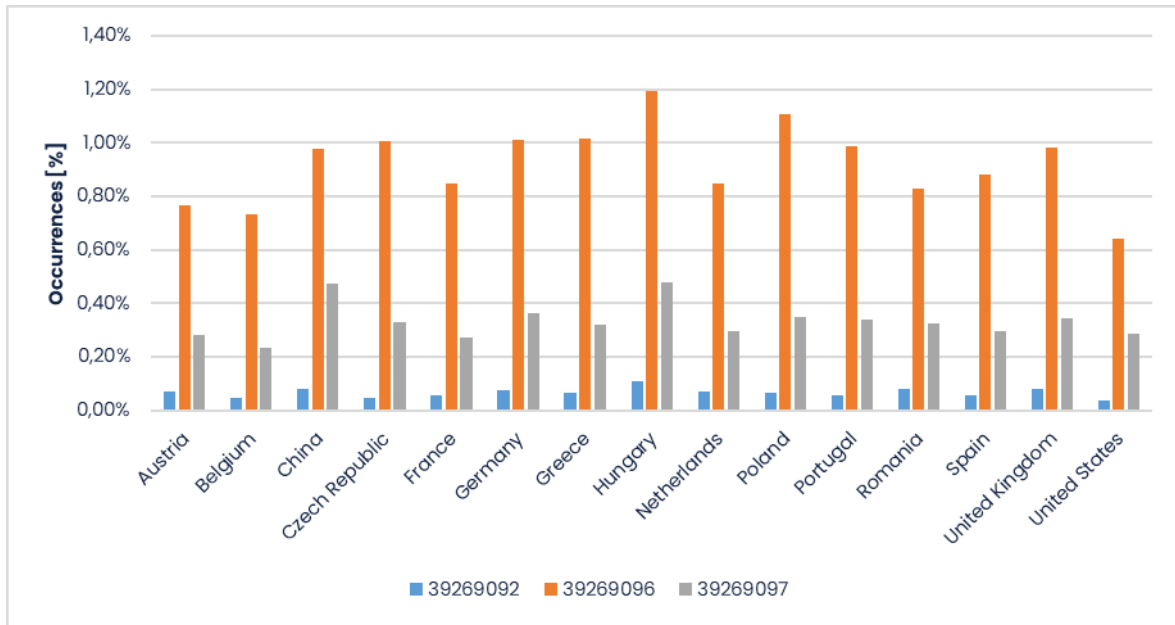


**Figure 26:** Import value of main countries over time

Source: Excel

The 12.29% of mechanical appliance transactions occurred with Germany, the 5.23% with France and the 4.09% with the United States. The plastic materials are traded mainly with Germany (15.42%), France (7.98%), Spain (4.77%). The outcomes point out important amount of transactions in Europe (particularly in Germany and France) and sometimes with the United States, China and Japan. The values of import and export highlight similar results, the main industries are related to 84, 71 (Natural or cultured pearls, precious stones, semi-precious stones, precious metals, metals clad or covered with precious metals; imitation jewellery; coins), 72 (Cast iron, iron and steel), 39 and 85 (figure 31). The countries involved are similar to the ones involved in the occurrences analysis because

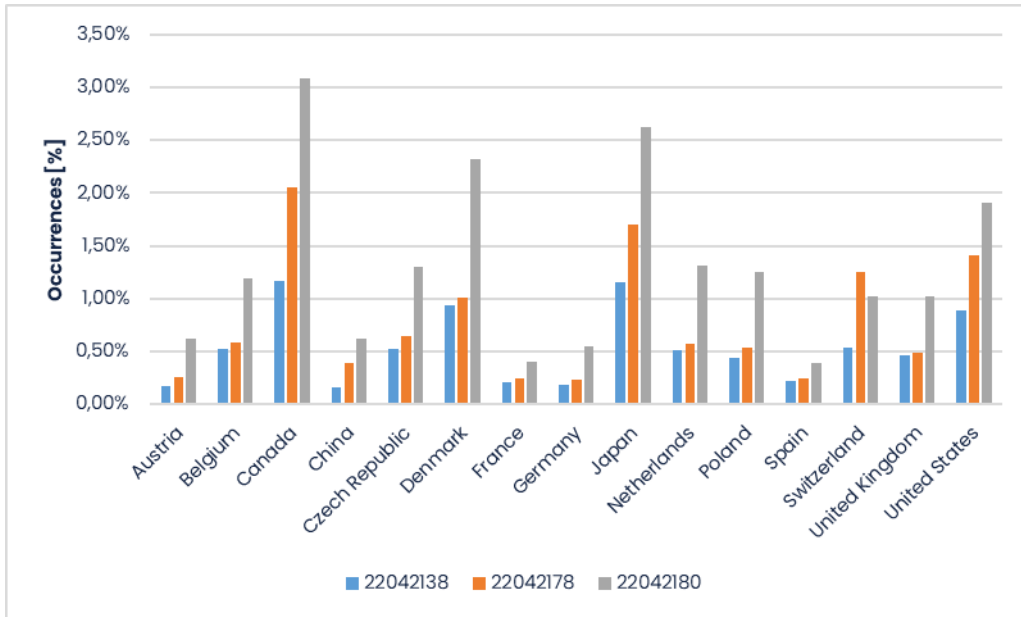
Germany and France remain important partners and China is important for the imports of iron and steel works, Switzerland is important for the export of precious stones, Austria for the export and import of iron and steel and UK is important for the export of plastic materials.



**Figure 27:** Plastic product occurrences [% in respect to all occurrences per country] per country (main data)

Source: Excel

Over the years the products showing most of the occurrences and most of the value of the operations highlight similar trends. The occurrences make notice an upward sloping function until 2016 or 2017, afterwards a decline occurs. From the value viewpoint there are some products following this course and some others that have upward or downward progresses. The aggregated products in 2 digit show the same trends (figure 32), a part from the value viewpoint where the positive progresses are more evident.



**Figure 28:** European wine occurrences [% in respect to all occurrences per country] per country (main data)

Source: Excel

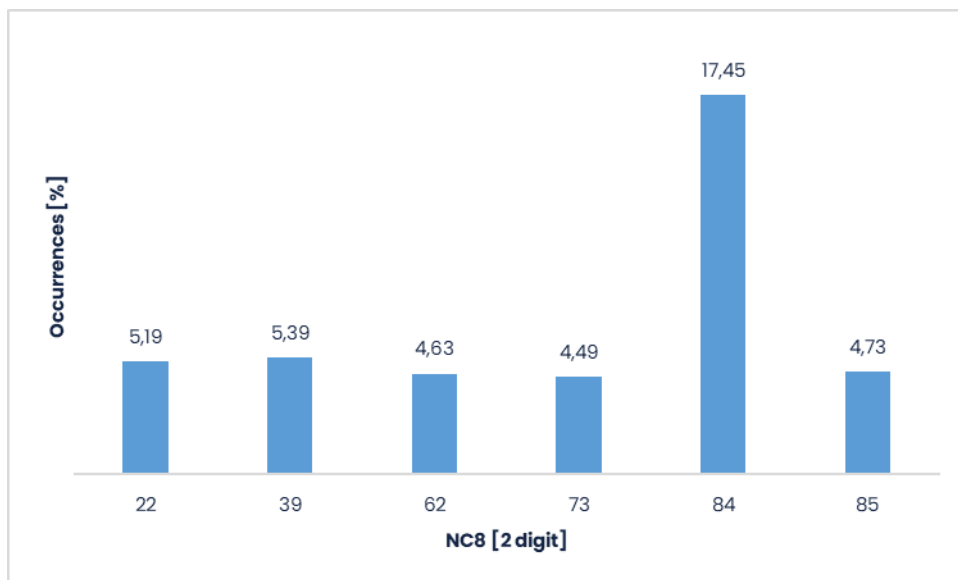
```

tostring NC8, generate(NC8_str)
//NC8 in 2 digit
gen NC8_2d_str = substr(NC8_str, 1, 2)
replace NC8_2d_str = substr(NC8_str, 1, 1) if length(NC8_str) == 7
destring NC8_2d_str, generate(NC8_2d)

```

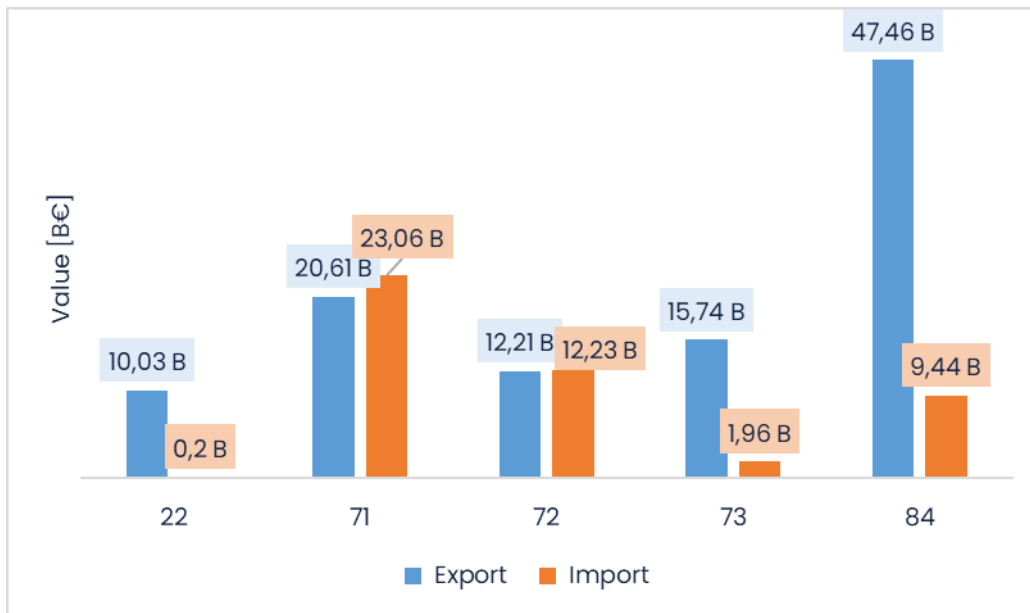
**Figure 29:** NC8\_2d variable

Source: STATA

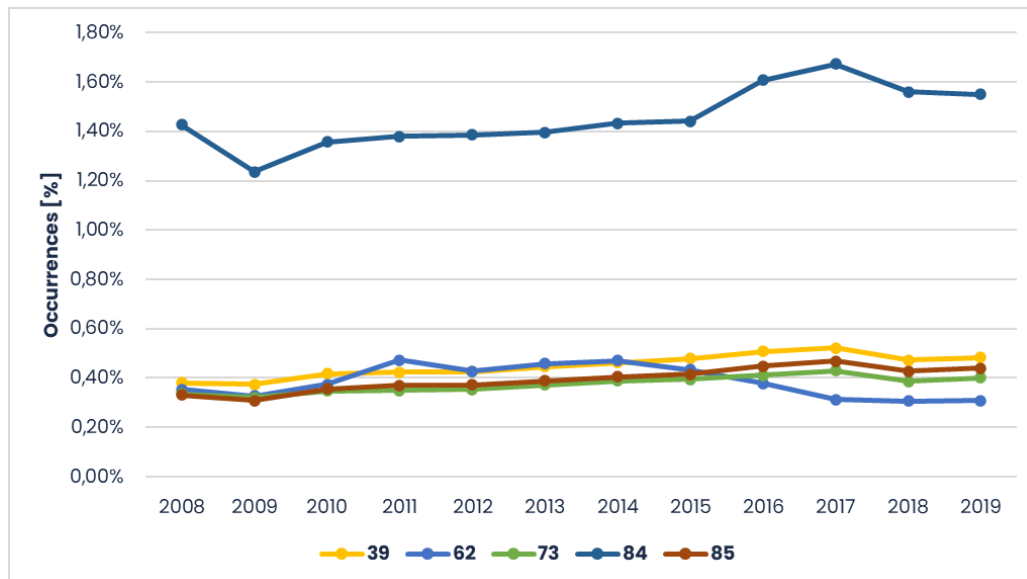


**Figure 30:** Occurrences [%] per NC8 in 2 digit (main data)

Source: Excel



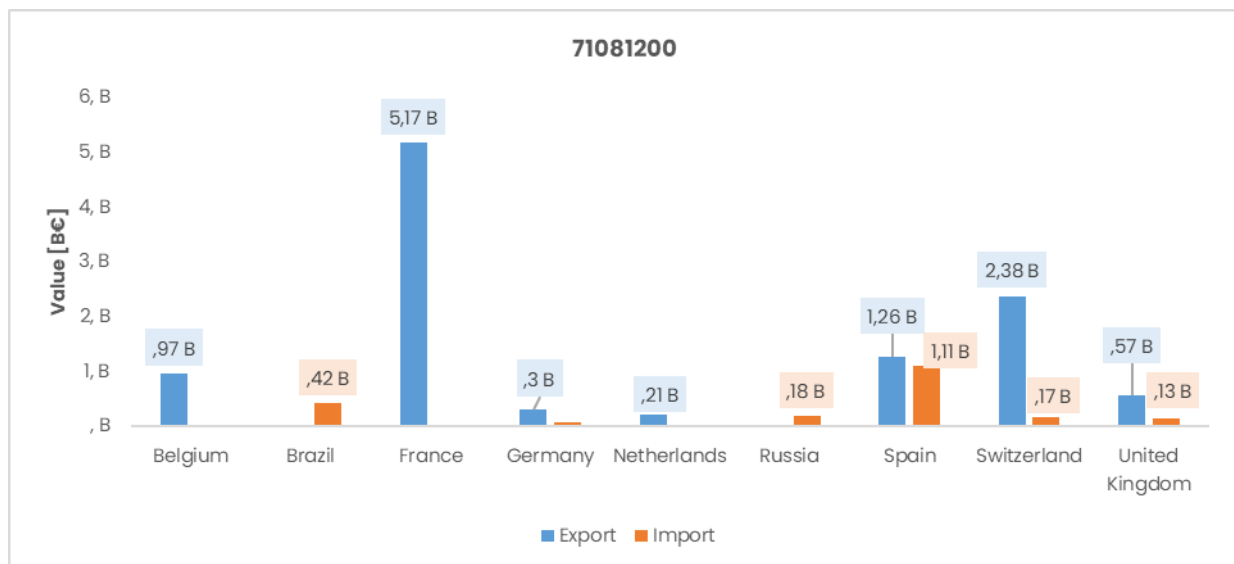
**Figure 31:** Value of import and export per NC8 in 2 digit (main data)  
Source: Excel



**Figure 32:** Occurrences [%] per NC8 in 2 digit over the years (main data)  
Source: Excel

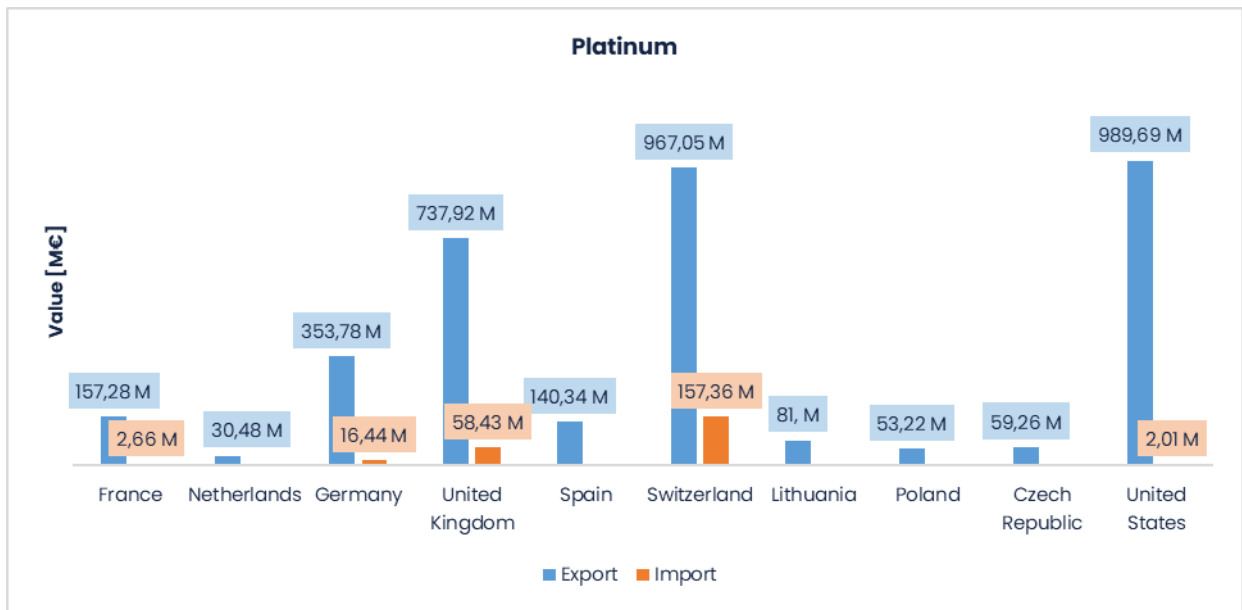
The firms of the sample are divided according to the ateco code 2007. Most of the transactions are from firms of 1320 ateco code (6.92%), related to the weaving industry, followed by firms of 1413 code (5.9%), related to pack of outer clothing,

companies of 1102 code (3.35%), related to production of table wines and quality wines, companies of 2893 code (2.1%), related to manufacturing of machinery for the food, beverage and tobacco industry (figure 38). On the other hand, the value of export is mainly covered by 2440 code, referring to production of precious and semi-finished metals, 2410 code, referring to manufacturing of iron, steel or iron alloys, 1102 code, referring to production of table wines and quality wines, 1413 code, referring to packing of outer clothing and 2550 code, referring to forging, drawing, stamping and profiling of metals and powder metallurgy (figure 39). The value of import is mainly covered by 2440, 2410, 1413, 1051 (referred to dairy industry) and 2751 (referred to manufacturing of household appliances) codes in sequence.



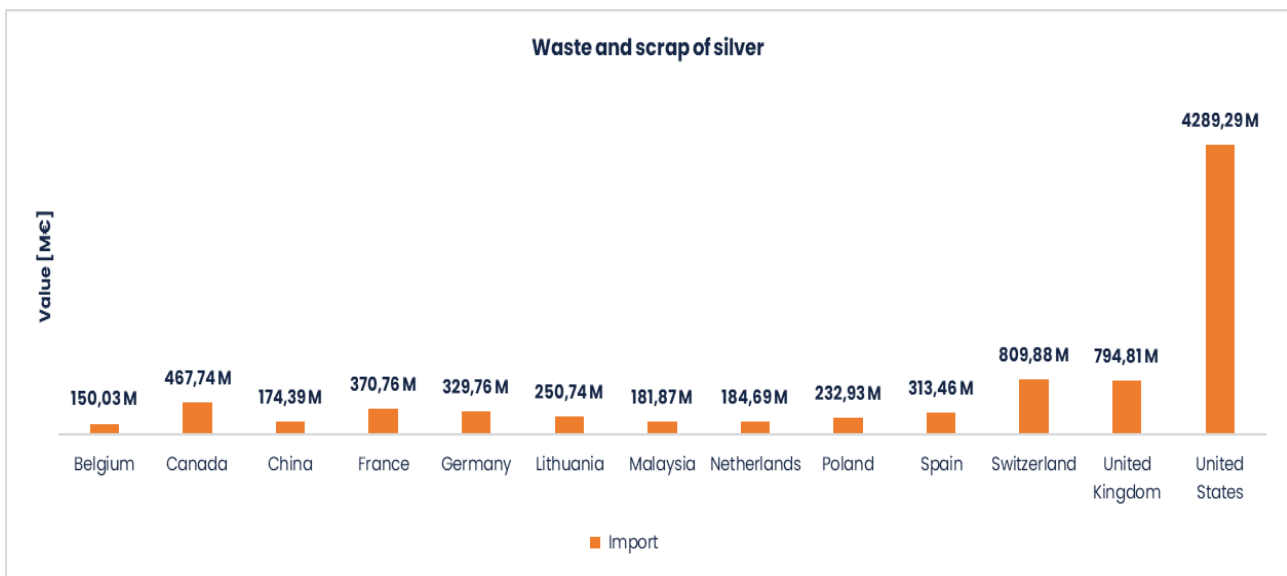
**Figure 33:** Value of transactions of unwrought gold for non-monetary uses (main data)  
Source: Excel

Over the years the most represented ateco codes show a number of occurrences quite constant, apart for 1320 (weaving) and 1413 (pack of outer clothing) that had a little bit of decline (figure 40). From the value viewpoint the exports point out a similar pattern, a part for 2440 code (production of precious and semi-finished metals) having a great decline after 2012 and a good recovery in 2019 (figure 41). The imports show that most of the value is comprised 2440 code (production of precious and semi-finished metals), and 2410 code (manufacturing of iron, steel or iron alloys) (figure 42).



**Figure 34:** Value of platinum transactions per country (main data)

Source: Excel



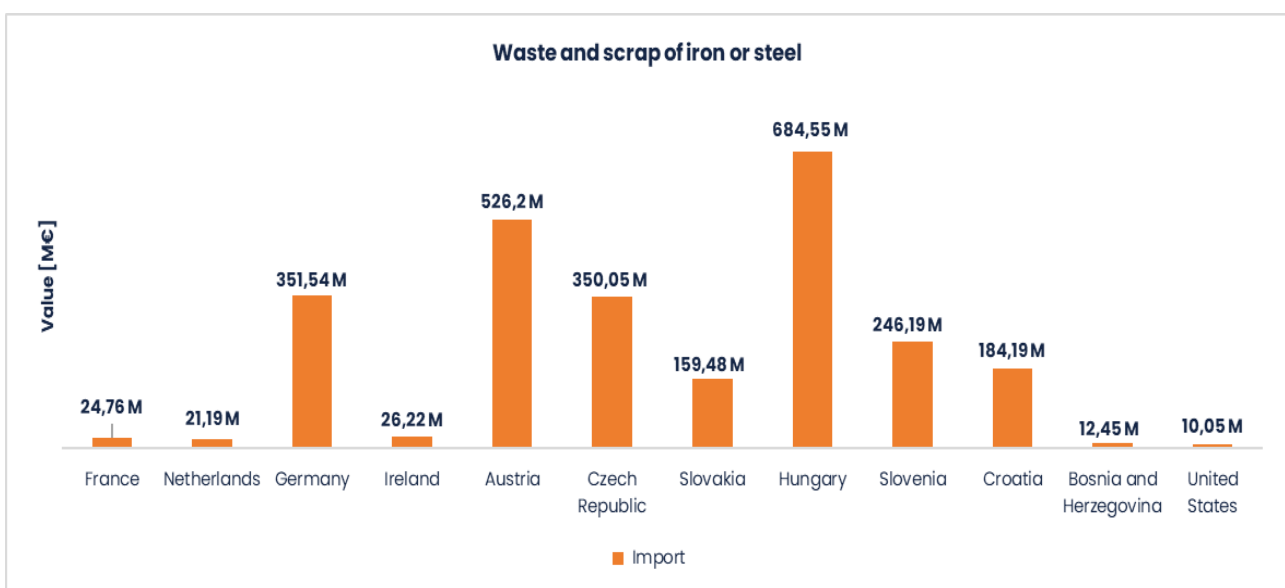
**Figure 35:** Import of waste and scrap of silver per country (main data)

Source: Excel

The transactions are also divided according to the ateco code. The most frequent codes are aligned with the ones of the companies, 1320 (6.8%) referred to the weaving industry, 1102 (4.49%) referred to the production of table wines and quality wines, 1413 (3.58%) referred to packing of other outer clothing and 3109

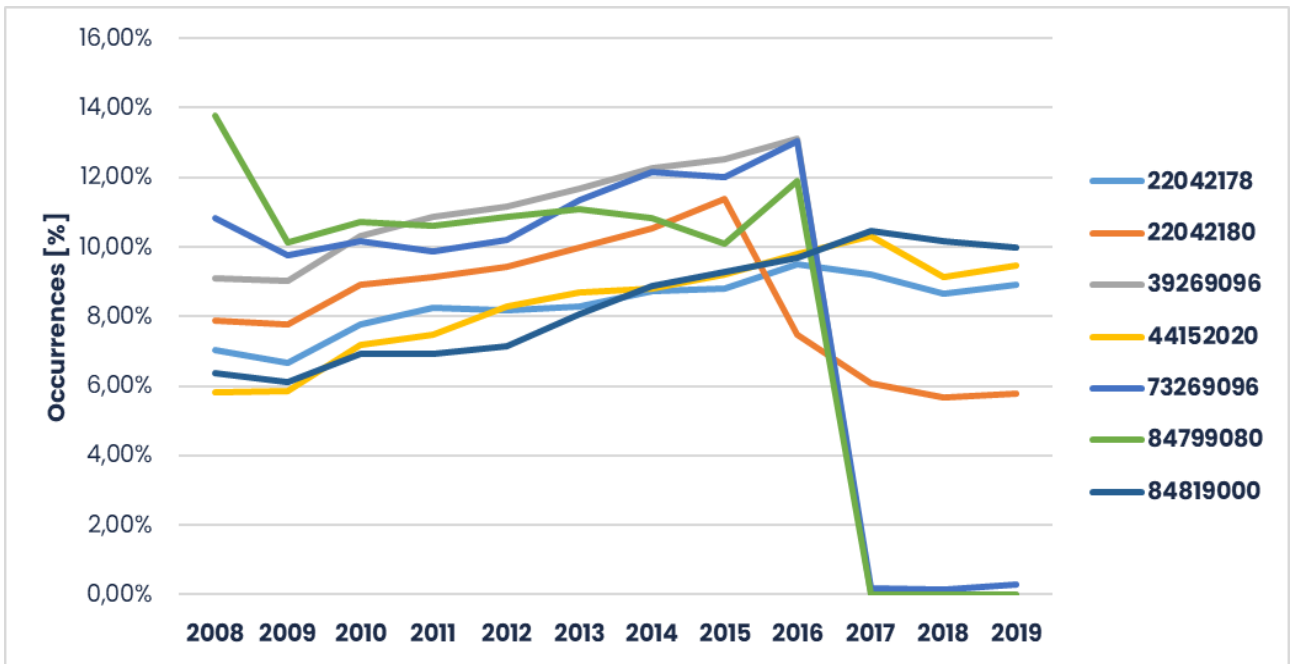


(2.79%) referred to manufacturing of other furniture (figure 43). The most important codes for export values are 2441 (production of precious metals), 2410 (iron and steel industry), 1102, 2751 (manufacturing of household appliances) and 2420 (manufacturing of steel pipes, tubes, hollow sections and related accessories), as shown in the figure 44. The imports highlight 3811 code (collection of non-hazardous waste), 2441, 2410, 2016 (manufacturing of plastics in primary forms) and 1011 (meat processing and preservation). The transactions seem to occur mainly in the northern regions, differently according to the ateco code. The 1320 code is highly present in Lombardia, Toscana and Piemonte (they cover the 90.8% together), while 1413 code in Piemonte, Lombardia and Emilia Romagna (they cover the 57.2% together), and 1102 code in Veneto, Piemonte and Trentino Alto Adige (they cover the 49.5% together) (figure 45). From The value viewpoint there is more differentiation, 2441 code is an outlier in Toscana (export € 17.51 billion and import € 12.89 billion), while 2410 code (manufacturing of iron, steel and iron alloys) in Friuli Venezia Giulia (export € 7.52 billion and import € 2.53 billion), 2420 code (manufacturing of steel pipes, ducts, hollow profiles and related accessories) in Lombardia (export € 5.19 billion and import € 0.32 billion) and 2331 code (manufacturing of ceramic tiles for floors and walls) in Emilia Romagna (export € 2.92 billion and import € 12.08 million). The 3811 code (collecting non-hazardous wastes) includes high levels of import in Toscana (€ 10.04 billion) and in Friuli Venezia Giulia (€ 3.97 billion).



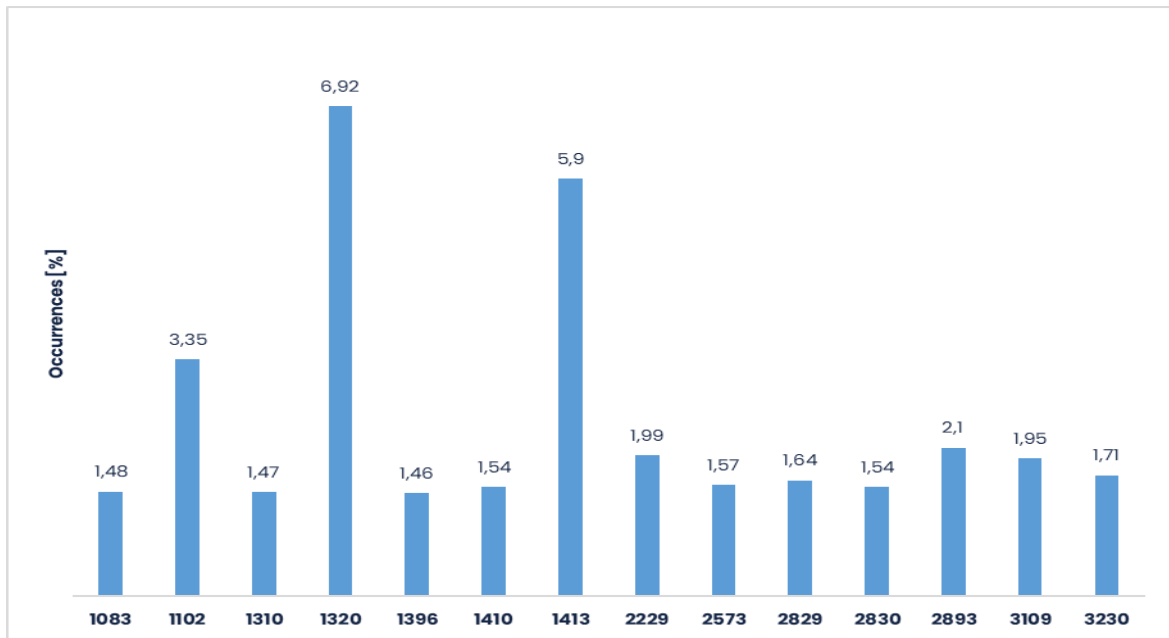
**Figure 36:** Import of waste and scrap of iron or steel per country (main data)

Source: Excel



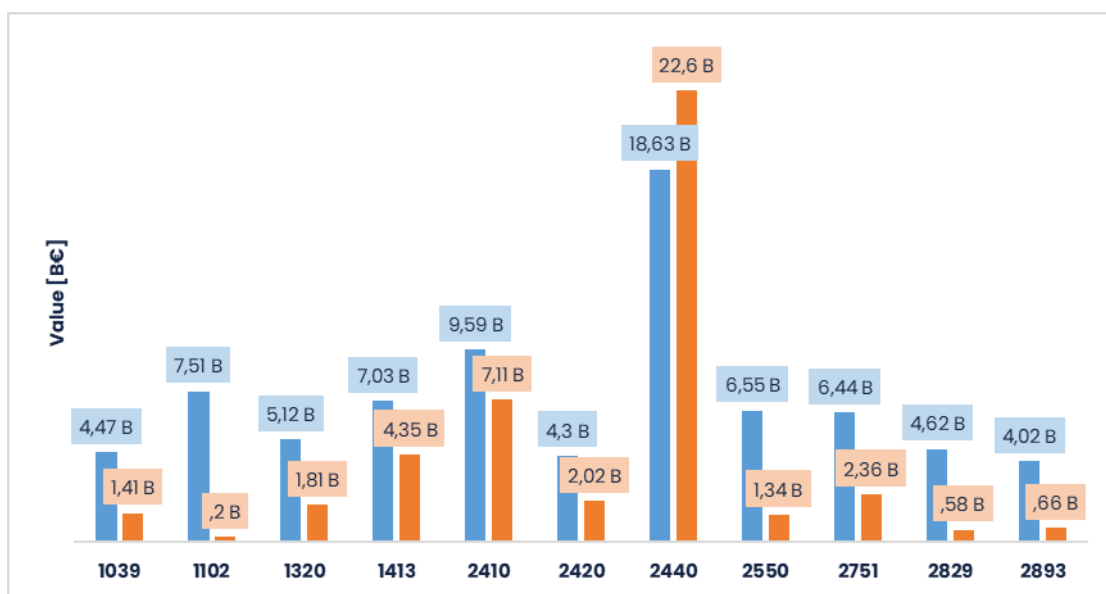
**Figure 37:** Occurrences [%] per product per year (main data); percentage measured in respect to the occurrences per NC8

Source: Excel



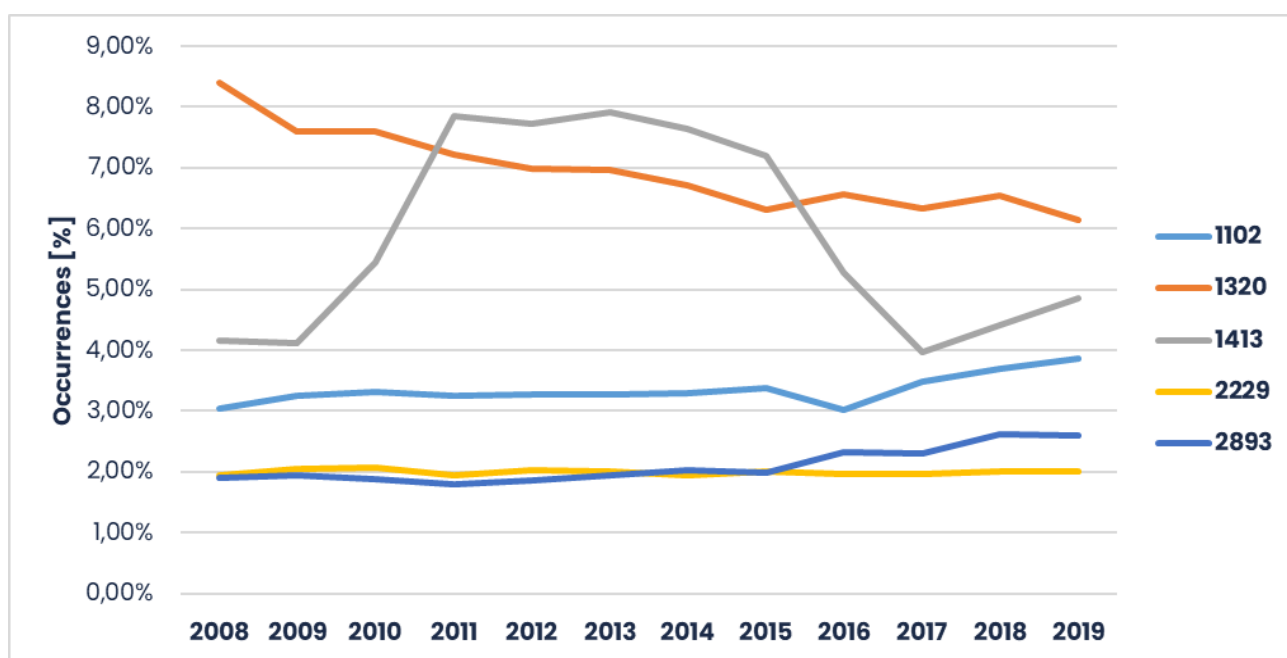
**Figure 38:** Occurrences [%] per ateco code of firms (main data)

Source: Excel



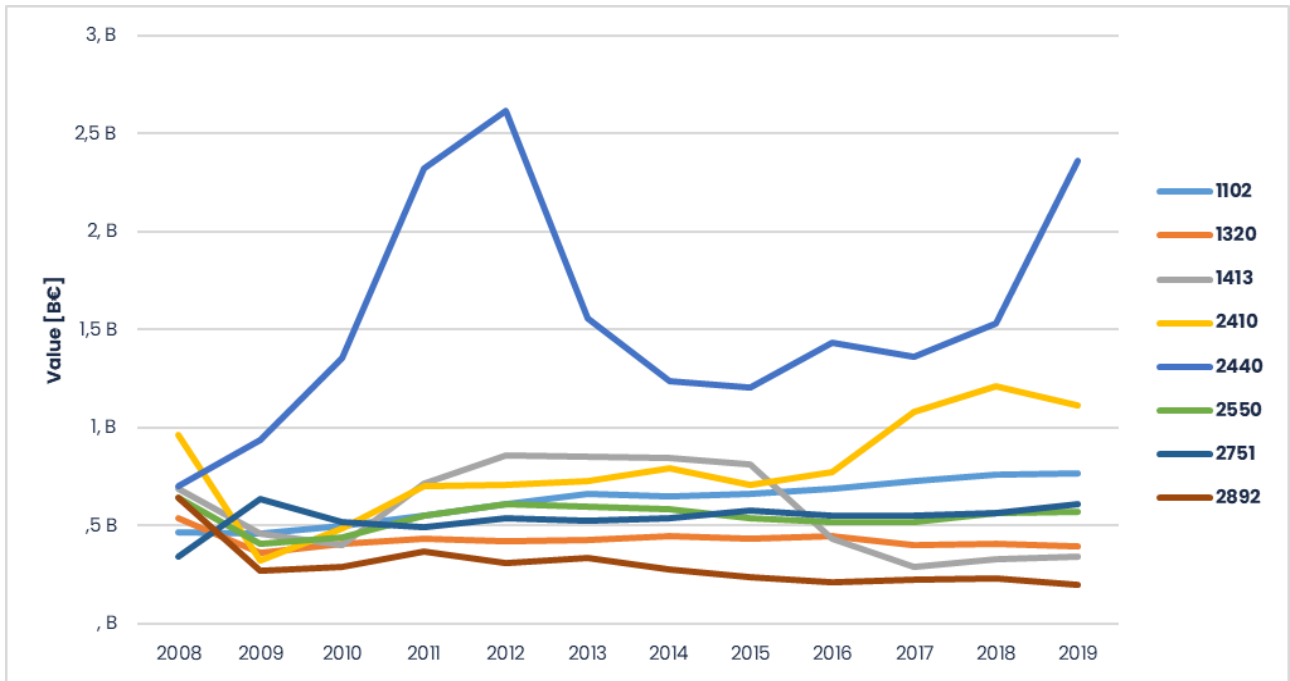
**Figure 39:** Value of transactions per ateco code of firms (main data)

Source: Excel



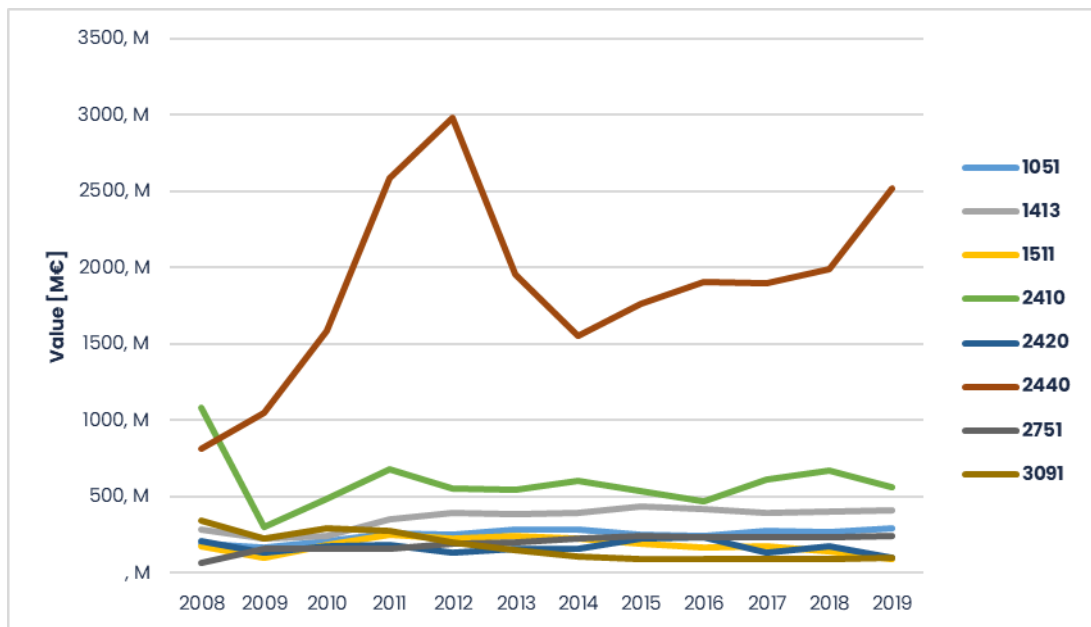
**Figure 40:** Occurrences [%] per ateco code of firms per year (main data); percentage measured in respect to the total amount of occurrences per year

Source: Excel



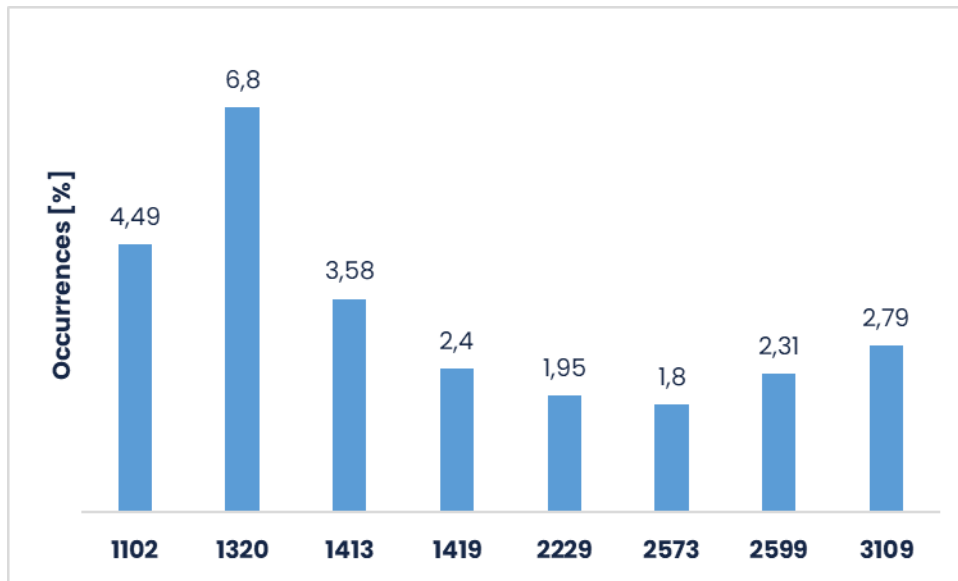
**Figure 41:** Value of export per ateco code of firms per year (main data)

Source: Excel

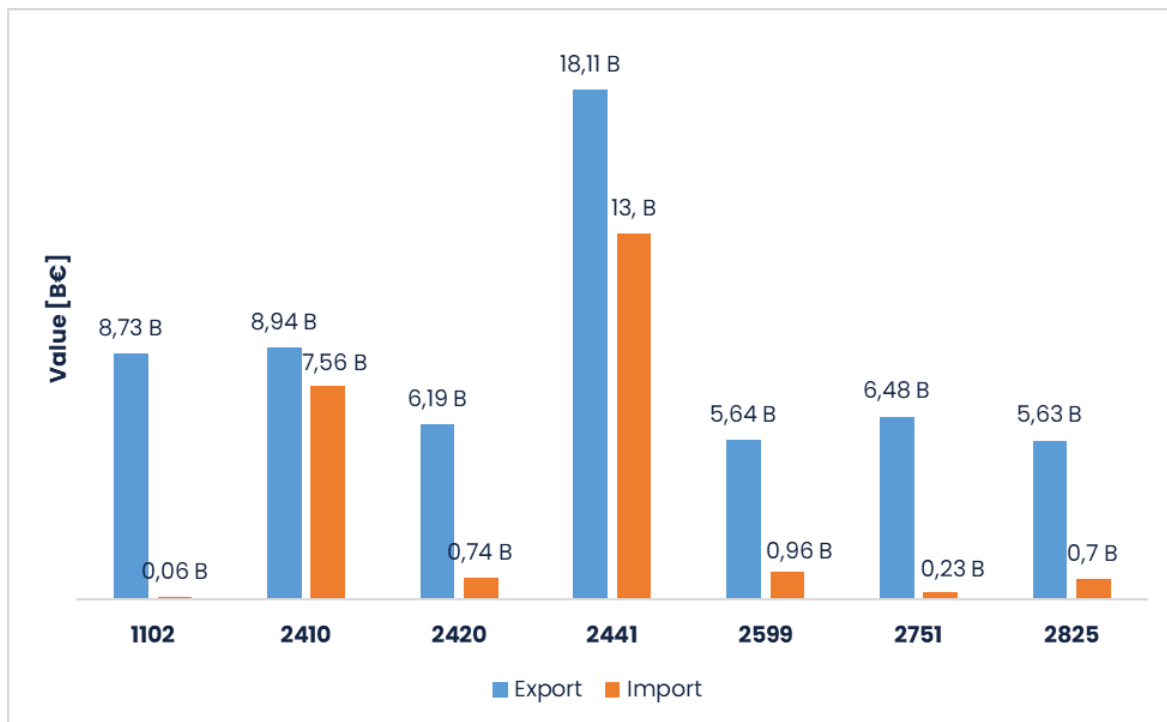


**Figure 42:** Value of import per ateco code of firms per year (main data)

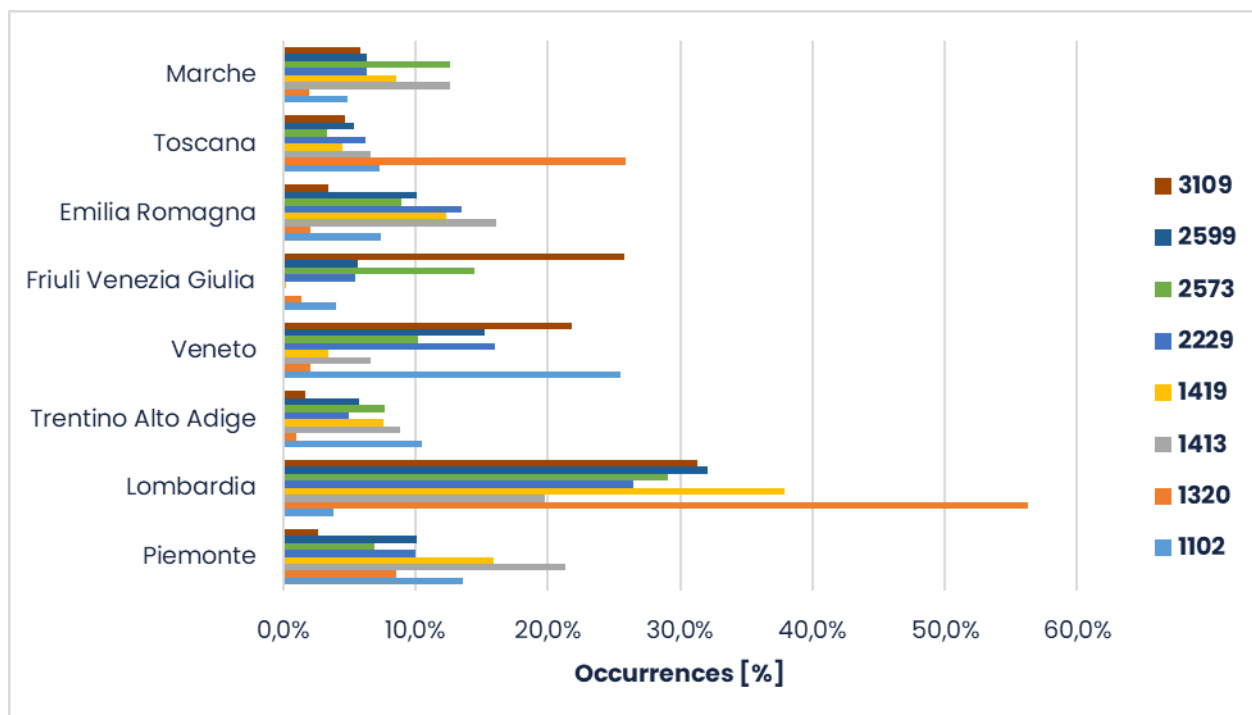
Source: Excel



**Figure 43:** Occurrences [%] per ateco code of transactions (main data)  
Source: Excel



**Figure 44:** Value of transactions per ateco code of transactions (main data)  
Source: Excel



**Figure 45:** Occurrences [%] per ateco code of transactions per region (main data); percentage measured in respect to all occurrences per ateco code

Source: Excel

## 2.4.2 Summary

This dataset consists of 2.76 million import-export transactions carried out by 5,000 Italian manufacturing firms in the period between 2008 and 2019. The data includes the entire national territory, involving all regions, provinces and 220 countries or areas. The sample is composed of the 75.89% of export operations and 24.11% of import ones. The box plot shows very low medians and a lot of outliers for imports and exports; in 2011 and 2012 the imports highlighted the highest amounts (figure 46). The exports show similar patterns.

The analysis reveals that Lombardia emerges as the most dynamic region in international trade, followed by Veneto, Emilia Romagna and Piemonte. Some specific provinces, such as Como, Bolzano, Varese, Modena and Vicenza, show intense trade activity. Arezzo is the most exporting and the most importing Italian

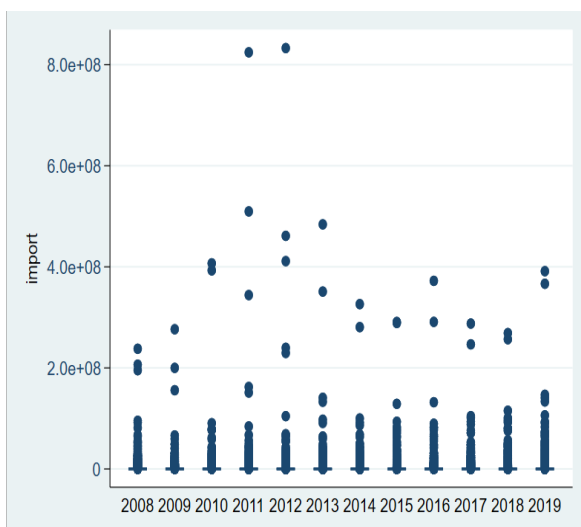
province from the value viewpoint. In the south of Italy, the import values frequently overcome the export ones.

Germany, France, Spain and Austria emerge as Italy's main trading partners. Europe dominates the trade landscape, followed by Asia and North America. The United States is the third major player according to the export values and China is the third major player according to the import values.

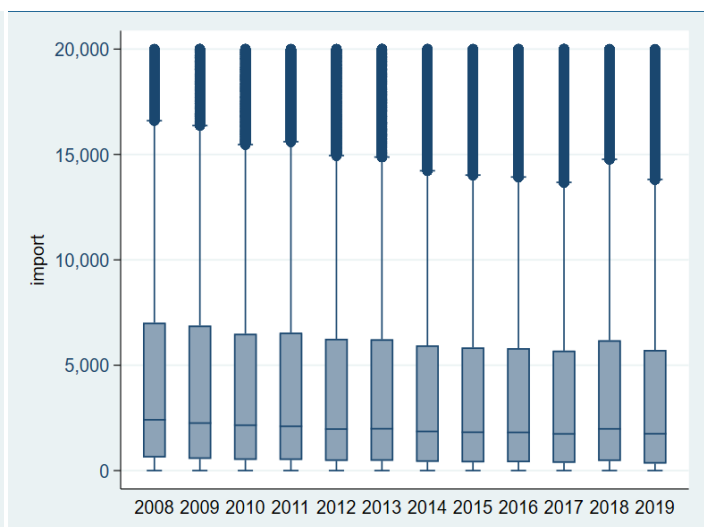
Plastic products, red wines, pallets and steel products constitute the main traded goods. Aggregating the NC8 classification in two digits most transactions are related to mechanical appliances, plastic materials, beverages and electrical apparatus.

Although the number of transactions has remained relatively stable over time, there was a slight decline in 2009, probably attributable to the Great Financial Crisis. The overall value of imports and exports has instead shown constant growth over the years.

A regional specialization is evident: the textile sector is concentrated in Lombardia, Piemonte and Toscana, while outer clothing packaging is important in Piemonte, Lombardia and Emilia Romagna. Table wine and quality wine production are concentrated in Veneto, Piemonte and Trentino Alto Adige. The export values are affected by precious metals, iron and steel, ceramic tiles, while the import values are also affected by collecting non-hazardous wastes.



**Figure 46:** Import Value Box Plot  
Source: Stata



**Figure 47:** Import Value Box Plot below 20.000€  
Source: Stata

### 3.0 Statistical analysis

I used STATA software to analyze the data. The database was composed of different types of variables (figure 48).

variable name	storage type	display format	value label	variable label
anno	float	%9.0g		
NC8	double	%9.0g		
ateco2007	double	%9.0g		Ateco code of transaction - codice prodotto, 5 digits
ateco2007_str	str5	%9s		ateco2007
firmid	float	%9.0g		group(n_firm)
paese	float	%77.0g	country	
provincia	str20	%20s		
movim	float	%9.0g	export	
import_val	float	%9.0g		
export_val	float	%9.0g		
ateco2007impr	long	%12.0g		codice Ateco impresa, 6 digits
ateco2007~r_str	str6	%9s		codice Ateco impresa (stringa), 6 digits
developed	float	%9.0g		
ateco200~5d_str	str5	%9s		codice Ateco impresa, 5 digits (stringa)
ateco2007imp~5d	long	%10.0g		codice Ateco impresa, 5 digits
ateco2~r_4d_str	str4	%9s		codice Ateco impresa, 4 digits (stringa)
ateco2007imp~4d	int	%10.0g		codice Ateco impresa, 4 digits (stringa)
ateco2~r_3d_str	str3	%9s		codice Ateco impresa, 3 digits (stringa)
ateco2007imp~3d	int	%10.0g		codice Ateco impresa, 3 digits (stringa)
manufacturing	float	%16.0g	manufacturing	
ateco2007_4d~r	str4	%9s		codice Ateco transazione, 4 digits (stringa)
ateco2007_4d	int	%10.0g		codice Ateco transazione, 4 digits (stringa)
ateco2007_3d~r	str3	%9s		codice Ateco transazione, 3 digits (stringa)
ateco2007_3d	int	%10.0g		codice Ateco transazione, 3 digits (stringa)
Region	float	%21.0g	Region	

**Figure 48:** Variables of the database

Source: STATA

The 'firmid' includes numbers from 1 to 4999, 'paese' is a number from 1 to 960 defining most of the countries and of the zones worldwide, 'movim' is composed by 8 if the transaction was an import or 9 if the transaction was an export. The 'ateco2007impr' variable describes the ateco code of the firm in 6, 5, 4 and 3 digits, while the 'ateco2007' one refers to the ateco code of the transaction in 5, 4 and 3 digits. The 'developed' variable includes 0 if the good is not produced and 1 if it is produced internally. The 'manufacturing' has only value of 1 cause all the firms of the database are manufacturing companies.

At first, I added a variable on the database called "Region", it is a numerical variable including from 1 to 20 all Italian regions to identify at a higher level the



region where the transactions took place, labelling them with the names of the regions. I took all the provinces, and I divided them according to Region and then I modified the variable Region with a number according to the provinces involved in the transactions.

Furthermore, I built a subset of the database dropping all the firms having only a transaction, all the firms having either only import or only export trades. In order to recognize them I introduced a new variable 'c' and I used the function "collapse (count)c, by(firmid)" to count the occurrences of each firm; finally I dropped all firms having  $c = 1$  (implying only a transaction). Finally, I added the binary variable 'solo' = 1 where  $c$  was = 1. In addition, I typed "collapse (mean)movim, by(firmid)" to identify the companies that either only exported or only imported cause if the mean of movim had been 8 or 9 it would have meant the company would have done only a type of transaction. Eventually I dropped the variable 'c' and I updated the 'solo' variable = 1 for those firms only having either exports or imports. I added a variable 'Offshoring' afterwards. It is a binary variable equal to 1 whether a firm has at least an export transaction and an import transaction, only when, the ateco code of the firm is equal to the ateco code of the transaction, in order to catch all the firms that bought and sold the same product; this can be a potential sign of the offshoring phenomena, hypothesizing firms traded their main good.

The analysis continues identifying the potential nearshorers through three databases. The three databases come from the data described before, but they differ for the 'Offshoring' variable because in the first database I have taken into account the 4-digit ateco codes, in the second database the 5-digit ateco codes and in the third database the 3-digit ateco codes in order to find whether the increase in the specialization of the codes highlights significant differences. Each database has been tested through three approaches. The first approach refers to a measurement of 'near' according to a geographic distance from Italy, the second approach refers to a measurement of 'near' according to a European viewpoint, so including as near countries only the European members because of the advantages in trading among EU partners. The third approach refers to a measurement of 'near' according to geopolitical alliances in order to verify that

they can incentivize trades, for this case only the OECD (Organisation for Economic Co-operation and Development) members are considered allied.

The first operations for every database are linked to the reduction of the observations, dropping the ones where 'solo' is equal to 1 and keeping only the Offshorers, so the observations where 'Offshoring' is equal to 1 (figure 49).

```
drop if solo == 1

keep if Offshoring == 1
keep if ateco2007_4d == ateco2007impr_4d

fillin firmid paese movim anno

replace import_val = 0 if _fillin == 1

//generate sum of imports per country per year cause there can be more transactions of import from the same Country for the same year
collapse (sum)import_val (sum)export_val, by(firmid paese movim anno)

//to reduce the database
drop if movim == 9
```

**Figure 49:** first operations for the 4-digit database

Source: STATA

Then I used the 'fillin' command to fill all the transactions of imports and exports per firm, country and year lacking in the database, replacing `import_val = 0` for the new transactions set. To reduce the huge amount of observations I used the `collapse` command cause each firm could have more imports and exports towards the same country in the same year, so through the command "`collapse (sum)import_val (sum)export_val, by(firmid paese movim anno)`" I reduced in only one transaction all these dealings. Finally, I dropped all the exports.

In order to detect the nearshorers I hypothesized to measure the variations of import per year per country for each firm, summing the variations per country, summing the sum of variations of nearby countries identified by a variable (`distant_country`, `eu_members` or `distant_country_pol` according to the three approaches) and doing the same for distant countries. Finally, I compared the sum of nearby countries and the sum of distant countries noticing a nearshoring phenomenon through a binary variable called 'nearshoring'. The variable was set

equal to 1 if the sum of nearby countries was higher than the sum of distant countries (figure 50).

```
//measure the variation of imports every year
by firmid paese (movim anno): gen dimport = import_val - import_val[_n-1] if movim == 8

//sum the variation of imports over the years to analyze the reduction of import towards distant countries and increase of import towards nearby countries
by firmid paese (movim anno): gen sum_dimport = sum(dimport) if movim == 8

//sum the sum of variations of nearby countries
by firmid: gen sum_dimport_nearby = sum(sum_dimport) if anno == 2019 & distant_country == 0 & movim == 8

//sum the sum of variations of distant countries
by firmid: gen sum_dimport_distant = sum(sum_dimport) if anno == 2019 & distant_country == 1 & movim == 8
```

**Figure 50:** measurement of import variations for the first approach of the 4-digit database  
Source: STATA

The 'by' command allowed me to introduce the variable 'dimport' to gauge the annual variation of imports per firm per country. Then I determined a variable 'sum\_dimport' to measure per firm and country; eventually I established the variables sum\_dimport\_nearby to sum the variation of imports from nearby countries and sum\_dimport\_distant to sum the variation of imports from distant countries.

The idea is that if the imports of the main good produced from nearby countries increased a lot during the period 2008 – 2019 and the imports from distant countries decreased it can be a sign of nearshoring. The variable 'nearshoring' was set afterwards (figure 51).

```
//determine nearshoring
//to make the difference between different observations
by firmid: gen x = sum_dimport_nearby[1908] //to save the cumulative variation of imports from nearby countries
by firmid: gen y = sum_dimport_distant[2640] // to save the cumulative variation of import from distant countries

gen nearshoring = 0
replace nearshoring = 1 if x>y
```

**Figure 51:** variable nearshoring for the first approach of the 4-digit database  
Source: STATA

## 3.1 First database (4-digit)

### 3.1.1 First approach

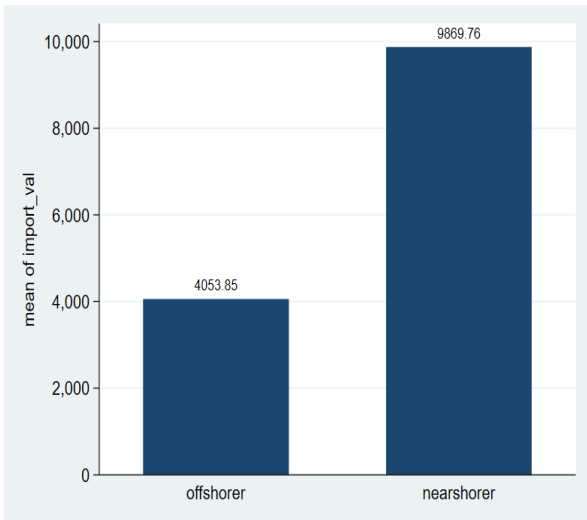
In a first analysis I included a binary variable called 'distant\_country' equal to 0 if the countries involved were located in Europe, considering the geographic area, so including Russia, Ukraine, Turkey, Belarus, Holy See, Andorra, Liechtenstein, United Kingdom, Serbia, Montenegro, Albania, Kosovo, North Macedonia, Gibraltar, Norway, Switzerland, San Marino, Moldova, Bosnia and Herzegovina. The variable was introduced to identify the nearby countries from a geographic viewpoint (50 countries over 220) (figure 52).

```
//identify countries nearby Italy
gen distant_country = 1
replace distant_country = 0 if paese <= 75 | paese == 91 | paese == 92 | paese == 93 | paese == 94 | paese == 95 | paese == 96 | paese == 97 | paese == 98 | paese == 600
```

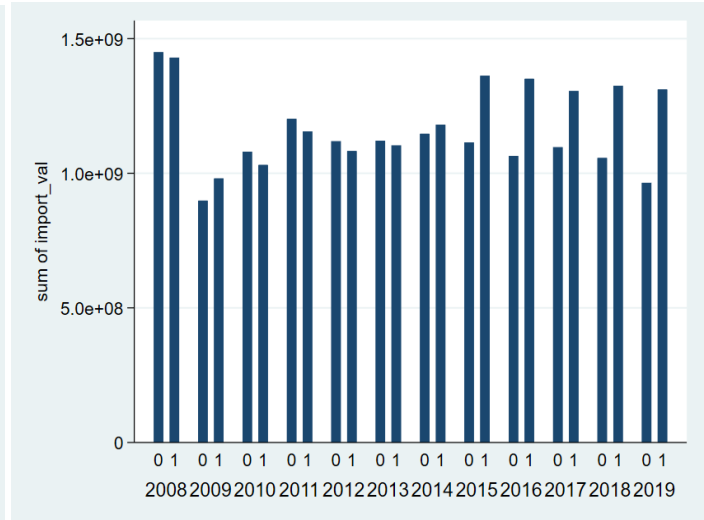
**Figure 52:** distant\_country variable

Source: STATA

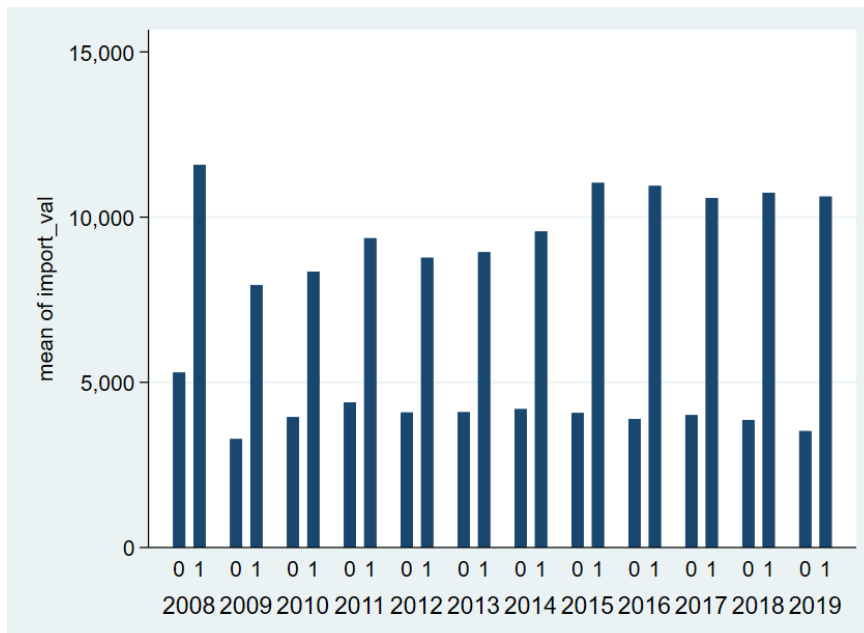
The result of this method (leaving only the imports) is that 1.481.040 (31.08%) out of 4.765.200 observations are related to nearshorers, 561 firms over 1805 ones (offshorers). The 11.22% of companies of the original database. The nearshorers seem to import higher amounts on average (figure 53), even considering the total amount. As shown in figure 54 the gap of import between nearshorers and offshorers seem to be increased in the most recent years.



**Figure 53:** Mean of import per nearshoring firms  
Source: STATA

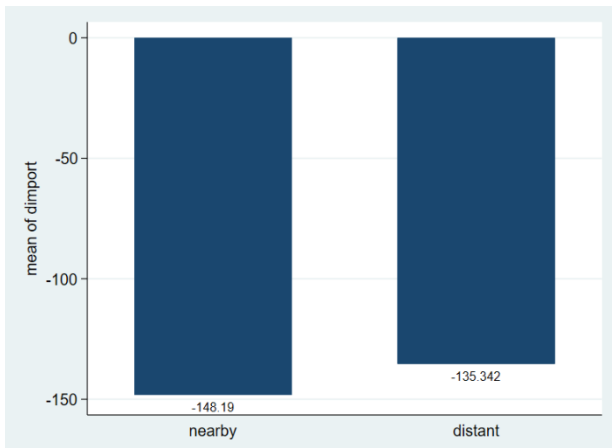


**Figure 54:** Sum of import per year and nearshoring  
Source: STATA

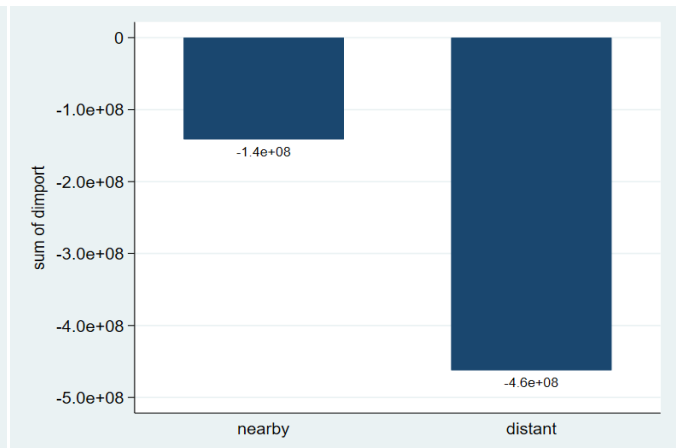


**Figure 55:** Mean of import per year and nearshoring  
Source: STATA

The variations of import are on average lower for distant countries than for nearby ones, but the sum of variations is lower for nearby countries (figures 56 and 57).

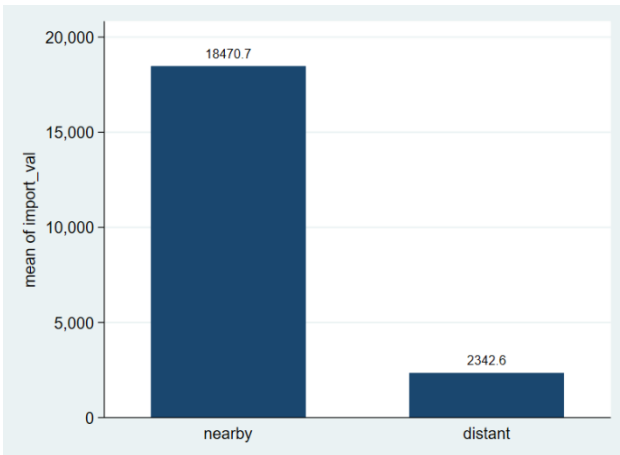


**Figure 56:** Mean of dimport per distant\_country  
Source: STATA

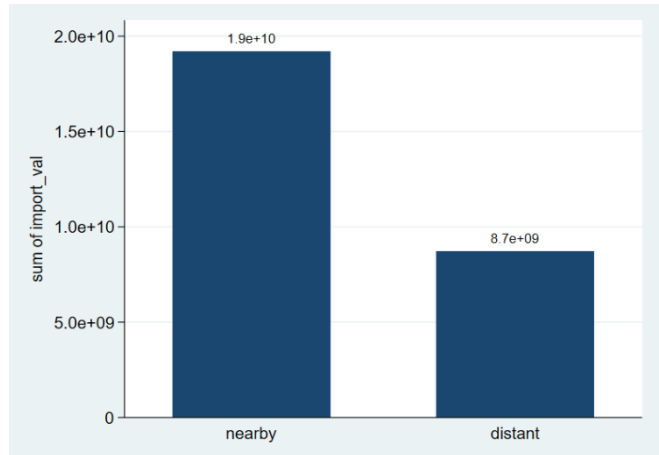


**Figure 57:** Sum of dimport per distant\_country  
Source: STATA

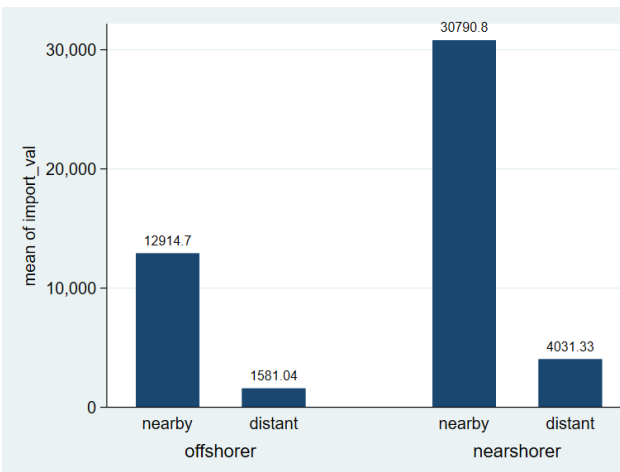
The sum of imports and the mean of imports is higher from near countries than from distant ones (figures 58 and 59). The nearby countries are more involved in the imports for both offshorers and nearshorers, the last ones have the highest mean (figure 60). The total amount of imports for nearshorers and offshorers, from nearby and distant countries, are about at the same level (figure 61).



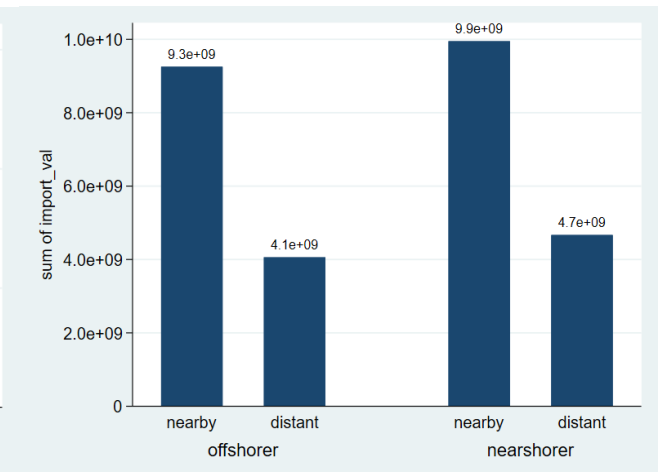
**Figure 58:** Mean of import per distant\_country  
Source: STATA



**Figure 59:** Sum of import per distant\_country  
Source: STATA



**Figure 60:** Mean of import per nearshoring and distant\_country  
Source: STATA



**Figure 61:** Sum of import per nearshoring and distant\_country  
Source: STATA

### 3.1.2 Second approach

The second way of nearshoring is calculated considering as nearby countries only the members of the European Union. The first operations related to fillin and collapse commands are the same as before, instead of the distant\_country variable I added the 'eu\_members' binary variable equal to 1 whether the countries joined the EU (figure 62). The variable counts 29 countries (27 EU members, Ceuta and Melilla) out of 220.

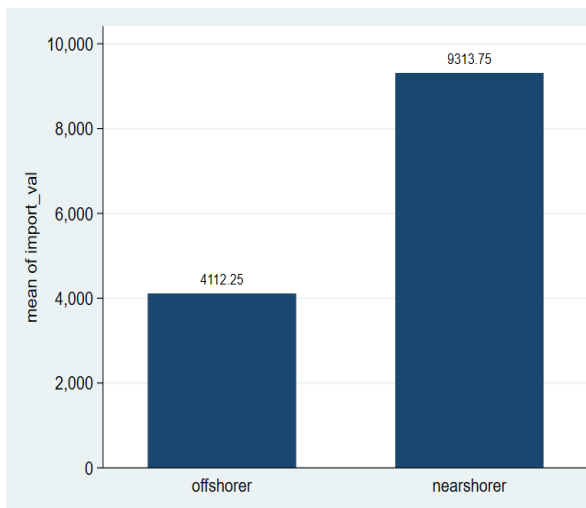
```
//UE members
gen eu_members = 0

replace eu_members = 1 if paese == 1 | paese == 3 | paese == 4 | paese == 7 | paese == 8 | paese == 9 | paese == 10 | paese == 11 | paese == 17 | paese == 18 | paese == 21 |
paese == 23 | paese == 30 | paese == 32 | paese == 38 | paese == 41 | paese == 46 | paese == 53 | paese == 54 | paese == 55 | paese == 60 | paese == 61 | paese == 63 | paese
== 64 | paese == 66 | paese == 68 | paese == 91 | paese == 92 | paese == 600
```

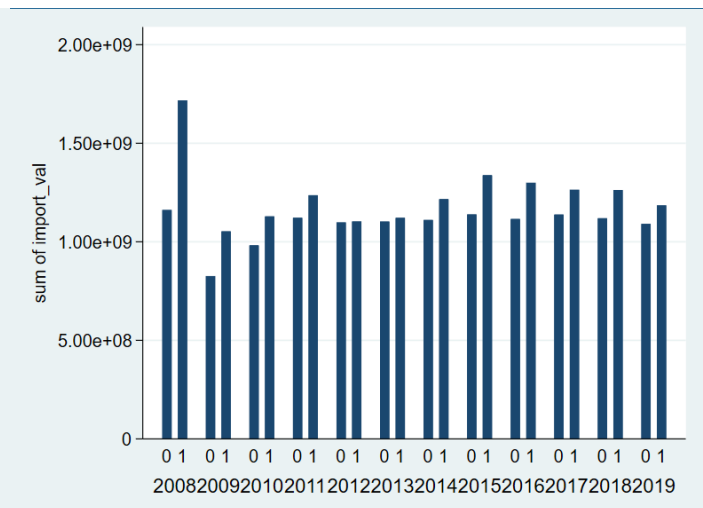
**Figure 62:** eu\_members variable  
Source: STATA

The nearshoring variable was calculated through the same reasoning, so in case of higher variations of import from EU countries than from distant countries the variable was set to 1, otherwise 0.

The outcome shows that 1.602.480 observations out of 4.765.200 are related to nearshoring, so 607 companies over 1805 (33.63%). The 12.14% of firms of the original database, more than the 561 businesses involved in the first approach.



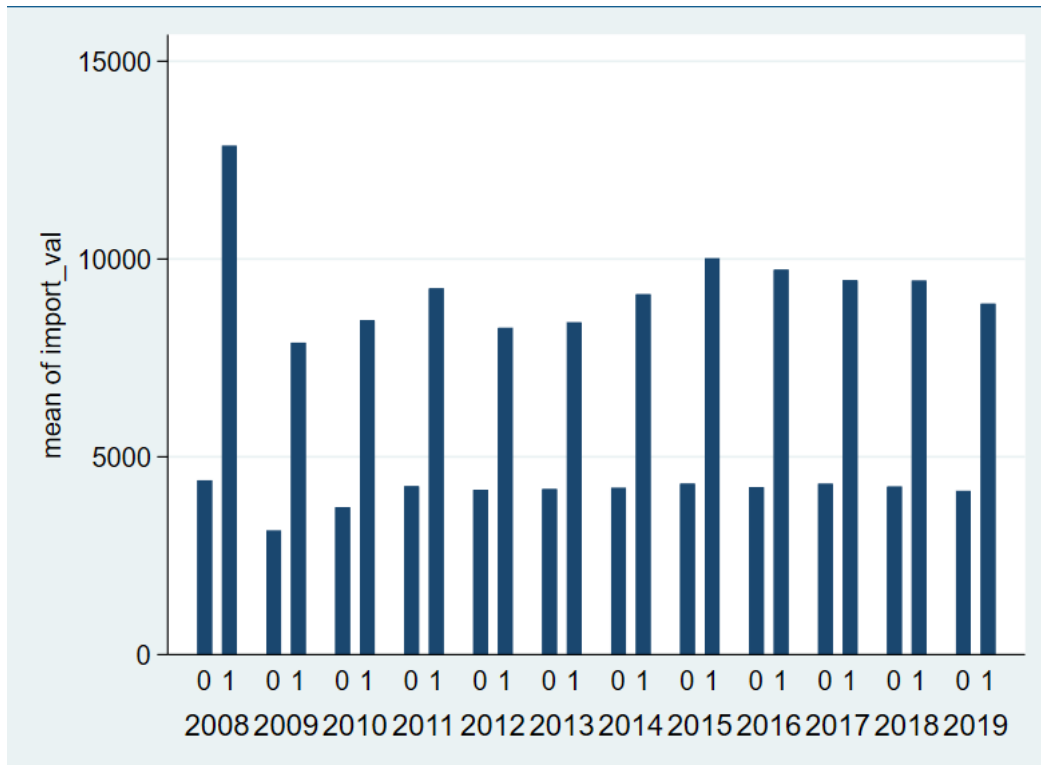
**Figure 63:** Mean of import per nearshoring  
Source: STATA



**Figure 64:** Sum of import per year and nearshoring  
Source: STATA

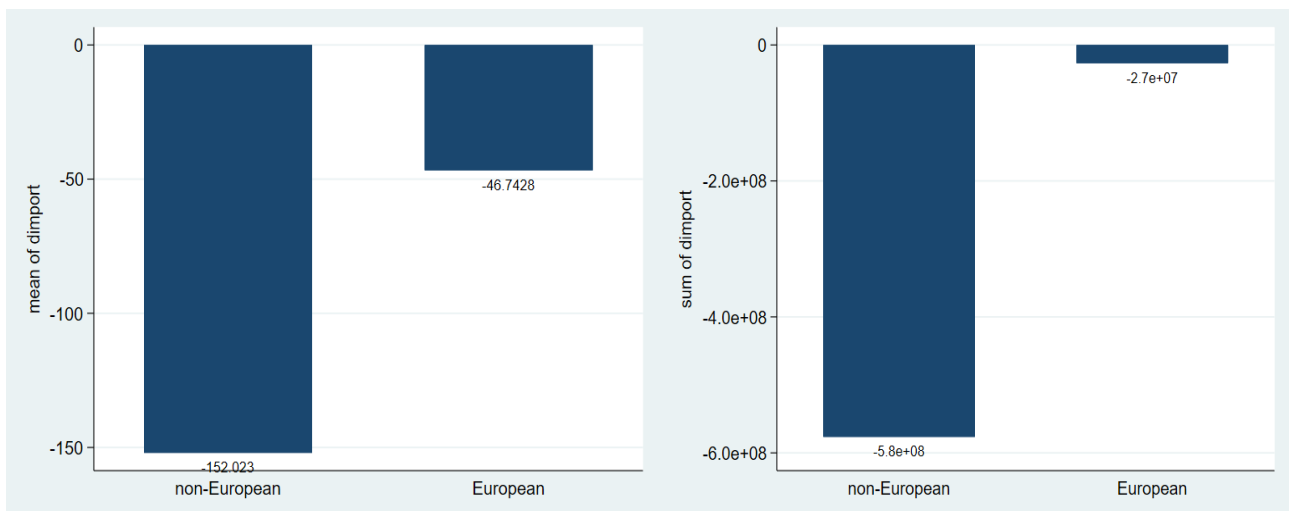
The nearshorers seem to import more on average than the offshorers (figure 63). Furthermore, the sum of import per year is always higher while in the first approach there was opposite trends in a few years (figure 64).





**Figure 65:** Mean of import per nearshoring and year  
Source: STATA

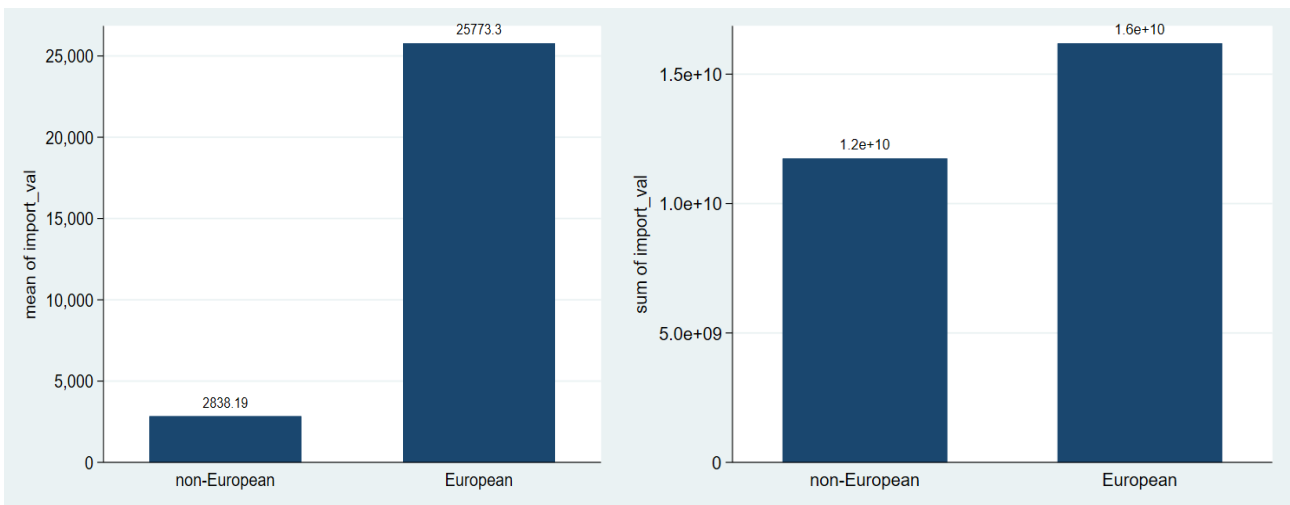
The mean of import per year highlights a similar pattern (figure 65). The variable 'dimport', measuring the variation of import over the years, shows decreases on average but the distant countries in this analysis have higher reductions than in the European members (figure 66), while in the first approach the results were the opposite despite the little difference.



**Figure 66:** Mean of dimport per eu\_members  
Source: STATA

**Figure 67:** Sum of dimport per eu\_members  
Source: STATA

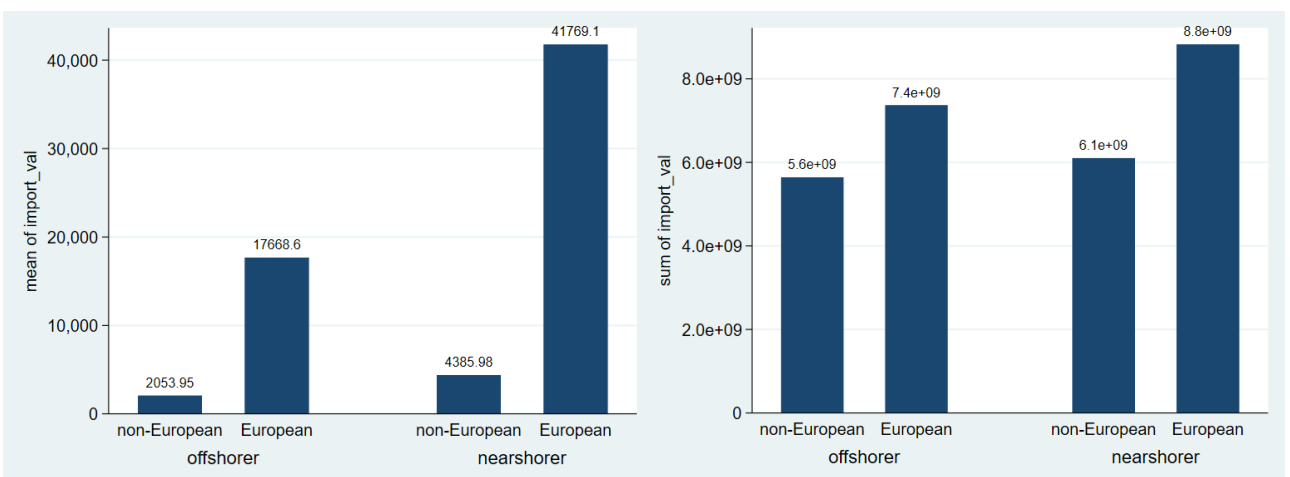
The sum of variation of import instead shows similar numbers as before, with a huge decrease for non-EU countries (figure 67).



**Figure 68:** Mean of import per eu\_members  
Source: STATA

**Figure 69:** Sum of import per eu\_members  
Source: STATA

The mean of import from European countries is much higher than from distant countries, even with respect to the first approach; this is due to the great advantages companies have trading in the European Union (figure 68). The sum of import points out the same trend but the one from European countries is lower than the same from nearby countries of the first approach (figure 69).



**Figure 70:** Mean of import per nearshoring and eu\_members  
Source: STATA

**Figure 71:** Sum of import per nearshoring and eu\_members  
Source: STATA

The nearshorers import more than offshorers on average, mainly from the EU countries (figure 70). The same features can be identified considering the total amount (figure 71). The second approach points out higher averages of import of nearshorers and offshorers from nearby countries than the first analysis. In fact, the sum of import for nearshorers is higher than before.

### 3.1.3 Third approach

The third approach for the nearshoring analysis is aimed at considering as nearby countries the ones joining some political alliances with Italy, identifying the “friends”. I added the ‘distant\_country\_pol’, a binary variable equal to 0 in case the countries are members of the Organisation for Economic Co-operation and Development (OECD), 1 otherwise. The variable includes 40 countries over 220 (figure 72).

```
//identify countries nearby Italy from a political viewpoint (OECD)
gen distant_country_pol = 1

replace distant_country_pol = 0 if paese == 800 | paese == 38 | paese == 17 | paese == 404 | paese == 512 | paese == 8 | paese == 53 | paese == 32 | paese == 1 | paese == 4
| paese == 732 | paese == 9 | paese == 7 | paese == 24 | paese == 624 | paese == 54 | paese == 55 | paese == 18 | paese == 412 | paese == 28 | paese == 804 | paese == 3 |
paese == 60 | paese == 10 | paese == 61 | paese == 728 | paese == 63 | paese == 6 | paese == 91 | paese == 11 | paese == 400 | paese == 30 | paese == 39 | paese == 52 |
paese == 64 | paese == 480 | paese == 21 | paese == 23 | paese == 44 | paese == 436
```

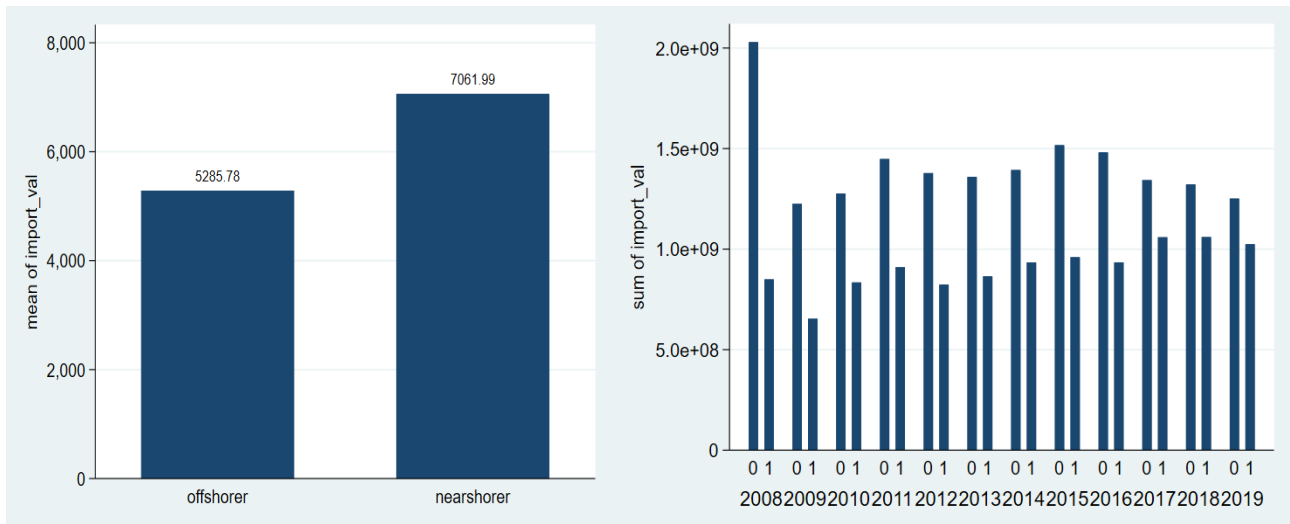
**Figure 72:** distant\_country\_pol variable

Source: STATA

The ‘nearshoring’ variable was introduced, and it identifies nearshoring (it is equal to 1) if the sum of variations of imports from OECD members is higher than from distant countries.

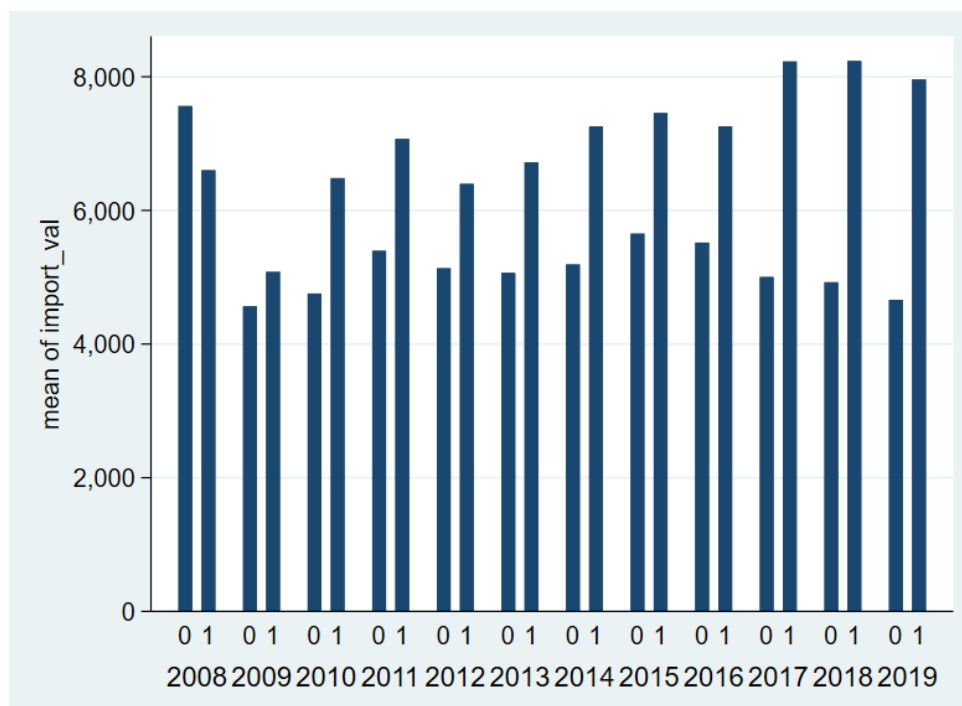
The results show 1.544.400 occurrences over 4.765.200 related to nearshoring companies, so the 32.41% of firms (585 out of 1805). They are the 11.7 % of the total amount of companies of the original database. The quantity is in the middle between the 561 of the first approach and the 607 of the second approach.

The nearshorers import more on average than offshorers (figure 73), similarly to the outcomes of the other approaches. From the point of view of the total amount per year this analysis highlights that the value of imports for the offshorers is always higher than nearshorers even though the gap seems to decrease over the period 2008 – 2019 (figure 74), differently from the other two studies where the nearshorers imported more.



**Figure 73:** Mean of import per nearshoring  
Source: STATA

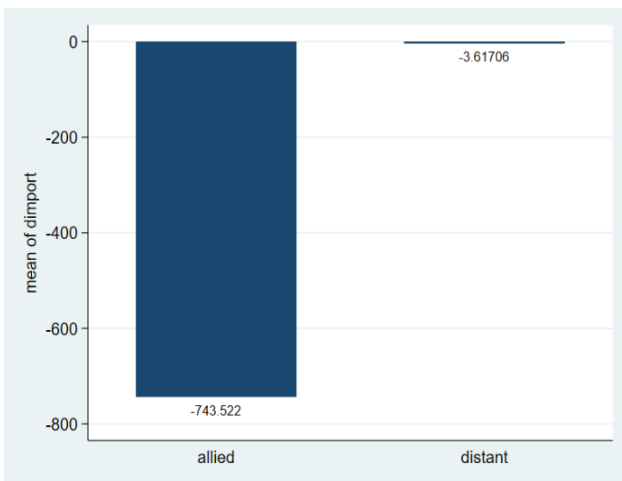
**Figure 74:** Sum of import per year and nearshoring  
Source: STATA



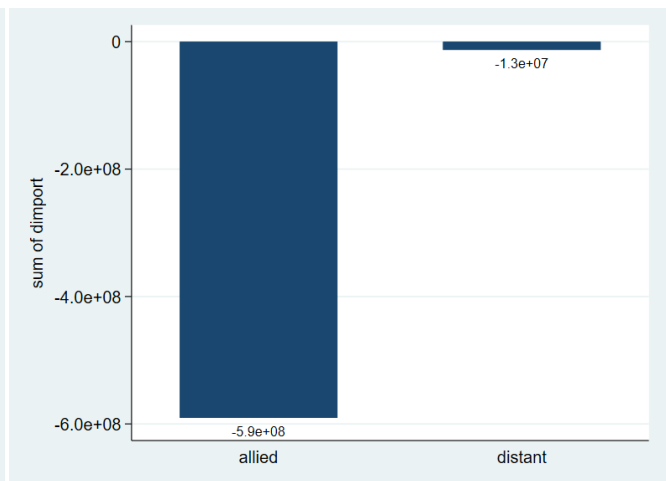
**Figure 75:** Mean of import per year and nearshoring  
Source: STATA

The same converse pattern can be identified by observing the mean over the years (figure 75).

The mean of variation for imports are negative as in the other approaches, but this method shows the lowest level for “nearby” countries (figure 76). The huge decrease can be seen even considering the total of variations of import, displaying reduction of trade over the years not compensated from distant countries (figure 77).

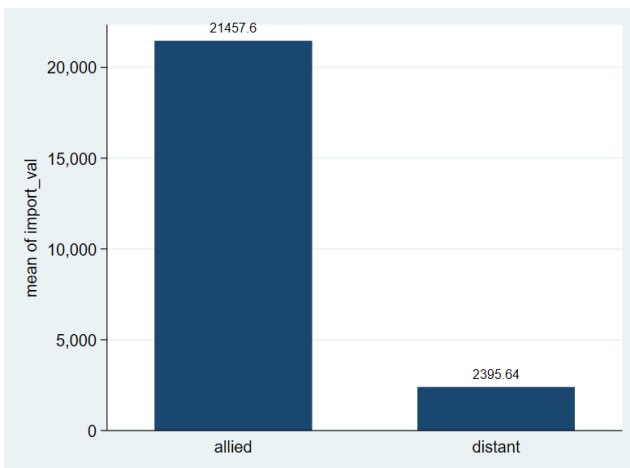


**Figure 76:** Mean of dimport per distant\_country\_pol  
Source: STATA

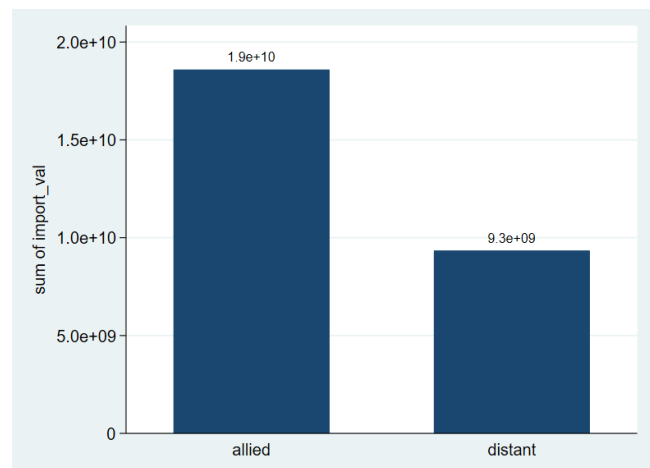


**Figure 77:** Sum of dimport per distant\_country\_pol  
Source: STATA

The imports from allied countries seem to be more important than the ones from distant countries, considering both the mean and the total amount (figures 78 and 79). The results are consistent with the other two studies.

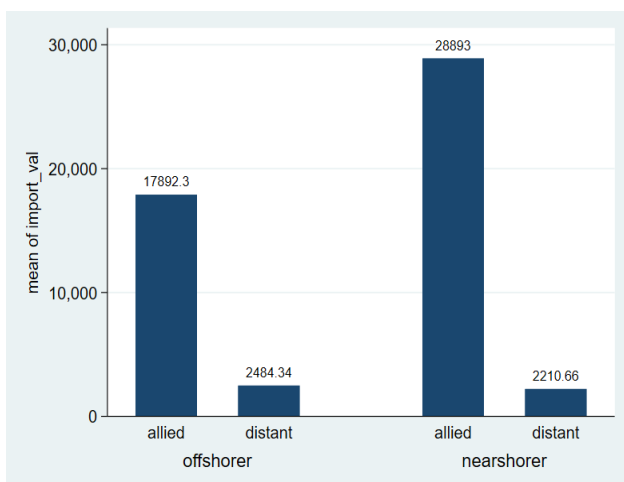


**Figure 78:** Mean of import per distant\_country\_pol  
Source: STATA

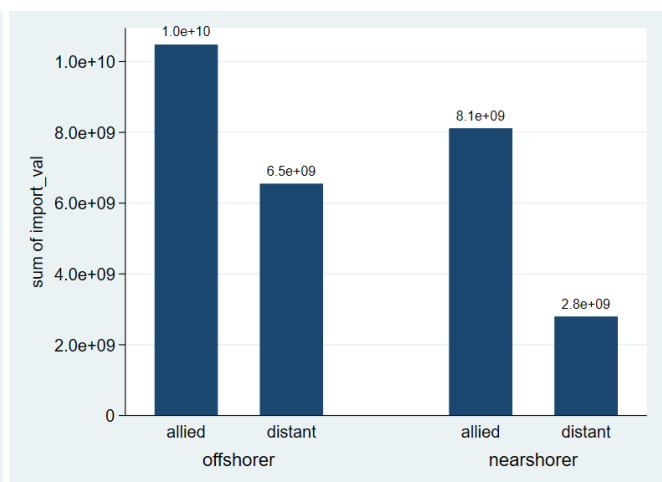


**Figure 79:** Sum of import per distant\_country\_pol  
Source: STATA

The nearshorers on average import more from allied countries but considering the total amount the offshorers overtake them in the imports from allied (figures 80 and 81). In the second approach the highest mean of nearshoring firms from European countries can be seen; in the third approach the nearshorers show the lowest mean of import from allied countries, increasing the mean of offshorers. The sum of import is different from the other two studies because the offshorers point out higher amount from allied and distant countries than nearshorers, while it was opposite before. The offshorers highlight the highest value of imports from allied countries in this analysis.



**Figure 80:** Mean of import per nearshoring and distant\_country\_pol  
Source: STATA



**Figure 81:** Sum of import per nearshoring and distant\_country\_pol  
Source: STATA

### 3.1.4 Comparison

The third approach shows more firms involved in nearshoring than the first approach, but less than the second one, even if the 'near' countries are 40 (50 in the first analysis and 29 in the second one). This can highlight the potential of the economic alliances for trade coupled with the geographic proximity.

The mean of imports considering the different distance definitions is the highest in case of EU analysis (approximately 26000) and the lowest in case of geographic analysis (approximately 18500), demonstrating that European members import more from each other due to economic and geographic

advantages. On the contrary, the mean of import for nearshorers is maximum in the first approach (around 10000) and the lowest in the third approach (around 7000), underlining that the geographic distance remains an important factor for trade.

The amount of imports over the years recognizes an increase for nearshorers in respect to offshorers for the first approach, a reduction of the gap in case of the second approach and a higher value for offshorers in the third approach with a decreasing divergence confirming the progress of nearshoring in the period 2008-2019.

The companies import more (in total amount) from nearby countries, especially in the first and third approach, as understandable because the second approach takes into account less nearby countries.

Analyzing the sum of imports the nearshorers import more in the second analysis and less in the third one, the offshorers show the highest amounts in the third approach, in line with the expected results.

The mean of variation of import points out three different situations, it is negative in all studies but in the first approach it is similar for distant and nearby countries, in the second approach it is lower for the European countries, and it remains equal as before for distant ones, indicating a more stable situation in Europe; the third approach highlights a huge decrease for allied countries and a mean of 0 for the distant ones, suggesting a compensation of positive and negative fluctuations over time.

The nearshorers import more on average from 'near' countries in the second analysis, so from European countries, the lowest mean is in the third analysis; the outcomes can give a sign of the importance of the geographic proximity for businesses.

The sum of import per nearshoring and distance shows the highest amount of import from nearby countries of nearshorers in the first analysis, the lowest one is related to the third approach. On the contrary, the offshorers import less from distant countries in the first study and more from nearby countries in the third analysis. The achievements are due to the fact that the OECD members are even far away Italy and some nearby countries like Russia and others from the Balcanic area are not included.

## 3.2 Second database (5-digit)

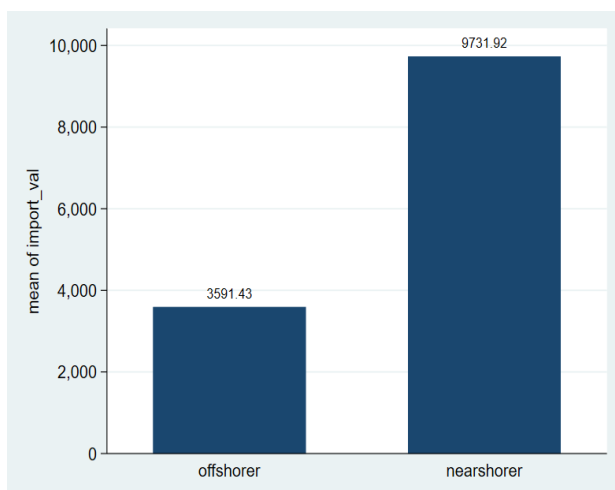
The second database involved includes those firms offshoring considering the 5-digit ateco code.

### 3.2.1 First approach

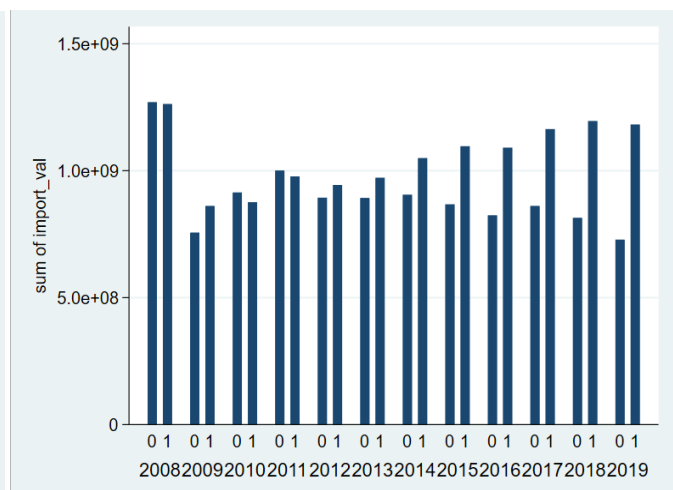
The first analysis is related to a geographic distance, so the 'near' countries are identified according to the proximity to Italy, through the binary variable 'distant\_country'.

The results show a smaller sample than before. There are 1.301.520 occurrences of nearshoring over 4.287.360, the 30.36%, so 493 firms out of 1624 (9.86% of the original database). The percentage is a little bit lower than the same of the first approach on the first database.

The mean of import is higher for nearshorers than offshorers, about 10.000€ (figure 82). The total import per year points out a reduction of the imports of offshorers coupled with an increase of the imports of nearshorers, a potential signal of nearshoring (figure 83). The average of import per year highlights more this trend excluding a reduction of import immediately after the 2008 global crisis (figure 84).

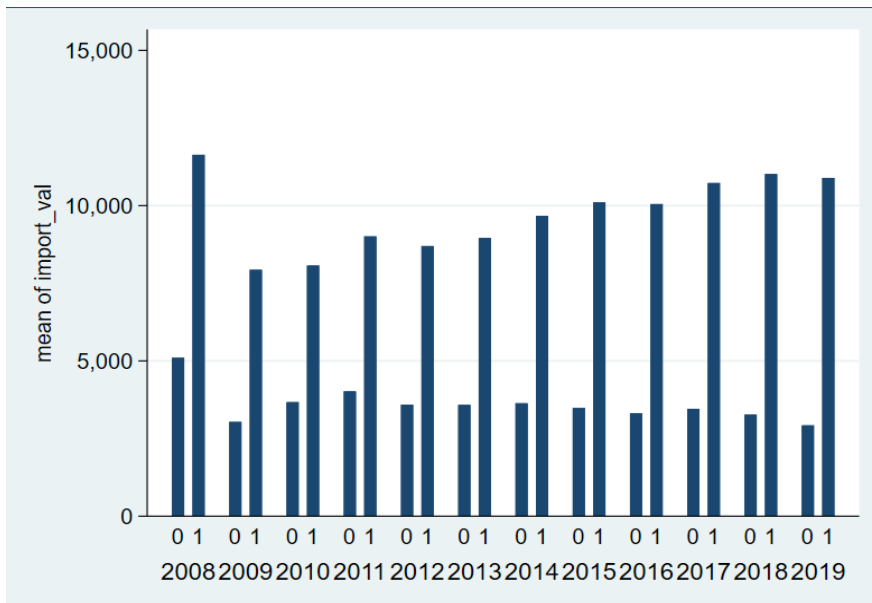


**Figure 82:** Mean of import per nearshoring  
Source: STATA



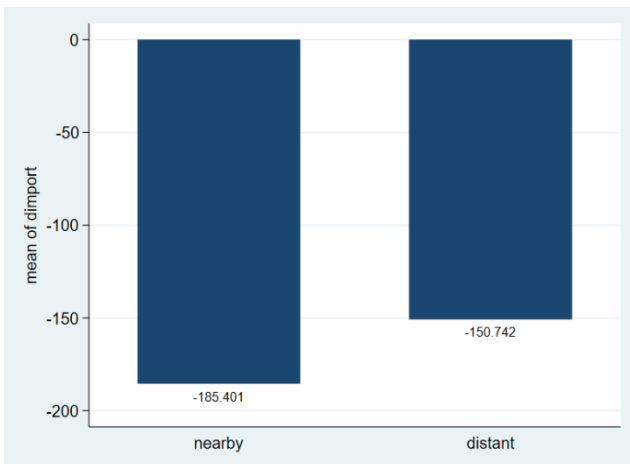
**Figure 83:** Sum of import per year and nearshoring  
Source: STATA



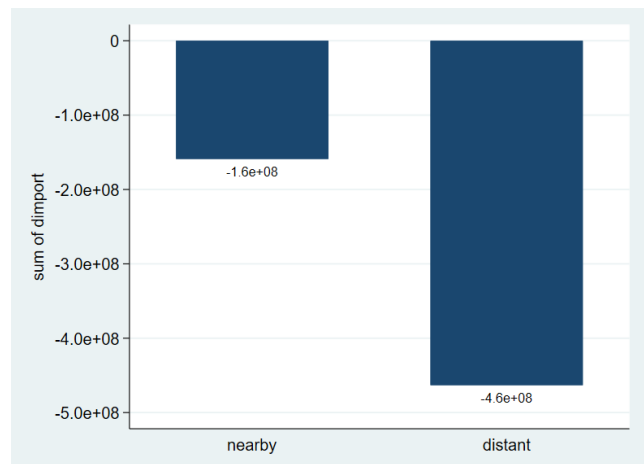


**Figure 84:** Mean of import per year and nearshoring  
Source: STATA

The variation of import is negative on average, it is worse from nearby countries than from distant ones (figure 85). The sum of variation has negative values but in opposite pattern cause the one from distant countries is more negative than the same from nearby ones (figure 86).

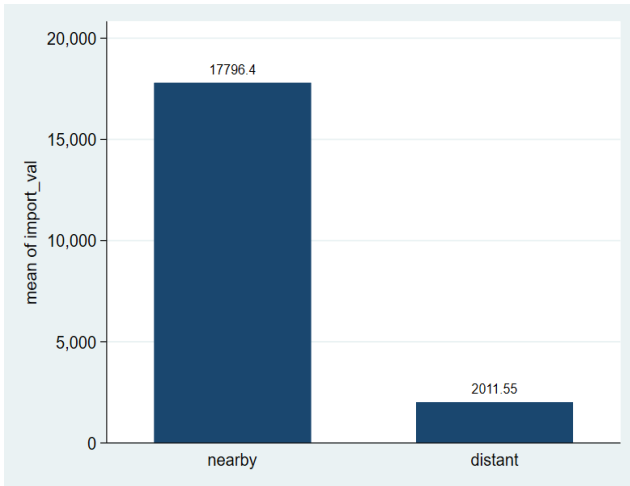


**Figure 85:** Mean of dimport per distant\_country  
Source: STATA

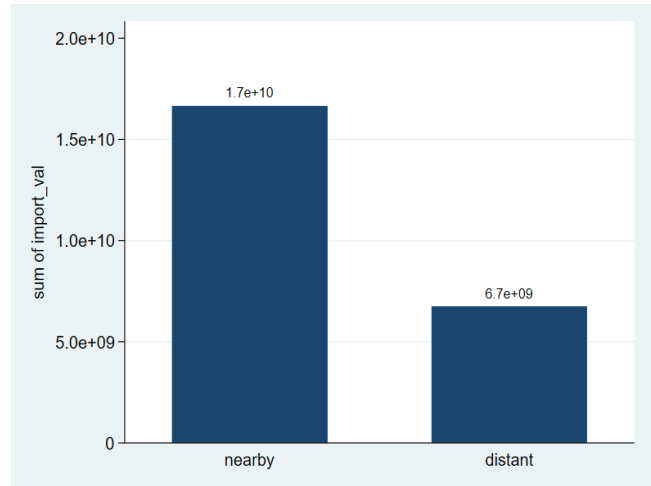


**Figure 86:** Sum of dimport per distant\_country  
Source: STATA

The average of import depending on the distance is higher for nearby countries than for distant ones (figure 87). The sum of import shows the same trend (figure 88).

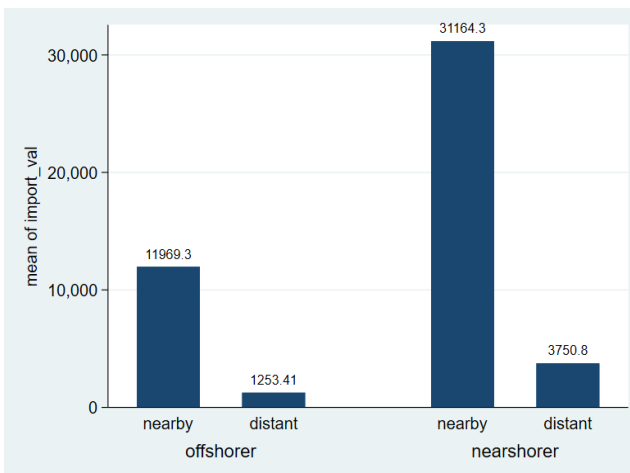


**Figure 87:** Mean of import per distant\_country  
Source: STATA

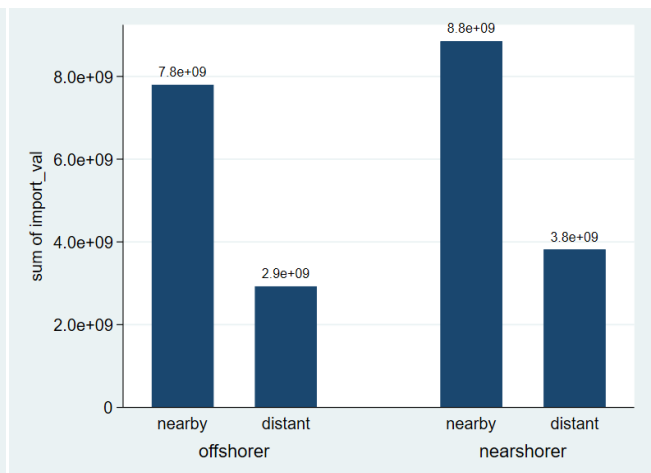


**Figure 88:** Sum of import per distant\_country  
Source: STATA

The nearshorers seem to import more than offshorers and most of the transactions are from nearby countries (figure 89). The average shows an even more significant gap (figure 90).



**Figure 89:** Mean of import per nearshoring and distant\_country  
Source: STATA



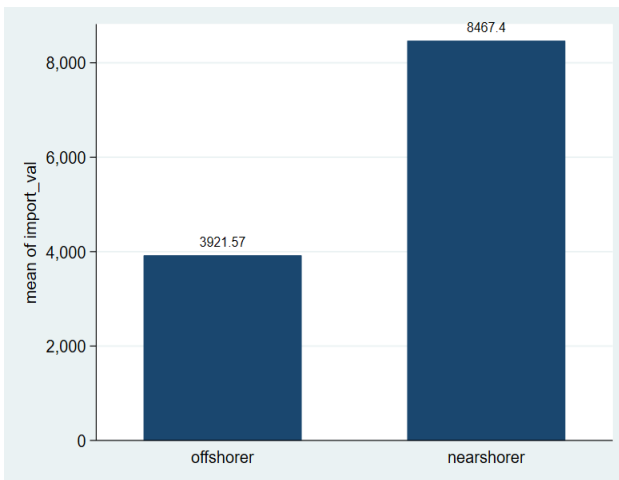
**Figure 90:** Sum of import per nearshoring and distant\_country  
Source: STATA

The first approach of the second database identifies fewer nearshorers than before, as expected due to the higher specification of the ateco code. The averages of variations of import are more negative from both nearby and distant countries. The sum of import is a little bit higher in the first database because there are more firms involved. The other outcomes are quite similar.

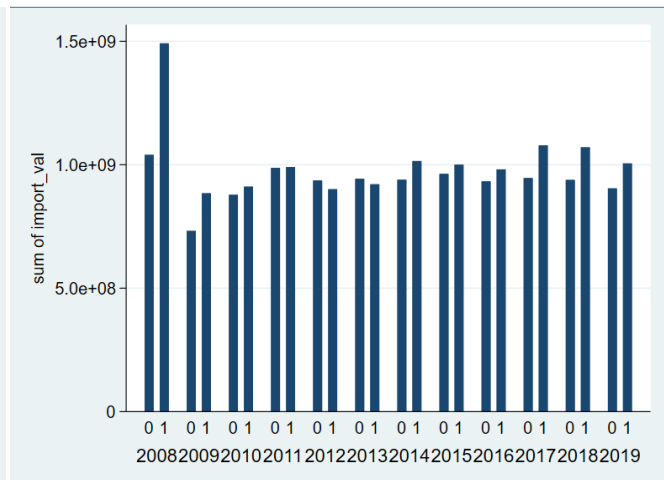
### 3.2.2 Second approach

In the second study the nearby countries are only the European members in order to analyze whether the nearshoring is boosted by the strong economic and political advantages. The 'eu\_members' binary variable is defined equal to 1 whether the countries are EU members. The variable counts 29 countries (27 EU members, Ceuta and Melilla) out of 220.

The outcomes highlight 1.446.720 occurrences of nearshoring over 4.287.360, the 33.74%, so 548 companies out of 1624 (the 10.96% of the original database). There are more firms involved than in the first approach and the 33.74% is higher than the 33.63% of the second approach of the first database.



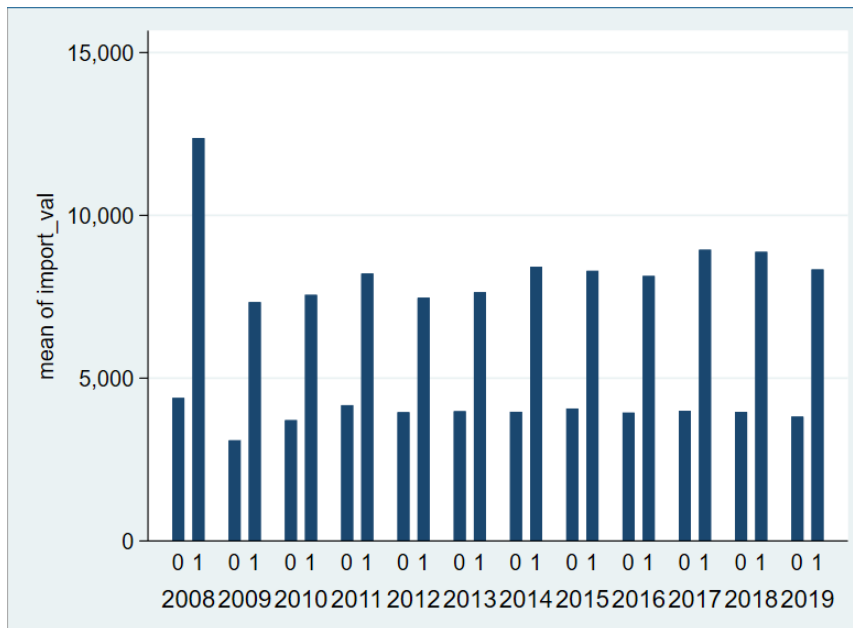
**Figure 91:** Mean of import per nearshoring  
Source: STATA



**Figure 92:** Sum of import per year and nearshoring  
Source: STATA

The nearshorers import more on average than offshorers (figure 91). In the period 2008 – 2019 the gap of imports between nearshorers and offshorers reduced a lot after the financial crisis and in the most recent years it is increasing as shown in the figure 92. In respect to the second approach of the first database the pattern is the same, but the values are underneath.

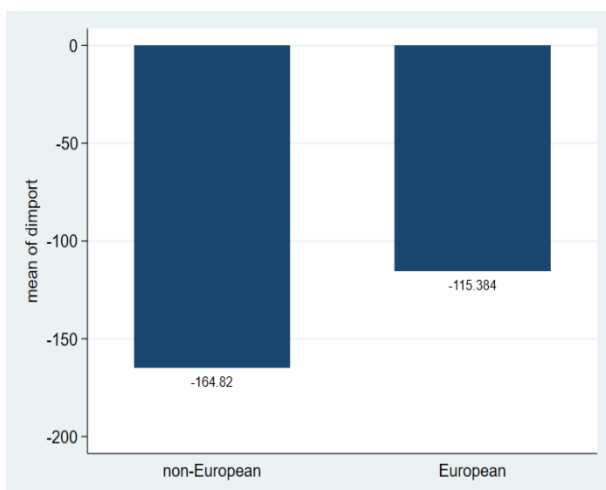
The mean of imports over the years points out an upward slight trend of the average of nearshorers, while the average of offshorers keeps constant (figure 93). The scheme is similar to the one of the first database but there are lower amounts.



**Figure 93:** Mean of import per year and nearshoring

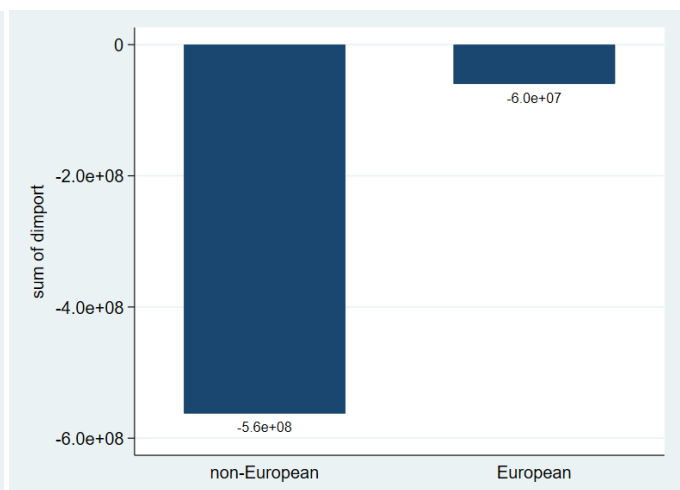
Source: STATA

The variations of import show negative values, the fluctuations from European countries are better. Comparing the analysis with the second approach of the first database, the average is a little bit worse, mainly from the European countries, while the total amounts are quite similar (figures 94 and 95).



**Figure 94:** Mean of dimport per eu\_members

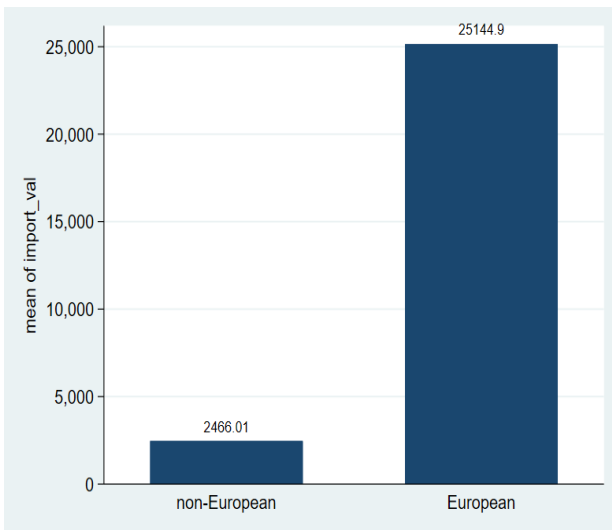
Source: STATA



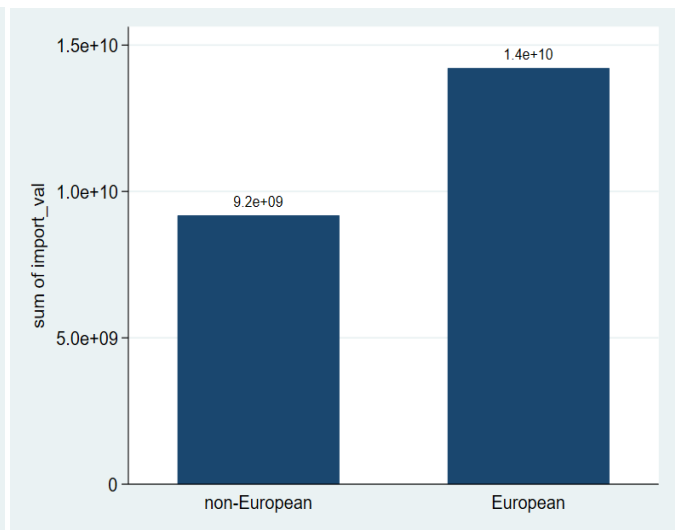
**Figure 95:** Sum of dimport per eu\_members

Source: STATA

The mean of import depending on the distance shows a huge difference between non-European and European countries (figure 96). The sum of import follows the same course; in general, the values are lower than the same of the second approach for the first database (figure 97).

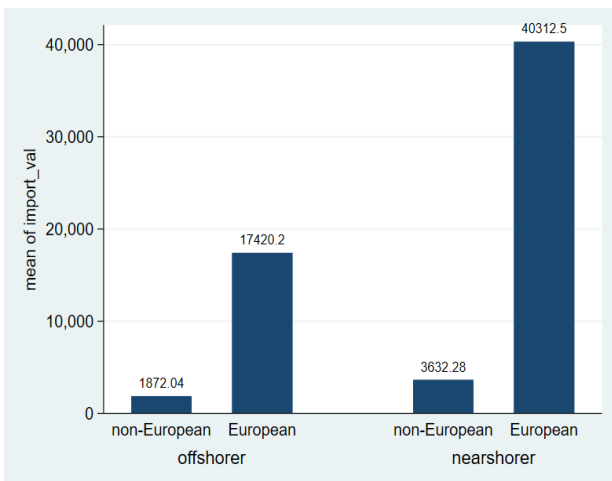


**Figure 96:** Mean of import per eu\_members  
Source: STATA

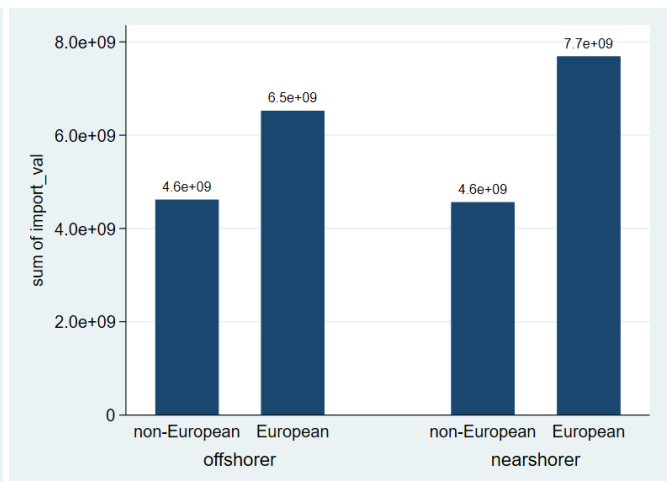


**Figure 97:** Sum of import per eu\_members  
Source: STATA

The nearshorers import more than offshorers, and they import more from European countries as seen in the figure below. The total amounts highlight a similar pattern, nearshorers and offshorers seem to import the same quantity from non-European countries (figure 99).



**Figure 98:** Mean of import per nearshoring and eu\_members  
Source: STATA

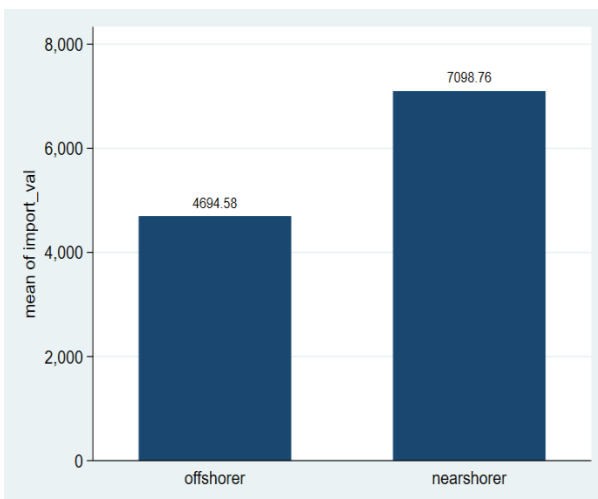


**Figure 99:** Sum of import per nearshoring and eu\_members  
Source: STATA

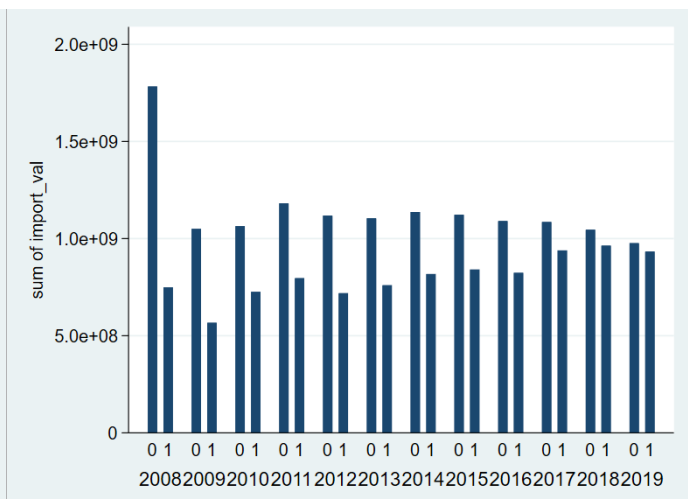
### 3.2.3 Third approach

The third way of defining nearshoring refers to Italian allied, in order to identify if political alliances can boost the phenomenon. The 'distant\_country\_pol' binary variable was set equal to 0 in case the countries are members of the Organisation for Economic Co-operation and Development (OECD), 1 otherwise. The variable counts 40 countries over 220.

The analysis points out some important achievements. The nearshoring occurrences are 1.356.960 over 4.287.360, so 514 out of 1624 (31.65%), the 10.28% of the original database. The third approach of the first database gave 585 firms, so a little bit more (even in percentages); as in the first database the number of companies is in the middle between the two other approaches.

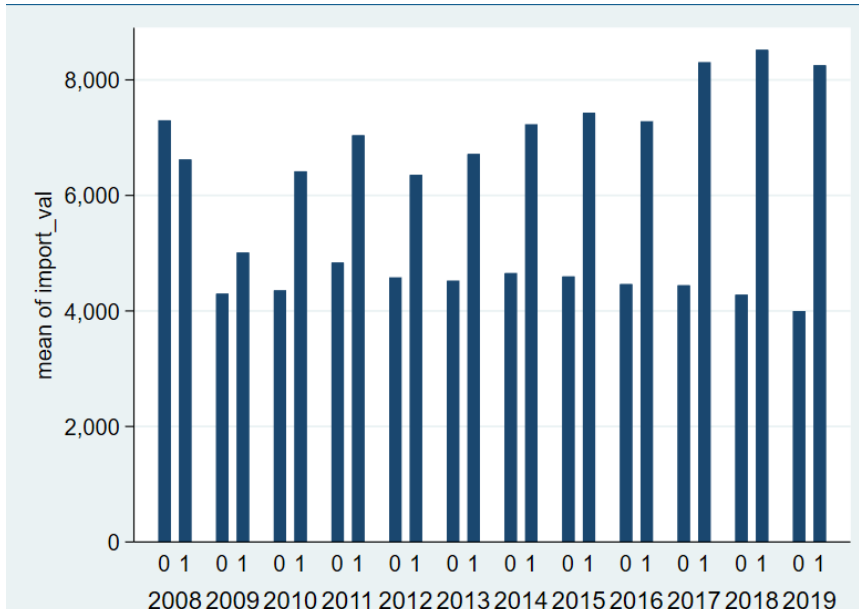


**Figure 100:** Mean of import per nearshoring  
Source: STATA



**Figure 101:** Sum of import per year and nearshoring  
Source: STATA

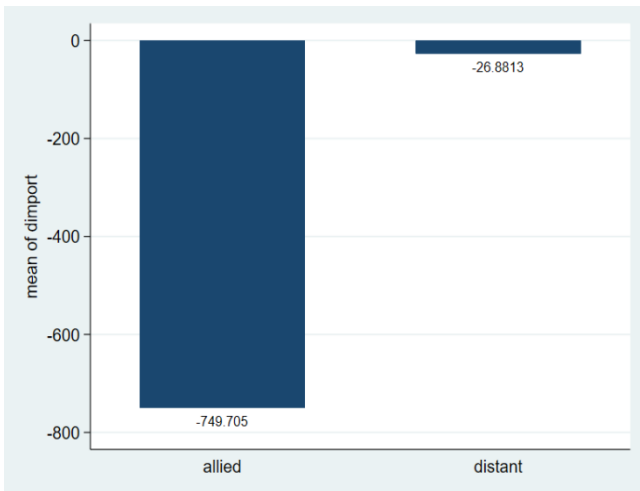
The nearshorers import more on average than offshorers and the values are aligned with the ones of the third approach for the first database (figure 100). During the period 2008 - 2019 the offshorers imported more than nearshorers even if recently the gap has been reducing (figure 101).



**Figure 102:** Mean of import per year and nearshoring

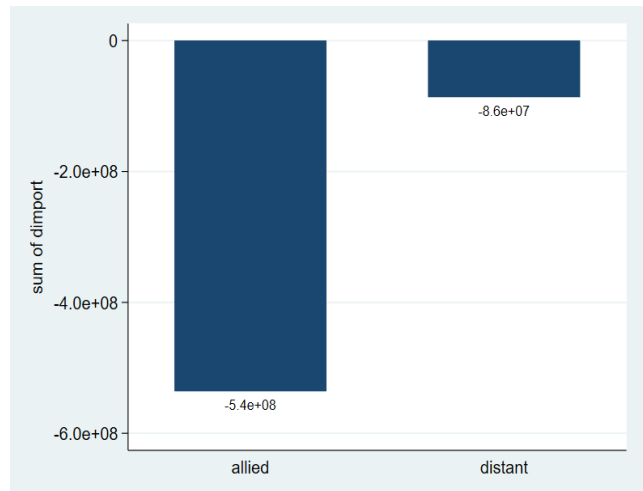
Source: STATA

The mean over the period shows an opposite trend because the nearshorers imported more and the gap has been increasing (figure 102). The two propensities are similar with the ones of the first database.



**Figure 103:** Mean of dimport per distant\_country\_pol

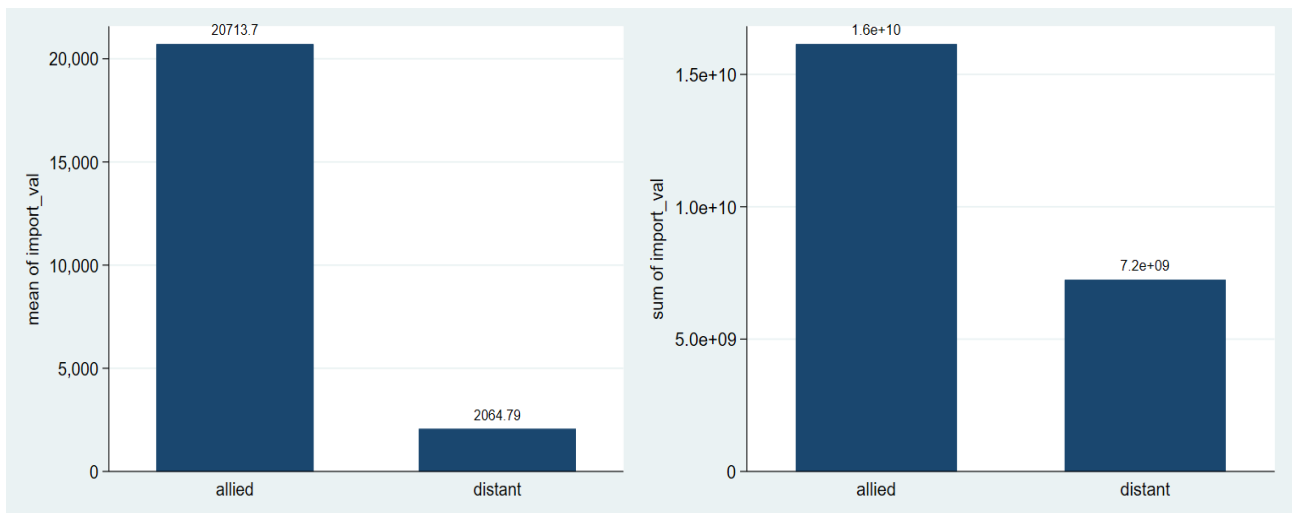
Source: STATA



**Figure 104:** Sum of dimport per distant\_country\_pol

Source: STATA

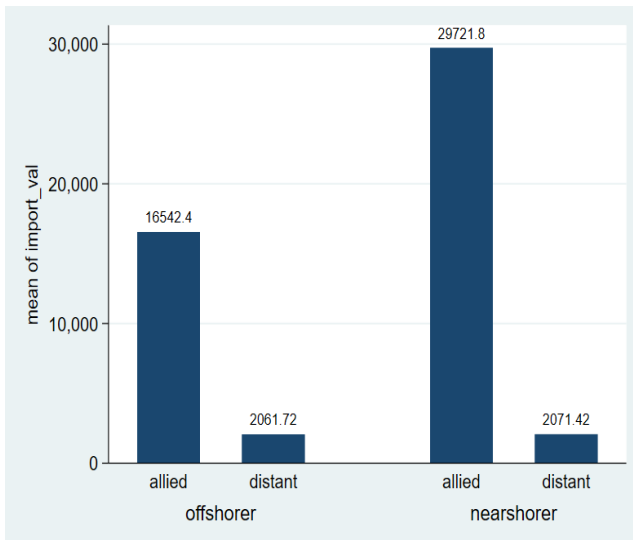
The variations of import are negative as in the other approaches. The mean and the total amount from allied countries are worse than from distant ones, but the sum shows better conditions than the first database likely due to the lower number of companies involved (figures 103 and 104). The results contrast with the results of the other two approaches where the imports from nearby countries are less negative than the imports from distant ones.



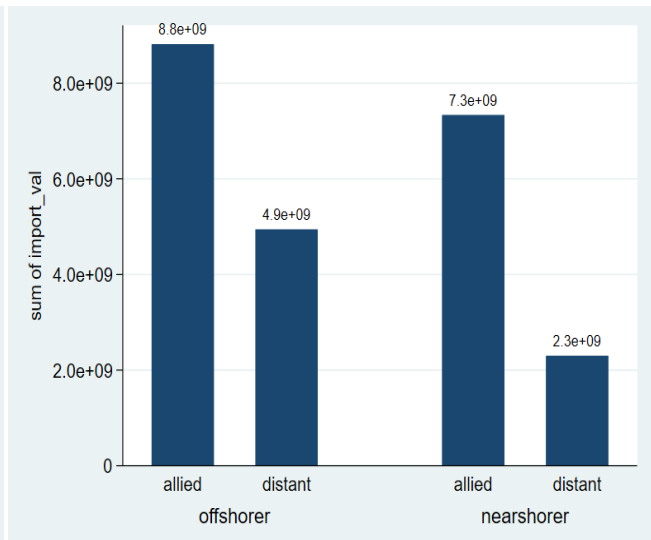
**Figure 105:** Mean of import per distant\_country\_pol Source: STATA  
**Figure 106:** Sum of import per distant\_country\_pol Source: STATA

The average of import from allied countries is higher than the one from distant countries (figure 105), despite the lower number of firms in the second database the mean from allied countries for the first database is lower while the pattern of the total amount of import is very similar (figure 106).





**Figure 107:** Mean of import per nearshoring and distant\_country\_pol  
Source: STATA



**Figure 108:** Sum of import per nearshoring and distant\_country\_pol  
Source: STATA

The average of import from nearby countries is higher for nearshorers than offshorers, in general the imports from allied countries are more important (figure 107). On the contrary, the nearshorers seem to import less considering the total amounts, differently from the results of the other approaches (figure 108). The outcomes are aligned with the same of the first database.

### 3.2.4 Comparison

The three methods imply more firms involved in nearshoring in the second approach and less in the first one, considering that the nearby countries are 50, 29 and 40 respectively. The European study induces to think that proximity and the political alliances incentivize trades.

The average of imports depending on the distance definitions is the highest in case of EU analysis (approximately 25000) and the lowest in case of the first approach (approximately 17500). On the contrary, the average of imports for nearshorers is maximum in the first approach (around 9900) and the lowest in the third approach (around 7100). These results show that the imports are more important among European members and the geographic proximity is important for nearshorers' trades.

The total amounts of import over the years show different results because in the first approach the nearshorers overtook the offshorers in 2012 and from that moment on the gap has been increasing, with a regular decrease of offshorers' imports. In the European approach at first the nearshorers pointed out a huge difference between the nearshorers and offshorers in 2008 and 2009, then the offshorers surpassed and in recent years the nearshorers have had more imports than offshorers with a decreasing gap. The OECD approach highlights the offshorers' imports higher than the nearshorers' ones but during the whole period the gap decreased. The three studies signal a rising nearshoring from 2008 and 2019, the European study shows a weaker sign probably because the recovery after the Great Financial Crisis boosted even offshoring.

The averages of imports over the years are all in favor of nearshorers.

The total amount of import per distance points out the highest value from nearby countries (first approach) and the lowest value from EU countries (second approach), this effect can be the consequence of the involvement of more countries in the first approach in the group of nearby countries.

The variation of import points out a negative average in all the circumstances, but in the first approach it is similar for distant and nearby countries, in the second approach it is lower for the European countries, highlighting a more stable situation in Europe, and there is an opposite situation than the first analysis; the third approach highlights the lowest variation for allied countries and a mean of around 0 for the distant ones, suggesting a compensation of positive and negative variations over time.

The nearshorers import more on average from both near and distant countries, the highest mean from nearby countries is in the second analysis, so from European countries, the lowest mean is in the third approach. Moreover, the offshorers import more from EU countries on average, differently from the first database where the offshorers import more from allied countries even though the inequality is slight. The achievements identify the prominence of geographic proximity for nearshorers.

The sum of import per nearshoring and distance shows the highest amount of import from nearby countries of nearshorers in the first analysis, the lowest one is related to the third approach. On the contrary, the offshorers import less from distant countries in the first study and more from nearby countries in the third

analysis. The results are aligned with the ones of the first database, suggesting greater importance of the distance in respect to a political alliance for businesses.

### **3.3 Third database (3-digit)**

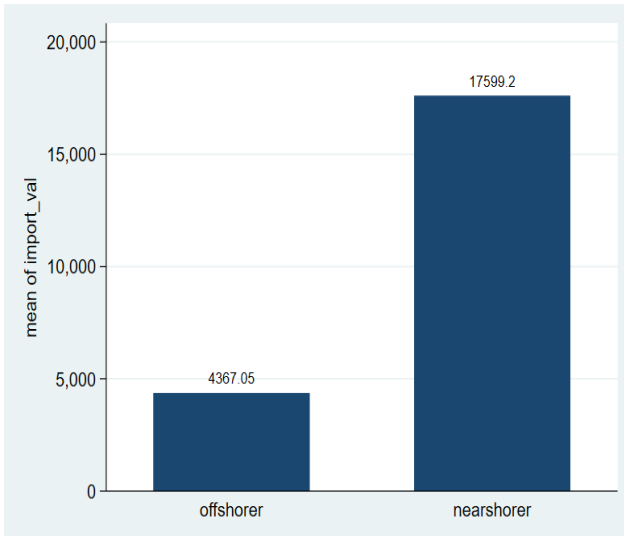
The third database includes as offshorers those firms having at least an import trade and an export trade when the 3-digit ateco code of the transaction is equal to the 3-digit ateco code of the company.

#### **3.3.1 First approach**

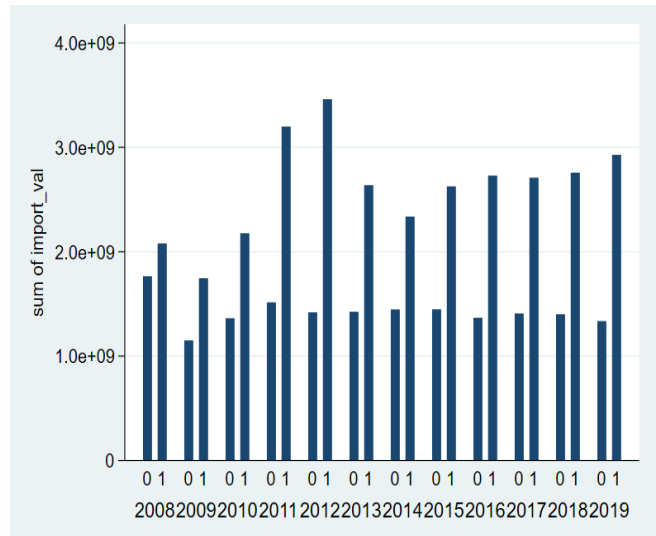
The first analysis identifies the nearshoring considering the geographic distance of countries from Italy. The 'distant\_country' variable is a binary one taking 0 in case of countries in the European area, including Russia, Ukraine, Moldova and Turkey, and 1 otherwise. The nearby countries are 50 in total amount. The distant countries include even Tuvalu, missing in the first and second databases.

The results of the analysis show that the 31.37% of companies nearshored, so 672 firms out of 2142 (the 13.44% of the original database). The occurrences are 1.782.144 over 5.680.584. The number and percentage of firms is the highest compared to the first approaches of the other two databases.

The nearshorers import more than offshorers on average (figure 109). The total amount of import per year shows a huge gap between nearshorers and offshorers, mainly in 2011 and 2012 (figure 110).

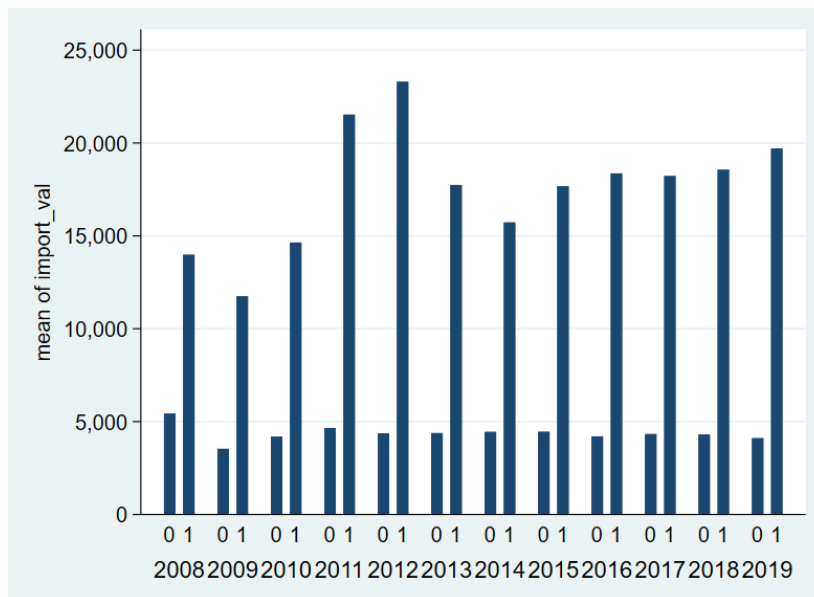


**Figure 109:** Mean of import per nearshoring  
Source: STATA



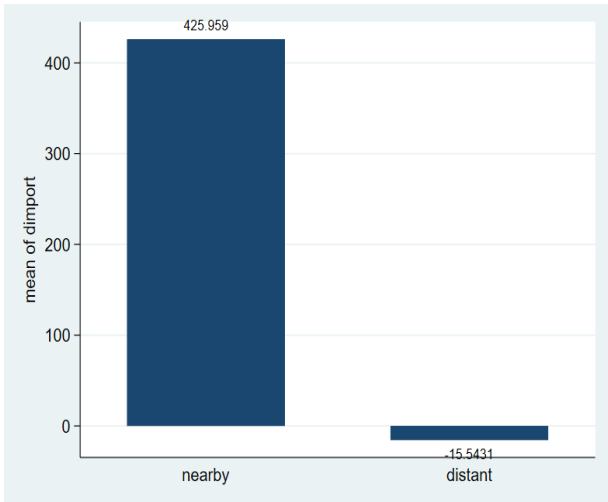
**Figure 110:** Sum of import per year and nearshoring  
Source: STATA

The mean of import over the period 2008 – 2019 is higher for nearshorers than offshorers, mainly in 2011 and 2012, and it has been growing (figure 111).

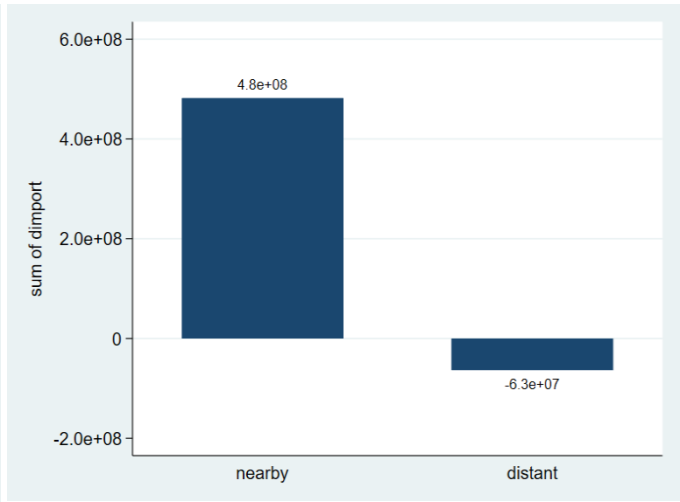


**Figure 111:** Mean of import per year and nearshoring  
Source: STATA

The variation of import from nearby countries is surprisingly positive in respect to all precedent studies, while the one from distant countries is a little bit negative (figure 112). The sum of variation of imports follows the same trend, in countertendency with the first and second databases (figure 113).

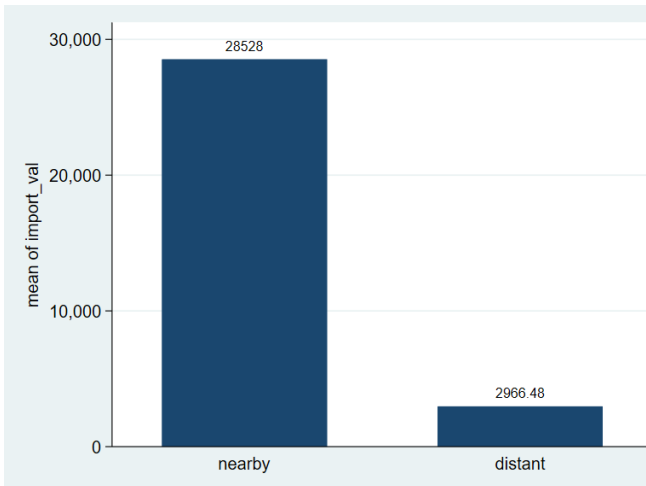


**Figure 112:** Mean of dimport per distant\_country  
Source: STATA

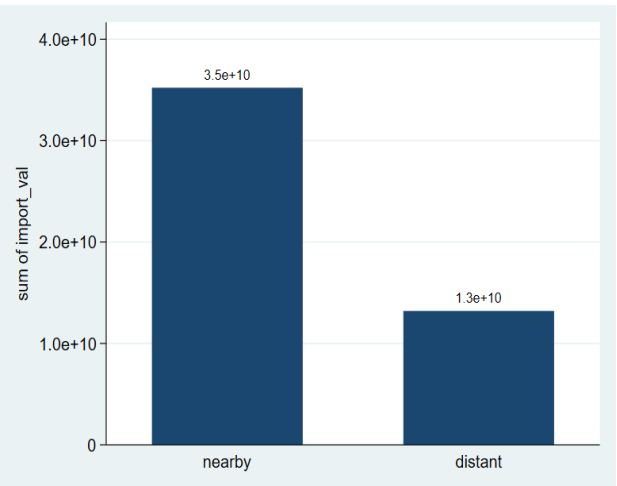


**Figure 113:** Sum of dimport per distant\_country  
Source: STATA

The mean of import from nearby countries is higher on average than from distant ones (figure 114). The increase in the number of companies generates higher amount of averages and sums. The sum of import from nearby countries is higher than the one from distant countries (figure 115).



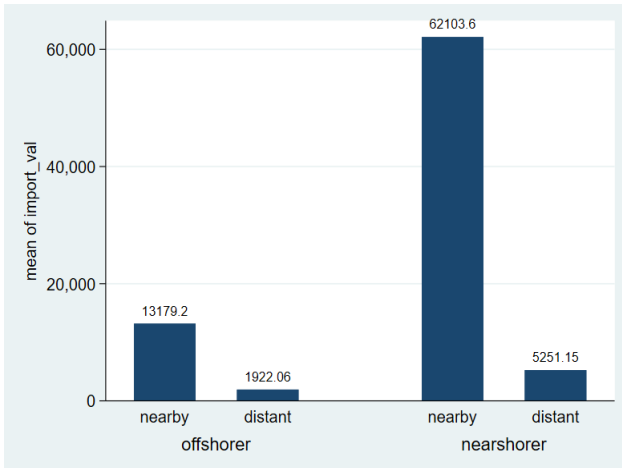
**Figure 114:** Mean of import per distant\_country  
Source: STATA



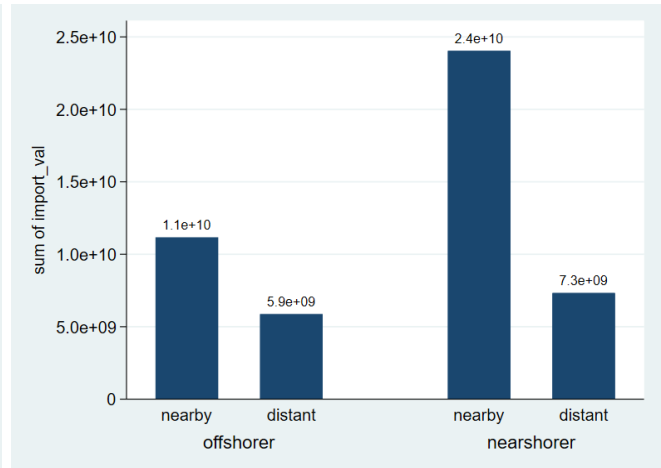
**Figure 115:** Sum of import per distant\_country  
Source: STATA

The nearshorers seem to import more on average than offshorers and the amounts from nearby and distant countries are both higher than the same amounts of offshorers (figures 116 and 117).

The third database holds more firms than before and it shows a positive variation of imports from nearby countries, contrarily to all precedent cases. The other trends are aligned.



**Figure 116:** Mean of import per nearshoring and distant\_country  
Source: STATA



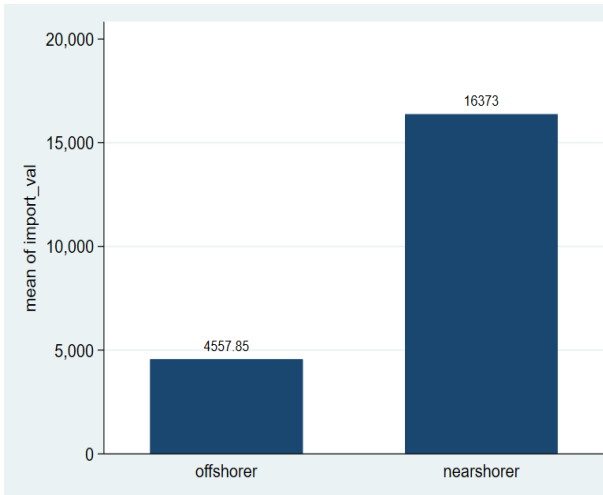
**Figure 117:** Sum of import per nearshoring and distant\_country  
Source: STATA

### 3.3.2 Second approach

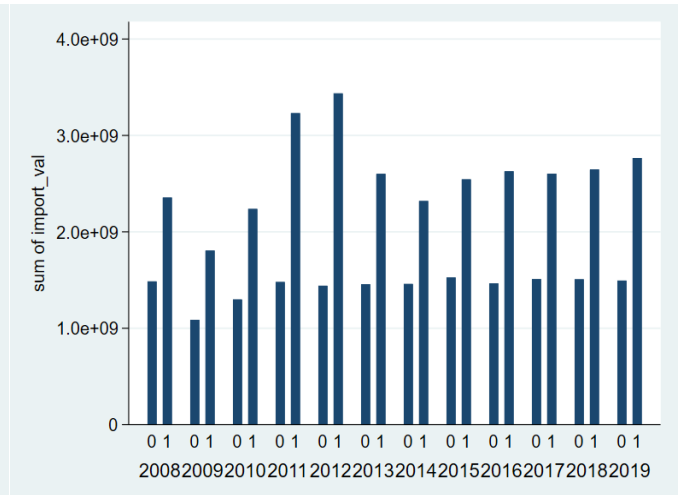
The second approach is built to consider as nearby countries only the European members.

The outcomes achieved show 1.904.136 occurrences of nearshoring over 5.680.584, so the 33.52% of the sample, 712 firms over 2142 in total amount (14.24% of the original database). More companies are involved than the first approach and in respect of all precedent cases, but the 33.52% is a little bit lower than the same percentage of the other two databases in the second approach.

The average of import is higher for nearshorers than offshorers (figure 118). The offshorers import around 4000€ on average in all databases analyzed while the nearshorers point out an important difference (from 8400 of the first database to 16373 of the third database). In the period 2008 – 2019 the total amount of import per year highlights an upward trend for nearshorers with two outliers in 2011 and 2012 (figure 119).

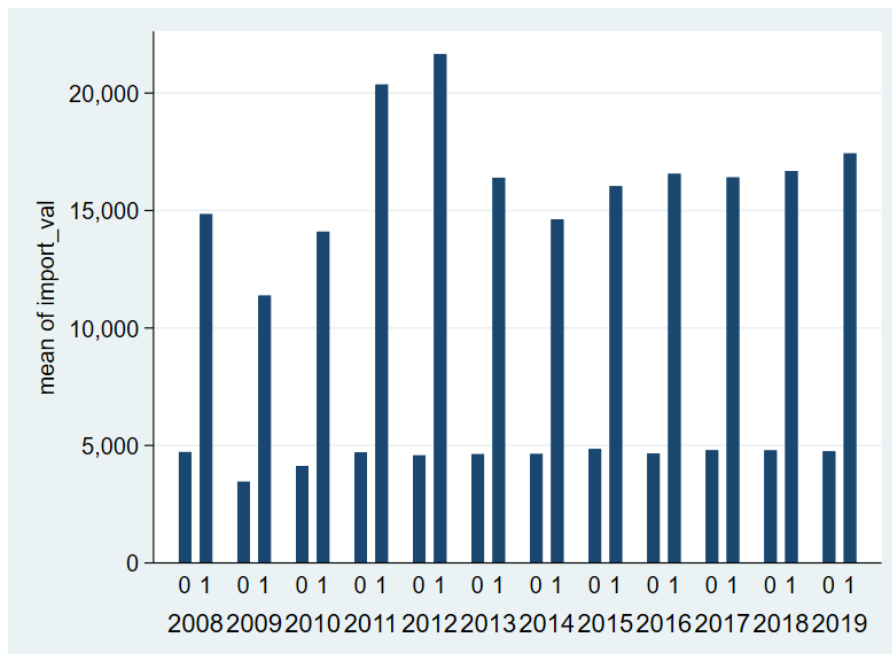


**Figure 118:** Mean of import per nearshoring  
Source: STATA



**Figure 119:** Sum of import per year and nearshoring  
Source: STATA

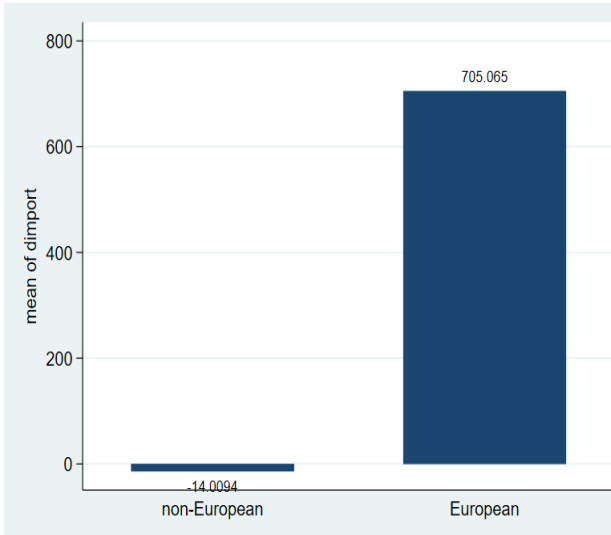
The increase in the number of firms shows an increase in the gap between nearshorers' mean and offshorers' mean during the years. The years 2011 and 2012 highlight different patterns from the other databases (figure 120). The positive tendency is confirmed.



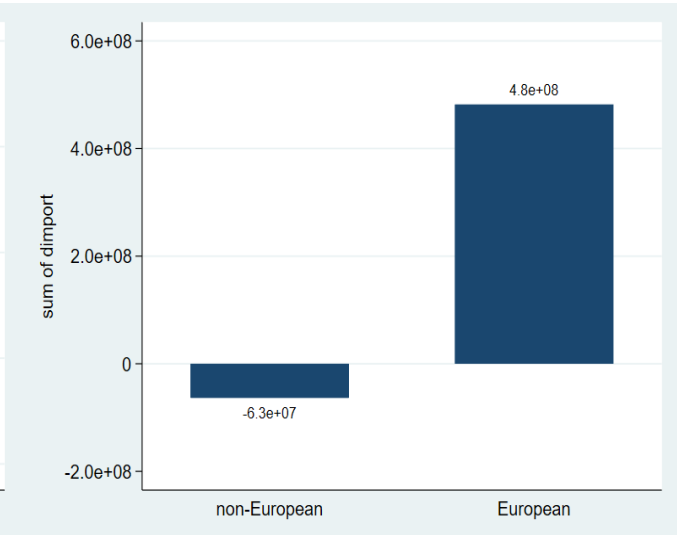
**Figure 120:** Mean of import per year and nearshoring  
Source: STATA



The variation of imports is positive from the EU countries (figure 121), aligned with the first approach and in countertendency with the other databases. The non-European countries point out a negative variation for both the average and the total amount (figure 122).

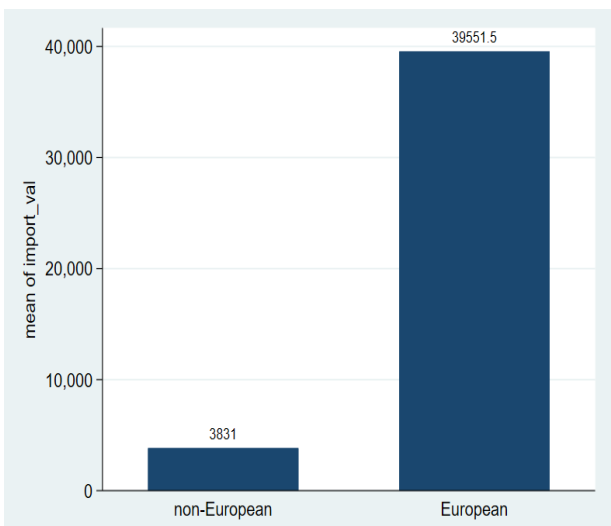


**Figure 121:** Mean of dimport per eu\_members  
Source: STATA

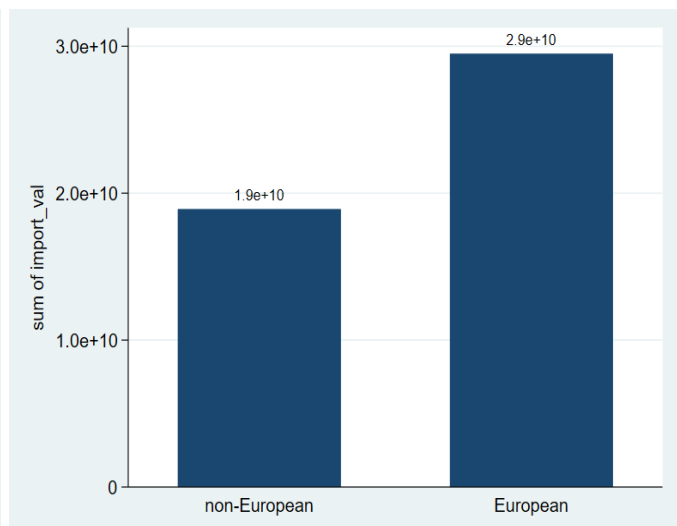


**Figure 122:** Sum of dimport per eu\_members  
Source: STATA

The averages of import and the sums of import per eu\_members show higher amount from European countries (figures 123 and 124).



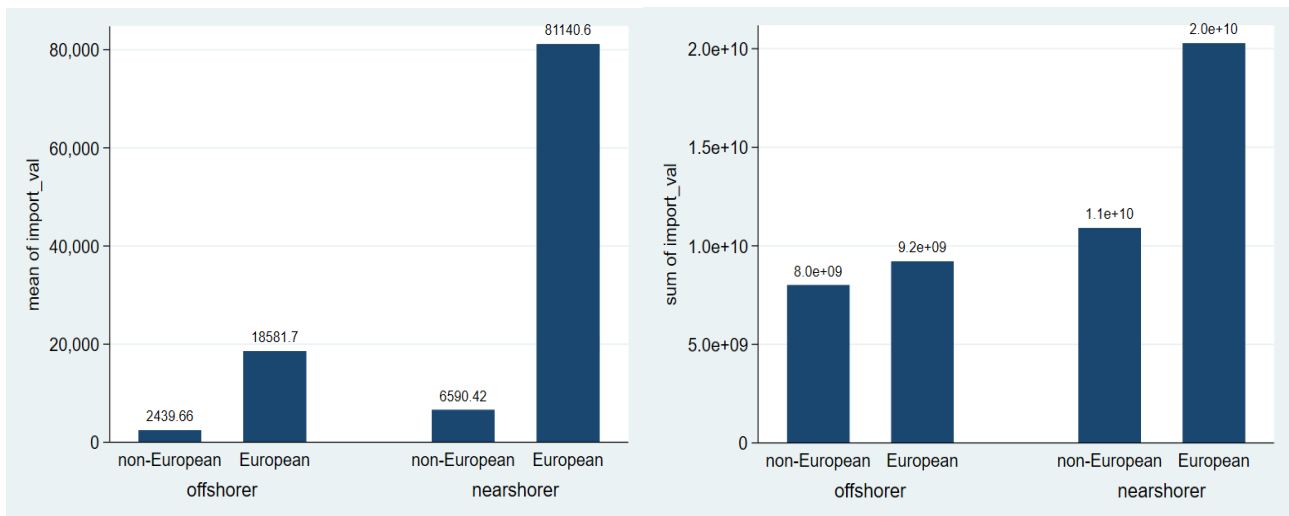
**Figure 123:** Mean of import per eu\_members  
Source: STATA



**Figure 124:** Sum of import per eu\_members  
Source: STATA

This analysis highlights the highest averages of imports for both nearshorers and offshorers (figure 125). The nearshorers import huge amounts from European

countries and the offshorers import less than nearshorers as in all precedent cases (figure 126).



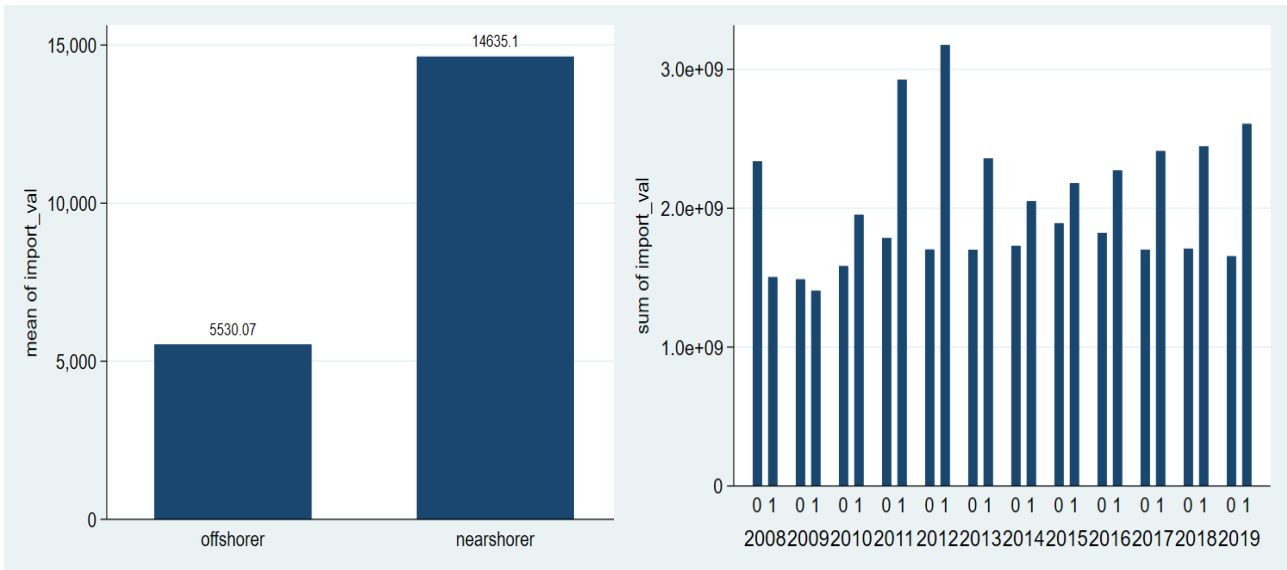
**Figure 125:** Mean of import per nearshoring and eu\_members  
Source: STATA

**Figure 126:** Sum of import per nearshoring and eu\_members  
Source: STATA

### 3.3.3 Third approach

The third approach is related to the identification of nearby countries from a political viewpoint in order to detect whether the alliances stimulate nearshoring. The countries are screened through the 'distant\_country\_pol' binary variable, set equal to 0 in case the countries are members of the Organisation for Economic Cooperation and Development (OECD), so considered allied, 1 otherwise. The variable counts 40 countries over 220.

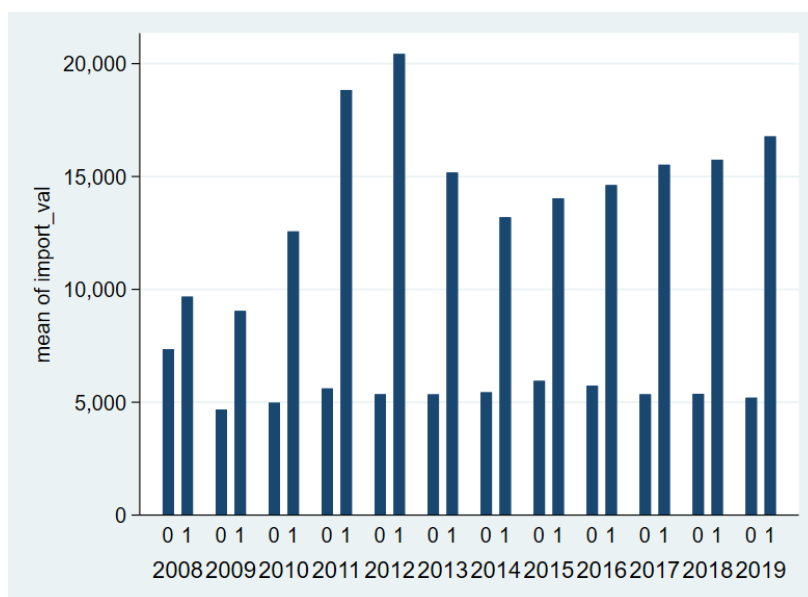
The results show 1.864.356 occurrences out of 5.680.584 ones about nearshoring, so 703 companies over 2142 (the 32.82% and the 14.06% of the original database). The outcomes are aligned with the other two databases because the third approach gives an amount of companies in between of the first and second approaches. The third database highlights the highest percentage of firms for the third approach.



**Figure 127.** Mean of import per nearshoring  
Source: STATA

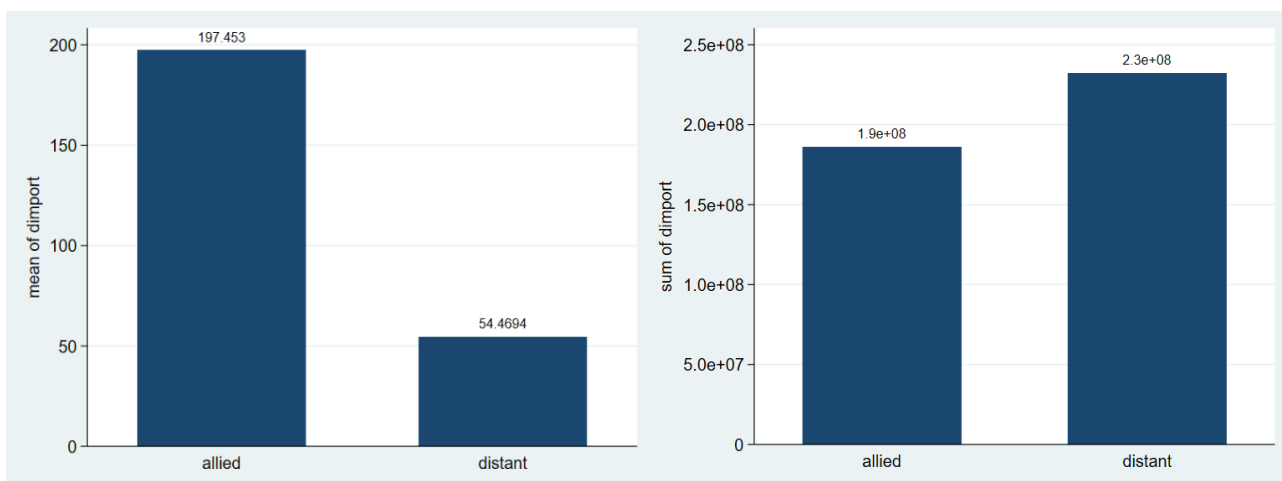
**Figure 128.** Sum of import per year and nearshoring  
Source: STATA

The nearshorers import more on average than offshorers and the approach points out the lowest mean for them and the highest mean for the offshorers in respect to the other approaches (figure 127). In the period 2008 – 2019 the offshorers imported more only in 2008 and 2009, from 2010 the nearshorers imported more but with fluctuations (figure 128). The gap between the two types of manufacturing company seems to be less important as in the other studies.



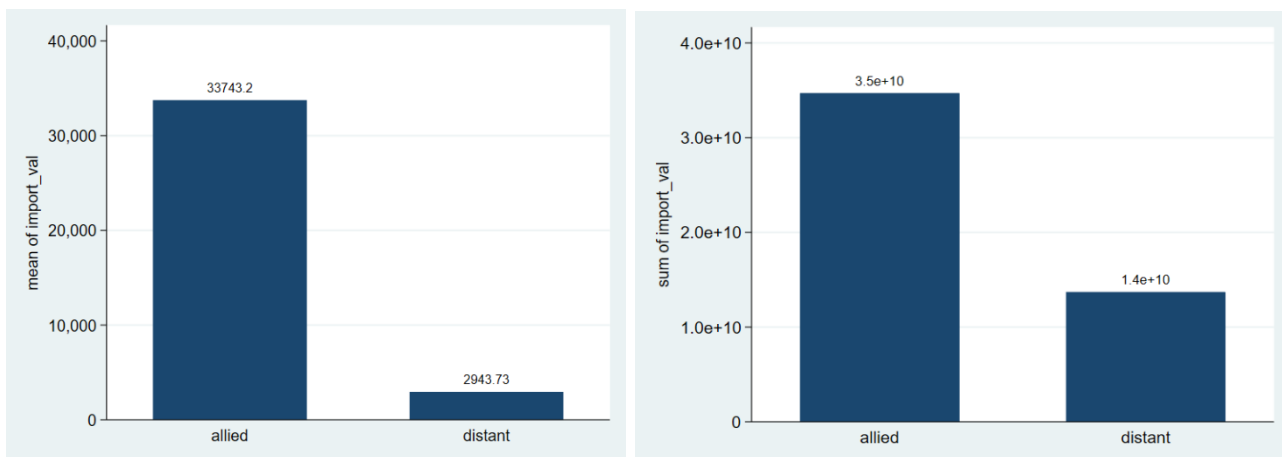
**Figure 129.** Mean of import per year and nearshoring  
Source: STATA

The average of imports per year for nearshorers is increasing, a part for some outliers, while the same for offshorers is decreasing (figure 129). The other databases show similar results but in this analysis the mean is always higher for nearshorers than offshorers in the same approach.



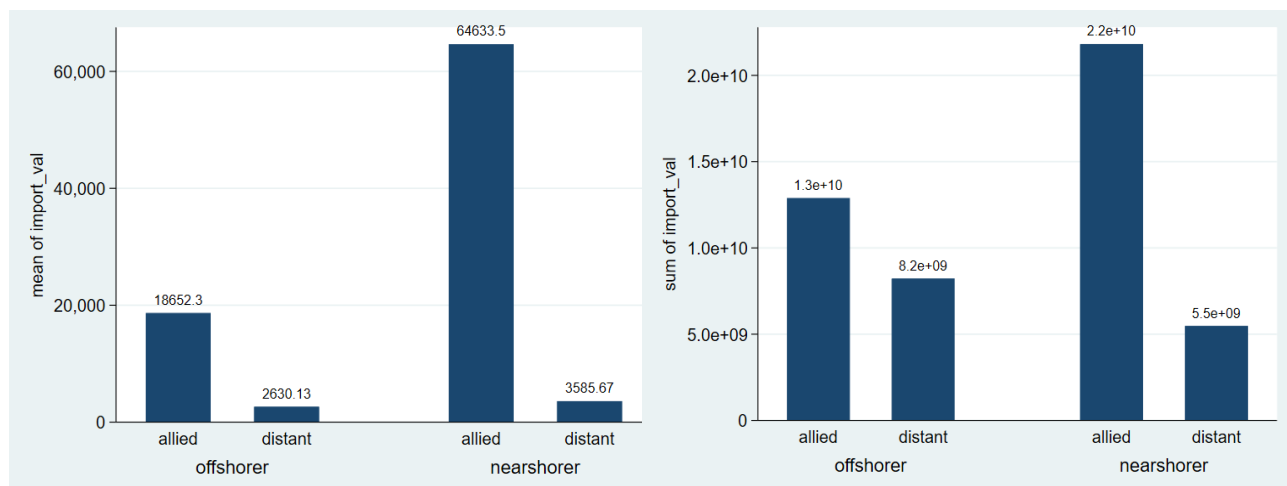
**Figure 130:** Mean of dimport per distant\_country\_pol **Figure 131:** Sum of dimport per distant\_country\_pol  
Source: STATA

The variations of import according to the distance are positive, in countertendency with all precedent studies. The averages from allied countries are higher than the same from distant ones (figure 130). The total amounts of variations are positive and the sum from distant countries overcomes the one from allied countries exceptionally (figure 131).



**Figure 132:** Mean of import per distant\_country\_pol **Figure 133:** Sum of import per distant\_country\_pol  
Source: STATA

The average of imports from allied countries exceeds the one from distant ones (figure 132). The third approach shows the lowest mean from distant countries for the database analyzed. The total amounts of import per distance points out the same pattern but the results are in the middle of the other two approaches (figure 133).



**Figure 134:** Mean of import per nearshoring and distant\_country\_pol  
Source: STATA

**Figure 135:** Sum of import per nearshoring and distant\_country\_pol  
Source: STATA

The nearshoring companies import more on average, and the highest mean is from allied countries (figure 134). The offshorers show the highest averages compared to the other approaches. The total amounts highlight the same trends (figure 135). The results are aligned with the other databases.

### 3.3.4 Comparison

The three analyses show more nearshoring firms in the second approach and less nearshoring firms in the first approach, although the first case involves more countries and the second case only 29. The European Union is an important factor to boost the phenomenon thanks to the economic advantages and the geographic proximity.

The offshorers import more in the third analysis (around 5530€) and less in the first one while the nearshorers import more in the first analysis on average (around 17599€) and less in the third one, testifying the relevance of the geographic proximity for the transactions of nearshoring companies.

According to the different distance definitions the mean of imports is the highest in the EU analysis (approximately 39552€) and the lowest in the first approach (approximately 28528€), because the European companies keep important relationships among with each other.

The total amount of import per distance shows the first and third analyses with the same values (the highest ones) and the lowest value from EU countries (second approach), while the distant imports are more important in the EU study and less in the first one.

The period 2008-2019 signals an increase in nearshoring imports, with an increasing gap in respect to offshorers' ones, suggesting a rise of this phenomenon. The third database points out a peak in 2012 for nearshorers in all three cases. The averages over the years have aligned trends, so the gap is increasing; the offshorers' means appeared more stable over time.

The mean of variations of imports is positive from the nearby countries with a maximum amount for the EU approach, while the average is negative from the distant countries, except in the third analysis; the first and second approaches give a mean from distant countries around 0, so a compensation of positive and negative fluctuations occurred. The sum of variations points out the same trends, the European Union remains important from a commercial viewpoint.

The nearshorers import more on average from 'near' and 'distant countries than offshorers, the second approach highlights the most important means. The offshorers seem to import more on average in the third study from 'near' and 'distant' countries, perhaps because the allied countries involve some important players worldwide like the United States.

The total amounts of import show different situations because the nearshorers import more from nearby countries in the first approach and more from distant countries in the second one (it is worth remembering that the nearby countries are only 29 in the second approach). On the contrary the offshorers import more in the third study, less in the second study from nearby countries and in the first

study from distant countries, underlining the importance of the geographic proximity for all Italian manufacturing companies.

## 4.0 Conclusions

The three databases imply the presence of nearshoring for the 31% of companies on average, only considering the offshorers, and from the 9.86% to the 14.24% of companies of the original database. As expected, the second database (5-digit ateco codes) includes the lowest amounts of firms, while the third database (3-digit ateco codes) includes the highest amounts, because reducing the specialization of the ateco code, the offshoring is identified in more cases, rising the approximation and potentially overestimating the nearshoring. The three approaches involve the same number of countries, the nearby ones are 50, 29 and 40 respectively.

The averages of import per nearshoring highlight similar values for offshorers while the third database shows an important increase on the nearshorers' mean, it can be due to the higher number of companies analyzed. In all databases the nearshorers show higher values of averages of import in the first approach, underlining the prominence of the distance in their trades.

In the period 2008 – 2019 the nearshorers imported more on average than offshorers, a part for some exceptions, and the gap between them and offshorers is increasing. The third database gives the highest values and shows two outliers in 2011 and 2012. The total amounts of import per year point out similar trends as the averages but the third approach in the first and second database display the offshorers overtaking the nearshorers, even if the gap is reducing. The outcomes in the period seem to show an increase of nearshoring phenomenon over time and a decrease in a lot of instances for offshorers total imports.

The variations of import remain negative for the first and second database, in particular for the nearby countries in the third approach, while for the third database they are positive except those from distant countries in the geographic and EU approaches. The total amounts of variation follow the same pattern, and the third approach always highlights a higher value from distant countries than from nearby ones, while the other approaches exhibit opposite situations. The results are aligned with the hypothesis of increase in nearshoring because the sum of variations of imports is more negative from distant countries, signaling a more significant reduction in distant imports; the third approach is in



countertendency but likely because the allied countries involve even United States, Canada and other far ones.

The averages of import according to the different definitions of distance yield similar outcomes for the three databases, where the EU approach points out the highest values and the imports from nearby countries are more important than the ones from distant countries. These achievements demonstrate the reliability of the methods used to measure nearshoring and that the geographic proximity coupled with a political alliance, as granted by the European Union, boosts trades among countries.

The total amounts of import based on the distance show almost identical results because the first and third approach point out the highest values from nearby countries while the second approach point out the highest value from distant ones. The results are aligned with the idea that the closeness and the alliances incentivize nearshoring. The values are higher in the third database and less in the second database because of the difference in the number of companies involved.

The nearshorers import on average more than offshorers in all analyses and they import more from nearby countries than from distant ones. The EU approach always highlights higher values than the other studies and the first approach holds the lowest values for offshorers while the third approach holds the lowest values for nearshorers. The increase in the number of firms offshoring increase the values of mean.

The sum of import per nearshoring and distance is aligned for the three databases. The offshorers import more in the OECD analysis while the nearshorers import more in the first approach from nearby countries and more in the second approach from distant countries.

In conclusion, the methods used to analyze nearshoring seem to be effective because the size of the phenomenon can be real and the period from 2008 and 2019 shows an upward trend. The average values highlight higher values in the European approach, suggesting important trading relationships among European members, while the first approach points out the most important total amounts of imports due to the significance of geographic proximity for trades and for the involvement of more nearby countries to measure nearshoring.

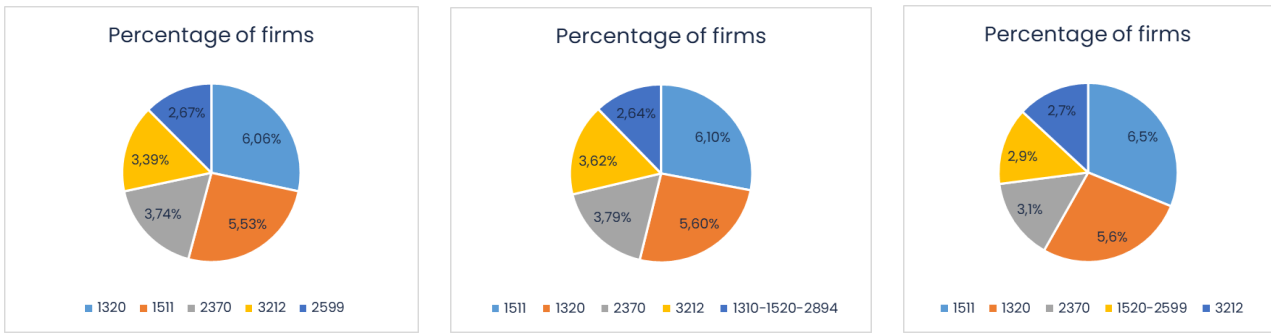
The first and second databases show similar results, while the third one is a little bit stand-alone, perhaps because the increase in the approximation (including more aggregated ateco codes) can overestimate the offshoring and, consequently, the nearshoring.

The period 2008–2019 points out that the third approach related to political alliances is less evident and offshoring seems more important than nearshoring, likely in that period political closeness was not so relevant for trading but, after the increase in global tensions and the recent wars the study may have increased its prominence; further analyses should include the more recent data in order to verify the statement.

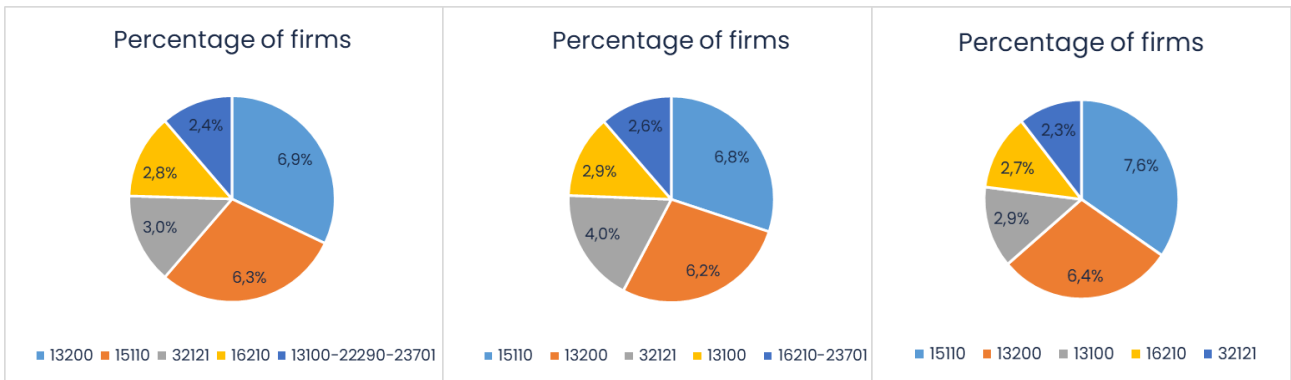
#### **4.1 Ateco codes comparison**

The analysis continues through the reacquisition of the information about the ateco code of the companies. The first operations are related to the drop of companies having nearshoring variable equals to 0, and the collapse ('collapse (sum)import\_val, by(firmid)') in order to save the companies nearshoring. Then the original database is reduced to only transactions where the ateco code of the firm is equal to the ateco code of the transaction and it is condensed through 'collapse (sum)import\_val, by(firmid ateco2007)' to acquire the information about the ateco code of the firms nearshoring. These operations are made for each approach for all databases.

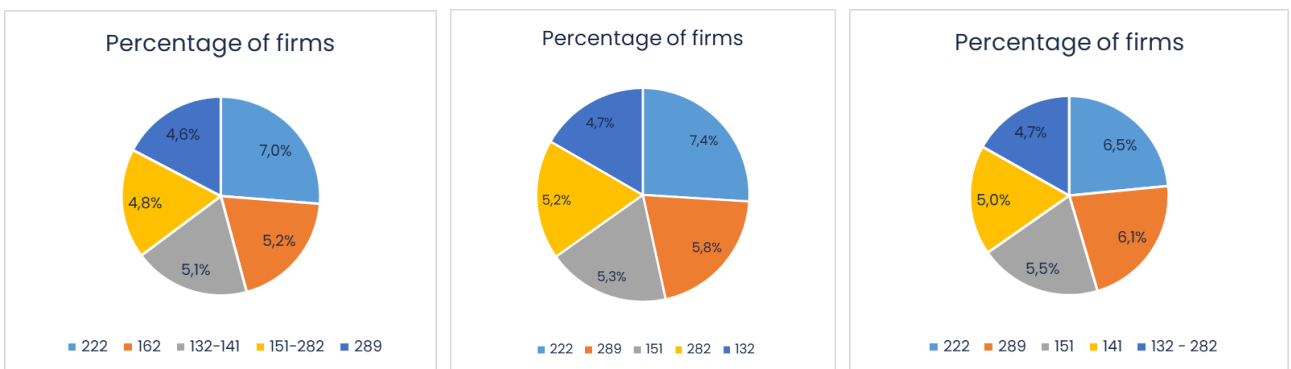
The most represented ateco codes among nearshoring firms are similar in the 4-digit and 5-digit databases because the firms imported more goods classified 1320 (Weaving) in the first approach and 1511 (Preparation and tanning of leather; preparation and dyeing of furs) in the second and third approaches. Other important codes are 2370 (Cutting, shaping and finishing of stones), 3212 (Manufacture of jewellery, goldsmith's and related articles), 1520 (Footwear manufacturing), 2599 (Manufacture of other fabricated metal products n.e.c.) and 1310 (Preparation and spinning of textile fibres) (figures 136 and 137).



**Figure 136:** Most represented ateco codes in the three approaches of the 4-digit database  
Source: Excel



**Figure 137:** Most represented ateco codes in the three approaches of the 5-digit database  
Source: Excel

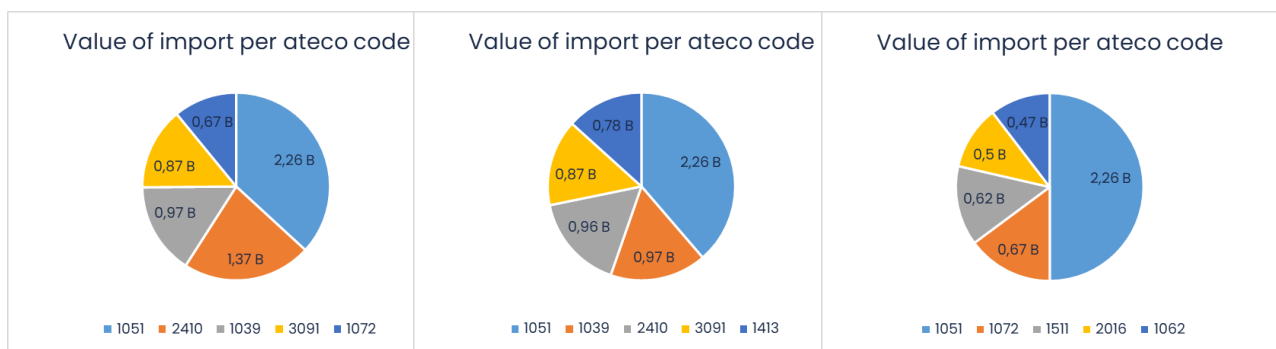


**Figure 138:** Most represented ateco codes in the three approaches of the 3-digit database  
Source: Excel

The 3-digit database is more represented by the 222 ateco code (Manufacture of plastic articles) in all studies (figure 138). The first approach points out 162

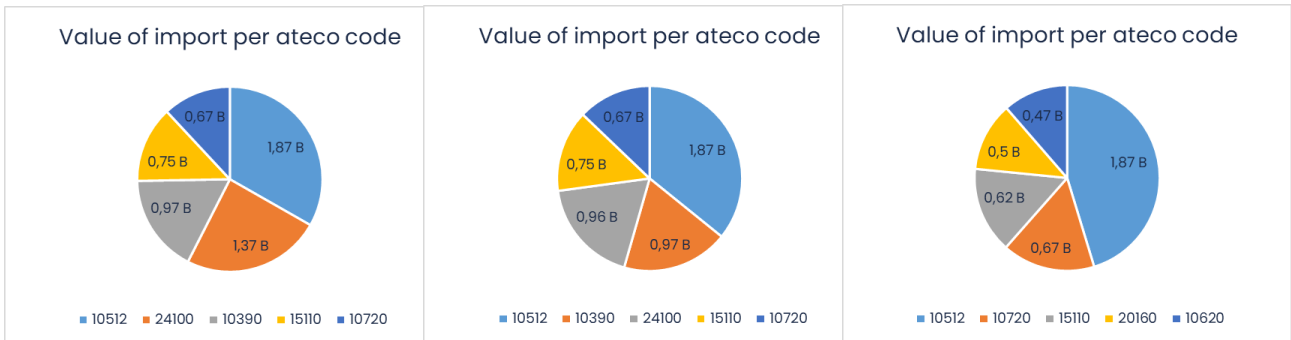
(Manufacture of products of wood, cork, straw and plaiting materials), 132 (Weaving), 141 (Packaging of clothing items (excluding fur clothing)), 151 (Preparation and tanning of leather; Manufacture of luggage, bags, leather goods and saddlery; Preparation and dyeing of furs), 282 (Manufacture of other general purpose machinery) and 289 (Manufacture of other special purpose machinery). The other approaches show the same codes in different orders.

The total amount of imports per nearshoring firm highlights different results. The 1051 ateco code (Dairy industry, hygienic treatment, milk preservation) overhangs all other codes in the 4-digit and 5-digit databases (figures 139 and 140), while the 244 ateco code (Production of precious base metals and other non-ferrous metals, nuclear fuel processing) has the same pattern in the 3-digit database (figure 141).

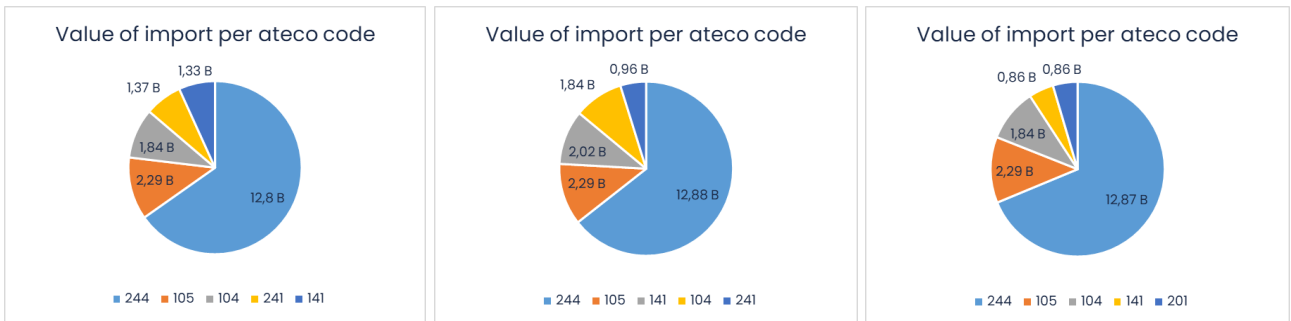


**Figure 139:** Value of import per ateco code for the three approaches of the 4-digit database  
Source: Excel

The 2410 code is related to the 'steel industry', the 1039 code to 'Other preservation and processing of fruit and vegetables', the 3091 code to 'Manufacturing of motorcycles (including engines)', the 1072 code to 'Production of rusks and biscuits, production of preserved pastry products', the 1413 code to 'Packaging of other outerwear', the 2016 code to 'Manufacturing of plastics in primary forms' and the 1062 code to 'Starch production'.



**Figure 140:** Value of import per ateco code for the three approaches for the 5-digit database  
Source: Excel



**Figure 141:** Value of import per ateco code for three approaches for the 3-digit database  
Source: Excel

The 3-digit database has as top ranking 244, 105 (Dairy industry), 104 (Production of oils and fats), 141 (Packaging of clothing items (excluding fur clothing)), 241 (Steel industry) and 201 (Manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in primary forms). The database shows more important outcomes in terms of values and number of firms because the reduction in the specialization of the ateco code increase the volume of companies involved in nearshoring.

## 4.2 Implications and limitations

The manufacturing industry is affected by nearshoring. The databases show a few companies nearshoring during the period 2008 – 2019. The data should

include other transactions during the following period 2020 – 2024 because a lot of important events occurred, like the Covid-19 pandemic, the Russia-Ukraine war, the Israel-Palestine war. The literature highlights an increase in the tensions between US and China, as well as for their respective allies, so it is likely that nearshoring has been growing and the trades has been shifting depending on tensions. Aiyar et Al. (2024) found an increase in Foreign Direct investments among geopolitically aligned countries while Lábaj & Majzlíková (2023) noticed an increase in manufacturing employment in US and Europe and a decline in China. In addition, the European countries and the United States are incentivizing policies for the sustainable productions and digitalization in order to reduce their dependence to Russian oil and gas and to Chinese critical raw materials (European Commission 2022), another potential impulse to nearshoring. Further analyses could include other topics affecting the nearshoring as the environmental and social issues because now more and more consumers are conditioned in their purchasing behavior. The industry 4.0 can improve the competitiveness of companies and reduce the cost gaps in respect to developing countries inducing firms to relocate. New studies could include other industries in order to test whether nearshoring is more evident in other sectors.

The databases are quite large, so the results can be a mirror of the real phenomenon, despite the limitations of the measurement.

These analyses can have some drawbacks because the operations of imports made for a few years before 2019 are not included in the final sum, so some countries are excluded from the analyses (it can either over- or underestimate the sum of variations of import). The Offshoring variable defines an offshorer in case the company has at least an export and an import transaction including all occurrences in the period 2008 – 2019, maybe it should define an offshorer considering year by year. The case of decrease of imports from nearby countries lower than the same decrease from distant countries generates nearshoring = 1 even if the reduction from distant countries is not coupled by an increase from nearby countries (the same reasoning in case of two increments). The fall of imports from distant countries can be a sign of either crisis or bankruptcy instead of nearshoring. It can be even a sign of changes in the market conditions. The study does not take into account the changes in the movements between nearby

countries or between distant countries, it does not take into account those firms nearshored towards countries nearer Italy but not comprised in the variable defining the distance. The nearshoring variable includes those companies trading only with nearby countries (like European ones), overestimating the nearshoring phenomenon; they should not be comprised cause these transactions did not follow alterations in transactions from distant countries. It is right that those firms having reduction in the nearby imports and no variations in the distant imports are not included in the nearshoring. I considered only those firms importing and exporting with the ateco code of transaction equal to the ateco code of the company, hypothesizing the firms imported their main product manufactured abroad.

## Studies analyzed

Study	Institute	Period analyzed	Database	Type	Results
<b>European Manufacturing Survey</b>	Fraunhofer Institute	2010 – mid 2012	3500 European manufacturing firms from 13 countries	Written survey	4% of firms reshored, there is more propensity to reshore by high technology firms. There is no industry that shows more backshoring than offshoring
<b>Boston Consulting Group Survey</b>	Boston Consulting Group	2000 -2011	200 US manufacturing firms with more than 1 USB billion sales	Written survey	In 2013 54% of executives were planning to reshore (against the 37% in 2012). More than 20% of respondents in 2013 (twice the ones in 2012) indicated they were actively undertaking backshoring or would have moved manufacturing to US in the near future
<b>German Manufacturing Survey</b>	Fraunhofer Institute	2010 – mid 2012	400 to 700 German manufacturing companies per year	Written survey	Only 2% of companies backshored, the 50% of them from Eastern European countries
<b>European Reshoring Monitor</b>	Eurofound and a consortium of Italian universities (Bologna, Catania, L'Aquila, Udine)	2015 – 2018	253 reshoring cases announced in the media and 68 reshoring papers published (reshoring comprising backshoring, nearshoring and offshoring)	Analysis and surveys, delphi studies, trade data	92.4% of cases are related to backshoring, 5.1% to nearshoring. 85% of cases are related to manufacturing companies. Most involved countries: UK, France, Italy, Denmark, Norway, Germany, Sweden, Spain. Poland and



					Germany are the most frequent host countries. 59% of cases involve large companies (> 250 employees)
<b>European Restructuring Monitor (Elia et Al. 2019)</b>	Eurofound	2002 – 2015	118 European relocations of manufacturing firms in EU27 + Norway	Analysis	77 cases are related to Relocation to third countries (RTCs) and 41 to Relocation to home countries (RHCs). RHCs: Germany (15), France (8), Italy (4), UK and Sweden (3). Source of RTCs: Germany (21), UK and Sweden (11), France (10), Finland (9), Italy (5), Belgium (4). Most losses due to RTCs: Italy (12), France (11), Germany (7), UK and Finland (6). Main destinations of RTCs: Poland (22), Romania (9), Czech Republic (9), Hungary and Germany (6)
<b>European Restructuring Monitor (Barbieri et Al. 2019)</b>	Eurofound	2002 – 2015	496 European manufacturing relocations (public announcements, company websites, social partner websites)	Analysis	406 of cases are RTCs and 90 are RHCs. RHCs: Germany (24), France (14), Italy (8), UK and Sweden (7), Switzerland (6). Main destinations of RTCs: Poland (88), Czech Republic (51), Romania (38), Hungary (35), Germany (30), Slovakia (29). Loss due to RTCs: UK (52), France (51), Germany (33), Belgium (30), Spain

					(28), Sweden (26), Italy (22), Austria and Netherlands (20).
<b>Slepniov et Al. 2013</b>	Commercial section of Lithuanian Embassy in Sweden	2010 – 2011	3 Scandinavian industrial firms and 55 vendors in Lithuania (manufacturing and services)	Surveys, semi-structured interviews and observations	Lithuanian firms succeed in manufacturing and delivering more value-added products and services when collaborating with Scandinavian firms. The value added remained unchanged for almost 25% of Lithuanian companies cooperating with Latvia companies and for almost 15% of Lithuanian firms cooperating with Estonian companies.
<b>IT Nearshoring Index (Keller &amp; Zoller-Rydzek 2019)</b>	Center of European Business at the ZHAW School of Management and Law in cooperation with swiss ICT and ISSS (Information Security Society Switzerland)	2017 – 2018	56 Swiss IT service firms	Survey	The overall index shows that the most attractive regions for Swiss It companies are: London and surrounding regions, Germany, Madrid, Catalonia and Denmark.
<b>Aiyar et Al. 2024</b>	Financial Times fDi Markets	2003 – 2022	300.000 greenfield FDIs between 186 countries	Media sources and reports	The likelihood that FDI takes place between geopolitical aligned countries is more than twice higher than one would expect if FDI take place independently of the alignment.

					In recent years this likelihood increased more than 2.5 times.
<b>Lábaj &amp; Majzlíková 2023</b>	FIGARO – Full International and Global Accounts for Research in Input – Output analysis (Eurostat)	2010 – 2020	64 industries in 45 countries	Transactions	In 2014 China's manufacturing employment was about 7%, in 2020 declined at 5.8%. It remained stable in Europe and United States. Offshoring in Europe was close to 30% in 2010 and declined to 25% in 2011. Offshoring in the United States peaked in 2014 at 40% and fell to 17% in 2020. European nearshoring increased from 67% to 73% in the overall period. US nearshoring increased by almost 20 percentage points from 2018 and 2020.

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