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### "GLOBAL VALUE CHAINS AND THE IMPACT OF COVID-19 CRISIS: THE CASE OF THE ITALIAN GOLD JEWELLERY"

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# Introduction

The last three decades have been characterized by a dramatic growth of a worldwide spread phenomenon called globalization. It refers to the interconnection between different countries' economies, intensifying economic, social, and geopolitical relationships among countries. Despite globalization could seem a country-level phenomenon, some recent literature analysed it under different lenses, considering more its impact on local territories. Researchers have found a blend between two well-affirmed models, which are Global Value Chains (GVCs onwards) and Industrial Districts (IDs): the former is a framework mainly used to identify and understand the potential directions of the world globalized-economy, especially during tough periods such as economic crises (Gereffi, Fernandez-Stark, 2011); the latter refers to the analysis of IDs, organic groups of firms concentrated within a specific geographical area that developed a particular fragmented production process and whose emphasis is on the crucial role within IDs of the social inter-relations across participants (Becattini *et al*., 2009). GVCs are recognized to bring important spill-overs in local territories – as a point of contact with IDs – that concretize in the share of best practices, knowledge, and technologies (Agostino *et al*., 2020). These proven efficiency gains derived from GVCs even led the World Bank to re-name the first decade of 2000s "Age of Global Value Chains" (Giglioli *et al*., 2020): however, apart from this huge integration of global economy, several and severe shocks and crises threatened the world economic system, as long as this era started declining after 2008, immediately after the Great Financial Crisis (GFC). This decline was not a return to closed economies and lower international interconnectedness, but it must be intended as the end of positive growth rates of global trade volumes. The latest event that affected the international landscape is Covid-19, a virus-caused pandemic which is bringing down the greatest economies in the world. This thesis aim, thus, is to analyse the effects of and how IDs actively involved in GVCs reacted toward the Covid-19 crisis. In doing so, a specific industry will be considered in order to avoid the

inclusion of potential industry-effects and also to narrow the scope of the analysis. The industry chosen is the jewellery one, as it results perfect for this analysis for two crucial reasons: first of all, the Italian jewellery production is mostly concentrated within three industrial districts – which are Arezzo, Vicenza and Valenza Po – whose main feature is their important role within GVCs. Moreover, jewellery industry and fashion industry in general has suffered the negative effects of this crisis more than other industries, making perfect to the thesis final aim the choice of Italian jewellery IDs as unit of analysis. In addition, Italy – and in turn the previously mentioned jewellery IDs – has been hardly hit by the Covid-19 crisis. Sforzi (2015, p. 15) states that "academics who want to study economic change through analysis at the territorial level [...] use the industrial district as a benchmark": with this thesis I want to investigate and possibly to bring an interesting contribution to the branch of literature that wants to blend ID and GVC frameworks in order to understand and report the impact of economic crisis observed under a more comprehensive light, which include the local and the global dimensions. The former is represented by industrial districts as unit of analysis, whilst the latter lies in the choice of jewellery IDs, that were and still are embedded within the global production chain of jewels.

The thesis starts with the report and explanation of the literature background of GVCs and industrial districts in Chapter 1, continuing with an analysis of the Covid-19 crisis and the contextualization of how GVCs and IDs reacted toward past crisis and disruptive events and whether they were resilient or not in Chapter 2. Chapter 3 is dedicated to the methodological approach, while in Chapter 4 an analysis of the jewellery industry, both internationally and at national level, will be done in order to have a clearer picture on the main trends of the gold industry. In Chapter 5 the empirical analysis will be made to test the three hypotheses that emerged after the literature review: the first hypothesis has as object of analysis the district firms, in particular it refers to whether the firms pertaining to industrial districts (within the same industry and national context) were more performing during the Covid-19 crisis, and this hypothesis will be tested throughout a statistical model. In order to test the second hypothesis, which refers to whether the Italian jewellery industrial districts reacted and quickly adapted their international role within the gold global value chain with respect to the current crisis, a quantitative analysis will be carried out analysing the official data – for the three districts – of their import and export performances. The third hypothesis is aimed at analysing if industrial districts, within the same industry and the same national economy, showed resilient attitudes and reacted in a different manner against the current crisis with respect to other past crises. The conclusions will include a synthetic and complete review of what has emerged after the research.

# Chapter 1

# Global Value Chains and Industrial Districts

## 1.1. Key features and characteristics of GVCs

The theorization of the GVC model dates back to the mid-1990s, when it was introduced and defined by its major author, Gary Gereffi (Gereffi *et al*., 1994). The model, for which Gereffi distanced himself from the orthodox commodity chain theory (Bair, 2005), is now supported (after around 20 years from its theorization) by a vast and hefty literature. GVC main purpose can be defined as "understand[ing] how global industries are organized by examining the structure and dynamics of different actors involved in a given industry" (Gereffi & Fernandez-Stark, 2011, p. 2): so the model is mainly used to try to predict and understand global trends of industries during crisis periods, with the final aim of overcoming economic shocks. At the beginning, GVC theory gave answers to the increasing necessity of understanding the directions of a globalized economy; after this, it was effectively implemented to comprehend effects and consequences of the most severe crisis. So, it is not surprising that recently, during the Covid-19 pandemic crisis (one of the worst shock ever seen of the XX century), the model has aroused interest again. This is certainly due to the main strength point of GVC framework, which lies in its versatility, offering two distinct but complementary interpretations of the whole picture: a top-down perspective, through which it is possible to analyse the actors, the lead firm, the governance and the relationships within the value chain, and a bottom-up one, that allows to spot strategic and growth opportunities for the aforementioned actors and for local territories in general. The adjective 'global' highlight the fact that the range of activities required to create a product tends to be geographically dispersed, often in different countries or even continents. In a more and more global reality, it is impossible (if not potentially harmful) to not pay sufficient

attention to the structure and configuration of industries, hence there lies the key for firms and companies to maintain an appropriate level of competitiveness (Gereffi, Fernandez-Stark, 2011). In this regard, Agostino *et al*. (2020), empirically investigate in which ways and to which extent GVCs are capable of bringing efficiency to local firms. Pertaining to a global chain allows firms to develop a high degree of vertical specialization, letting them focus on a single phase of the production cycle to better perform it, and, in turn, improving their performances. Suppliers in GVCs can access and benefit from the amplification towards new output markets: new potential customers can offer so many opportunities in terms of improving quality of products to comply with new standards, having more possibilities to sell products not relying on few clients and exploiting economies of scale. On the other side also manufacturers or assemblers can count on more variability for what regards inputs needed, having the possibility to choose various and better-quality inputs, and reorganize the cost structure delocalizing those productive activities that do not bring enough added value. These are huge advantages and opportunities, especially for small and medium enterprises (SMEs onwards), as they can broaden their horizons exploiting yet existing linkages in the chain. In fact, SMEs often found difficulties when expansion is needed, as this type of firm often lacks appropriate managerial, financial and organizational capabilities. In order to pursue a correct analysis through the use of the GVC framework, it is necessary to identify the value chain related to a product (so all the activities that compose the path that a product – or a service – has to follow from its initial conception phase to the last step of the life cycle, the usage from final customer) and then contextualize it globally, understanding which and how different countries are involved in the production process. The activities that a firm need to carry out in order to realize a product are for example design, production, marketing, distribution, and post-sales services. One crucial step is to individuate the lead firm – which is the firm that manage all the chain and decide how the value produced is going to be allocated among all the other actors – and the type of governance it imposes (Gereffi, Fernandez-Stark, 2011). Gereffi also elaborated some key dimensions for the GVCs: (1) the input-output structure, so the physical transformation of resources to obtain the final product; (2) the geographical area involved in the production; (3) the governance structure within the chain, which means the type and degree of control that the lead firm is able to impose; (4) the upgrading path that a firm can follow within a GVC (introduced after Gereffi (1999) and (Humphrey & Schmitz's (2002) contributions); (5) the institutional context, so which and how many institutions play a role within the chain; and (6) industry stakeholders, which is related with the interactions that occurs across different local actors involved in the GVC (Ponte *et al*., 2019). As it can be noted, the six dimensions can be 'divided' into two groups: the first three mentioned are related with the global aspects of a value

chain, while the last three ones describe the local characteristics of a GVC. However, each of these dimensions will be addressed and better explained later.

## 1.2. The theoretical origins of GVCs

Before describing the main dimensions and features of GVCs, it is appropriate to draw up the theoretical framework: there are three different major currents related to the study of value chains (Bair, 2005). The world-system theory is the old-fashioned one among the three. During the 1980s, Wallerstein and Hopkins focused on the dynamics of the world-capitalist economy. At the beginning, in an article of 1977, Wallerstein and Hopkins explored the possible development of the traditional theory of a European-centred world-economy: according to their research, a first clear definition of commodity chain was given. A commodity chain refers to the whole production process, from the collection of raw materials and necessary inputs to the distribution and usage of the final output, not excluding its social aspect. To use their words, commodity chain is "a network of labor and production processes whose end result is a finished commodity" (Hopkins & Wallerstein, 1986, p. 159). But then they went further; in their view, what mostly characterized the historical capitalism during globalization phases was a "widespread commodification of processes" (Bair, 2005), which means a higher fragmentation and dispersion of the activities involved in the commodity chains. What distinguished their work from Gereffi's one, is the fact that their focus was still on an overall perspective of world economy, instead of analysing even the microlevel of firms and the middle one of industries. After a decade, Gereffi et al., (1994) mentioned and delineated for the first time a new framework for studying what Gereffi himself defined as global commodity chains (GCCs onwards), moving away from the orthodox theory about globalization. The focus of GCCs was the dynamic of "inter-firm networks in global industries" (Bair, 2005, p. 160). The majority of their contribution is concerned with the analysis of how global commodity chains can impact on local territories, especially at the beginning of their work when they started watching at developing countries. According to Gereffi's view, GCCs had three main dimensions to explore, which were: (1) the input-output structure, as the more recent GVC framework; (2) the territoriality (the current geographical scope for GVCs); and (3) the governance structure of the chain (Gereffi et al., 1994, p. 97). What was relevant in the GCC framework was the new attention spent on governance structure, due to the relatively poor literature dedicated to this topic. The analysis of the governance structure starts with the identification of the chain: Gereffi identified two types of global commodity chain. Producer-driven commodity chains refer to the

configuration in which a large industrial entity or a transnational entity organize the whole production process. This configuration is typical for capital-intensive and high technological industries, and its main feature is the major role played by the large manufacturer, which is able to exercise control utterly over the chain. On the other side, buyer-driven commodity chains are in turn characterized by large retailers and merchandisers that play a central role in coordinating and controlling the chain. In this configuration the large buyer is purely a retailer, so all the manufacturing and the production-related activities are carried out by subcontractors usually located in other countries (often developing or non-developed countries). This chain arrangement is frequent for labour-intensive industries and products, such as food, garments, and other consumable goods (Gereffi *et al*., 1994). Around the 2000s, Humphrey and Schmitz enlarged the GCCs literature with a paper in which they analysed the impact of global chains governance structure and local governance, focusing on the specific effect on local strategies for upgrading, starting from the branch of industrial cluster literature which stated that being part of global value chains could enhance competitiveness at local level (Humphrey & Schmitz, 2000). From that period onwards, the new focus was on how the value was created and how does it flow through the whole global value chain: new contributions came from other authors (Sturgeon in 2002 and Gereffi three years later), and so the GVC framework, enriched with international business literature (Bair, 2005) in addition to GCCs, came to life. During the same years, after a wave of expansion for multinational companies happened in the initial period of globalization (from the mid-2000s) a new trend of vertical disintegration (Gereffi et al., 2005) has begun. MNEs concentrated their effort in order to keep within the firm the activities of the chain that add the most value at the expense of 'non-core functions' (Gereffi *et al*., 2005). With Gereffi, Humphrey and Sturgeon's contribution on the Review of International Political Economy (February 2005), there was an official consolidation and an enlargement of GVCs theory. As formerly anticipated, the interest for the GVC framework derived from the necessity of understanding trends and dynamics of the society, which was facing a new phase of world economy, globalization. This framework, however, has come in handy also to analyse crisis-related consequences and how – and if – interconnections across different countries have had an impact during economic shock periods. World economy is currently evolving (it is sufficient to think of the passing of the baton of 'global economic power' from United States to China), and this makes necessary a comprehension of the links between global chains, national development and local district development (De Marchi *et al*., 2018).

## 1.3. The main dimensions of GVCs

Getting back to the previously mentioned GVC framework, it can count on six main dimensions of analysis:

1) Input-output structure
2) Geographical scope
3) Governance structure
4) Upgrading
5) Institutional context

A further explanation for each of these dimensions will follow.

### 1.3.1. Input-output structure

The input-output structure is the first step of the analysis, it consists of identifying the main activities needed to bring a product (or a service) to life; activity types and quantity depends on industry-specific factors, but in general design, inputs collection, production, distribution, marketing, and post-selling services are common to the most of products and services (Gereffi, Fernandez-Stark, 2011). Spotting the activities and the segments that compose a GVC is crucial to understand how value is created and who creates it along the chain. Another important aspect is identifying the firms involved in the chain, their role, and the environment in which they are embedded, so industry features, structure, and trends (Gereffi, Fernandez-Stark, 2011).

### 1.3.2. Geographic scope

The second dimension to analyse refers to the geographical scope of the chain; the need to access inputs with a lower cost to survive to global competitiveness, and the relative ease of finding these inputs in other countries in the world have dramatically widened the geographical areas of the chains. The direct consequence of this dispersion is that different activities (identified thanks to the input-output analysis) are carried out in different countries, increasing the dependence for firms within the GVC on other countries and also increasing potential risks of imported crisis (Gereffi, Fernandez-Stark, 2011; Ponte *et al*., 2019).

### 1.3.3. Governance structure

The third aspect to consider is the governance structure that characterizes the chain: when in mid-90s Gereffi introduced the GCC framework, he took an early interest especially in the relationship between the governance structure of the chain and the strategic implications for each actor within the same chain. At the beginning he distinguished the GCCs coordinated by great retailers, which acronym is BDCCs, that manage and exert control along all the value chain; these governance types were common in labour-intensive and consumer goods industries. PDCCs (producer driven commodity chains) was rather governed by large manufacturers, whose strong vertical integration allowed them to have full control both backward and forward within the chain. This GCC type characterized mostly high capital- and technology-intensive industries, such as automobiles and heavy machinery (Gereffi, 1999). This early distinction, however, was later criticized due to its excessively simplicity and to its incapability to grasp all the important aspects that characterize different governance structure configurations (Lee, 2017); for this reason, Gereffi *et al*. (2005) proposed a new classification for governance structure types not anymore based on single lead firms. Refining the new approach, they shifted the focus from the actors *per se* to the linkages and the nodes that connected actors within the chains (Ponte *et al*., 2019). They classified three variables to compute in order to determine the governance type across five classes: how much actors find difficult to communicate information within the chain, whether the information can be easily codified or not, and the degree of competency of suppliers (Gereffi, Fernandez-Stark, 2011). The authors noted that eight different combinations of the three aforementioned variables could potentially exist. However, the two combinations that include a low level of transaction complexity and simultaneously a scarce ability to codify information occur very rarely. Eventually, the last missing combination refers to simple transactions, high ability to codify information and a poor supply capacity: in this particular case the lack of suppliers' competences would directly exclude them from the chain, therefore the combination is not configured as a governance structure type (Gereffi *et al*., 2005).

A sum-up table is shown below (Figure 1.1.).

**Figure 1.1.** Key determinants of global value chain governance.

| Governance type | Complexity of transactions | Ability to codify transactions | Capabilities in the supply-base | Degree of explicit coordination and power asymmetry |
|---|---|---|---|---|
| Market | Low | High | High | Low |
| Modular | High | High | High | |
| Relational | High | Low | High | |
| Captive | High | High | Low | |
| Hierarchy | High | Low | Low | High |

*Source*: Gereffi *et al.*, 2005, page 87.

So, the final governance structure Gereffi *et al.* (2005) elaborated – which is still used today – is based on two opposites pertaining to the same *continuum*, arm-length relationship between parties or pure hierarchical relationships (which implies total control over subsidiaries or other actors involved). Between these two extremes, buyer-supplier relations tend to be network-based; in turn, these network relationships could be captive, relational, or modular (Gereffi *et al.*, 2005). The five types of governance structure are the following:

- *Market*. These relationships are the simplest across all the possible types of governance structure. Arm-length involves easy information to communicate, as products are made according to each party's standards; the governance mechanism is price and there is no need for cooperation or collaboration across actors.

- *Modular*. In this value chain configuration, suppliers' competence is sufficient to make a buyer-specific product even without the use of particular machinery (Gereffi *et al.*, 2005).

- *Relational*. In this governance structure the complex nature of interactions between the parties often makes idiosyncratic investments necessary. The parties generally resort to governance and control mechanisms such as "reputation, family or ethic ties" (Gereffi *et al.*, 2005, p. 84).

- *Captive*. These value chains are characterized by small suppliers serving larger buyers; in such situations, suppliers develop strong dependence on their buyers, making them constrained by the latter. The lead firm is able to exert a tight control over the chain.

- *Hierarchy*. With the maximum level of structured vertical integration, hierarchy is characterized by the presence of a strong-positioned lead firm which is able to exert managerial control over other parties.

To sum up all the aforementioned concepts, a useful table is reported (Figure 1.2.).

**Figure 1.2.** GVCs governance structure types.
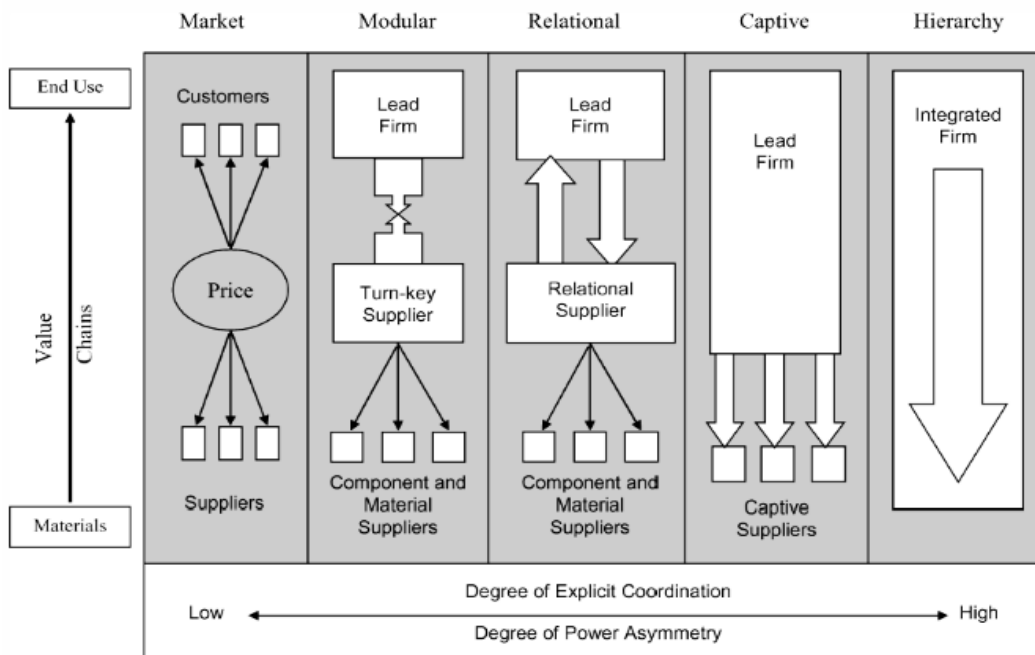


*Source*: Gereffi, Stark (2011).

### 1.3.4. Upgrading

The interest in GVC upgrading comes mainly from the fact that globalization often has led to different level of economic development and unequal distribution of profits across different countries (the inequality is strongly marked between developed and developing countries). In the context of global value chains, economic upgrading refers to the ability of the economic actors involved in the GVC to shift from low-value activities to high-value ones (Ponte *et al*., 2019). The four types of upgrading were determined as:

1. *Product upgrading*. This type of upgrading consists in increasing the product value or in improving its features.
2. *Process upgrading*. This typology refers to the enhancement of the technology used for production or the improvement in efficiency of the transformation process.
3. *Functional upgrading*. This is related to the functions involved in the chain, increasing their value-added.
4. *Intersectoral (or chain) upgrading*. Such upgrading type consists in a shift toward new sectors.

Basing on this classification of upgrading, Humphrey & Schmitz (2002) worked on spotting the relation between governance of GVCs (which were market, network, quasi-hierarchy and hierarchy) and upgrading types. They found that quasi-hierarchy, a government form of chains in which control and power are relatively concentrated in the lead firm, product and process upgrading are enhanced, while functional upgrading is difficult to pursue. Arm-length relationships, on the contrary, stimulate more functional upgrading with respect to product and process ones (Humphrey & Schmitz, 2002). Later on, a critic to the early distinction among different types of upgrading was that it was quite static, as defined by Gereffi (Ponte *et al.*, 2019, p. 241): it is only possible to define the upgrading type in a certain moment without completely understand its potential dynamic or trajectories. In a later research, Fernandez-Stark, Bamber and Gereffi (see Ponte *et al.*, 2019, pp. 61-62) added supplementary kind of upgrading to integrate the four types described above also considering the firms not directly involved within GVCs. They observed that a firm could upgrade by entering in the value chain: this is probably the most challenging path of upgrading, especially for local firms, as it requires to develop specific and efficient capabilities that allow a firm to survive the tough competition within the chain. Backward linkages upgrading refers to firms that start covering with their supply also products previously imported by other suppliers. Lastly, firms could upgrade the end-market: this is the case in which improvements that allow a firm to comply with higher standards are carried out. Recent studies argue, however, that functional upgrading could be considered as a separate category (De Marchi *et al.*, 2018), as it can be split into five sub-categories that are: (I) firms in the chain can approach to functions and activities typical of first-tier suppliers or lead firms; (II) firms can decide to quit and dismiss some lower-value activities; (III) the lead firm can decide to transfer some higher-value functions to lower-tier firms; (IV) firms can enter into new intermediary markets and (V) firms can implement merger and acquisition strategies in order to pursue a functional upgrading. Moreover, the authors stress the fact that functional upgrading can generate a virtuous 'cascade effect', as if first-tier suppliers improve their position within a GVC, then they probably require also second-tier suppliers to do the same, and so on.

A further distinction was made after some research on East Asia producers (Ponte *et al.*, 2019), based on the capabilities and the extension of firms' role within the GVC. According to this distinction, it is possible to identify upgrading paths relatively to value added and type of activities of a firm. So, it is possible to distinguish between:

- firms that are involved only in assembling imported inputs in export-processing zones (EPZs)

- firms that complete the "full-package" production, so from collecting inputs, carry the production processes to the sourcing of the final output (called original equipment manufacturing or OEM)
- firms that own a brand and sell it to local market and also foreign markets (which acronym is OBM)
- firms that are involved in the design phase of a product, but that sell final outputs under other actors' brand (known as original design manufacturing, ODM) (Ponte *et al*., 2019, p. 241).

With this classification of upgrading, one can analyse firms' range of activities in order to understand the dynamics within a chain. However, upgrading should not be considered as a sequential process, as firms in GVCs can jump up some steps and be relatively fast in innovation, while other could even undertake a slower process. It is also important to keep in mind that specific industry characteristics may imply different boundaries to classify a firm into an OEM rather than other types. Gereffi calls this 'false homogeneity' and 'false heterogeneity', reporting the example of OEM firms in motor vehicle industry (the final product assembler) and in electronics (in which OEMs are first-tier suppliers) (Ponte *et al*., 2019).

### 1.3.5. Institutional context

The second-last dimension related to GVCs refers to the local institutional context: it "identifies how local, national, and international conditions and policies shape a country's participation in each stage of the value chain" (Ponte *et al*., 2019, p. 64). All the main characteristics of the environment in which a firm is embedded contribute to its competitiveness, that in turn has effects on the impact and the role that the same firm would have within a global value chain. The social, economic, and institutional contexts supply all the vital sources a firm needs to compete, survive, and insert effectively into a GVC, from skilled manpower to physical and financial inputs.

### 1.3.6. Industry stakeholders

In order to carry a complete and exhaustive analysis of GVCs, it is crucial to pay attention also on the last dimension, the group of stakeholders involved. Understanding stakeholders' relations, linkages, and the 'lead' ones (the stakeholders in an industry who can potentially ask for and obtain changes) is extremely useful in order to draw a complete list of GVC players and have a full picture of upgrading direction and growth opportunities (Ponte *et al*., 2019).

## 1.4. The theoretical background of industrial districts

### 1.4.1. IDs' main features

As premised in the Introduction, this thesis aims at deepening (successively, the following chapters) how Italian industrial districts that operate in the gold jewellery sector are facing and reacting to the recent Covid-19 crisis. It becomes so necessary to introduce and explain in general terms the main features of IDs, and also the new frameworks that enable to better comprehend their internal dynamics. The IDs model is characterized by an inter-related network of small-medium enterprises in which the labour is highly divided, and each participant is specialized in a different phase of the same production process. Each industrial district has two complementary characteristics that contribute to its unique structure: an impalpable dimension, which lies in the knowledge and information flow that completely permeate ID's environment; and a visible and concrete dimension, that are workers, entrepreneurs, plants, and factories.

As it will better explained later, the first author who contributed to this field of literature has been Alfred Marshall. He started observing some specific English industrial areas for a determined reason. During the 19th century, in fact, England conquered its major role within international trade: during the industrialisation process that involved the whole country, some specific geographical areas (such as Birmingham, Sheffield or Stoke-on-Trent) developed until becoming the engine of the English manufacturing dominant position in the world trade. It is important to mention that this primary raw definition of industrial district areas was used to define IDs quite different from current ones. At that time, IDs were still strongly linked to the craftsmanship environment (Becattini *et al*., 2009). Relatively soon, the circumscribed workshop areas aforementioned had incentivised the development of "small, flexible, specialized [and] partial process firms" (Becattini *et al*., 2009, p. 46), enhancing in this way also the local context, considered as the glue that bound economic improvement and knowledge transfer within the district. Even early in 19th century, IDs' main distinctive feature was the fragmentation: the division of the production phases within the district is the core of its specialization. During this period of development and evolution, IDs of different territories have matured different characteristics with respect to other districts. For example, some districts have a wide variety of small, medium but also large firms, while others developed a more hierarchical environment. This heterogeneity will have of course consequences on the evolution trajectories and on the reaction responses of districts to structural and environmental changes that IDs are facing. The key feature of the traditional industrial district, however, lies in its ability of

spreading knowledge and information: all the participants have strong relationships and linkages that allow them to share capabilities and skills with others (Ponte *et al*., 2019). This particular ability comes from the specific context in which clusters are embedded: in fact, in their circumscribed environment, SMEs often have to compete and collaborate at the same time; competition is necessary to survive and to gain profits, while collaboration is crucial for increasing the competitiveness of the community (De Marchi *et al*., 2018). Moreover, the geographic concentration of the industrial district and the strong sense of 'community', has contributed to the development of "a new way of thinking about growth and competitiveness based on small firms and networks rooted in specific territories" (Ponte *et al*., 2019, p. 403). Lastly, the importance of the local aspect is also highlighted by the institutional subjects, which often operates within IDs – here comes the importance of the local institutional context – generating positive externalities for all the firms of the cluster, such as public and private services and infrastructures (De Marchi & Grandinetti, 2014).

## 1.4.2. The Marshallian district

The development of industrial districts in some specific areas is not only due to the historical path that a certain territory has made; rather the ID is the result of the building of synergies across institutions in a determined geographic area. The core of the development of IDs is the vertical integration of human capital, from IDs' past: even immediately before the Industrial Revolution, what characterized the industrial areas was the cognitive inheritance that the entrepreneur (the 'teacher') passed on to the 'pupils', its heirs who must develop the appropriate knowledge. Oldest districts are the result of the implementation of an adaptive system, a continuous mechanism of innovation and adaptation of available resources, human capital and local institutions. Even though according to the literature the IDs observed by Marshall in UK have some differences between Italian ones, there is still a common feature for all IDs, and it is the fact that there is always a special and fruitful combination between traditions and modernity (Becattini *et al*., 2009). About the evolution and the heterogeneity across different types of IDs, some districts seem to be the evolution of the so-called 'proto-industry', while other have been linked by scholars to the guild system. Proto-industry is the gradual development, through a proletarisation, of rural and poor areas; this kind of districts saw a progressive expansion of a traditional manufacturing typical of merchants (Becattini *et al*., 2009). This specific result came after some studies conducted by Becattini, who discovered that many Italian IDs' development could not be linked to the guild system. Marshall, in contrast, mentioned the Sheffield's district, whose historical evolution comes directly from the guild system (guilds were medieval

associations of craftsmen and merchants which aim was to regulate and protect their work guaranteeing support in different fields such as training, prices, unemployment). Those districts that have a historical link with guilds, are the result of the development of several small and medium entities born in and around the territory in which the guild was in force. Even after the dismiss of the guilds, the typical functions that they served were passed on municipalities and local institutions (Becattini *et al*., 2009). As just said, IDs theorization started during the 1920s, after Alfred Marshall started studying a new model of production – opposite to the Fordist one – that first developed in the industrial area of Sheffield during the last decades of the Second Industrial Revolution (at around the end of XIX century) (De Marchi & Grandinetti, 2014). Marshall noted that Sheffield's productive system had developed new distinctive features, the same that could be used nowadays to describe industrial districts (so presence of many small-medium firms circumscribed in a determined territory, characterised by high degree of specialization, fragmentation of labour and by strong socio-cultural relationships) (De Marchi & Grandinetti, 2014). He also demonstrated that the industrial district was able to create external economies thanks to its flexibility, and that the relations occurring with other economic actors of the cluster contributed to reduce even other costs, such as procurement costs for example (De Marchi & Voltani, 2014). Marshall viewed IDs as organizational forms that developed answering to the need of adaptation to new challenges. The core of Marshallian IDs is with no doubt their local dimension, hence according to his view the key to survive within the economic context is the adaptation. IDs, in this case, reach adaptation capacity and reactiveness thanks to their particular essence, for which social and economic dimensions are merged together; in this way the community, and its inter-related network of relationships, is the innovation propulsor for IDs. According to Marshall's theory, IDs can be seen as subsystems, whose survival and adapting capacity are determined by two main variables: the external relationships with the environment and the whole system, and the internal relationships that occurs within the subsystem itself. The social dimension has been widely explored by the literature, as it is one of the most distinctive features of IDs. Trust, reputation, and informal relationships permeate the internal ID's environment, encouraging the diffusion of shared values, culture, customs and common language and strengthening the cohesion sense of the district. Moreover, despite different firms within the same ID are often competitors, what pushes them to act in a loyal way is the creation of a solid and trustful reputation, as it is one building-block of a fruitful network of relationships.

After several years from the formal theorization of IDs made by Marshall, different disciplines got interested in industrial clusters and through the years various important authors such as Porter, Becattini, Piore and Sabel started making their contribution (De Marchi & Grandinetti,

2014). Around the '80s, Becattini resumed the Marshallian district studies, interested by the socio-territorial homogeneity typical for districts and by the fact that they were an 'economic measurement unit' between the whole industry macro level and the single firm micro level (De Marchi & Voltani, 2014).

### 1.4.3. Decline of Marshallian IDs and evolutionary trajectories

Despite Marshall's crucial role in theorizing IDs, the economic and social context during the last years has profoundly changed – and is still going to change in future. During the last twenty years some particular factors – such as globalization, generational turn, migratory flows and internal IDs problems – have caused a transition: industrial districts are progressively losing the original characteristics outlined by Marshall. Globalization has brought new competitors who follow strong cost leadership strategies, causing in this way a reduction in the number of district firms and, simultaneously, leading clusters to a tight spatial concentration in order to survive to a tougher competition. For this reason, ID companies used to adopt external growth strategies (e.g., with mergers or acquisitions) and, in some cases, they even started buying inputs from foreign suppliers at the cost of a reduction in the added value of their offer (De Marchi & Grandinetti, 2014; De Marchi *et al*., 2018). This trend has reduced the number of firms pertaining to IDs, generating a lack of one symbolic feature of the Marshallian district: the large amount of small and medium enterprises. The greatest openness of IDs contributes to make more and more distant the Marshallian model of industrial districts, given the fact that according to Marshall's theory their economic and innovation engine are just local resources and social context; missing this collective dimension, the backbone of the Marshallian IDs theory falls (Chiarvesio *et al*., 2010). For what concerns migratory flows, in the paragraph before the attention was put on how the sense of 'community' was a crucial characteristic too: being part of a community implies that people share values, language, culture, customs and traditions. This 'community effect' withholds when a consistent share of workers in the IDs belong to different cultures (De Marchi & Grandinetti, 2014). Similarly, also deep generational differences in values and customs within a single society produce the same consequence: a socio-cultural heterogeneity that makes the 'communitarian aspects' of IDs failing. It is also important to remember that the results of all these changing factors have been accentuated, during the years, by the Great Recession of 2008-2009 and by the challenging recovery that followed. In relation to all the aforementioned changes for the economic global context (so globalization, international crisis etc), new critics about the survival and the innovation capability of IDs emerged. Two main literature veins addressed these critics, trying to give

further explanation to the changing process that is occurring especially with Italian IDs. As previously mentioned, according to the traditional view of Marshall, subsequently deepened by Becattini and his scholars, the focus and the point of interest of IDs is their social dimension: IDs capability of surviving to external changes and to be highly competitive could be found in the social context in which they are embedded in. About this, recently there has been a debate over some veins of the literature about whether social and tacit knowledge is easily transferable or not within IDs. On one side, the traditional literature states that the social dimension serve as a mean for sharing knowledge and information, while on the other side other more recent currents of thought do not see social and tacit knowledge as a public good, easy to transfer and freely accessible for firms within IDs (Rabellotti et al., 2009). Another literature vein stresses the 'discontinuity' of IDs' performances as the main driver for innovation/adaptation. Resuming the core of the Marshall's theory, IDs are subsystems able to continuously implement an adaptive process, thanks to the flexibility that small- and medium-sized firms have. However, new studies criticized this perspective on innovations regarding IDs: this strand of literature, in a strong opposite position with respect to Marshall, emphasize the fact that is the discontinuity of profitable performances that pushes for innovation (Becattini *et al*., 2009). According to Chiarvesio *et al*. (2010) a new model of firms within IDs has emerged, underling their importance in linking global and local dimensions. In conclusion, in order to survive with an appropriate level of competitiveness, leading firms are expanding their geographic range, both backward (enlarging the base of suppliers) and forward, also expanding the customer base. The direct consequence is that local territory is not anymore considered as the only possible source of competitive advantage, rather most successful Italian IDs are discovering the benefits in terms of flexibility and innovation of an international openness.

Such changes mentioned before have contributed to loosen the social local dimension that characterise the ID, leading districts toward a difficult and challenging evolutionary process for which they have to adapt and to rethink to their basic features. These changes drew three new possible paths for industrial districts (De Marchi *et al*., 2018):

- *Decline*. Districts pertaining to this category undertake a recession phase until the end of ID's lifecycle. Declining IDs experience a reduction of the number of active firms not related with a higher concentration: the population is simply going to decrease. Simultaneously with this demographic reduction, the social fabric and the relation network weaken rapidly and competitiveness level falls dramatically. (De Marchi & Grandinetti, 2014; De Marchi *et al*., 2018).

- *Hierarchization*. Contrary to declining districts, those IDs in which there has been a contraction of the number of firms in favour of an increasing presence of large companies. These big lead firms make the district highly concentrated, and leaders are able to capture the most of the value-added within the local context. The consequence is that the network of small firms fades while lead firm's role becomes more and more crucial: an example that fits this evolutionary path is the eyewear ID of Belluno. In this district, the number of firms is progressively declining in favour of few business groups whose degree of vertical integration is high. Within the surviving business groups there are the global lead firm, which is Luxottica, and other specific suppliers accurately selected (De Marchi & Grandinetti, 2014; De Marchi *et al*., 2018).

- *Resiliency*. Eventually, resilient IDs are able to dampen the reduction of economic actors within the cluster and they are also able to keep the productive activities that generate the highest added-value. These districts, although in different ways, are strongly adaptive and they are capable to implement all the necessary adjustments whenever the environmental and market conditions change. The parties in this district maintain and support knowledge-intensive relationships, that allow them to stay in a strong position even within global networks. De Marchi & Grandinetti (2014) define these IDs as 'glocal districts', due to their developed internal relations and to their ability to connect also with global chains (De Marchi & Grandinetti, 2014; De Marchi *et al*., 2018).

Rabellotti *et al*. (2009) collected some findings on Italian IDs which survived and improved their performance with respect to the structural changes, new challenges and external variability explained before. The authors made a survey in order to better understand IDs' reactions: they found that the most successful districts recorded some quality upgrading of exports, that is an increased quality in terms of exported products and in terms of higher unit price that allowed Italian IDs to maintain stable flows of export even though in the global market new tough low-cost-competitors have emerged, such as China. The only crucial point here is maintaining this great level of resiliency, given the fact that also emerging countries are rapidly increasing their production standards. Authors also found that despite the increasing openness of global markets and the great ability showed by Italian IDs to export successful products abroad, the international presence of these firms was still weak, whit a marginal amount of FDIs at least until 2010. Eventually, around the first years of 2000s, global competition and openness required new ways to penetrate and find a vital space in the market: IDs reacted by extending the supply chain towards new countries or taking part to yet existing GVCs. An alternative to

international outsourcing has been building ethnic firms and employing immigrants, exploiting the low cost of labour of unskilled workers in order to have a chance with Eastern Asian competitors offering similar prices; this happened, as mentioned in Rabellotti *et al.* (2009), for example in the clothing and leather districts of Northern Italy.


## 1.5. Industrial districts and GVCs


The interest in IDs recorded during the last years of the past century, derived from the prominent performances that many Italian IDs reached during the '80s. A combined analysis of IDs and GVCs literature, however, started only after two decades, in the middle of a recession period that affected Italian districts: the observation of IDs model became more critic, and scholars understood that new trends that were characterizing the early 2000s – such as globalization and internationalization – made a new and more comprehensive approach highly needed (De Marchi *et al.*, 2018). This new approach consisted in the blending of the two frameworks and the results are the common points in which GVCs and IDs concatenate each other. As previously stated in this chapter, GVC framework main strength point is the possibility to conduct industry analysis considering two perspectives, a top-down and a bottom-up one. While the former is related with the geographical scope of a chain, the latter refers to the regional impact of pertaining to GVCs for local firms. A strand of literature investigated the impact of upgrading within GVC operation for firms, workers, and States. Similarly, a branch of regional economy got interested in the evolutionary paths that clusters and IDs have undertaken in international key after the higher degree of global markets' openness of the last 20 years (Chiarvesio *et al.*, 2010; De Marchi *et al*, 2018). A second common point of interest is that both theories pose their attention on the inter-connections across actors: while GVC framework does this with respect to global industries, ID research – especially the earlier contributions – is interested in the relationships among different district firms (De Marchi *et al.*, 2018). About the relationships topic, Humphrey and Schmitz (2002) identified some same aspects faced in different ways both by GVC framework and IDs literature: in the latter literature the local governance aspect has been widely analysed, due to the fact that clusters often have strong relationships with local institutions. GVC theory, on the other side, has not formalized a conceptual framework/analysis for local governance, ignoring it. The situation seems reversed for what regard relations with external world, for which only GVC literature has deepened the analysis by studying the linkages within the global networks that constitute the chains. Later, Parrilli and Blažek, basing on previous works of Humphrey & Schmitz and Parrilli (see De Marchi *et al.*, 2018, pp. 52-

53), found another parallel between GVC and ID theories in which the main ID typologies are put in relation to different governance structures typical of global chains. ID types were spotted by Markusen (see Parrilli & Sacchetti, 2008, p. 390), who identified 'hub-and-spoke' clusters, characterized by a stable lead firm that serves as a 'hub' for the relationships with the local actors; 'survival clusters', considered as a 'hub-and-spoke' variation in which the leader firm is located outside the ID. He then classified 'artisanal clusters' and 'survival clusters': these IDs are often located in developing countries, made up of small and micro firms that are not particularly specialized; the production is not high quality, and in survival clusters inter-relations within this typology of district are poor and undeveloped (Parrilli & Sacchetti, 2008). The results allow to identify specific combinations of ID-GVC governance type, such as horizontal network IDs (districts in which the social dimension plays a crucial role, i.e., the Marshallian districts) often related with relational or modular GVCs; or, again, survival districts tend to be related with market-driven value chains (De Marchi *et al*., 2018). A third and strong connection between the two theories refers to the upgrading, as the research developed around the concept of upgrading of GVCs has split into two main camps. One is interested in explaining and understanding the dynamics of global industries, analysing and studying their features, trends, and relations with an international approach. On the other side, another literature front has expanded the research focusing on local implication and growth opportunities for industrial clusters and districts (Ponte *et al*., 2019). The bottom-up perspective of GVCs offers a view on upgrading that is related with local and regional impacts of pertaining to global chains. The connections across clusters, GVC upgrading and governance structure within global value chains were at first analysed by Humphrey and Schmitz (2000), who recognized four different literary veins: the first one, developed starting from the '80s, called 'New Economic Geography', in which Krugman and his collaborators studied the major economic returns experienced from industrial districts. A second vein, starting from half of '90s, in which Porter and other researchers focused on the major competitive advantage that derived from local factors and features that clusters benefitted from; nonetheless, the major contribute came from Regional Science (Becattini), that spent a lot of attention to the learning and to the innovation effect considering the regional aspect instead of the national one. Still during the '90s, other contributes came from innovation studies, which concentrated on innovation and its diffusion at the firm-level in a first place, getting then at a national, regional, and eventually at a local-level analysis (Humphrey and Schmitz, 2000). Humphrey and Schmitz (2002) found that for cluster framework the innovation driver lies in the ability of the district to spread the knowledge that each small actor can gain, while according to GVC theory, the real promoter of the innovation process is the lead firm within the chain. The key competitive challenge for cluster

theory is "promoting collective efficiency through interactions within the cluster" (Humphrey and Schmitz, 2002, p. 1019), while global value chain literature finds its ideal objective in "gaining access to chains and developing linkages with major customers" (Humphrey and Schmitz, 2002, p. 1019), to use the same words of the authors. Despite this difference, more and more often the two frameworks converge in research for what regard upgrading. Gereffi & Lee (2016) highlighted that ID theory is oriented toward the horizontal aspect of upgrading, within the districts: spill-overs and comparisons between peers stimulate the latter to have a transversal innovative spirit. In a complementary way within GVC framework upgrading is considered as a vertical process: it consists in reaching more advanced steps across the production chain (Gereffi & Lee, 2016). Moreover, the two theories are getting closer for another reason. IDs are facing some recent changes that are leading them toward new evolutionary paths: (1) the reduction of the so-called 'district effect', which consists of the existence of positive externalities and spill-overs within the ID, even though some new literature developments circumscribed these positive effects only to some districts; (2) an increasing heterogeneity across districts, both in size terms – so that in some districts there are small-, medium- and large-sized firms, sometimes organized in business groups, with the evidence that medium and large firms tend to be more adaptive to a changing environment – and in concentration terms, which is mutating and changing in turn also the network of inter-relations. However, even the performance of IDs of the same industry are quite different when compared, showing diverse adaptive and evolutionary paths. It is logic to question what the cause of such heterogeneity is. The answer lies in the position of IDs within GVCs; some district firms, after having seen an intensification of global competition (with the emergence of fearsome competitors such as China, with extremely low-cost supply alternatives), reacted by closing or by shifting their specialization, for example from final products toward industrial machineries related to that product (Chiarvesio *et al.*, 2010). Even according to Rabellotti *et al.* (2009) IDs are experiencing an increase in the concentration and in the formation of business groups, that are legally independent entities linked by the same ownership. The reasons behind the rise of business groups are various, but generally they are all related with increasing the control with a vertical or a horizontal integration, in order to be more competitive. The competitiveness comes from a high degree of control on quality, delivery and other qualifying factors that characterize a firm in its market. Moreover, there is an increase of the importance of medium-sized firms: these firms are considered as the result of growth strategies implemented within IDs, and they tend to be part of the previously mentioned business groups. Rabellotti *et al.* (2009) highlight how different evolutionary paths emerged during the first decade of 2000s for Italian IDs: some started a diversification strategy, others invested in order

to upgrade the quality of products or the quality of the production process. The most important conclusion reported by Rabellotti *et al.* (2009) is that this evolving path for firms' dimensions within IDs is aimed at access easily in international markets and in GVCs; small firm's dimensions are seen as impediments for global competition. This has been confirmed also in Becattini *et al.* (2009): this finding has emerged in the analysis of the export dynamics of IDs. Evidence showed that since the 1990s, the specialization of Italian IDs went toward capital goods instead of final or consumer goods (it happened for example in the tile district of Sassuolo and also in Veneto's clothing districts) (Becattini *et al.*, 2009). IDs' firms actually started an opening process toward international markets, and not only consumer goods specialized firms, but also suppliers with specific and qualifying competencies (Chiarvesio *et al.*, 2010). Even though the internationalization started with the research of low-cost suppliers, soon specialized and quality suppliers replaced them in order to maintain the international innovation standard. For IDs' firms this global participation represented and still represent a source of dynamism and innovation that bring more competitiveness with respect to those firms excluded from GVCs.

Considering all the things explained above, the converging paths of these two theories enhanced the creation of a joint ID/GVC framework, emerged in order to explore the evolution of the cluster model within a global context, paying particular attention to the connections across SMEs and GVCs (De Marchi *et al.* 2018).

### 1.5.1. The ID-GVC stylized model

As mentioned before, during the '80s and '90s Italian districts had a blooming period which mostly derived from the great specialization of SMEs along value chains that, in geographical terms, were locally circumscribed at that time. After the globalization wave in the 2000s, Italian industrial districts had to adapt and insert, more or less, into GVCs. However, the districts adapted in different ways, due to their characteristics and due to the various internal strategies pursued by the firms. Giuliani and Rabellotti (see De Marchi *et al.*, 2018) stylized a model in which they identified three types of ID-GVC, based on the value chain activities carried out and on the amount of value-added:

1. *Low-road IDs*. These districts perform mainly manufacturing activities, adding little value to them; firms pertaining to these districts prefer outsourcing several activities exploiting cost advantages. The participation to global value chains is not profitable and firms competitively suffer the insertion into GVCs.

2. *Locally-rooted GVC-led IDs*. In this model, district-located firms are tendentially medium to large-sized and perfectly integrated within the local context and with other companies. Also here, like in the low-road IDs model, several performed activities pertain to the manufacturing kind; however, as opposed to low-road, activities value-added is superior. This type of district arouses a lot of interest for lead brands of GVCs, which often pursue investments and acquisitions strategies in order to increase crucial competitive skills.

3. *Outward-oriented GVC-led IDs*. Even in this model firms are mostly medium large-sized, integrated within the district territory but, in contrast to locally-rooted IDs, performed activities are high value-adding, such as R&D, branding, marketing or distribution. For the firms pertaining to outward-oriented IDs, international linkages are as much important as – if not more – local linkages; moreover, these firms focus in keeping the highest value-adding core activities. Typically, these firms operate in very strict market segments, such as niches or super specialized segments. Eventually, the frequent contacts with MNEs and other international entities allow them to benefit from knowledge transfer.

Here is reported a specific picture that depicts the three types of ID-GVC models.

**Figure 1.3**. Giuliani and Rabellotti's stylized models of ID-GVC involvement in Italy.
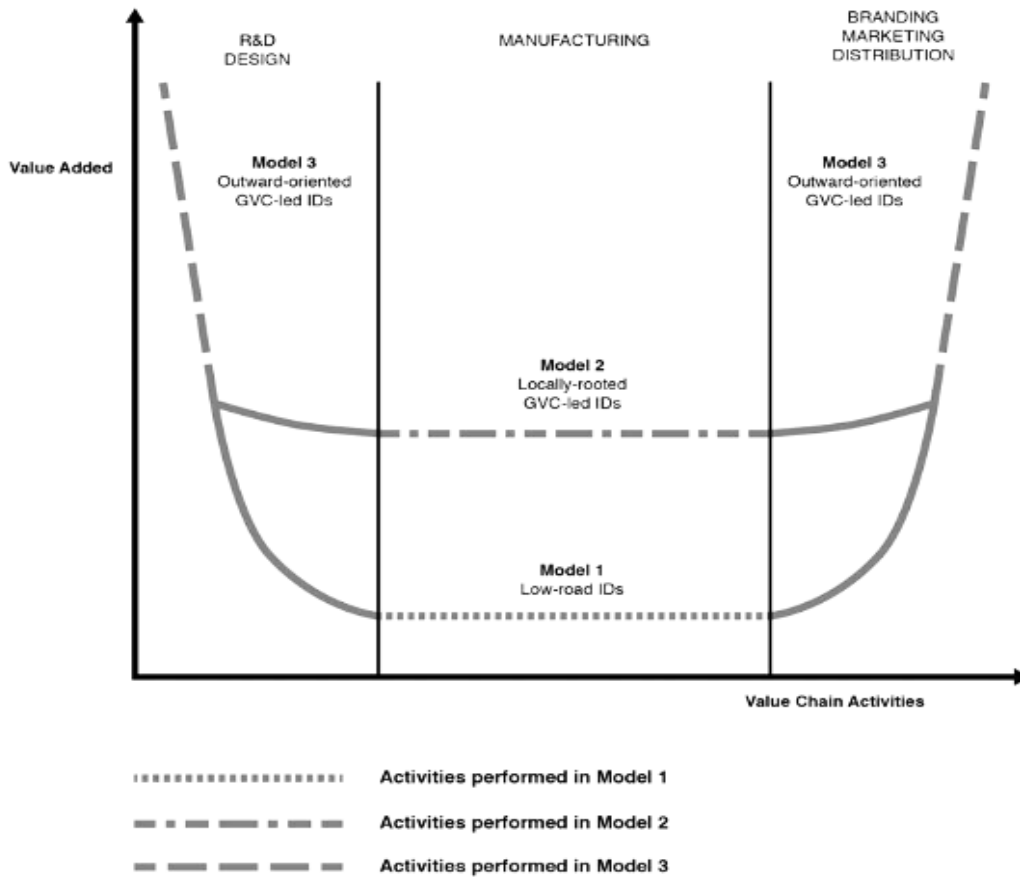
According to De Marchi *et al*. (2018) (Figure 1.3.), many districts took the low-road path, as they decided to divest instead of investing in activities that could have brought more added value, such as for example investments in R&D activities. Compete as low-road IDs, although it could seem a profitable solution given the cost reductions, is still a risky choice: implementing a downgrading in this moment, in which the global trade context is going to stabilize and strengthen, could not be a success. For what regard locally-rooted IDs, the risk is that giving up on core activities that foster competitive advantage – such as branding or marketing – in favour of big global brands could lead to lower value-added too. This is what happened in the Riviera del Brenta district, in which the lead firm, Rossimoda, have been acquired by LVMH group (Louis Vuitton, Moët & Hennessy): after the acquisition, even though Rossimoda has extremely high-quality performances, the role assigned by LVHM was purely related with specialized manufacturing, with no higher value activities (De Marchi *et al*., 2018). IDs that truly undertook the way of success are those outward-oriented: these districts are actively opening toward international markets, investing in activities that effectively increase the value added they can

offer, allowing them to reach niches with level of specialization. Despite this, the risk is to detach from the local fabric: this happens when these firms become leading actors.

In conclusion, at the beginning of the chapter the GVCs model was presented, in order to create a clear and complete idea about how this framework is essential in analysing economic events such as crisis, industrial trends and dynamics. Become a central point in the literature, various veins deepened the model by enlarging it and by contextualizing it: a clear example refers to the scholars that focused on the local dimension, on industrial districts and on how these lasts have inserted and integrated within global value chains. Now that the principal information has been introduced, in the next chapters there will be a specific analysis – under GVCs perspective – of Italian gold jewellery districts, of implications and features of the actual Codiv-19 crisis and about how these lasts are reacting to the economic shock.

# Chapter 2

# The disruptive effects of Covid-19 on GVCs and IDs.

## 2.1. The Covid-19 economic crisis

In order to better understand the impact of the crisis on GVCs, it is useful to depict a general picture of it. In the following paragraphs an analysis about the crisis derived from Covid-19 spread will be presented, mentioning economic data both for industrialized countries and developing ones. Then, a specific focus will be put on GVCs, observing whether they are and were resilient toward severe events. After having described the most important points, in the following chapter the thesis will continue illustrating the features of Italian gold jewellery industry, and localizing, describing and explaining the related industrial districts.

### 2.1.1. The spread of Covid-19

Even though an intense integration of commercial flows across different countries is still present at global level, it is also important to keep in mind the economic context that pre-empt the end of 2019 (Botti, 2020). In a report curated by *Istituto Affari Internazionali* (IAI, an Italian institution), Botti made an analysis of the phase that the international trade was going through just before the beginning of the Coronavirus spread. Despite globalization is still a well rooted phenomenon in todays' society, after the financial crisis of 2008 the global-level rhythms of economic integration have undergone a sudden slowdown, until reaching an inverse trend of import and export flows in 2019. This negative trend is mainly due to a new rise of protectionism, culminated around the end of 2018 with the cooling of official relationships between USA and China (two fundamental 'pillars' within GVCs) (Botti, 2020). This decisive stopping of international exchanges increases the risk of an impairment of GVCs' operations.

On the 31st of December 2019 Chinese healthcare authorities initiated an alert with regard to an outbreak, localized in Wuhan city (a city which counts around 11 million inhabitants, situated in Hubei province, southern China), of pneumonia cases which causes were unknown. The authorities recorded at the beginning a common factor across all affected patients: the participation to the Wuhan's South China Seafood City Market (better known as the biggest wholesale seafood market of the whole central China). After further investigations a virus coming from bat contamination was declared the more plausible cause of the respiratory system diseases registered. Ten days after, on the 9th of January 2020, Chinese CDC (the Chinese centre for prevention and control of diseases) officially identified the novel Coronavirus, also confirming its airborne nature. At the end of the same month, Wuhan officially declared a lockdown, an epidemiological containment measure for which every citizen must stay home, isolated, without leaving the house neither for working (without prejudicing essential activities such as hospitals, pharmacies, supermarkets). In addition to social distancing, the authorities also made mandatory the utilization of single-use masks in order to avoid air infection. In March of the same year, after numerous breakout recorded in many countries in the world, the World Health Organization classifies Covid-19 as a pandemic for all intents and purposes: the cases, especially in Europe, were worrying increasing and rapidly also all the European authorities initiated an alert for the sudden health-crisis. Italy, the first European State that started adopting strict restrictive measures, declared a national lockdown from the 9th of March, closing all social activities like schools, shops, restaurants (Sole24Ore). After a first wave of contagions, the situation seemed to return quite normal, but a second wave arrived between September and October in Europe, making necessary additional containment measures in order to avoid the spread of the virus. All the containment measures taken by governments strongly impacted the economy, especially international trade flows. There were unprecedent disruptions within GVCs, and an extraordinary degree of uncertainty and fear in front of the pandemic; GVC operations in most countries were stopped, and in general the organization of global chains were mined (Giglioli *et al.*, 2020).

## 2.1.2. Effects and consequences of the crisis

Covid-related crisis has short-term impacts both on supply side and on demand side. For what regard supply side there have been production stops, delays, and financial difficulties for several

firms (especially in those sectors mostly integrated within GVCs, such as automotive industry for example): the presence and the spread of the virus in production sites did so that totally or partially production was stopped (Miroudot, 2020; Baldwin et al., 2020). According to Barrot *et al*. (2020), the spread of supply shock has been facilitated by the sectoral composition typical for many countries of today: internally, many industries are inter-connected, so the spread of exogenous shocks propagates from sector to sector just through these intra-sectoral linkages (Barrott *et al*., 2020). Another issue that contributed to intensify the production shutdown regards international transportation: due to containment measures introduced in many countries it suffered an impasse period. International transportation block has caused, in turn, the shutdown of several production lines (for example car makers such as Hyundai and Volkswagen closed their manufacturing plants during February and March 2020). Moreover, the increase in controls at frontiers, swabs and quarantines contributed to the consistent delays. Social distancing and lockdowns reduced people's movements, both nationally and especially at the international level, with a consequent fall in international trade volumes (mainly for industries such as tourism). According to Miroudot (2020) the rapid spread of problems related to supply could be the amplifier of the economic impacts that the demand side is experiencing (that was exactly what happened during the Great Financial Crisis in 2008-2009). For the demand side, at the beginning there has been panic across consumers and for this reason consumption paths were distorted; then containment measures physically constrained consumers, who could not anymore buy products and services (Baldwin *et al*., 2020). Firms and consumers mainly cut expenditures, causing in turn a decline; but this decline is also the result of the cut to mobility and of the changes occurred to working conditions (e.g., lockdowns and containment measures that obliged people to stay exclusively home) and to wholesale and retail trade (Espitia *et al*., 2021). According to a recent report of United Nations (UNCTAD, 2021), global GDP is expected to suffer from a contraction of around 5%, while flows of international trade will experience even a sharper decline of -8%, with a peak of -20% during the second quarter of 2020 compared to the same period of the previous year (UNCTAD, 2021). According to Deloitte, the pandemic has caused and will cause damages to international economic through three main channels:

1. Through a direct impact to production, so that productive activity of China and all countries affected by lockdowns and closures reduced till zero. This direct effect has been observed in many countries. In Italy total industrial production fell down to -44% between March and April 2020, as a result of the complete shutdown imposed by the government (Statista, 2021d). In an interesting graph reported by the OECD, a focus on the hardest hit countries under the perspective of industrial production can be done.

Industrial production index is calculated taking as benchmark the amount of manufacturing industrial production of 2015 (2015=100). The comparison is made with the latest data available for each country, which is 2020. As it can be seen in the graph, countries such as Germany, Japan, Italy, Canada, UK, USA, Spain and France all have an index which is lower than 100, which means that the range of the shutdown of all industries consequent of lockdowns and containment measures of 2020 is relevant (OECD). Japan, for example, with only 91, is also one country highly involved in GVCs, being in a centric position in several chains. China, the first hit country, shows a different trend according to a Statista's report (2021a) the country still recorded a positive 2.4% in 2020 with respect to the previous year (and despite the strict lockdown).

**Figure 2.1**. Industrial production index.
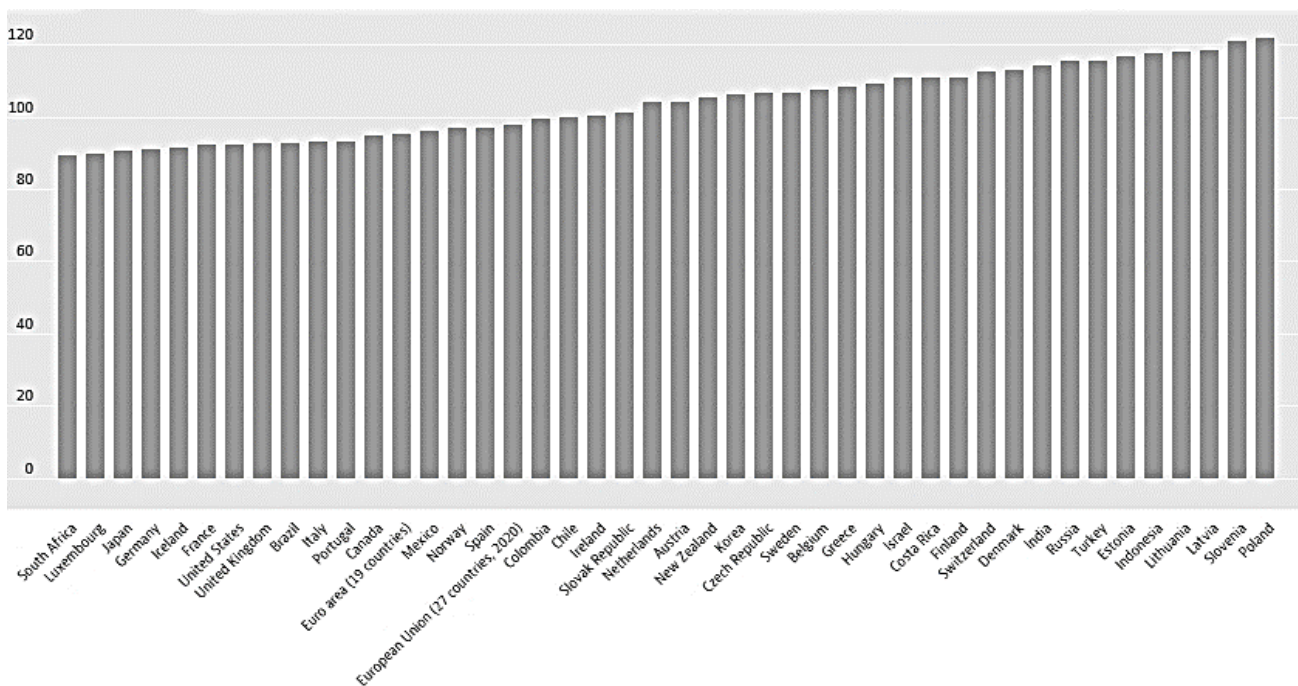


*Source*: OECD. 2015 = 100, 2020 or latest available. Available at
*https://data.oecd.org/industry/industrial-production.htm*.

2. Through disruptions in global supply chains: China is the centre of many GVCs, and the Chinese production shutdown of semi-finished products addressed to global chains indirectly hit all firms in the countries involved, causing delays and production volume reductions. Small and medium entities seem to suffer more this condition (further information will follow in a specifically dedicated paragraph). As advanced economies were the most hit, with countries such as Japan, Korea, China, Italy, US and Germany, also GVCs were hardly hit too due to the fact that these countries have a great share of

participation in international chains. China, Japan and Korea became the 'centre' of manufacturing global supply chains; later, China specialized in the production of industrial parts and components, until it was renamed soon 'factory of the world'. The crisis derived from the pandemic changed in some way this equilibrium, in some cases reshaping the role of some countries within international trade. Vidya & Prabheesh (2020) have done a specific empirical analysis about impacts and implications of Covid-19 on global trade and interconnectedness across countries pertaining to GVCs by making a comparison of global trade network of 2018 and 2020. They found that China slightly repositioned from the exact centre of the network, remaining anyway within the central area. Differently, a country that profoundly changed its position is South Korea, passing from the central area during 2018 to a peripheral one in 2020. World volumes of global trade dramatically reduced due to Covid-19, with an expected decline of 13% (more than what decreased for WWII) (Vidya & Prabheesh, 2020).

3. Through financial issues: both the shutdown of most of the industrial production and GVCs disruptions caused delays, stopped or swinging manufacturing production and/or blocks of imported and exported flows of product. The lack of confidence and an increasing uncertainty of financial markets, in turn, sharpened potential liquidity problems for many firms. Usually, financial markets tend to react quickly, so negative peaks of the most important indexes in the world emerged rapidly after the outbreak (Zhang *et al*., 2020). For example, FTSE (UK's most important index) dropped by 10% during March 2020, in the meanwhile of the first wave of Covid-19 contagions. Being financial markets more unstable, firms could encounter solvency problems and liquidity shortages.

### 2.1.3. Crisis impact on different territories

Differently from other crisis, like those ones that hit countries during the post-war of first World War and the second World War, immediately Covid-19 crisis has hit six of the most important global economies, such as: China, USA, Italy, Germany, Japan and Korea. As stated by (Baldwin *et al*., 2020), these six nations account for more than half of global demand and supply, represent around 60% of global manufacturing and they are some of the greatest exporter in the world. Moreover, these six States are often the core of many global value chains; the biggest fear is that the international economy would get through the same path of the Great

Crisis of 2008-2009 again, during which a consistent decline of global aggregated demand Fund faster than what was not the recovery of global trade. Developed economies are going to suffer, in fact, the hardest hit of this crisis: it is sufficient to keep in mind that across these six countries only China is expected (Statista, 2020) to maintain a positive sign for its GDP's growth. Still in this report, it is possible to observe that the real GDP of advanced economies decreased of around 4%; in emerging economies the reduction has on average been more restrained, lining up to a -2%. Following, in this paragraph, a useful picture that shows the trend of year-to-year GDP growth rates of G7 countries (USA, Canada, Germany, Italy, Japan, France and UK) is reported (OECD, 2021). According to a report of United Nations (UNCTAD, 2021), even for what regards international trade the most affected economies are advanced ones, especially in exports, that has recorded a decline of 24% during the second quarter of 2020.

**Figure 2.2**. Year-on-year GDP growth rates (in percentage), G7 countries and OECD total countries.
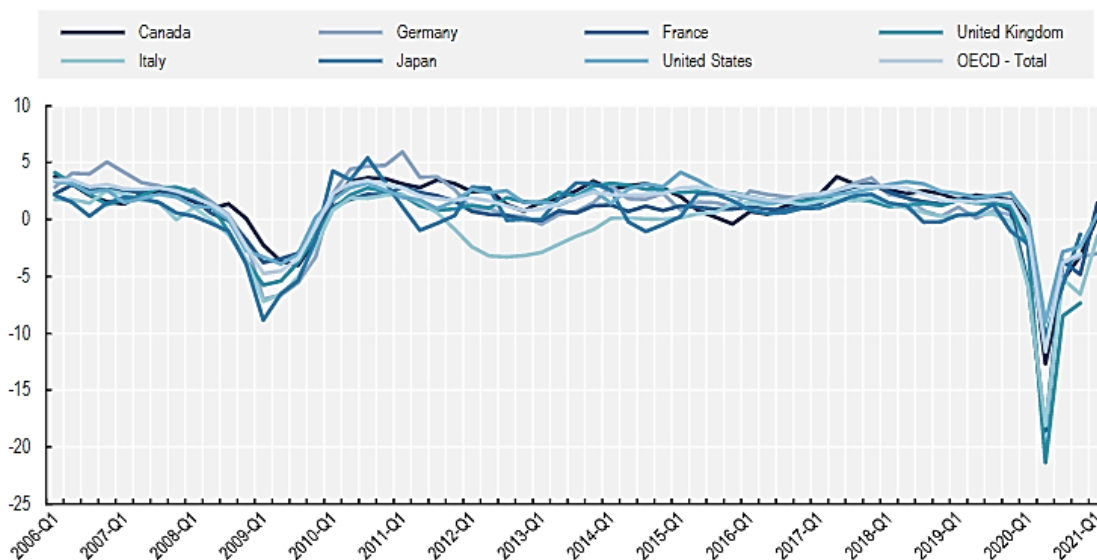


*Source*: OECD - SME and entrepreneurship outlook, (2021), p. 22.

As just seen, the crisis originated from the pandemic had strong negative implications for advanced economies. However, even non-developed economies have suffered important consequences. The first issue emerged in low-income countries (LICs onwards) has been the impossibility of counting on a sufficient amount of personal protective equipment (PPEs) destinated to containment of the virus. Moreover, these countries do not have plants and industrial and manufacturing industrial structures suitable for an increase of PPEs and masks production volume (Baldwin *et al*., 2020). As confirmed in the International Monetary Fund

(IMF, 2021) report titled 'Macroeconomic Developments and Prospects in Low-Income Countries', economic implications arouse with the pandemic go hand-in-hand with the health difficulties of these countries. The extent of Covid-19 crisis could be even larger than what was the Great Depression of 2008 (IMF, 2021). Often poorer countries do not have nor the possibility neither the adequate instruments to access global financial market, thing that contribute to increase the poverty and, in turn, internal inequalities. LICs already in a bad debt position and with poor fundamental performances will suffer the most. As reported by IMF (2021), many countries in a poverty condition were still trying to face and solve important economic issues, such as the inadequacy of the education system and of healthcare services, the inappropriateness of private business sector, scarce total factor productivity performances. Despite the stop and the decrease in GDP growth in LICs has been lower with respect to the decline recorded in advanced economies, the former start from more disadvantageous position of per-capita GDP. Delays, international transportation blocks and reductions of commodity prices, moreover, has hit the most those LICs whose strength points are commodities exports, such as fuel. Eventually, the scarce space to action of LICs' governments in fiscal policy do not allow them to implement appropriate countermeasures in order to support the recovery (IMF, 2021).

### 2.1.4. Crisis impact on different industries

One peculiarity of the crisis originated from Covid-19 pandemic, is the asymmetry with which it affected different industries even within the same country. In particular, industries such as electronics, machinery and auto were the most hit. To go into details, the main representative products for some specific industries, as reported by Cai & Luo (2020, p. 412) such as computers and smartphones for electronic industry, suffered both a supply and a demand decrease. A worse decrease has also been experienced by auto industry, affecting both the traditional vehicles production and "new energy vehicles" too. The semiconductor industry has mostly been hit on the supply side, as one of the crucial global production hub is located in China: the supply shortages recorded during Covid-19 made the chips and memory products market declining. For other types of goods, defined by (Cai & Luo, 2020) as "fast moving consumer goods", the impact sign of covid-19 has been different according to the product. Initially, first necessities products have registered a huge increase in demand, with the problem for producers to deliver all the demanded quantities in time. Also, other products such as single-use masks and disinfectant dramatically experienced an unprecedent raise up. Other FMCGs products, however, did not see such a positive trend after Covid-19 outbreak: products related

with social life – zeroed by containment measures – such as wine, beverages, and make-up products suffered a consumption decrease given the lockdowns and quarantine measures, a sector which really suffered this pandemic was – but still at these days is – the tourism and travel industry (Škare *et al.*, 2021). Even according to a Statista's report (2020a), industries such as airlines, tourism and leisure suffered a deep decline; however, there are other types of industries which almost benefitted from the pandemic, like tech, retail or software. Most important airlines were constrained to cancel a lot of flights during 2020, both because governments imposed stricter safety controls on flights and also because people reacted to the emergency with "conservative" behaviours, avoiding any type of leisure travel due to the fear of Covid-19 pandemic. However, leisure industry counts different subcategories, such as restaurants, discos, hotels, and other services. Globally, the most important health countermeasure against the spread of the pandemic was self-isolation and social distancing: as it is easy to understand, leisure industry has been one of the most hit, hence this sector's core is all related with social activities and direct services to the people. The situation imposed by the pandemic also reshaped the industry for a considerable period, with restaurants trying to survive shifting from physical consumptions at locals to home delivery or take-away. The other side of the medal is that the pandemic also brought some positive consequences for a part of industries: during quarantines and lockdowns people were constrained home, without the possibility to do anything but shop first-necessities goods and drugs physically. But physically is not the only way to buy, and technology and e-commerce colossi such as Apple, Amazon, Microsoft, and others are well aware of this. In these industries the pandemic could be considered almost as a sort of growth driver; at the end of 2020, JD.com (the biggest Chinese e-commerce company) more than doubled its stock value, followed by Zalando and Amazon. Moreover, tech industry also benefitted from the increase of remote working, with Zoom peaking with its stock price 8 times higher in June 2020 with respect to its price of January 2020. Also, the pharma industry recorded figures enough to turn heads: Moderna for example quadruplicated its stock value within 9 months. Moreover, McKinsey developed an article in which the effect of Covid-19 disruption on 20 industries is analyzed. The most negatively impacted industries are logistics, consumer durables, retail, travel and hospitality, asset management, industrial equipment, and business services. Other industries, however, experienced some kind of positive effects, such as fintech, insurance, software, healthcare, pharma and biotech, and telecommunications.

**2.1.5. Differences between Covid-19 crisis and other past crises**

In this paragraph the aim is to highlight the most important differences between the crisis originated by the Coronavirus pandemic and other past crises. Firstly, putting the global lenses, this crisis happened in a period of weak but constant decline of the growth rate of international trade, with most important countries and experts asking themselves whether globalization has come to a definitive end or not. The 2008 financial crisis, for example, happened in a full expansive phase of global trade, and the initial situation has some influence on the impact and the development of the negative shocks. Moreover, this crisis affected and still is affecting countries all over the world, and not mostly middle- to low-income countries as it happened for example with Ebola around 2013 or SARS at the beginning of 2000s. Moreover, during the Great Financial Crisis of 2008-2009, the endogenous mechanics that led to the collapse of the financial system firstly affected the aggregate supply, and then – only subsequently – the demand declined under the pressure of the negative supply shock and in response to the great uncertainty that the crisis spread across consumers. Differently, during covid-19, the contraction of demand and supply happened at the same time, with a sharper decline in manufacturing with respect to 2009's levels and a double stressing effect on services and productive activities (Giglioli *et al*., 2020; Di Stefano *et al*., 2020; Cai & Luo, 2020). However, the comparison between endogenous and exogenous originated crisis is quite imprecise: given their completely different starting point, Covid-19 crisis could be better related with natural disasters shocks. But a difference still exists, hence Covid-19 outbreak quickly expanded all over the world as pandemics, per definition, are events that strike all world's countries in a relative short period of time, while other past natural disasters (for example the 2011 Japanese earthquake) tend to be circumscribed within and to hardly hit a specific geographical area. Even though the pandemic has not implied physical damages to structures, factories and productive plants, the only efficient containment measure that lasted more than a year has been social isolation of people, with the consequent shutdown of industrial and commercial activities.

Picking the different global context mentioned before up, one of the main differences directly comes from a consequence of the higher international integration of nowadays. Global supply chains play an important role for many productions, but all the benefits related to fragmented chains and their efficiency are counterbalanced by some disadvantages. The main one, as it will be further analysed in the next paragraph and which represents another specificity of the Coronavirus case, is that a lot of companies all over the world participating in GVCs, in which China (epicentre of the outbreak) represents one of the major inputs supplier, found production blocks and delays especially in the initial phase – if not just cancelled orders – of the deliveries of semi-finished products from Eastern Asia (Baldwin *et al*., 2020).

Another not negligible particular effects happened with Covid-19 but not with other past crisis, is the way with which it impacted industries in different ways: as reported above, in the paragraph immediately before this one, some industries (such as pharma, food, beverages and software to cite some examples) remained stable or even experienced some positive effects from the pandemic. Other industries, such as fashion, leisure and tourism, bore the heavy boulder, with activity shutdowns for more than a year and great losses due to the fact that such industries cannot be substituted by remote services or solutions. This asymmetric economic impact on industries do not happen with natural disasters, that hit all industries independently.

## 2.2. The implications of the recent crisis on GVCs

At this point it would be interesting to deeply analyse the new debate about GVCs emerged recently when Covid-19 crisis has erupted. Given the reach of this event, many experts and scholars started immediately analysing the situation, its impacts and its implications. The part of them that empirically argued that the sharp crisis originated by the pandemic is going to seriously harm the GVC mechanism of global trade includes Bonadio *et al*. (2020), Camatte *et al*. (2020), Huo *et al*. (2020), Baldwin and Freeman (2020) (see Di Stefano, 2021, p. 17) through the others. So, one first question to ask would be whether GVCs have amplified the economic costs of the shock in some ways. In order to give an answer to this question, is necessary to analyse and explain the literature produced until now on this topic. After different studies conducted in 2020, a good part of the literature empirically asserts that a logic nexus between commercial integration across countries (so the participation within GVCs) and quicker spread of economic shocks actually exists. This Covid-19-originated crisis supplied new sources and data to test this theory. The parallel between international trade and GVCs has been made because about a 20 to 30 percent of the total world production is globally traded, and in turn around the two-thirds could be attributed to GVCs (Di Stefano, 2020). Global chains served as channels for the spread of the virus in multiple ways:

- Supply side. Lockdowns and productive shutdowns in different countries almost completely stopped the production. This supply-freeze reached also other countries less affected by the virus or which were not subjected to such strict containment measures, and this was the main negative consequence of inter-countries trade linkages. Especially in manufacturing industry, countries are expected to severely suffer from this indirect effects of the crisis (Baldwin *et al*., 2020).

- Demand side. Demand shocks across countries were different, and the impact of demand shocks affected also supply shocks in different ways. Those firms participating in GVCs, despite domestic problems with demand contractions, suffered also foreign shocks of countries integrated in the same GVC.

- Policy channel. From the very beginning of the spread of coronavirus, lot of countries took as countermeasure the closure of national borders, both for people and for goods. New restrictions and export bans caused physical and bureaucratic impediments for GVCs' operations.

**Supply side effects**. As already seen, supply shocks were the first visible effect of the pandemic. Social distancing, lockdowns, productive shutdowns and other containment measures implemented after the recording of Covid-19 cases, caused massive supply blocks. In his research, Miroudot (2020) points out that events such pandemics, natural disasters (like Japan earthquake of 2011 or Kathrine hurricane that hit USA in 2005) block almost totally the production of a country, causing in turn a 'contagion' effect that expands through supply chains. According to the investigation of Espitia *et al*. (2020) the forced closure of factories in China, USA and Europe caused a decline in the supply of export products and disruptions in GVCs. The authors considered and tested the possibility that a country which pertains to a global value chain could in some way absorb or transmit Covid-related shocks: they empirically concluded that GVC participation increases exporters' vulnerability to foreign shocks and that this vulnerability is reduced for domestic ones. Productive contractions in countries that are input suppliers impact more negatively export growth for industries that refer to the availability of these same important inputs. Similarly, a production shock for a partner of an exporter country impact more negatively partner's export growth in industries with high percentages of intermediate inputs (Espitia *et al*., 2020). Another literature contribution comes from Strange (2020), who highlights that at the base of the GVC model there is the free movement of goods and people: during Covid-19 crisis, however, mobility was interrupted both for the former and for the latter, precluding the typical conduction of GVC operations. This GVCs block also revealed those industries that lacked productive capacity in each country. Eventually, Di Stefano (2020, p. 17) found that "the supply-side shock originally emanated from China, (…) 'reinfected' the Chinese industry, lasting longer". In fact, early during the first outbreak of Covid-19, after Chinese government put under quarantine the interested areas other countries imposed as a response lockdowns and productive shutdowns too. The disruption for GVCs started from here, but then, when China was recovering already, Europe and USA were facing

the same problems. This contagion mechanism of supply is clearly stronger when trade integration is strict across countries.

**Demand side effects**. Differently from other types of crisis, Covid-19 shocks immediately had enormous consequences also on national demands. Early studies made in 2020 reported by Baldwin *et al*. (2020) evidenced the strongly probability of Covid-19 crisis to quickly become a demand-side shock. Trade across countries mainly takes place for finished products that are often considered 'postpone-able' goods. According to the economic definition of this type of goods, customers tend to postpone in future the purchase of such items especially in the midst of high-uncertainty periods. The global demand level declined, as many consumers adopted the 'wait and see' type of behaviour – this happened also during the Great Recession of 2008 – causing delays for the recovery of investments and consumption (Baldwin *et al*., 2020). The demand-side effects considered until now affected singularly and heterogeneously countries. What Di Stefano (2020) concluded is that despite the magnitude of direct implications, countries pertaining to GVCs also experienced, as an indirect effect, demand contractions of partners within the same chain. Moreover, semi-finished products probably trigger the so-called 'bullwhip effect'. The bullwhip effect has the potential to amplify the demand side shock: as assemblers of final products stop selling items due to the demand crash, their request for components and intermediate parts drops as a consequence. The conclusion is the same of above: pertaining to a GVCs increase the risk of being indirectly subjected to other GVC's members shocks. This is defined also as the 'risk of spill-overs', which consists of indirect demand contractions imported from other countries in crisis.

**Policy channel implications**. Even though Covid-19 could be considered as a recent event, several empirical investigations were produced and still are in progress in order to understand the future of international business and the organization of GVCs. The Economist (see Verbeke, 2020, p. 445) reported that some advanced economies are going to incentivize more inward oriented policies (this is the case of Japan, India, and several European countries). Experts that promote this inward attitude support their thesis arguing that shorter supply chains would imply lower risks of economic shocks contagion. However, according to Miroudot (2020) this conclusion is too hurried, hence shorter chains do not necessary guarantee more reliable and less risky production processes and so it would be counterintuitive and counterproductive to make shorter GVCs during Covid-19 crisis, even though the pandemic hit simultaneously more

than one country. Di Stefano (2020) also adds that this emerging perspective on global trade could increase uncertainty and mistrust through economic actors, that could potentially decide to reduce import volumes; this will lead to an inevitable additional decline of global trade growth rates.

After this first part on GVCs' effects of Covid-19, now it is possible to analyse whether GVCs has been resilient or not. According to Miroudot (2020) – who firstly highlights the difference between resilience (defined as the ability to re-adapt production and activities after a crisis) and robustness (which, in turn, is defined as the ability to maintain production levels during a crisis) – being part of a GVC enhance robustness, as firms can benefit from a lower exposition to domestic shocks. For example, if only one country were affected by an internal recession, GVC operations could keep working without too many hitches, as firms within the chain can count on a more diversified basis of suppliers (backward) and customers (forward) (Miroudot, 2020). In Strange's (2020) view, firms embedded in GVCs – independently on their size – are likely to implement strategies aimed at the building of more resilience, as an answer to the crisis. These strategies, differently from what would seem straightforward, will be based on a greater geographical differentiation, even though their feasibility will be mainly dependent on future geo-political context (Strange, 2020). Another interesting perspective comes from the findings of Giglioli *et al*. (2020): the authors found that while during the first wave of Covid-19 GVCs just accentuate the propagation of economic shocks, during the second wave GVCs surprisingly served as a sort of "protection" against other countries' shocks. A reason could be that China, a central nexus in many GVCs, recovered relatively fast even though it was the first-hit country, so when the second wave exploded production levels were higher with respect to those of the first wave. Moreover, the second wave of pandemic were early anticipated by experts with respect to the first one, and this relevantly helped firms, that also had some ideas and took adjustment measures in order to not suffer again. To quickly recall, participation in global chains can be forward oriented (when a country is active at the initial stages of production), positioned upstream in the first part of the GVC; on the other side, a country can be backward oriented, when it is active in the final stages of the production process. The research found that forward-oriented countries tend to record lower losses of GDP during Covid-19 shock. Moreover, countries that have strong relationships within the chain tendentially experienced a higher impact from economic consequences of the virus, but surprisingly were more resilient and recovered quickly with respect to less integrated countries. Giglioli *et al*. (2020) also showed, deeply analysing Italian industries, that most internationalized sectors reacted better in general with respect to mainly inward oriented industries, concluding that "probably (…) being

international worked as shield" against economic shocks (Giglioli *et al.*, 2020, p. 27). The research concluded explaining that if on one side global integration and GVCs participation work as "shock multipliers", on the other side they offer valid diversification opportunities in order to overcome economic difficulties. Authors conclude that protectionism and inward-oriented policies could harm rather than benefit national economies; they also conclude that GVCs can be seen as a firm-level source to increase resiliency (Giglioli *et al.*, 2020). Also Verbeke (2020) found similar conclusions, stating that GVCs also tend to increase agility to survive and to adapt to the dramatic changes that the pandemic has brought. According to the author, GVC lead firms are implementing or are likely to implement some actions in order to face the pandemic crisis, such as reducing foreign investments (to mitigate uncontrolled risks) or increasing the quality of contractual relationships with key GVC partners. A possible re-adaptation path that leading firms of GVCs could follow is including to the core business also activities that have the potential to share analogue basic competencies but are less exposed to unexpected economic shocks, enhancing in this way the diversification degree. The author concludes saying that "paradoxically, in an era of declining multilateralism, agile GVCs are the best safeguard to maintaining the economic connections necessary for a thriving world economy" (Verbeke, 2020, p. 446). To conclude, even though economy has been hardly hit and high-interconnected countries suffered more the economic consequences and effects of this crisis, the recovery is going to be quicker than expected. Literature and empirical evidence encountered that internationally connected firms tend to be more resilient with respect to those that only operate domestically. The international participation to GVCs, in conclusion, can be seen as a mean to increase firms' adaptive capabilities; this conclusion, however, is based on the initial research made until now about Covid-19. In the next paragraph a specific analysis on the impact of other past disruptive events will be done in order to understand whether GVCs have been previously resilient or not.

## 2.3. An in depth-analysis of the economic impact of the pandemic on IDs

In order to depict a picture able to capture how the pandemic crisis impacted on IDs, the latest yearly report from Intesa Sanpaolo (2021) on the trend of Italian industrial districts will be used. In this way, analysing the Italian situation, it is possible to consider two important aspects: the first is the amount of available data on IDs, given the fact that Italy has a great number of industrial districts; secondly, Italy has been one of the hardest hit countries by Covid-19, so the overall implications of the economic crisis reflected on the information analysed in the report.

The economic situation before the pandemic spread was quite heterogeneous for different IDs in different industries: as identified by Intesa San Paolo, mostly food, beverages and machinery IDs were performing well until 2019. During 2020 the maximum negative peak of sales losses of firms pertaining to some industrial district was around a 60% in median terms (Intesa Sanpaolo, 2021), while the overall decline in sales was about 12% in 2020. An increasing 6% of district firms, in addition, concluded 2020 with a negative trend of cashflows and implicitly with worse profitable margins. As for what regard the national situation, even for IDs the most relevant impacts from the pandemic are referred to the months in which Italy set up the lockdown, so during March, April and May of 2020. The most affected firms by negative cashflows were mainly micro- and small-sized ones (a peak of 76% of small firms during April 2020 recorded compromised cashflows), followed by medium and large firms with a lower percentage. Moreover, as previously seen, this particular crisis affected in a heterogeneous way different industries: within Italian IDs, the fashion industry was the one that suffered the most. IDs pertaining to this specific industry strongly felt the high decline in demand and the contraction of consumptions, with a greater percentage of loss in sales with respect to other IDs (23.5% decline in fashion IDs' sales compared with the median value of 12% of the whole sample) (Intesa Sanpaolo, 2021). Consequently, these districts found also more difficulties with negative cashflows, given the fact that most consumers both avoided non-necessary purchases during lockdowns and were impeded by social distancing to shop physically. As well known, one characteristic feature of IDs is the strong presence of small and medium (SMEs) enterprises: districts suffered additional major consequences typical for small and medium sized entities, as reported by a book in which OECD (Organization for Economic Co-operation and Development), in which it just deepened the analysis that the economic and financial impact of the crisis on SMEs (OECD, SME and Entrepreneurship Outlook 2021, 2021). A lot of small and medium enterprises have needed and still need support from national institution to be able to survive the economic shock. This greater vulnerability showed by SMEs with respect to bigger firms derives from the fact that the former mainly refer to internal funds and bank credit (OECD, 2021) to run and grow their activity. As reported in the study, "smaller firms have been more likely to close operations during the crisis than larger firms" (OECD, 2021, p. 20). These negative effects mostly affect countries like Italy and Greece, in which SMEs employ around 90% of workers in the sectors listed above and micro firms (those with less than 10 employees) employ around 60% workers (OECD, 2021). Passing to the financial aspect, it is important to note that during the pre-Covid period SMEs' access to financial resources were facilitated with long-term low interest rates, favourable monetary policies and good contractual conditions for credit. Despite this, SMEs continue to be dependent on internal financial resources due to the

guarantees required and to the often-limited internal financial knowledge. Especially this dependence sharpens the negative effects that the current economic crisis is bringing, differently from big-sized firms that utilize various financing forms and financial instruments to not collapse under the adverse liquidity situation (OECD, 2021).

## 2.4. How GVCs faced past crises

As already seen in the previous paragraph, an analysis about the resilient nature of GVCs has been made only referring to the current pandemic-originated crisis. However, it could be interesting and useful to investigate whether GVCs were resilient also during other crisis in the recent past. The events that will be considered in doing such analysis happened during the last 20 years. This time frame has been chosen because events happened before cannot be considered as the organization of fragmented production processes throughout GVCs is relatively a recent phenomenon started around 30 years ago. The past crisis that will be considered later on are the Japanese earthquake of 2011, the Thai floods happened in 2011 too and the Great Financial Crisis of 2008-2009. All these events can be used as comparative cases because of their unexpected nature and their unrestrainable impacts. As seen before in paragraph 2.2., (I) GVCs, being fragmented productive chains with dispersed activities in different countries, tend to amplify foreign shocks and disruptions; and (II) firms pertaining to GVCs have a reduced degree of control along the operations, with the exception of the lead firm that holds the higher control power – albeit not total – within the chain. As marked by Ye & Abe (2012) and by Espitia *et al.* (2021), Baldwin *et al.* (2020) and Di Stefano (2021), the fact that firms are highly integrated within global trade increases the probability with which an exogenous shock would have indirect implications in the productive fabric of a determined territory. The evidence was that when relevant foreign exogenous shocks hit one or more countries, their belonging to GVCs or to global supply chains determines disruptions along all the industry chain, causing huge losses. As formerly stated and empirically verified by the literature, the interdependence across various fragmented productive activities increase the vulnerability of this productive paradigm (GVCs) with respect to economic crisis. In the previous chapter the emphasis has been posed on the extremely efficient-oriented nature of global chains, seen as productive systems capable of maximizing efficiency thanks to their peculiar features (e.g., upgrading opportunities). During the last decade a growing share of SMEs decided to take part to global value chains, mainly attracted by their flexibility and adaptability (Ye & Abe, 2012). Now it is the turn to analyse some tough crisis that threatened

GVCs' resiliency. There can be different causes to global supply chains disruptions and natural disasters are one of the most destructive cause. The destructive nature of these events is mainly given by the fact that they hit a specific region or geographical area, causing the total block or the destruction of facilities, plants and infrastructures at the same time. Also real or financial crises, such as the GFC of 2008, can become relevant causes for GVCs' disruptions.

**The "Great East Japanese earthquake"**

On the 11th of March of 2011, a severe earthquake classified as magnitude 9 on the Richter scale hit the northeast region Tōhoku, in Japan; in the aftermath of the earthquake, a tsunami dismantled Japanese shores and the coastal cities of the region. Despite more than 15 thousands deaths officially recorded, the most worrying consequence of the calamity was the explosion, happened after the melting of combustion bars, of two out of three active reactors in the nuclear plant of Fukushima. In the period immediately after the earthquake, Japanese economy was affected by an unprecedent decline, with plants and infrastructures completely out of use, manufacturing production totally stopped and huge losses in terms of employment. The estimated cost for the damages was around 6,418.73 billion Japanese yen (Statista); from that moment onward, Japanese government decided to more than double the disaster prevention budget, from a yearly amount of 383.38 billion Japanese yen in 2011 to 1,010.54 the following year (Statista, 2021c). However, thanks to the recovery plans implemented by Japanese government, many industries in March 2012 got back to pre-earthquake levels yet. At that time, Japan already played an essential role within global supply chains: it was a relevant supplier of components and intermediate parts within several sectors, such as automobiles, chemical industries, electronic and steel, but it also was an important producer of finished products for mass markets (Ye & Abe, 2012). Given its relevant role in international economy, direct and indirect effects of GVCs' disruptions affected many industries globally. The industries that suffered the most were those that depended more on sources produced and distributed only by few Japanese suppliers. A concrete example reported by Ye & Abe (2012) refers to "the largest manufacturer of custom-made microchips in the world" (Ye & Abe, 2012, p. 13), Renesas Electronic Corp. The earthquake constrained the firm to the closure of its productive plants: the result was that the whole automobile industry at global level was affected by the shortage of microchips necessary to the production of vehicles, with the additional consequence of a loss in terms of market share for many Japanese auto producers.

**Thailand floods**

Still in 2011, also Thailand suffered from a natural disaster. Between June and December of that year, the Asian country experienced abundant floods, with more than one third of Thai provinces invaded by massive rainfalls that caused a lot of problems and damages. At that time, Thailand was a crucial country for global supply chains, as it was one of the most important supplier within automobile and electronic industries globally. After the floods, downstream partners of such chains suffered components and intermediate parts shortages, hence production stagnated (Ye & Abe, 2012). Given the fact that the most industrialized areas corresponded to the hardly hit areas by the floods, manufacturing production suffered an abrupt halt. Despite direct damages to local firms, even other firms beyond Thai's borders were affected by the shortages of intermediate parts and components of Thai suppliers, this is what happened for example to Nissan and Toyota (Ye & Abe, 2012) A sector that particularly suffered this natural disaster was the hard disk drives: Thailand was the second producer at global level, immediately after China, and when floods reached Thailand industry's shutdown was instant. The direct consequence of this block was a consistent increase of hard disk drives price, that was also upheld by the growing amount of purchases done by wholesalers and retailers who wanted to anticipate inputs acquisition foreseeing the price increase. Both during the Japanese earthquake and the Thai floods, GVCs were identified as extremely vulnerable productive systems, especially with respect to unpredictable events, as they tend to sustain the spread of the negative economic impacts also to other actors not directly involved.

**The Great Financial Crisis**

The Great Recession that hit global economy between 2008 and 2009 has been one of the greatest financial and economic shocks of modern history. But in order to have a complete picture – even if in a concise way – of the path that led to the bankruptcy of the fourth American bank for importance, Lehman Brothers Holdings Inc., is necessary to remember some particular facts happened during the 2000s. Few years before the famous September of 2008, USA's banks were increasing the number of subprime mortgages granted, exploiting a complex mechanism of derivatives and securities. Subprime mortgages are those financing instruments granted even though the borrower will be insolvent with a quite high probability and often these subjects do not have neither appropriate capital guarantees. What pushed American banks to reach even a debt position in order to increase the number of these type of mortgages was the sale of securities and derivatives on the secondary market, thanks to generous advice from rating

agencies: the mechanism resulted efficient and profitable. This financial deregulation drove also real estate market on the crest of an uncontrolled wave of growth: demand and, as a consequence, house prices increased rapidly, contributing to inflate a big speculative bubble that soon or late will have exploded. In the meanwhile, the trade of derivatives made their valuation more and more divergent from their real value, shading what was the truly important aspect of derivatives: their quality in terms of insolvency risks. When the Federal Reserve (USA's central bank) decided to raise interest rates for supporting macroeconomic corrective measures, the situation started to fall: from that moment onward the idyll in which American finance had lived will have given away to one of the darkest periods of global economy. On the 15th of September 2008 Lehman Brothers appealed for Chapter 11, that is the American bankruptcy procedure, and, in turn, other big banks declared huge losses (Rodano, 2018). The shock that spread over the whole world after the breakout the speculative bubble transmuted soon in a strong recession. In USA the financing stop from banks and the lack of confidence for investments, caused a contraction of national demand. In little time the crisis spread to the rest of the world mainly because even during that period global trade integration was growing (this growth will have interrupted later) under globalization (Rodano, 2018). The dramatic reduction of international trade gave evidence to the crucial impact that a strong link in the chain, like United States, has had during 2008-2009. During the crisis and in the immediate aftermath, experts asked themselves whether GVCs were the appropriate mean to serve global production or whether they were a temporary trend, destined to arrive to an end with the decline of the globalization era. Similar issues emerged also at the end of 1990s, after the financial crisis that hit Asia. Nevertheless, 2008-2009 Great Financial Crisis was the first shock that in some way posed the attention of the debate on the complexity that GVCs imply, on their negative side of quickly transmitting crisis and economic implications to all the countries engaged – even though not directly – to a determined chain (Cattaneo *et al*., 2009). The considerations subsequent to the financial crisis highlighted that GVCs imply such a global trade openness able to amplify any potential negative effect from different countries. In fact, during the GFC of 2008, global trade recorded a contraction of 12 percentage points, becoming the transmission mean of the massive demand shock produced by the financial disruption that emerged immediately after the blow of the bubble. As Cattaneo et al. (2009, pp. 8-9) reported "countries less dependent on imports from high-income economies (as previously seen, advanced economies were the most hit – ed.) were buffered from the crisis", mainly "because of GVCs, adverse shocks affect firms not only through their sales of finished goods, but also through fluctuations in the supply and demand of intermediate goods via forward and backward linkages in GVCs". These considerations seem to be still valid during the current Covid-19-

originated crisis, as research and investigations confirmed it also empirically (Cattaneo *et al.*, 2009). Like with the current crisis, global chains contributed to the spread of real shocks because changes in the demand of final products have been quickly reflected into changes of components and intermediate parts traded volumes. Despite the huge contraction of demand and investments (similarly to what happened with Covid-19), and the growing uncertainty of future demand previsions, firms pertaining to GVCs reacted by searching new linkages and strengthening existing ones, in order to expand both supplier and customer base and to increase, in turn, their level of flexibility to not succumb to productive stagnation. Another reason for which GVCs allow firms to increase their flexibility lies in the high coordination level that characterize the chains. The authors concluded that GVCs favorite lead firms in the process of adjusting and undertaking corrective measures in front of both real and financial shocks, but eventually GVCs resulted quite resilient with respect to the GFC (Cattaneo *et al.*, 2009).

## 2.5. How IDs faced past crises

After having analyzed how GVCs reacted against other past disruptive events, it is now interesting to create a sort of "parallel" vision between global chains and industrial districts, which is the other crucial dimension for the overall analysis that will be proposed in this thesis. To make a useful comparison, the reactions of GVCs and IDs will be explained with respect to the same three past crisis that were analyzed in the previous paragraph.

**Japanese IDs against the earthquake**

The concept of industrial districts is something not so much recognized and studied by Japanese researchers. The most common forms of industrial agglomeration are called *Sanchi* (which means "place of production") and *Jiba-sangyo* (which is the "local industry"). Japanese industrial districts mainly developed from the period of the Second World War until 1970s, and consequently most of the production of related literature is relatively recent, started around the 1990s (Becattini et al., 2009). Around these years, Japanese IDs started suffering the international competition arose from globalization; however, from the 2000s, these clusters recovered quite well, increasing their level of competitiveness leveraging "interactive, cooperative and continuous knowledge transfers between manufacturers and suppliers" (Matsuhashi et al., 2013). A specific analysis on how the ceramic ID of Mashiko reacted against a disruptive exogenous shock like the 2011 earthquake was conducted by (Khare, 2012). The

ID is located 250 km from what was the epicenter of the earthquake and only 150 km from the nuclear central of Fukushima; in 2010 it counted 262 active firms. The district was already experiencing a declining phase, like most of the ceramic-IDs in Japan, due to the cheaper products offered by a relative new competitor, China. Despite this previous trend, the district tremendously suffered the impact of the earthquake: facilities completely damaged and impossible to use, inventories wholly destroyed and public infrastructure unusable. In addition, the number of visitors to the district dramatically fell, given the fear of new aftershocks and nuclear radiances. The resilience showed by the district was considerable hence it was based on the strong community and industry sense and collaborative attitude: after the shock, important donations come from other pottery districts from other countries, with the local community quickly supporting these initiatives. Fairs and other event-related projects were carried even few months after the earthquake, helping tourists and customers to get back to Mashiko. As highlighted by Khare (2012, p. 28), "each of […] the joint action activities were instituted by a distinct cluster agent"; this gives the idea of how fundamental the strong inter-relational network was to quickly respond to the shock. Still according to the qualitative analysis made by the author, cooperation, and social interactions across firms within the ID truly helped the district to find new solutions, even though it has been difficult for firms to share their productive practices and their creativity.

**Thai IDs against the 2011's floods**

Differently from Japan, Thailand's economy has developed mainly during the last 50 years, with the improvement of industries such as automotive, smart electronics, robotics, digital and medical hubs, logistics and tourism. In this country, the political boost to the industrial local environment is way more recent if compared with Japan (as above) or other advanced countries. Local clusters are mainly located in the Bangkok area, and only from the 1980s industrial activities were expanded even in other provinces. Their growth and development were also a consequence of foreign direct investments from other countries, especially from Japan. With the increasing presence of foreign countries, a reorganization process started in Thai industrial districts associated with an increasing level of concentration made to reach economies of scale in such territories. In a paper of Pathak & Ahmad (2016), the authors conducted an analysis of the impact of 2011's floods on SMEs in Thailand. Regional supply chains and factories suffered a halt that lasted for more than a month, causing around 1.43 trillion THB (which are 46.5 billion US dollars) losses: 90% of these losses come from private sector (Izumi & Shaw, 2015). During this flood event, also central Thai regions were -unprecedentedly – hardly hit, with some

provinces inundated for the first time. The Thai government set up various measures in order to help SMEs during the aftermath of the shock, including financial incentives, tax incentives, some legal measures such as a "catastrophe insurance policy", labor measures. A specific measure called *Otagai project* was promoted by Thai and Japanese governments, and it consists in a conjoined plan of support between the two countries in case of considerable disruptions. Given the fact that industrial clusters of Ayutthaya, Pathum Thani, Bangkok and Samut Prakan provinces have developed relationships with Japanese economy, the measure is aimed mostly at these clusters for the creation of a solid financial and strategical counterpart during extraordinary events as natural disasters. Differently from what happened in Japan, local communities supported less IDs during crisis phases, and the consequence was a longer recovery period (from 2013 onwards SMEs started to recording back pre-crisis operations) (Izumi & Shaw, 2015).

**IDs during the Great Financial Crisis**

As reported above for GVCs, the GFC was another event that caused several disruptions around the world. Specifically, a report made by *Osservatorio Nazionale dei Distretti* (Unioncamere & Intesa Sanpaolo, 2011) precisely explained how the financial crisis started at the end of 2008 impacted Italian IDs and how they reacted. In the paragraph dedicated to the impact of Covid-19 crisis on GVCs, it has emerged that highly inter-related productive networks tend to spread the negative effects across the participant economic actors. It kindly worked the same even within IDs during the GFC: even when only one firm suffered some negative effects from the recession, the expansion of such effects affected, sooner or later, also other firms within the same ID, given the particularly strict net of relationships that characterize the typical cluster environment. The financial crisis hit industrial districts harder than non-district firms: according to a survey proposed by *Banca d'Italia* in 2009 (Unioncamere & Intesa Sanpaolo, 2011, p. 89), within the first 9 months of 2009 losses on sales of IDs accounted for a 70%, while for non-district entities the figure was lower, at around -40%. This considerable difference comes from the industrial composition of Italian IDs: most district areas were – and still are – specialized in industries such furniture, fashion, mechanic. These are industries whose products tend to be considered by a major part of customers as non-necessary and "postponable" goods, and this imply that during crisis, when times are uncertain, the contraction related to the demand of these products tends to be sharper (Unioncamere & Intesa Sanpaolo, 2011). According to Ricciardi (2013) the crisis contributed to the disappearance of 4,476 district firms from 2009 to 2010, with the loss of 64 thousand employees.

During the financial crisis, the reactive measures undertaken by Italian IDs were different: from an improvement and a re-qualification of the workforce through specific education to various form of financing aimed at supporting investments and at boosting inter-firms collaborations. Overall, local productive areas and IDs resulted dynamic and resilient enough to resist against a huge and global event like the GFC was in 2008-2009 (Unioncamere & Intesa Sanpaolo, 2011). The crisis posed the attention on the strengths and the weaknesses of the social dimension typical of IDs, and the conclusion was that as well as the inter-firm net of relationships can represent a source of resilience and resistance against disruptions, it also needed to be more open-oriented, given the new competitive pressures from international markets of that period (Ricciardi, 2013).

## 2.6. Resilience in GVCs

### 2.6.1. The efficiency of GVCs

In the previous chapter a complete picture of the GVC framework has been depicted: the importance of global chains has emerged, as it can be seen how crucial their role during the last 30 years was, in the midst of a 'hyper-globalization' phase, as researchers defined it. Moreover, as previously introduced, GVC literature widely deepened the most around the concept of efficiency, running on the edge of a great wave of globalization and interconnectedness of international markets that characterized 1980s, 1990s and 2000s. However, a relatively little part of literature focused on the potential risks of GVC's participation, leaving some lacunas that would have been quite appreciated now. Globalization and the international fragmentation of operations have always been considered as growth drivers, capable of fostering efficiency and to spread new knowledge especially in developing countries. At this point, it is indeed straightforward to ask whether, beyond being so efficient, GVCs are also appropriately resilient. The main risk related to global chains and dispersed fragmented production processes is the strong interdependence that develops across different countries over the world. As previously seen within the chapter, GVCs resulted also empirically more vulnerable with respect to foreign economic shocks. Given all the information of above, then, a new need of amplifying the GVC literature under its risks aspect arose immediately after Covid-19 pandemic has exploded two years ago by now: the fact that the pandemic spurred firstly in China, known and defined as the 'factory of the world', highlighted the fragile and strong dependence of first tier and second tier suppliers in GVC systems (Gölgeci *et al*., 2020). Because if on one side the efficiency of GVCs has been widely demonstrated by the literature, on the other side the reverse of the medal is that

during periods of tough economic shocks – like the current one started in 2020 – a disenchant from GVCs tends to emerge. This also happened, for example, with the spread at international level of the GFC, event saw as a consequence of the great openness in trade of the first 10 years of 2000s. This 'disenchant' is also alimented by other more recent and critical situation, such as the institutional break up of UK from Europe with Brexit or the trade war started in 2018 between United States and China. The Economist gave a precise name to define this new trend of stagnation of international integration: 'slowbalization'. The causes of this slowbalization are different. First of all, global trade is yet well consolidated and developed, so there is no more room to a further increase in its growth rates again; second, both transportation and communication costs are going to stabilize, contrarily to 20 years ago when these costs' curve was falling, making delocalization and internationalization strategies cheaper and more attractive in the past than now. Third, during the period of globalization growth a massive dismantling of institutional and bureaucratic barriers took place: many countries underwrote various deals in order to increase liberalization of trade. Finally, new technologies and new improvements, such as automatization, robotization and 3D printing, "push[ed] in the opposite direction" of globalization, reducing the need of firms to delocalize or require foreign inputs thanks to the ease in reproducing the same products even domestically (Giglioli *et al.*, 2020).

### 2.6.2. Resilience and GVCs

As just introduced, GVCs are considered from a vast part of literature an efficient option for firms, industries and countries. But efficiency is a necessary but not a sufficient measure when it concerns economic crisis. As previously explained, a small part of GVC literature deepened the risky aspect of global chains: what has emerged is a strong interdependence across countries that could transform GVCs into a potential threat. Economic shocks and uncertainty sentiments could be transmitted easily throughout GVCs. The recent commercial tensions between great advanced economies and the unexpected pandemic spread of the last few years, have contributed to liven up again the debate around resilience. This growing debate over GVCs' resiliency also comes from the increasingly important critic to their ability to be sustainable, both economically and socially (Gölgeci *et al.*, 2020). This is why it comes interesting to investigate whether GVCs are resilient or not, even with regard to the main aim of this thesis, that is understanding the impacts of Covid-19 crisis for gold jewellery Italian IDs that precisely pertain to GVCs. Before anything else, it is useful to give a clear definition of resilience. The first definition of resilience dates back to 1973, when Holling (see Rose, 2004, p. 308) referred to "the ability or capacity of a system to absorb or cushion against damage or loss". At the

present, economic resilience concerns more with reacting, even in an organized manner, against potentially prejudicial events in order to adapt and to minimize the losses. Rose (2004) reported two types of resilience: the inherent one, related to normal circumstances, and the adaptive resilience, related, as its same name suggests, to the ability to adapt to unprecedent and unexpected situations. As it can be noted, the concept of resilience refers to the long-run: it is not an arrival point, but rather a process for which an entity acquires the capability to become more flexible. It is also important to make a distinction between agility and resilience, as they are two different concepts, even though it is frequent to think about them as synonyms. In an article of Forbes, Birkinshaw made a clarification about this: agility only refers to the ability of a firm to quickly implement changes and to switch its strategic direction, while resilience is related with the capability of getting back to the ex-ante situation after a disruption. According to the author, the era of super-efficient global supply chains has rather come to an end, due to the pandemic and the rising of protectionism sentiments. Literature about resilience is ample and vast, and the concept of resilience started from other disciplines with respect to management: it was firstly defined and studied by some psychologists around 1970s. After twenty years more or less, resilience got also interested crisis management literature and organisational management (Kantur & İşeri-Say, 2012). Nowadays there are different perspectives about the construct of resilience, but those interesting for the findings that the thesis aim to spot are territorial and organizational ones. Organizational resilience has been defined as "the ability to absorb the changes effectively to assure continuity and even turn them into opportunities" (Kantur & İşeri-Say, 2012); as resilience is not a static concept within management field, it can be seen as a capability, an attitude of reacting and re-adapting to unprecedent and disruptive event or events (Kantur & İşeri-Say, 2012, p. 765). In the research of Kantur & İşeri-Say (2012) organizational resilience is composed of four main features, that are (1) robustness (which refers to the capability of bearing changes without incurring in relevant losses), (2) redundancy (the range of functional requirements meeting of organization's elements), (3) resourcefulness (the ability to coordinate and collect necessary resources) and (4) rapidity (defined as the time span needed to implement strategies or undertake responses).

Despite the firm-level aspect of resilience, as it is a wide and vast concept, experts and researchers got interested also in the specific level of resilience within some specific territories: in particular, the attention was focused on the ability of certain geographic areas to react toward events and crisis. In the first chapter one the main feature of GVCs has emerged, which is the fact that they are located in a meso-level, so in the middle between the firm-specific sphere and the macro-aggregated one. It is exactly this industry-level that allows further research in the regional direction: thank to this particular feature, GVC framework is appropriate to understand

the consequences and the implications of the recent crisis at districts' level. Before getting into the core of the discussion, however, an explanation also about regional (or territorial) resilience is quite useful. The interest in territorial resilience is part of a parallel literature vein with respect to the wider concept of resilience in general. The focus of territorial resilience is understanding in a clear way the reasons behind different paths of development or growth of diverse geographical areas (Simmie & Martin, 2010). According to the literature analysis of Annarelli & Nonino (2016), there are two different concepts of resilience in regional studies: one, more engineering-oriented, focused "on the resistance of a system to shocks and the speed to its return (...) to a pre-shock state or equilibrium" (p. 3); the second, closer to the adaptive definition of resilience, refers to the dynamic aspect of internal coordination after a disruption. Generally, more interest is posed on the adaptability aspect of resilience, as it is the determinant capability of a territory to react and reshape with new trajectories against disruptions and shocks. The definition of regional resilience given by Simmie & Martin (2010, p. 28) states that it is "the ability of a [specific] region to anticipate, prepare for, respond to, and recover from a disturbance". This definition should also be integrated according to the two concepts of engineering and ecological resilience (Annarelli & Nonino, 2016): on the pattern of engineering view of resilience, regional resilience should be defined also as the ability to retain region's pre-shock structure and function. Ecological perspective of regional resilience is thus related with the capability "of absorbing and accommodating extreme shocks without any significant change to its form or function" (Simmie & Martin, 2010, p. 30).

Specifically referring to GVCs, resilience is the ability for the chain to react and recover from unexpected and unpredictable events by "maintaining continuity of operations at the desired level of connectedness and control over structure and function" (Gölgeci et al., 2020, p. 4). The definition of resilience given by Martin (cited by Gölgeci et al., 2020, p. 4), sees resilience composed by four different dimensions, which in order are: resistance, recovery, reorientation and renewal. Resistance is related with the capability of remaining stable in front of changes with an acceptance approach toward them; recovery refers to readapt and readjust after a disruption or a crisis. Reorientation could be intended as the recovery ability, as it is related with the best strategic direction to take; eventually, renewal refers to re-start the whole growing process that has been interrupted by the shock. The combination of all these four abilities listed above describes a resilient attitude.

As said at the beginning of this paragraph, however, the point is that being efficient is of course useful and necessary to survive in international markets but is being reliable and resilient that gives a huge boost to overcome crisis and disruptions. Despite the crucial role that plays

resilience, not so many firms can count on a well-built capacity of adaptation to environmental changes and challenges. In fact, the traditional management paradigm aims at maximizing efficiency, ignoring in some way resiliency: as Gölgeci *et al*. (2020, p. 128) reported "even if at odds in the short-term, efficiency and resilience could not be mutually exclusive in the long run". In the past 40 years globalization and openness of market at international level has allowed multinational enterprises to globally enlarge their supply chain, pursuing mainly an efficiency aim. The consequent fragmentation of production processes within GVCs concretely let MNEs reach their objective, though setting aside some important aspects such as resilience. This efficiency priority took Eastern Asia, especially China, to become the central focus of several GVCs of today. This even led to a new organizational form, described by Buckley (see Gölgeci *et al*., 2020, p. 129) as global companies that "have learned how to fine-slice their activities and to locate each stage of the activity in its optimal location and to control the whole supply chain, even when not owing all of it". The discussion lightened up after the block and the stop of production flows of several GVCs during the pandemic: Covid-19 revealed the weaknesses of a global fragmented processes in which the degree of interdependence and reliance on suppliers from different part of the world is extremely high. According to the authors, MNEs – which often are lead firms within GVCs – must implement strategies in order to build strong resilience capabilities without forgetting efficiency, rather prioritizing them according to the external context. The main vulnerability of GVCs lies in their extreme complex nature: complexity is almost every time synonym with rigidity, which is not the most suitable characteristic to have during high-impact shocks. The conclusion is that lead firms within GVCs must support their efficiency orientation with an effective resilience capability, in order to cope with high complexity of the same global chains and in order to not passively suffer crisis or unpredictable events (Gölgeci *et al*., 2020). The empirical findings of the interesting research of Giglioli *et al*. (2020) suggest that firms and GVCs have developed a higher level of resilience in the aftermath of Covid-19 crisis with respect to another turbulent shock happened recently, the Great Financial Crisis. The authors found that countries' degree of interconnectedness contributed to the spread of the virus, in the sense that the high and international mobility of goods and people within GVCs physically served as a transmission mean for the virus, especially during the first wave of contagion. This rapidly led to the partial and the complete block of the productive operations of global chains in many countries just after few months from the outbreak. International trade and GVCs were in this way immediately seen as multiplier of the negative impacts and effects of the pandemic. Theoretically, it is straightforward to think that shocks could be easily spread in global related networks of trade flows, however it must be kept in mind that often firms participating to global markets have

more opportunities to enlarge their suppliers' base and to reach customers in different countries: as stated before, GVCs are more efficient than local or domestic supply chains. Giglioli *et al.* (2020) investigated whether participating in GVCs have had some impacts on firms or not. The authors found, in fact, that during the second wave of the pandemic, firms pertaining to global chains had more opportunities of diversification with respect to domestic firms, allowing the former to reduce management risks. This is mainly due because during the second wave firms were already aware of implications of lockdowns, contagions and other restrictive measures, so they basically reacted better and faster, and also the organization of GVCs in such conditions was tested and implemented yet. This higher diversification can improve the process of resilience building; notwithstanding, authors marked the fact that how much firms can get resilient depends also on their *ex-ante* characteristics (Giglioli *et al.*, 2020).

## 2.7. What has emerged about IDs' resiliency

At this point there can be resumed some evidence about the resilient capability of IDs, gathering the main concepts and findings. De Marchi & Voltani (2014) analysed in their research how IDs faced the globalization crisis, focusing their work on the specific industry of gold jewellery in Italy. They found that despite the common characteristics that most industrial districts share, a heterogeneous set of evolutionary paths against the crisis emerged within IDs, highlighting the fact that resilience among districts could assume different forms.

In the research of Ricciardi (2013), the author explores the main effects of the financial crisis started in 2008 on Italian IDs. In the aftermath of the financial crisis, firms within IDs generally recovered rapidly with respect to firms outside districts, with a growth rate of sales higher than 4% with respect to non-district firms in 2010/2011. In the particular case of the GFC, what rewarded Italian IDs was their export-oriented attitude, that allow them to overcome the difficulties of the Italian internal demand decline of that period. Of course, even IDs suffered from the consequences of the financial crisis, struggling to return to the pre-crisis performances. Notwithstanding, IDs showed a superior capability of recovering in the aftermath of the GFC. In particular, firms within districts (especially lead firms) spent a lot of sources and energies in order to upgrade their innovative capabilities to maintain their competitive role on the market; firms also reinforced their productive *filière* and their relationship net in order to galvanise the collaboration both internally and externally with respect to the ID, and to spread know-how and information along the chain (Ricciardi, 2013).

Moreover, as previously addressed in chapter 1, one of the main strength point of IDs is their flexibility: in this paragraph resilience will be put in relation with IDs and their trajectories. According to Frank Giarratani (2013), globalization already draw out the first lines of different paths across industrial districts. The extremely tough competition that emerged around 2010s, period in which China stabilised and crystallised its role of global manufacturer of components and intermediate parts of many final products, led IDs to undertake an adaptive process toward the new conditions of international markets. Even the growth of the population of multinationals contributed to raise within IDs a major interest toward "new forms of cooperation in production (…) to seek innovative alliances" in foreign countries (Frank Giarratani, 2013, p. 482). Moreover, some particular IDs are source of dynamic innovation, originated by the capability of such districts to leverage the knowledge they still own with the knowledge that emerges across other economic actors and partners within the value chain. Still in chapter 1, a first outline about resilient IDs, of those inserted into GVCs, was given: these IDs emerged mainly because of their great ability to adapt even to drastic changes, such as globalization or other crisis. De Marchi *et al*. (2018) highlighted three different trajectories of IDs, basing the criteria to distinguish the specific paths on the trend of firm demography within a district, the degree of resource concentration and the variation of the value production attributable to an ID. The authors classified declining IDs, hierarchical and resilient ones. Resilient IDs face negative shocks and disruptive events by a moderate decline of firm population and by trying to not lose the added-value they produce (in fact, successful IDs' firms tend to keep their industrial core internal). Within these districts, dynamic firms often integrated in global supply chains emerge and lead the evolutionary process. As remarked also by Frank Giarratani (2013), IDs have demonstrated their resilient attitude (especially some successful districts) with respect to similar shocks and situations; those IDs rapidly reacted and adapted to new conditions and changes, also exploiting their learning and innovation abilities. However, different districts responded in different ways to the same external conditions, highlighting the wide diversity of development paths across them.

To conclude, industrial districts became a famous organizational form mainly because of their flexibility and their capacity to leverage the relationships that characterize the environment of IDs to become more competitive. Despite the success they collected 20 years ago by now, new challenges and new trends emerged during the time; however, not all districts reacted and adapted to these changes, and the researchers witnessed different and various evolutionary trajectories of IDs. The most successful IDs, anyway, were also the most resilient ones: such districts always found new ways of growing, learning and innovating in order to keep their position in the market. Two examples reported in De Marchi *et al*. (2018) are the Montebelluna

sport system district and the Riviera del Brenta footwear one. The Riviera del Brenta ID perfectly represent a district able to integrate with global partners in global supply chains: even though expanding outside national borders could be a challenge, overall the ID answered to the international call very well, attracting global lead firms, especially high-end luxury brands and business groups, that soon started to implement vertical integration strategies within the ID. Local firms adapted and started to collaborate with foreign companies, creating a winning and performing environment. In Montebelluna ID, the global integration, that determined the survival of the district to the last relevant market changes, passed through the development of a local-grown lead firm (GEOX). Moreover, firms within the district expanded the range of the productive activities done even to post-production ones, with the raise of globally-relevant OBMs (original brand manufacturers). Both the districts showed a strong resilient attitude and a great capability of exploiting new challenges and opportunities that external changes often imply (De Marchi *et al*., 2018).

## 2.8. The research question and hypotheses

Within this chapter, to conclude the theoretical part of the thesis, a parallel analysis between GVCs and IDs has been made with respect to the impact of the current Covid-19 crisis and other past disruptions, and the resilient abilities of the two productive dimensional units. GVCs were hardly affected by the economic negative impacts that emerged with other past crisis, especially because they can work as a mean of transmission within countries of shocks. Despite this particular feature, empirically explained by Baldwin *et al*. (2020), Di Stefano (2020), Giglioli *et al*. (2020), Miroudot (2020) and Verbeke (2020), GVCs have also shown that firms pertaining to them tend to be more capable of recovering. For what regard industrial districts, given the fact that they are agglomerations of mainly small and medium firms within a specific geographic area, IDs tend to suffer more from crisis and negative shocks as they encounter some limits of SMEs: however, as it can be noted in paragraph 2.5, the main source of resilience for IDs lies in their social dimension. The strong linkages with other firms, institutions and the community result an important instrument to face crisis and to overcome the related problems; this is what happened in Japan in the immediate aftermath of the Tōhoku earthquake, with the help in re-funding and promoting the local territories given by both public and private institutions. It is quite interesting to make up a link between the two different dimensions represented by GVCs and IDs: both of them showed to be, for different aspects, fragile and vulnerable with respect to disruptive events. However, both GVCs and IDs are productive

paradigms able to find the ability to recover and re-start. This great ability is not taken for granted, and it allows specific economic actors – that often are linked together, as many IDs are embedded in productive phases of global value chains – to adapt and re-innovate in a more and more lively and changing global context. So, the contribution that this thesis would like to bring to the yet existing literature consists in finding some empirical information about how IDs embedded within GVCs reacted toward the pandemic crisis started in 2020 after the outbreak of Covid-19. To find a satisfying answer to the research question, a quantitative empirical analysis will be needed; however, according to what previously found and written in this chapter, some raw expectations can be early noted. While during natural disaster disruptions plants, factories and facilities are concretely damaged, Covid-19 is a sort of "abstract" enemy for economies. Even though its range of impact is huge and reach all continents in the world, it still results easier to think that firms are trying to develop new business models that can allow their survivals, especially in the global dimensions of GVCs, after this tremendous crisis. Given also the new attention posed by economic actors on the resilient attitude and capabilities, even smaller dimensional units like IDs – that are locally flexible and often innovation-oriented – could survive and recover this crisis strengthening their core capabilities and learning new ones. So, it is straightforward to expect to see a relevant impact on IDs, especially on those embedded within GVCs, to see heterogeneity in crisis reactions within different districts, even in the same industry, and also to see a resilient recover coming from virtuous IDs. Even according to the report mentioned before, while explaining how Covid-19 impacted on Italian IDs (paragraph 2.3.), the high degree of inter-firms relationships works as a resource able to increase the resilience capability of firms (Intesa San Paolo, 2021). In order to carry out the empirical analysis, some specific hypotheses are needed to precisely define the scope of the empirical analysis that will be made. A first interest aspect to examine as first hypothesis derives from the IDs-related literature: authors (Giarratani, 2013; De Marchi *et al*., 2018) state that thanks to its particular nature, the district tends to be resilient and adaptive against environmental changes. Thus, the first hypothesis is formulated in the following way.

> *Hypothesis 1:* For the same industry and within the same national economy, the performance of industrial district firms will be significantly different and higher with respect to non-district firms with respect to the Covid-19 crisis.

The second hypothesis will be the glue between the ID and the GVC frameworks, as it aims at analysing how Italian jewellery IDs are reacting differently against the current crisis with respect to other past crisis. This hypothesis comes from the will to make a comparison with and – if possible – an expansion of previous research and the literature related to the analysis of different crisis on the same object of analysis, that are industrial districts (De Marchi &

Grandinetti, 2014; Rabellotti *et al*., 2009; De Marchi *et al*., 2018). As seen from recent literature (Gölgeci *et al*., 2020; Giglioli *et al*. 2020; Miroudot, 2020; Strange, 2020). GVCs tend to be hit harder by exogenous shocks, however they also demonstrate a stronger recover capability. This analysis will be an interesting cue, because first the recent literature emerged during the last two years has not already found a common point on GVCs' role during the last crisis, secondly because it would be also worthwhile to investigate whether the membership to global value chains makes IDs more competitive even nowadays. The second hypothesis is formulated in the following way.

> *Hypothesis 2:* For the same industry and within the same national economy, IDs embedded within GVCs suffered more the initial phase of Covid-19 crisis, but they are able to quickly recover.

The last interesting point to analyse is whether the Covid-19 crisis has been substantially so much different to push IDs to evolve with new reactions and new responses in order to overcome this negative period. Also, this specific point will be extremely interesting with respect to the GVC aspect, in the sense that the research could go deeper by taking as unit of analysis those IDs that have an active role within GVCs, considering their particular responses for what regard export and import performances. So, the third hypothesis is basically connected an intersected with the previous two hypotheses, and it is formulated in the following way.

> *Hypothesis 3*: for the same unit of analysis, namely IDs, the reactions and responses against the Covid-19 crisis have been different with respect to reactions and responses against previous crises.

Now that the research hypotheses have been explained, the quantitative analyses can be properly presented.

# Chapter 3

# Methodology

## 3.1. The empirical setting

Previously, in chapter 2, the effects and the implications of the Covid-19 crisis have been highlighted: however, at this point a more specific and detailed analysis is necessary in order to depict a concrete picture. In general, during each crisis the most hit industries tend to be related to industrial and manufacturing activities, especially industries – such as fashion – whose goods could be intended by most consumers as "postpone-able". Goods that can be considered as non-necessary are the first on which consumers give up during uncertain and crisis periods: this is what has recently happened with Covid-19, but this specific trend was experienced globally also during the Great Financial Crisis in 2008-2009. The fashion industry, especially in 2020, was hardly hit by the changing habits that the pandemic brought with force. At the beginning, with the imposed productive shutdown in many important countries, and after with self-isolation, lockdowns and quarantines that basically cancelled social activities within cities, giving the final blow. The fashion industry, as said before, showed some worrying data during 2020, so for this purpose it will be extremely interesting to discover the impact of the crisis on such industry. According to Confartigianato (2021), fashion-related industries are considered as spearhead for the made in Italy: the industry majorly contracted and suffered by the pandemic. Losses in sales were about -17.9 billion of euros, with a relative decline of 21.2%; the absolute value of turnover losses reached 20.6 billion of euros when considering the period between March 2020 and March 2021 (Confartigianato, 2021). But fashion is a vast and widely composed industry, as it comprehends the textile, leather, shoe, bag, glass, jewel industries as subcategories. Traditionally the jewellery industry refers to the group of activities that involve the transformation of precious metals, such as silver, gold, platinum and gems. However, it is possible to distinguish even some smaller micro-areas within the whole industry, as it also

groups activities like fine jewellery, costume jewellery, and cutlery. Jewels, especially fine jewellery, are dense of symbols and are goods that represent the identity and the personality of the customer.

The empirical analysis will be carried out within a specific geographic area. The thesis aims at analysing the Italian industrial fabric context, mainly because Italy, as reported by the literature in chapter 1 (Becattini *et al*., 2009; De Marchi & Grandinetti, 2014; Chiarvesio *et al*., 2010), was a peculiar case for the development of industrial districts starting from the 1990s. An interesting industry to analyse could be jewellery: to carry quantitative research that conjointly observes both at the Italian territory and at the jewellery industry, the object of the empirical analysis will be the three most important Italian "gold districts" operating in the gold jewellery industry, respectively Arezzo, Vicenza and Valenza Po. Moreover, the process and the conclusions will be interesting also because other research have already contributed to investigate behaviours and reactions of these IDs during other crisis periods – such as globalization crisis at the beginning of the current century and the Recession crisis of 2008 – (De Marchi *et al*., 2014). The detail degree that the thesis is going to aim is more granular than the national level, and this decision is winning for two main reasons: first, the three districts mentioned above represent more than the half (51%) of the overall Italian employment of the jewellery industry, with 8.488 workers on the national figure of 16.633.

**Figure 3.1**. ID's' percentage of Exports on National value from 2009 up to 2019. Data refers to ATECO 2007 code CM 32.1.
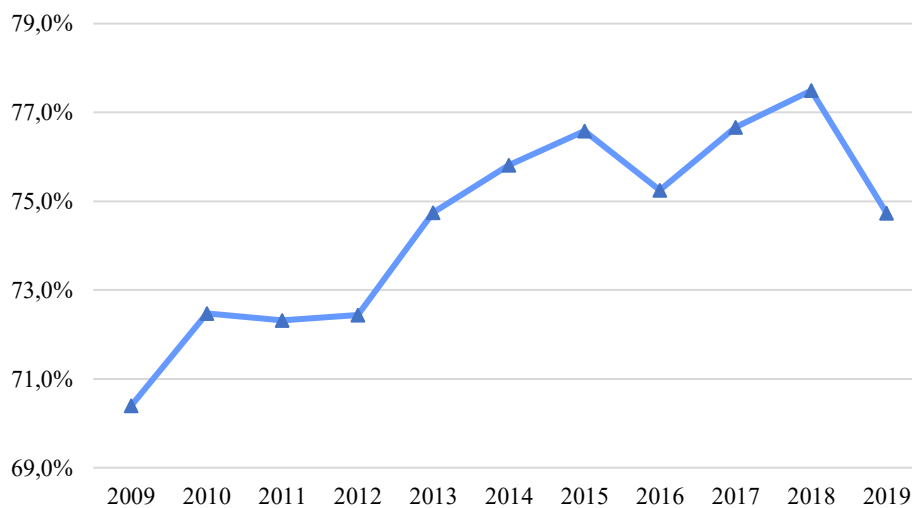


*Source:* own elaboration on ISTAT Coeweb. Data refers to ATECO 2007 code CM 32.1.

Secondly, the amount of export value of jewellery products of the main three Italian IDs represents a considerable percentage on the national value of jewels, bijoux and similar goods exported, with a figure that goes around the 70%-78% (Fig. 3.1.), highlighting in this way the important role of the local Italian dimension within this industry. The incidence on the national industry context and the importance of the three IDs has increased over the decade 2009-2019, confirming that the made in Italy jewellery seems attractive and well-performing abroad.

Moreover, despite being the reference point in the industry at national level, the three districts also represent the contact point between two distant perspectives, which relatively are the global and the local one. The former is present as Italian IDs are well embedded in the gold GVC, while the latter is intrinsically present as industrial districts are – picking up chapter 1 – local and organized productive networks.

**Figure 3.2**. Total Covid-19 cases from March 2020 up to December 2021.
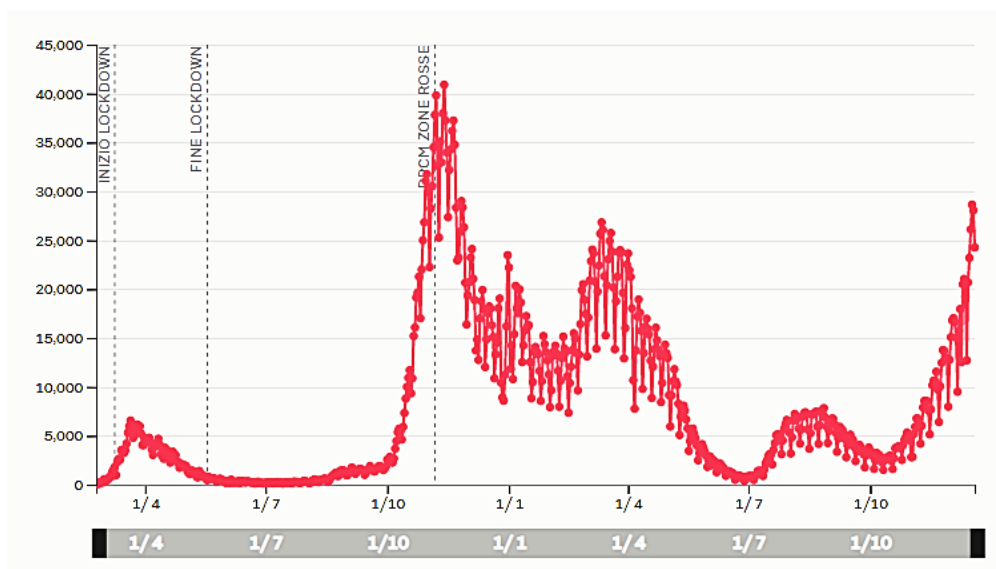


*Source: Sole24Ore Labs, https://lab24.ilsole24ore.com/coronavirus/.*

The choice of analysing the Italian territory is also supported by the fact that Italy has been, during the whole 2020 year, one of the most hit countries by the pandemic, both for what regard the health emergency and economically. In the picture above (Fig. 3.2), the number of total cases that Italy registered from March 2020 (with the beginning of the first national lockdown) up to December 2021. At the end of 2020 the cumulative number of total cases reached 2,107,166 (which corresponds to 3.55% of the overall Italian population). Economically, Italy has suffered the crisis and the uncertainty that the pandemic has brought (Banca d'Italia, 2021).

As reported by Banca d'Italia (2021), the Italian GDP experienced a decline of -8.9%. Italian economy has been hit by different front: global activities and transactions dramatically fell, as well as exportations and tourist flows. Internally, investments almost paralyzed (with a flection of -9.1%), and the same effect happened also for internal consumes (-10.7%). To have visible evidence about the dramatic impact of Covid-19 on the Italian economy, in Figure 3.3. the trend of Italian GDP of the last 10 years has been reported: it fell in 2020 from a value of €1,790 billion in 2019 to a value of € 1,651 billion, which is a value slightly higher than 2011's GDP.

**Figure 3.3**. Italian Gross Domestic Product at current prices (in billions of Euros) from 2009 up to 2020.
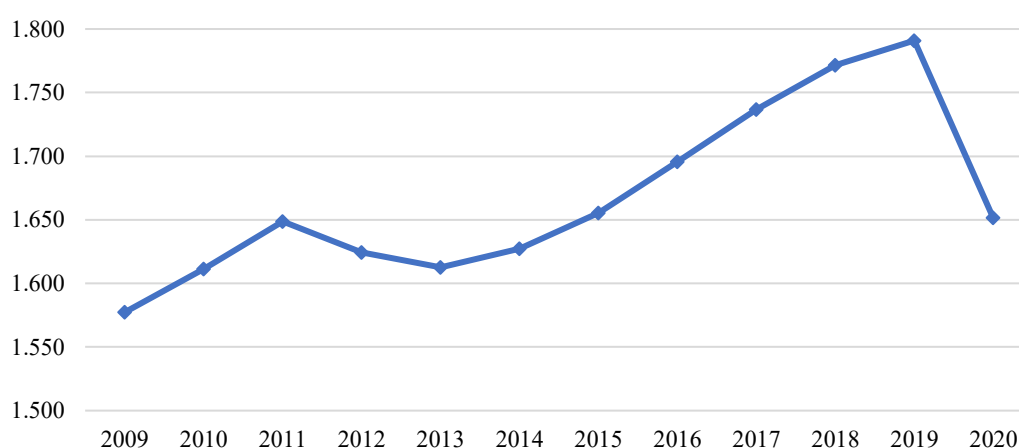


*Source:* own elaboration on ISTAT data.

## 3.2. The methods

The analysis, that will be showed in the following chapter, will be conducted using two approaches: on one side, a statistical method will be used to assess the first hypothesis. A quantitative analysis on import and export official data will be carried out in order to assess the second hypothesis, while on the other side a qualitative approach will be the best in order to examine the third hypothesis. For the statistical model, a Multiple Linear Regression model estimated with the Ordinary Least Squares (OLS) technique will be employed: this specific method has been chosen because of its simplicity and rigorous process. It allows, in fact, to investigate whether a linear relationship between a dependent variable and one or more independent variables statistically exists.

In order to precisely specify the range of economic activities and goods typical for firms and industrial districts pertaining to the jewellery industry, it has been used the classification of ATECO 2007 within the quantitative analysis. In order to capture the international dimension related to GVCs of the three IDs, the main reference source has been the Coeweb ISTAT database, using the specific ATECO code C 32.1 (which represents the more granular level of detail that can be addressed utilising ISTAT Coeweb's site), for import and export values: within this site is possible to make a detailed provincial analysis. Code C 32.1 refers to the production of jewellery items, bijoux and similar items and the finishing of precious stones; within this section there are three main areas of jewellery-related production: mint currency, high-end jewellery production and custom jewellery production. For the information presented in this thesis, the three provinces utilised within Coeweb have been Alessandria, code 101006; Vicenza, code 205024; and Arezzo, code 309051. The data referred to import and export values with industry code C 32.1 includes also precious stones and custom jewellery production; moreover, due to data limitations, from Coeweb it is only possible to make a provincial analysis of export and import data, so within the qualitative analysis the three provinces mentioned before were used as proxies for the jewellery IDs. However, it is straightforward to assume that the potential bias derived from using the provincial proxy is minimal, as the jewellery production carried out within these areas is highly concentrated (De Marchi *et al.*, 2014). On the other side, in order to carry out the quantitative analysis the ORBIS database has been used: it is a global database from Bureau Van Dijk that contains the financial information of more than 400 million firms, both listed and non-listed ones. In order to isolate the jewellery industry within the database, the code 32.12 of NACE Rev. 2 classification has been used. To clarify, ORBIS database utilises the European classification criteria for industries, namely the Statistical Classification of economic activities in the European Community (whose acronym is NACE, from its French definition *Nomenclature statistique des Activités économiques dans la Communauté Européenne*), while ISTAT utilises from 2008 the relative Italian version, called ATECO 2007 (from *ATtività ECOnomiche*). However, the two classifications are the same, with no differences throughout the code that will be employed within this thesis to do the quantitative analysis. Code C 32.12 specifically refers to the production of high-end jewellery items and similar goods, including the production of high-end jewellery items, made of, or covered by precious metals and the production of precious and semi-precious stones for jewellery and for industrial use.

For the quantitative analysis, moreover, the list of the municipalities of each industrial district used to identify each ID within ORBIS database is presented:

- Vicenza district: Altavilla Vicentina, Arcugnano, Arzignano, Bassano del Grappa, Bolzano Vicentino, Bressanvido, Brogliano, Caldogno, Camisano Vicentino, Carrè, Cassola, Castelgomberto, Costabissara, Creazzo, Dueville, Grisignano di Zocco, Grumolo delle Abbadesse, Longare, Malo, Marano Vicentino, Montecchio Maggiore, Monticello Conte otto, Mossano, Mussolente, Nanto, Romano d'Ezzelino, Rosà, Sandrigo, Sarcedo, Schio, Solagna, Sossano, Tezze sul Brenta, Torri di Quartesolo, Trissino, Vicenza, Villaverla, Zanè, Zovencedo and Zugliano.
- Valenza Po district: Bassignana, Bozzole, Giarole, Lu, Mirabello Monferrato, Pecetto di Valenza, Pomaro Monferrato, Rivarone, San Salvatore Monferrato and Valenza.
- Arezzo district: Arezzo, Castiglion Fibocchi, Castiglion Fiorentino, Capolona, Civitella in Val di Chiana, Cortona, Foiano della Chiana, Laterina, Lucignano, Marciano della Chiana, Monte San Savino, Pergine Valdarno and Subbiano.

## 3.3. Recent evolutions in the global gold jewellery

### 3.3.1. Recent trends and data

**Recent data**. By looking at the last 20 years of the gold jewellery industry, it has certainly experienced some important and considerable changes; at the end of the 1990s, at the beginning of the new century and until 2010, the industry was a dynamic growing sector, with a huge increase in volumes of global trade that passed from $16 billion in 2001 to the almost tripled value of $44 billion in 2010 (De Marchi *et al*., 2014). The latest value of 2021 of the overall volume of global trade, according to UN Comtrade data, is around $124 billion, with another impressive growth of the industry size in just 11 years. As stated in a McKinsey report (2021), the jewellery global industry recorded total annual sales for over $329 billion in 2019, divided in turn in fine jewellery and luxury watches, and the market value of the industry goes around 228 billion of US$ (Statista, 2019b). The former recorded around $280 billion, while the remaining part of $49 billion sales pertains to watches. However, these two sectors are going to pass through a flat point: the Asian market, as well as regional markets, are expected to expand and branded global fine jewellery is increasing its market share. In order to define a jewel of 'fine jewellery' it must "contains precious metals, such as gold and silver, and precious gems and is priced over $360" (McKinsey, 2021, p. 9). A further price-based distinction can be made within fine jewellery items: premium jewels are those whose price position lies between $360 and $1800; luxury jewels are those with a price not higher than $36.000 and eventually ultra-luxury jewels costs more than $36.000. Today, jewellery brands account for a 20% of the

whole fine jewellery market, and even if unbranded competitors have the greatest market share, this trend is expected to be less marked (McKinsey, 2021). Still according to the report, both in Europe and especially in United States luxury products are expected to recover faster than non-luxury goods. At a global level, Asia, Europe and America are the three geographical regions with the higher percentage of revenue share in 2019: Asia with a 50% share, Europe with a 26% and America with a 22% share. According to a Statista report (2019b), the countries in which there is the higher per-capita expenditure in jewellery products are, respectively, Hong Kong (with more than US$370), followed by Singapore, Switzerland, Italy and Luxembourg (Statista, 2019b).

Even the data referred to the global trade show how geographically differentiated the global jewellery industry is, as within the very first positions of both importers and exporters (by US$ value) there are countries from Europe, Asia and America. Globally, in fact, the top ten exporters and importers of the last 12 years (from 2009 included to 2020 included) are reported in some graphs below in order to immediately capture the major changes across countries. In fact, as it can be seen from the figure 3.4., trends of jewellery exports were and still are going to change: the first thing that stands out is China's export trend, which consistently grew from

**Figure 3.4.** Top ten jewellery exporter countries' trend (by world share %).
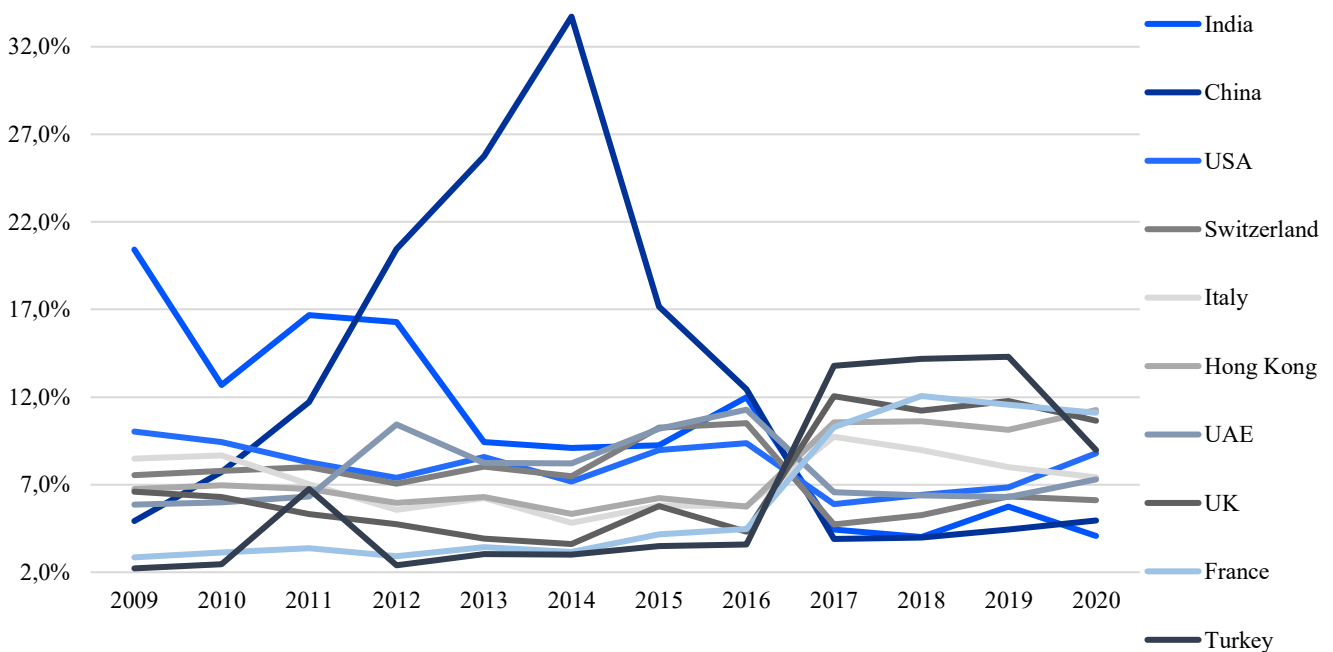


*Source*: own elaborations on UNCOMTRADE data. The data refer to Harmonized System code 7113, including jewellery of gold, silver, platinum and other base metal products.

2009 up to 2014, year in which the country reached its peak with a world share of 33.7%; then, from 2015 onwards experienced a drastic decline. Nowadays China is slightly increasing its percentage of world share in jewellery exports, however it is far from the high-growth period. Excluding China, the other countries remained within a range of world share of exports that goes from 2% to 20%: countries as India and USA declined during the overall period considered, losing important positions. On the opposite, there are also virtuous countries such as Switzerland, UK, France and Turkey that substantially improved their world share within the global jewellery industry.

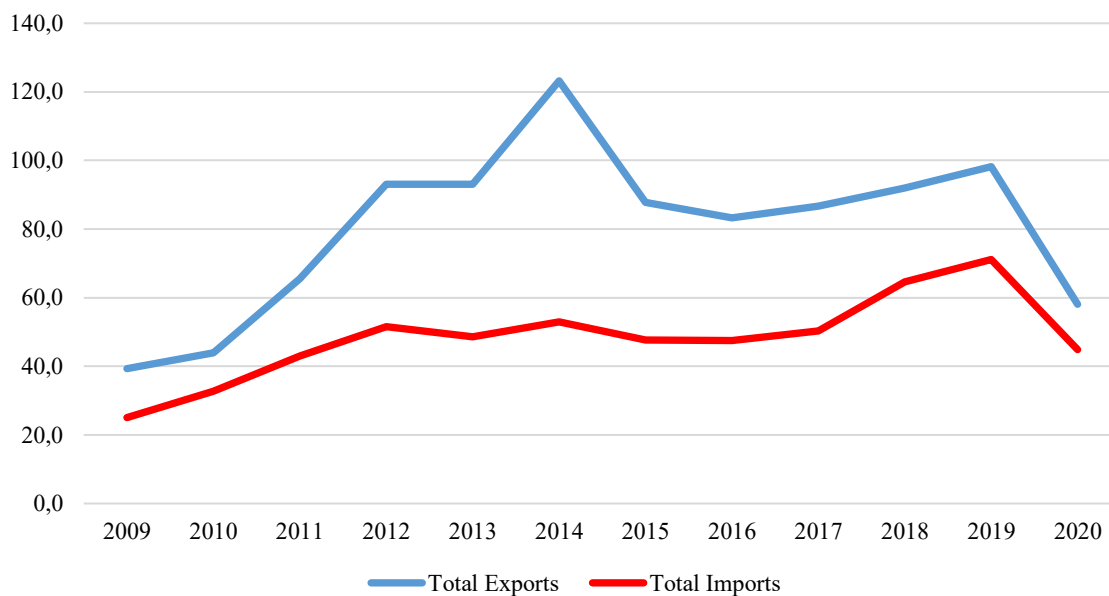**Table 3.1.** Top 10 world jewellery importers and exporters by their world share (%).

| Top ten exporters | | | | Top ten importers | | | |
|---|---|---|---|---|---|---|---|
| 2009 | | 2020 | | 2009 | | 2020 | |
| India | 20,4% | Switzerland | 11,3% | USA | 15,9% | Hong Kong | 18,8% |
| USA | 10,0% | China | 11,1% | UAE | 14,9% | Switzerland | 13,1% |
| Italy | 8,5% | India | 10,6% | Switzerland | 11,8% | USA | 12,7% |
| Switzerland | 7,5% | UAE | 9,0% | Hong Kong | 11,5% | UAE | 10,1% |
| Hong Kong | 6,8% | Hong Kong | 8,8% | UK | 8,9% | China | 6,1% |
| UK | 6,6% | USA | 7,4% | Singapore | 5,0% | France | 5,3% |
| UAE | 5,9% | Italy | 7,3% | France | 4,0% | UK | 4,4% |
| China | 4,9% | France | 6,1% | Japan | 3,2% | Singapore | 3,6% |
| Thailand | 4,8% | Turkey | 5,0% | Italy | 2,0% | Japan | 2,6% |
| Singapore | 3,1% | UK | 4,1% | India | 1,6% | Italy | 1,9% |

*Source:* own elaboration on UN Comtrade data. The data refer to Harmonized System code 7113, including jewellery of gold, silver, platinum and other base metal products.

For what regard the composition of major exporting countries of goods pertaining to the Harmonized Code 7113, some dynamics can be noted: in Table 3.1. the top ten exporters and importers, respectively of 2009 and 2020, are reported in order to understand how leader countries changed their position throughout the last decade. For what regard exports, China and Switzerland eroded more than 10% of India's world share from 2009 up to 2020, gaining respectively +6.2% and +3.8%. On the opposite situation, some countries such as USA or Italy consistently declined their world share during the last 11 years, with a -2.6% for United States and -1.2% for the Italian industry. Referring now to the import situation, some other dynamics emerged with respect to exports: in this case, the first four leading countries remained the same, with a world share for each of these four countries (Switzerland, Hong Kong, USA and UAE) higher than 10%. Hong Kong passed from the fourth position to the first one in a decade, passing

from 11.5% in 2009 to 18.8% in 2020, and also Switzerland grew from 11.8% to 13.1%. UAE declined of 4.8% and USA fell from 15.9% (the first importer country in 2009) to 12.7%. The four leading importers together accounted for 54.1% of world share in 2009, while in 2020 their overall shares grew, accounting for 54.7%.

**Figure 3.5**. Top 10 countries' Import and Export dynamics from 2009 to 2020 (values in billion US$).

As reported in Figure 3.5., during the last 11 years the ten most important countries involved in the global trade of jewellery and similar products experienced two main differentiated trends: the first one was a positive trend both for the import and for the export, with a slowly but constant grow in terms of monetary value. To go more in detail, as it can be noticed by Figure 3.5., the overall trend of export values was extremely positive, especially from 2009 up to 2014. As it will reported later, from 2014 to 2015 the peak reaches its edge and then started a decline: this is because one of the main players within the industry, China, introduced in this period new restrictions over the use of chemical compounds within the production and the working of precious metals. For what regard import values between the period 2009-2014, they experienced a growth, even though it was slower if compared with the export trend. 2015 has been a year of setback for both import and export values, however from that period onwards, both the global trade flows, recovered re-starting a virtuous period. This positive trend has been

interrupted, as depicted by the graph, by the Covid-19 crisis in 2020, with the decrease of the value of imports of -36.9% and the decline of the value of exports of -40.9%.

**Global demand**. Before entering into the details of the global gold demand, it is important to stress a functional and important distinction: gold, differently from other commodities, suffers the influence of a heterogeneous demand composition, due to the fact that gold is used for three main final-usage destinations. First of all, gold has a monetary function, as it is utilized by States in order to produce metal coins; then it is also held and distributed by the Central Bank of each state, as a gold reserve. Moreover, gold has an investment function, as it is held by investors as a "safe heaven". Eventually, gold has an industrial function: it is used both for specific medical supplies and also in some particular industries, such as electronic. Still referring to its industrial function, this precious metal is extensively used in the fashion industry given its peculiar characteristics, that are brightness, ductility and malleability. In this way, the global demand of this commodity is exposed to frequent and also consistent price fluctuations, that in turn have consequences for the producers and on the price of the final products (Lazzeretti, 2003). As it can be seen on the picture below (Figure 3.6.), gold price has been subjected to cyclical fluctuations over the last 12 years: the minimum peak price the graph reports dates back to 2009, in the immediate aftermath of the Great Financial Crisis. Overall, the price of gold experienced a positive trend, with a valuation of more than $1,500 per ounce in the period 2011-2013 and a growing performance from the end of 2018 onwards.

**Figure 3.6**. Gold prices in US$ per troy ounce, from January 2009 to December 2021.



*Source*: data on FastMarkets, ICE Benchmark Administration, Thomson Reuters. World Gold Council.

According to the GFMS Gold Survey of 2019, gold global demand has two main sources: the precious metal can be extracted for the first time from mines, or it can come from scraps, a recyclable source, after an additional melt. For what regard the mine production of gold, in

Table 3.2. is reported the rank of the top 10 countries from 2009 to 2018 with active mines for the gold extraction: the main input producer is China, with a 12% share of gold globally extracted in 2018, a quite decreasing value if compared with previous years (especially from 2015 onwards). This decline is the result of the application within the Asian country of new environmental policies, with stricter control over the use of a chemical compound – the cyanide – during the gold extraction within mines (GFMS Refinitiv, 2019). The rest of the list is composed by countries mainly pertaining to three continents, which are Eastern Asia, North and South America, and Africa. There are also two countries from other continents, as Russia and Australia, respectively the third and second gold mine producers.

**Table 3.2**. Top 10 countries for gold mines.

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Russia | 200.9 | 195.0 | 204.4 | 214.9 | 232.7 | 247.5 | 249.5 | 253.6 | 270.7 | 281.5 |
| | *7.6%* | *7.0%* | *7.1%* | *7.5%* | *7.6%* | *7.8%* | *7.7%* | *7.8%* | *8.3%* | *8.4%* |
| US | 221.4 | 229.7 | 233.5 | 232.4 | 229.6 | 208.7 | 216.2 | 222.0 | 230.0 | 253.2 |
| | *8.4%* | *8.3%* | *8.1%* | *8.1%* | *7.5%* | *6.6%* | *6.7%* | *6.8%* | *7.1%* | *7.6%* |
| Canada | 96.0 | 103.5 | 107.8 | 107.8 | 133.6 | 152.5 | 162.5 | 165.0 | 175.6 | 193.0 |
| | *3.6%* | *3.7%* | *3.8%* | *3.7%* | *4.3%* | *4.8%* | *5.0%* | *5.1%* | *5.4%* | *5.8%* |
| Mexico | 62.4 | 79.4 | 88.6 | 102.8 | 119.8 | 118.1 | 141.3 | 133.00 | 126.8 | 121.6 |
| | *2.4%* | *2.9%* | *3.1%* | *3.6%* | *3.9%* | *3.7%* | *4.4%* | *4.1%* | *3.9%* | *3.6%* |
| Peru | 201.4 | 184.8 | 189.6 | 184.4 | 187.7 | 173.0 | 177.9 | 168.00 | 162.3 | 155.4 |
| | *7.6%* | *6.7%* | *6.6%* | *6.4%* | *6.1%* | *5.4%* | *5.5%* | *5.2%* | *5.0%* | *4.7%* |
| China | 324.0 | 350.9 | 371.0 | 411.1 | 432.2 | 478.2 | 454.1 | 453.5 | 426.1 | 399.7 |
| | *12.2%* | *12.7%* | *12.9%* | *14.3%* | *14.1%* | *15.0%* | *14.1%* | *13.9%* | *13.1%* | *12.0%* |
| Indonesia | 204.5 | 184.1 | 165.1 | 131.0 | 152.7 | 158.4 | 176.3 | 174.9 | 154.3 | 190.0 |
| | *7.7%* | *6.6%* | *5.8%* | *4.5%* | *5.0%* | *5.0%* | *5.5%* | *5.4%* | *4.7%* | *5.7%* |
| South Africa | 219.5 | 199.9 | 190.8 | 163.5 | 168.9 | 159.2 | 151.0 | 145.7 | 139.9 | 123.5 |
| | *8.3%* | *7.2%* | *6.7%* | *5.7%* | *5.5%* | *5.0%* | *4.7%* | *4.5%* | *4.3%* | *3.7%* |
| Ghana | 90.3 | 92.4 | 91.0 | 95.7 | 107.4 | 107.4 | 95.1 | 94.1 | 101.7 | 101.8 |
| | *3.4%* | *3.3%* | *3.2%* | *3.3%* | *3.5%* | *3.4%* | *3.0%* | *2.9%* | *3.1%* | *3.1%* |
| Australia | 223.5 | 256.7 | 258.7 | 250.4 | 267.1 | 274.0 | 279.2 | 290.2 | 295.0 | 312.2 |
| | *8.4%* | *9.3%* | *9.0%* | *8.7%* | *8.7%* | *8.6%* | *8.7%* | *8.9%* | *9.1%* | *9.4%* |
| **World Total** | **2,651.3** | **2,770.9** | **2,867.7** | **2,882.2** | **3,075.7** | **3,179.7** | **3,221.9** | **3,251.8** | **3,259.3** | **3,332.2** |
| | *100%* | *100%* | *100%* | *100%* | *100%* | *100%* | *100%* | *100%* | *100%* | *100%* |

*Source*: GFMS Refinitiv Gold Survey (2019).

Given the fact that the gold extraction is often not sufficient to cover the whole global demand, gold scraps – especially during the last years – are playing an important role. Gold scraps, also coming from the filing productive phases, have great markets within some specific countries, which are: India, whose large part of scraps are destined to the jewellery market, China, with stable volumes, Japan, with a decreasing share of this market. The way in which scrap gold is valued follow the same rules for the pure metal, that is, according to the percentage of pure gold present within the scrap.

### 3.3.2. The Italian position within the industry

The position covered by Italy within the jewellery industry has almost always been crucial: from the 1990s, the country experience a blooming period for jewels production, export volumes and trade. Still in that period, the increasing importance and efficiency of the organic structure of Italian industrial districts was the propulsor that pushed the national production of jewels, with the crystallization of three globally known IDs, Arezzo, Valenza Po and Vicenza. According to ISTAT data, it is possible to analyse the export-import position and trend from 2009 until the latest available data, which refers to August 2021. However, in order to understand the effect of the current crisis on import and export trends, the graphs in Figure 3.7. and 3.8. go from 2009 to 2019. Starting from the Italian export dynamics, it is possible to see (Fig. 3.7.) that quantity follows a quite different path with respect to values: tonnes of exported jewels tend to altern increase and decrease phases, with cyclical fluctuations. Values of export experienced a more stable path, showing a constant growth with some exceptions (in 2016 and 2018). For what regard imports (Fig. 3.8.), Italy declined considerably, from a maximum value in 2010 of 9.047 tonnes to levels around 5.000 tonnes in the time period from 2015 to 2019. However, also here the imported values followed a different path if compared with imported quantities: from 2009 to 2019 values almost tripled. In fact, both import and export values follow a similar dynamic: in both cases until 2019 their value constantly grew. This information, combined with the one about the volumes (in tonnes) of import and export, can lead to some consideration about the price: given that the value both for import and export has increased in the face of a stable amount (export) or even a declining one (import) of jewel tonnes globally traded, the most straightforward conclusion is to assume that price has increased over the last decade.

**Figure 3.7**. Italian export data in tonnes (left axis) and in euros (right axis).
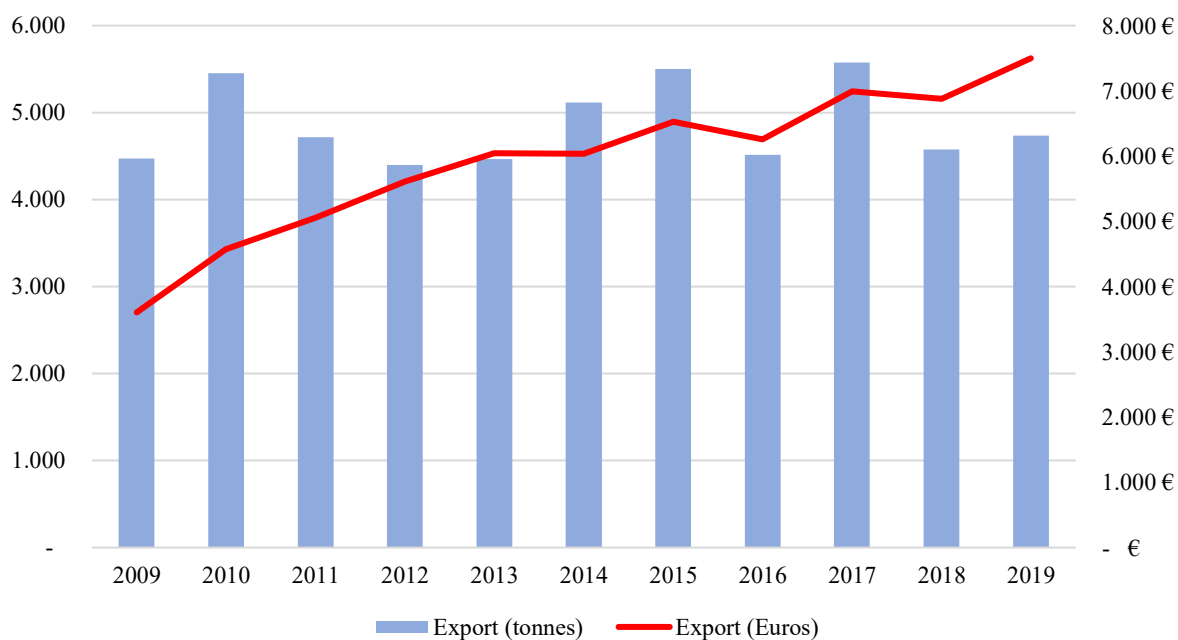


*Source*: own elaboration on COEWEB ISTAT. Data refers to ATECO 2007 code CM 32.1.

**Figure 3.8**. Italian export data in tonnes (left axis) and in euros (right axis).
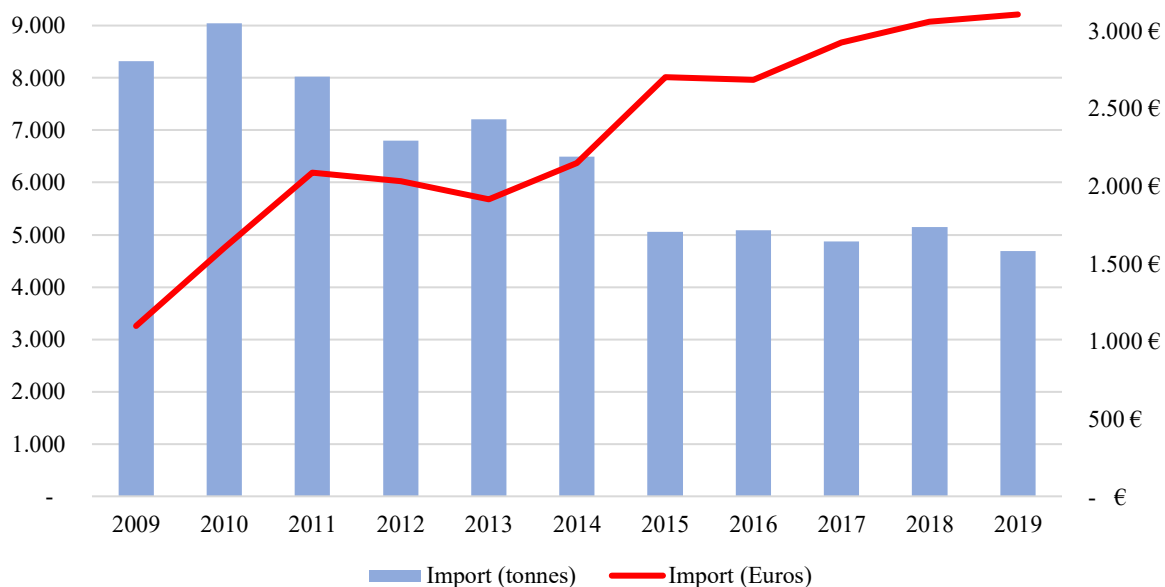


*Source*: own elaboration on COEWEB ISTAT. Data refers to ATECO 2007 code CM 32.1.

Italian main export destinations in US$ values are – according to UN Comtrade data (Table 3.3.) – Switzerland, UAE, France, USA, China, and Hong Kong. It is however interesting

explain a note on the particular case of Switzerland: the country of course has the role of international hub for many products, whose one is jewellery (*Federorafi*, 2018). Anyway, a consistent part of gold and jewels is traded in the Helvetic country for a legal issue. Globally, jewels and similar goods need to own a specific label (the so-called hallmarks) in a mandatory way in order to be sold as "gold" products. This special label affixing and, in turn, jewels recognition in other countries, can be done "internally", that means directly by producers with a particular self-certification (this is the case of Italy, for example); or throughout dedicated "external" institutions that guarantee on the quality and also on the quantity of precious metal present within jewels (this is the case of France and Germany). Controls on hallmarks are strict, plus neither at European level a harmonized law on jewellery-related labels exists. But Switzerland, however, allows foreign countries to export jewels and bijoux with a specific mutual recognition agreement, in which substantially both countries recognise and guarantee

**Table 3.3**. Italy's main export destinations (millions of US$), from 2008 to 2020.

| | 2008-2018 | | 2008-2020 | *Variation* |
|---|---|---|---|---|
| UAE | 12,244 | Switzerland | 14,013 | *14,45%* |
| Switzerland | 12,019 | UAE | 13,702 | *14,00%* |
| USA | 7,439 | USA | 9,211 | *23,82%* |
| France | 6,198 | France | 7,68 | *23,91%* |
| China | 5,834 | China | 6,975 | *19,56%* |
| Turkey | 2,582 | Turkey | 3,087 | *19,56%* |
| UK | 2,281 | UK | 2,757 | *20,87%* |
| Germany | 2,161 | Germany | 2,557 | *18,32%* |

*Source:* UN Comtrade data. The data refers to Harmonized System code 7113, including jewellery of gold, silver, platinum and other base metal products.

each other that the exchanged products satisfy the quality standards needed. For what regard the main export destinations of Italy, in the table below (Table 3.3.) it is possible to note that for the decade 2008-2018 the main partners have remained the same, with differences in the amount of export values. The most consistent variations (in percentage terms) have been recorded by, in order, France (+23.9%), USA (+23.8%), UK (+20.8%), China and Turkey (both with +19.5%).

### 3.3.3. Italian gold jewellery IDs

As seen at the beginning of this chapter, Italian jewellery has played an important role within the global context, representing the high valued manufacturing typical of the made in Italy. However, within the national territory there are three important spearheads for the production of high-end jewels: Arezzo, Vicenza and Valenza Po. These cities are located in three different areas of Italy, respectively in central, north-east, and north-west of the country; however, the thing that associates these three areas is their local organizational form. In fact, all the three productive poles are characterized by the most important features of the industrial district production: within the local territory a strong net of medium and small firms (with some exceptions for the leading firms) developed different and complementary abilities and skills that increase the quality of precious metals manufacturing and working. Thanks to this dense and diversified development, three relatively small IDs (the total amount of workers involved within Arezzo, Vicenza and Valenza Po is 16.871 at June 2021) have become important players in the national (their export values weighted from 70% to 75% on national exports) but especially in the global industry of jewellery. In the following sections of this paragraph each Italian industrial district will be presented, with an introduction about the birth and the history of each ID, in order to proceeding then with the explanation of each ID's main current features.

### Arezzo

Arezzo is one of the three Italian clusters specialized in the gold jewellery production, and it is located in Tuscany region, central Italy. The origins of this city date back to a period comprised between the XI and the I century B.C, when Etruscans started to refine and work gold to produce the first fine jewellery items, with an interesting particular technique called the "granulation" – it consisted of the dismantling of precious metals into small grains, that were further welded according to the form wanted for the final jewel. These precious pieces of craftmanship became the main driver of the fame of the ancient *Aretium*. Despite these great origins, the interest in handmade jewels and in their production process continue: between the XIV and the XV centuries, a lot of jewel workshops developed within Arezzo, confirming and increasing the fame linked to the city. The quality that craftsmen are able to impress on jewels is so high that even the royale courts of Rome and Florence appreciated them. The development of that period was mainly driven by the growth of middle class and bourgeois, that financed such workshops in order to satisfy the intra-city needs or to satisfy religious commissions. It will be, in fact, only during the 1900s that Arezzo started its main expansion with the production of modern jewels, passing in general from an economy based on agriculture to an industrialized one. With

the introduction of new technologies and with the increasing wealth across people, the jewellery industry experienced an upgrade, almost until the second World War. The starting point for the modern activity of the industrial district, however, was in 1926: during that year a commercial representative (Leopoldo Gori) and a craftsman (Carlo Zucchi) founded the yet-called firm Gori & Zucchi, that later will have turned in UnoAErre. This firm can be considered as the core of the new-born ID, as the consolidation of UnoAErre pulled the trigger of an expansive growth mechanism for the overall local area. The first consequence was the extended know-how of workers of UnoAErre, that specialized and gained experience until they opened their own new firms; at the same time, the same firm Gori & Zucchi decided to decentralize some productive phases, incentivizing the creation and the development of new laboratories and craft shops in the local area (Lazzeretti, 2003). Until the 1960s, the development of shops and small firms contributed to consolidate the jewellery production within Arezzo, and this positive growth trend continued also during the 1970s. During the '70s, Arezzo saw also the consolidation of UnoAErre as a leader of the ID, as in that period it was the principal European exporter of jewellery; the remaining part of the productive fabric within the area consisted of small firms, that mainly worked with commissions requested by big industrial companies. During that period the small entities that populated the ID did not characterize their production with a high added-value, and the strong dependence with commissioners did not allow them to develop financial and strategic capabilities in an industry in which the principal raw materials suffer from frequent price fluctuations. In 1979, in fact, when the price of gold registered a sharpen increase, Arezzo's jewellery suffered a strong crisis period: to recover and avoid the emergence of a similar situation again, entrepreneurs within the ID decided to act a renovation phase, introducing new products and adding more added-value to the production. During the period 1980s-1990s, Arezzo effectively became an industrial district, populated by SMEs and positive growing trends of number of active firms, sales and workers. In the '90s the ID also extended its final markets abroad, affirming the "made in Italy" design and quality of products and introducing a new technology called *elettroformatura* that allowed local firms to produce high-end light jewels available only with this specific technique. Arezzo is now specialized in chains, bracelets and rings pertaining to mid-low-price range. Its main competitive advantage lies in its ability to maintain relatively low productive prices: this is possible due to the high degree of mechanization of productive phases and also by the utilization of other noble metals (such as silver, for example) in order to mitigate the gold price fluctuations; nonetheless is also important to remember that Arezzo can count on consistent innovative processes and initiatives. Nowadays the firms that constellate the district are small-sized (except for the lead firm,

UnoAErre), but at least half of them own a proprietary brand and a distributive channel (De Marchi *et al.*, 2014).

The ID can count on a heterogeneous productive fabric, given that within the local area there are different types of firms, divided in four main groups: a consistent part of firms is specialized in the procurement of raw materials, other firms are dedicated jewellery producers, others are specialized in the production of the machinery needed in the jewellery production, while some other firms are intermediaries. However, independently on the specific area of specialization, within the district there are both phase-focused firms as well as companies that carry out the overall production process, with a considerable level of forward integration. The firms pertaining to Arezzo district are linked together through a complex net of inter-linkages, and the largest part of them directly carry out the most important phases of the production process, which are projecting and product design, alloy preparation, casting, metalworking, affixing of the hallmark (Lazzeretti, 2003).

**Vicenza**

Vicenza is a provincial city situated in the North-eastern part of Italy, in Veneto region. The industrial district, however, is extended within the overall province, with two main reference productive poles: Trissino and Bassano Del Grappa (two out-of-city towns; the former is 25 km far from Vicenza and the latter is around 35 km far) and Vicenza city. Vicenza is another territory which shares with Arezzo a long tradition of jewellery production: the first written documents that reported information about the jewellery-dedicated activity of the city dates back to the first half of the XIV (1339) century, and it was the official statute of the local jewellery corporation – that gathered around 150 artisans – whose name was "*Fraglia degli Orefici di Vicenza*". A period of great fame and success for Vicenza has been the Renaissance (XV and XVI centuries): during these centuries the quality of the handcraftsmanship and the development of the small, specialized workshops (the so-called *botteghe*) happened thanks to Valerio Belli – also known as Valerio Vicentino, in tribute to his native land. Belli was an illustrious artist who frequented artists such as Michelangelo Buonarroti and Raffaello; his name was well-known all over Europe, as he mastered the art of engraving precious hard stones and metals. Renaissance was a glorious period for the jewellery production of Vicenza, and many masterpieces created by goldsmiths from Vicenza can be admired in several churches in Italy. However, the "jump" that transformed Vicenza from a dense artisan city into an industrial district can be dated back to 1700s-1800s, period during which different small-sized firms emerged and increased their specialization in the jewels production.

Nowadays the district is composed by many small firms, similarly with the local fragmentation that characterizes Valenza Po, but recently a consistent group of firms pertaining to the ID started to specialize in the building of machines for the jewellery production: this contributed to the emergency of two paths within the same district. Small-specialized artisan firms focused more on leveraging a product differentiation strategy, while firms within the two poles of Trissino and Bassano Del Grappa started to compete exploiting more economies of scale with respect to differentiation, with firms specializing especially in the production of chains. The entry of the ID within the international market and within GVCs happened, as well as for Valenza Po, thanks to the economic boom that Italy experienced a decade after the WWII, during the period 1950s-1960s. The global competition pushed new investments in more-performing machines and an increased diversification of the product range within Vicenza; it was also the driving force that contributed to the development of supportive local institutions such as the globally famous Vicenza Exhibition (whose name is VicenzaOro) (De Marchi *et al.*, 2014).

**Valenza Po**

Valenza Po is a hilly city that counts around 18,000 inhabitants located in the Piedmont region (North-west Italy), near the border with Lombardy. Valenza Po's jewellery industrial district has a more recent story with respect to Arezzo's or Vicenza's one: in fact, the small city located in Alessandria province, saw during the middle-age an initial and new interest of small entrepreneurs and gold laboratories on gold manufacturing. As Valenza is geographically situated near the confluence of Po river with its tributaries, it has always been an attractive area: the craftsmen started to sift the sand along the riverside with the hope to find some gold. However, despite gold searchers were not so lucky, they learned anyway how to work and shape the noble metal. In 1843, Vincenzo Morosetti, an entrepreneur who came back in Italy after a period as emigrant in the US, opened a small laboratory to process gold and create jewels. This small laboratory could be seen as the fundamental impulse to the development of the jewellery production of Valenza Po. In 1872, other 4 firms added to the jewellery production in Valenza Po, and the grew continued, as in 1911 the number of firms went up to 43 (Gaggio, 2007). As reported also by De Marchi *et al.* (2014), Valenza Po's history is quite recent, as the specialization in high-end jewellery and precious stones destined to high-price ranges started only around the end of the XX century. It is so important to say that the most crucial period for the developing of the industrial district as it is known today happened during the post-war periods: in fact, after the two global conflicts, gold-related economic activities became

interesting, as gold was seen by people as a "safe heaven" against the increasing post-war inflation (Gaggio, 2007). At the same time, mainly thanks to the expansion of the national market in 1950s-1960s after the WWII, Valenza Po industrial district attracted relevant international and national jewellery brand such as Damiani, Cartier, Bulgari and Pasquale Bruni, that developed strict relationships with foreign wholesalers but that also built branded-shop chains (Fontefrancesco, 2011; De Marchi *et al*., 2014). The period 1950s-1960s was also characterized by the reinforcement of local institutions, and a striking example was the creation of a specialized professional school and the Cabinet for gemmological analysis in 1950, to cope with the increasing needs of qualified goldsmiths. In 1978, Valenza Po witnessed the building of the first national jewellery-dedicated Exhibition center, that will have later become a common model for other cities.

Nowadays the ID is populated by many small and medium firms, and only some among them are concretely leading firms (generally the big brands aforementioned rule the district); the small entities within the district are often only manufacturer (Original Design Manufacturer or ODM and Original Equipment Manufacturer or OEM, to recall the theoretical background introduced in Chapter 1), with little managerial and marketing skills. The presence of international and famous national brands within the ID combined with the enhancement of local institution favoured and facilitated the entry of Valenza Po district within the GVCs. Valenza is nowadays specialized in high-end jewellery manufacturing and precise finishing, and the ID is characterized by a strong sense of cooperation and a proactive entrepreneurship (De Marchi *et al*., 2014).

## 3.4. The impact of the Covid-19 crisis on the industry

### 3.4.1. Main effects of the crisis

The impact of the pandemic around the world, as stressed in the previous chapter, has been heterogeneous across different industries; the fashion industry, that is the macro-category within which jewellery is embedded, particularly suffered the effects of Covid-19 crisis. Fine jewellery and luxury watches industries recorded a 10-15% and a 25-30% decline in revenues respectively. The crisis intensified the active changes that the industry was already experiencing, such as the digital transformation for example (currently the jewellery industry counts on a 13% of online sales, while the amount of watches sold digitally is around 5%), sharpened in the last two years because of the physical shops closure in most countries around

the world (McKinsey, 2021). An additional negative effect that Covid has brought during the last two years refers to those purchases made by travellers and tourists, which accounted for roughly one third of total market sales according to McKinsey (2021). Covid-19, however, marked the beginning of a demographic evolution within jewellery and watches industries, especially considering consumers' characteristics and new habits.

**Figure 3.9**. Global annual average growth rate of jewellery exports (from 2009 to 2020).
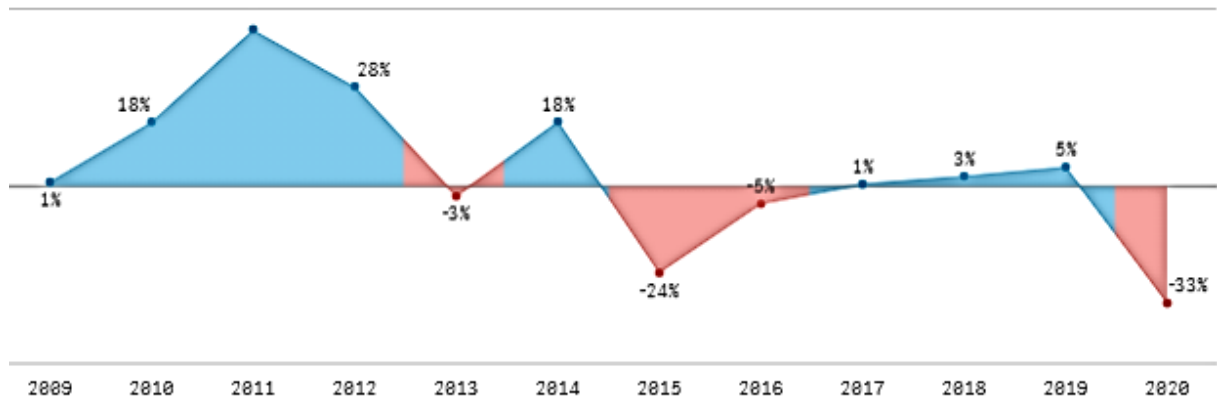


*Source:* UN Comtrade. The data refer to Harmonized System code 7113, including jewellery of gold, silver, platinum and other base metal products.

As reported in the graph above (Figure 3.9.) it is possible to note that the global trade of the jewellery industry has considerably suffered the pandemic-originated crisis, with a negative annual average growth rate from 2019 to 2020 of -21%. During the period 2015-2020, China has been the first reference export destination for the global industry, and the previous-showed negative growth rate is associated to the fact that China has also been the very first country in which Covid-19 was discovered and in which lockdowns and other countermeasures were undertaken. Despite the initial difficulties of 2020, the industry is going to recover in 2021, as pointed out by McKinsey (2021). In fact, a first important aspect for what regard demand just refers to the renewed positive growth of Chinese consumers, which are interested especially in fine branded jewels and luxury watches.

**Figure 3.10.** World's jewellery demand (% of tonnes) per global regions.



■ China   ■ India   ■ Other countries
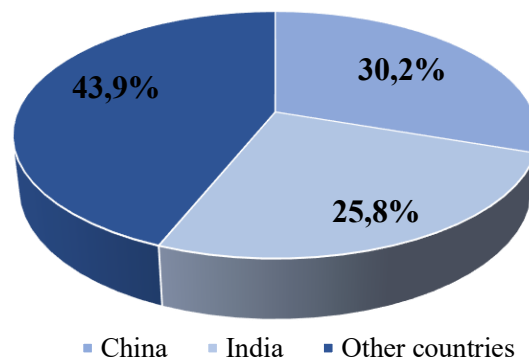
*Source*: own elaboration on Statista report – *Jewellery market worldwide*, 2019b.

**Gold demand**. However, demand levels of 2020 are the most significant data, as they witness the reduction from 2019 to 2020 of 33%. Even according to the World Gold Council (as reported in Sole24Ore article) the global amount of gold demand touched the minimal levels in 2020: such a dramatic impact is due to social distancing, productive shutdowns and lockdowns but also to the higher level of jewels prices, as a consequent effect of the great uncertainty experienced on markets. According to Sole24Ore, the global jewellery demand started a recovery period from the third quarter of 2020, with improvements especially in India and China that consisted in a smaller reduction rate with respect to the overall 2020's figure. In Figure 3.10., a pie chart shows the percentages of world's jewellery demand (measured in % of tons) per region: as it can be noted more than half of world's demand comes from only two countries, which are China (with 30,2%) and India (with 25,8%), so the overall consumption is led by these two countries, with global players getting more and more interested in these markets.

**Figure 3.11a.** Global gold demand (in tonnes) from 2009 to 2020.

**Figure 3.11b.** Year-to-year percentage variation of global gold demand.

As it can be seen in Figure 3.11a., the global gold demand strongly contracted in 2020, year in which all the countermeasures against Covid-19 were massively applied. This contraction marks the lowest peak of demand during the last 11 years, which is dramatic considering that during 2009 the Great Financial Crisis effects were still affecting global markets. Another interesting consideration that can be done by looking at the graph in Figure 3.11b. is that the industry experienced a great period of demand growth until 2013, while from 2014 on jewellery demand started a period of decline.

**Expected trends**. Covid-19 and the social countermeasures undertaken to face the pandemic from 2019 contributed to the halt of global leisure travels: for the macro-industry of fashion and, consequently, also for the jewellery industry, this has completely blocked all the purchases by tourists of jewels and bijoux (this type of sales represented a 30% of the pre-pandemic market). However, other expected shifts within the industry have been identified (McKinsey, 2021) for the next five years. A first expected trend refers to a considerable growth of the fine jewellery, with an estimated compound annual growth rate (CAGR) of the period 2019-2025 of 8 to 12%. The emergency of the pandemic raised the attention of a large part of consumers about topics like environmental sustainability, social progress, decent and right work conditions: jewellery firms are asked to answer at these responsibilities with a higher degree of transparency and traceability in their supply chains. Moreover, social distancing and lockdowns have made necessary new ways of selling products, as physical shops and boutiques have been closed for months. Both fine jewellery and watches industries needed to re-think or partially change their business models, as the yet-growing necessity of customers was to consolidate and extend firms' digital channels. Jewellery has been affected by this digital transition request mainly because of the nature of its products: in fact, consumers are willing to spend consistent amount of money generally after an accurate examination of product features, quality and certifications (this is the same for other durable goods, such as cars for example).

**A demographic evolution**. According to McKinsey report (2021), the industry has experienced and is still going to experience a demographic evolution, meaning that globally firms pertaining to the jewellery industry would have to adapt to new conditions of final customers. In this case, "ultra-high-net-worth" – as classified by McKinsey – individuals are going to increase their importance as final customer segment, creating new market spaces for the high luxury. To specify, these individuals can count on personal incomes higher than US$ 100 million. Another change that the industry is experiencing refers to the increasing relevance that Chinese consumers are gaining for global brands: the expected figures calculated from 2019 to 2025 support the idea that this geographic area will constantly outgrow, especially for branded fine jewellery. Moreover, a size expansion for fine jewellery is expected by researchers, passing from $280 billion sales of 2019 to a value between $340-360 billion in 2025 (with a growing CAGR of 3-4%). This growth will be triggered by the changing customer tastes and preferences: a consistent growth of 5-10% of market share with respect to 2019 is expected for branded jewellery until 2025. Still referring to branded purchases, the Asian market is expected to recover faster, with a 2019-2025 sales CAGR of 10-14%. The increasing size expected for branded jewellery industry will be reflected in rising prices of such products, with a tougher competition across luxury jewellery brands (high-end products sold by specialized branded-

firms, such as Damiani, Cartier), fashion brands that differentiated in this sector too (luxury famous *maison* such as Louis Vuitton, Chanel for example, that expanded their business from clothes, bags and shoes to accessories, jewels and watches) and new direct-to-consumer (DTC) companies. Especially the latter ones are new business models that appeared in the industry quite recently (less than 10 years ago) and that offer a direct – and often digital – distributive channel to consumer, allowing them to buy fine-jewellery pieces at affordable prices because of the lack of intermediate wholesalers.

**Digital transition**. As previously outlined, the jewellery industry will experience an "unprecedented digital evolution" (McKinsey, 2021), with a rapid follow-up change also in consumers' purchasing habits. The online channel for the industry is expected to grow of a 9 to 12% rates from 2019 to 2025. It is interesting to mention an interview with the CEO of Cartier made by McKinsey in "The State of Fashion" (2021) about the digital transition that is needed and requested in the near future; McKinsey interviewer makes some interesting points emerge. Premising that this digital transition for jewellery industry will be enhanced and speeded up by the current pandemic crisis, Vigneron (Cartier's CEO) highlighted that digital transition should not be perceived as an issue, rather as an opportunity, and the point is not re-creating the in-store experiences but delivering to final customers exactly what they want to see on screen. Despite the thoughtful purchase process typical for fine jewels, often consumers buy in physique stores in order to have a consultation and a professional assistance; that was the main reason why the industry slowly started the digitalization process. However, the pandemic worked as a "catalyst" – as defined by McKinsey (2021) – to give the impulse to the industry to concretely start this transition. Luckily, consumers did not approach to online purchases difficultly, so the overall US and European markets experienced a growth of 57% in the number of fine jewellery pieces purchased from 2019 to 2020. In addition to the increase in processed orders, also jewels average unit value increased from 2019 to 2020: this could be a consequence of the great fluctuations that gold price experienced from the beginning of the pandemic. As it could be seen in Figure 3.12., in the initial months of 2020 gold price remained in a price range that went from around $1,500 per troy ounce, while few months later (August 2020) the peak hit up $2,048.15 per ounce. From that period onwards, until nowadays, gold price crystallized on quite high values, especially high if compared with its price during the last 10 years (this difference can be seen in Figure 3.6.).

**Figure 3.12**. Gold prices in US$ per troy ounce, from December 2019 to December 2021.
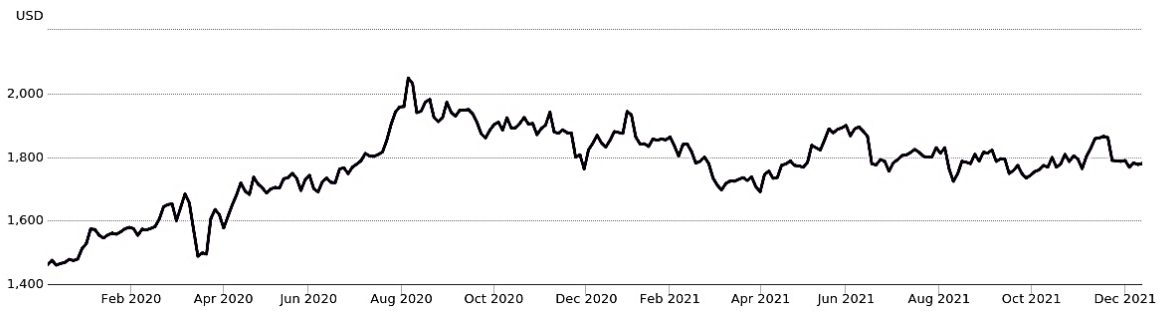


*Source:* data on FastMarkets, ICE Benchmark Administration, Thomson Reuters. World Gold Council.

This new shift toward digital and online channels, however, are not as bad as it can be thought: in fact, digitalization can also be seen as a new opportunity to exploit social media audience, as McKinsey (2021) estimated an online sales CAGR for fine jewellery of 9-12%. However, it is true that each change implies some adaptability, as consumers who frequently buy online could easily compare prices and features of products. Players within the jewellery industry must put a huge effort on transmitting in some way the professionality that characterizes the brick-and-mortar purchases (McKinsey, 2021).

**Customers' preferences**. Traditionally, the "fine jewellery" segment represents pure luxe for the majority of customers. Around a 20% of the market is composed by large-sized brands, such as Cartier, Tiffany or De Beers, while the remaining market share is split across many unbranded firms. Still before the pandemic this brand-orientation trend has begun, but in 2020 many consumers dramatically changed their preferences according to the new priorities that Covid-19 has settled. Large brand companies initially invested in loyalty and engaging campaigns, with the aim of capturing customers and retain them thanks to new strict relationships, as "today, consumers increasingly look to brands to fulfil a desire for affiliation, purpose and deeper meaning" (McKinsey, 2021, p. 60). As cited in McKinsey, some retailers upgraded their technologies in order to allow customers to almost give feedbacks instantly by using AI-driven chat for example. In this context of brand-loyalty need, there are different types of players within the industry: yet-established brands already operating in the industry; yet-established brands that are going to expand their distributive channels and their promotional campaigns; and new brands that are going to enter in the market. However, as previously mentioned in paragraph 3.3., firms pertaining to jewellery industry will be soon commit to sustainability and transparency programs in order to effectively retain the greatest part of consumers.

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### 3.4.2. Effects of the pandemic crisis within the Italian jewellery industry

As previously reported in chapter 2, Italy has been one of the most hit countries by the pandemic, especially during the first and the second wave of contagion of 2020. Still in chapter 2, a special attention has been posed on how the effects of social distancing and other countermeasures affected heterogeneously different industries: the fashion sector experienced consistent losses, both because often clothes and accessories are bought in relation to social life, zeroed by social distancing, and also because during periods of uncertainty consumers tend to drastically change their purchase habits, preferring to cut the budget dedicated to secondary goods in favour of first necessity ones. Even if at the end of the year (2020) the Italian jewellery industry showed some recovery signs, the industry with no doubt experienced a hard recession. The positive trend verified at the end of 2020 happened mainly due to the fact that this industry tends to be seasonal, and the Christmas period has always been a crucial time for jewellery, as jewels are often object of presents. According to Federpreziosi (the actual Italian jewellery federation), most of the difficulties encountered by Italian firms within the industry have been the dramatic decline of sales and the consequences implied: many costs, such as rents, suppliers' payments and mortgage payments must be paid anyway, independently from external conditions. In this way, a consistent part of jewellery firms had considerable cash issues, forcing entrepreneurs to ask for a renegotiation of payment contracts. In the previous paragraph a new enhancement of digitalization within the industry emerged as a new evolution that jewellery must undertake in order to survive to the changes and to the challenges that Covid-19 crisis has brought; however, still according to *Federpreziosi* (2020), Italian jewellery is far from online commerce, with only 1 firm out of 5 owning an e-commerce distributive channel. The specific dynamic of 2020 and 2021 can be observed in the two graphs below (Figure 3.13. and 3.14.): for what regard the position of Italy of imports and exports, comparing Fig. 3.13. and Fig. 3.14. with Fig. 3.7. and 3.8. respectively, it is possible to note that the pandemic has had a considerable impact on Italian jewellery industry, both in terms of quantities (tonnes) and in terms of values (Euros). However, as stressed in an article by Sole24Ore, the negative impact recorded for 2020 suffered both the negative effects of the pandemic and also a great trend experienced in 2019, with a positive growth rate of exports of 3.5% in quantities and of 9.1% in values. According to Sole24Ore, the industry slightly recovered during the last two months of 2020, with the return to a positive component of foreign sales. Moreover, it is important to keep in mind that the data collected for 2021 are cumulative for the first, second and third quarters.

**Figure 3.13**. Italian export data in tonnes (left axis) and in euros (right axis).
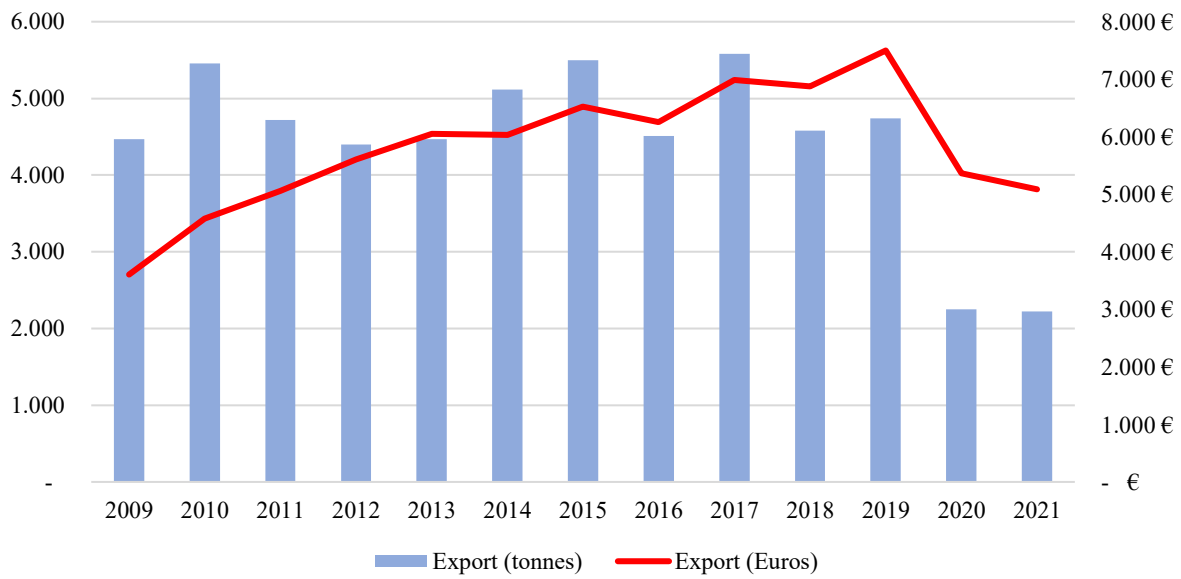


*Source:* Own elaboration on COEWEB ISTAT data; ATECO 2007 code used is CM 32.1.

**Figure 3.14**. Italian import data in tonnes (left axis) and in euros (right axis).
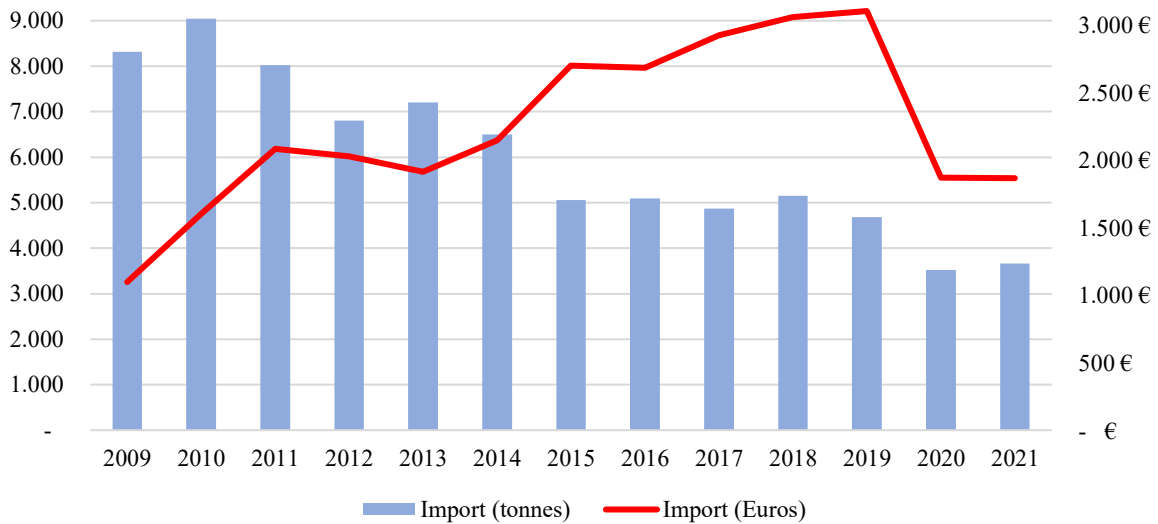


*Source:* Own elaboration on COEWEB ISTAT data; ATECO 2007 code used is CM 32.1.

**Figure 3.15**. IDs' percentage of Exports on National value (including 2020 and 2021). Data refers to ATECO 2007 code 32.1.
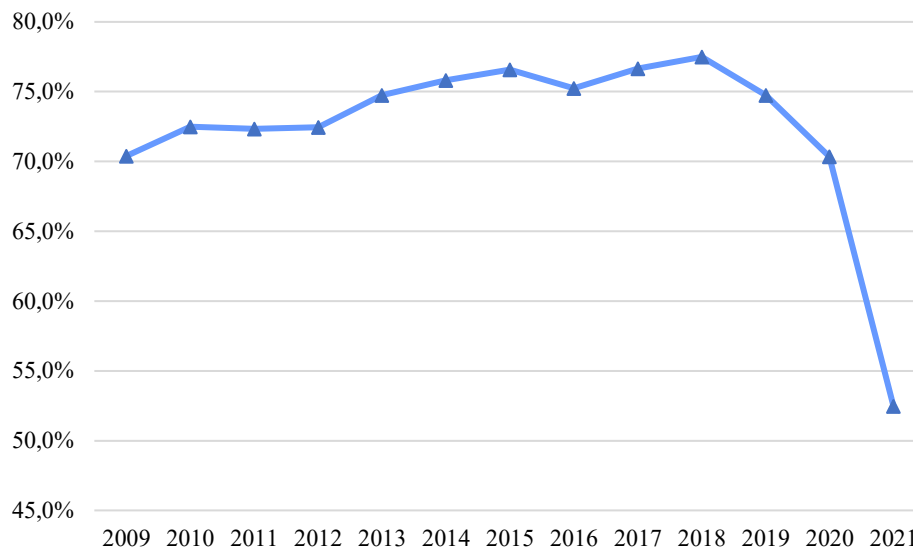
Analysing the role of the three Italian IDs, it is possible to note that the last two years (2020 and 2021) show atypical values due to the impact of the pandemic. Also referring to Fig. 3.15., it is crucial to remember that the data for 2021 are cumulative for the first, second and third quarter. As it can be observed in the graph, the percentage of Valenza Po, Vicenza and Arezzo's export values on the national figure is lower in 2020 with respect to 2019, passing from 74.7% to 70.4% respectively. The same decreasing percentage can be observed also from 2018 to 2019: this negative trend could be explained by the fact that, being the three Italian IDs embedded within GVCs, they early experienced the losses and the effects of the countermeasures against the pandemic, even at the end of 2019 when Covid-19 spread in China. Figure 3.16. reports the trend in millions of US$ of the first 8 main export destination for Italy: as showed by the graph, only USA maintained the same export turnover, while the other major countries, already in 2019 experienced a decline, such as Switzerland or China. Other countries, such as UAE or France, experienced a growing volume of transactions in 2019 with respect to 2018, and then export figures fell after the spread of Covid-19 pandemic. Except for USA, the other top 7 partners followed the overall trend of export turnover, with a consistent decline in 2020.

**Figure 3.16**. Italy's main export destination for 2018, 2019 and 2020. Values in millions of US$ of the first 8 destinations (left axis) and of the total amount of these countries (right axis).
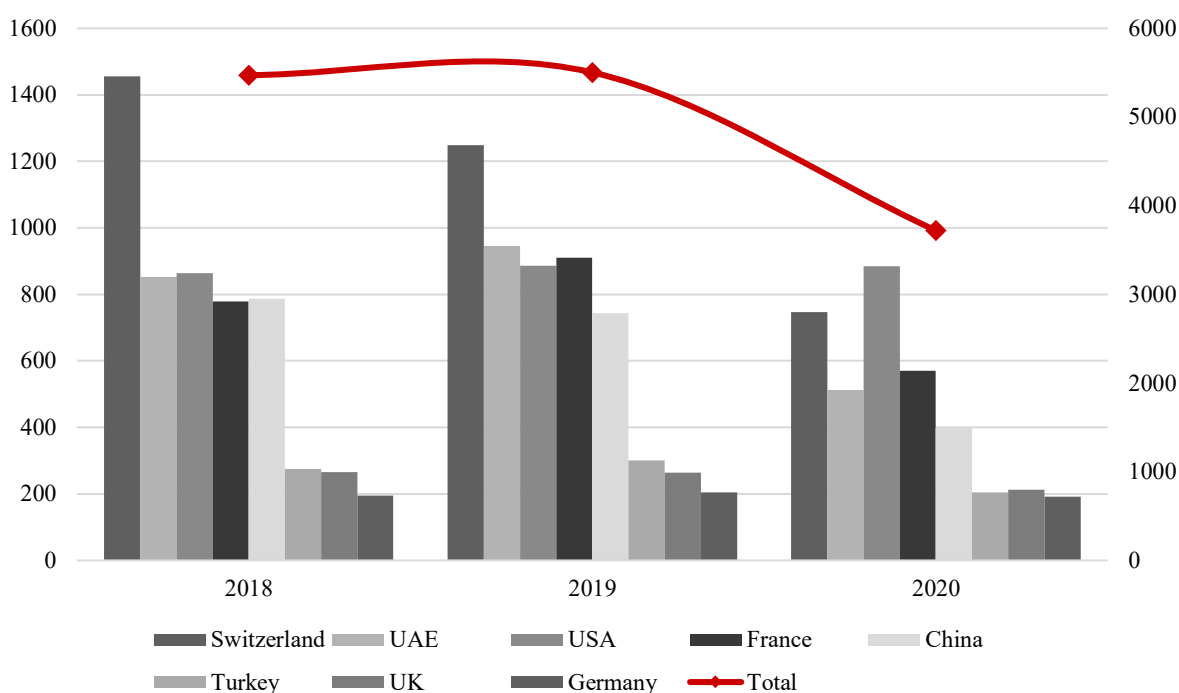


*Source:* UN Comtrade data.

### 3.4.3. The Italian gold IDs against the Covid-19 crises

After having seen the main characteristics and information about the three Italian districts that operates within the jewellery industry, it is now interesting to present some data with the aim of understanding the major trends and implications that Covid-19 brought on Italian jewellery IDs. In table 3.4. it is possible to notice how the IDs changed in terms of employees and firms' demography: what emerges is that Valenza Po, Arezzo and Vicenza changed from 2010 to 2019 heterogeneously. For what regard the number of firms, Valenza and Vicenza recorded a negative variation, while only Arezzo increase its number of firms during the decade. Referring to the number of employees, all the three districts experienced a decline, even though Arezzo had a smaller decline with respect to Valenza and Vicenza, that decreased more than 34%. The average number of employees per firm decreased in all the three IDs, passing from 7.7 in Valenza, 7.4 in Arezzo and 9.2 in Vicenza during 2010 to, respectively, 6.1, 5.9 and 6.2 in 2019.

**Table 3.4**. Recent changes within the three Italian jewellery IDs.

| | Valenza Po | Arezzo | Vicenza |
|---|---|---|---|
| Number of firms (2019) | 726 | 1408 | 690 |
| Variation, 2010-2019 | -17.41% | 15.41% | -3.23% |
| Number of employees (2019) | 4402 | 8233 | 4246 |
| Variation, 2010-2019 | -34.95% | -9.30% | -35.15% |
| Average number of employees (2019) | 6.06 | 5.85 | 6.15 |

*Source*: own elaboration on data given by Chambers of Commerce of Arezzo-Siena, Alessandria and Vicenza.

In table 3.5. the same data of table 3.4. are reported in order to depict an initial picture of how the current crisis impacted the demography of the Italian jewellery IDs. As it can be noted, in all the three territories the number of firms decreased if compared to 2019: it declined of less than 2% in Valenza Po, whilst in Vicenza the decrease has been more consistent (-5.22% from 2019 to 2021). The variation of the people employed within the industrial districts are interesting: in Valenza the occupation increased, with a positive growth of 3.63%. In Arezzo the variation is minimal, and only Vicenza recorded a decrease of -3.25%. However, the average number of employees per firm slightly increased in all the three IDs from 2019 to 2021, reversing the trend previously seen for the period 2010-2019: this lead to the conclusion that an initial recovery phase, started during the last two months of 2020, has begun; and that currently the three IDs are experiencing an increasing concentration of firms, with less firms with more employees.

**Table 3.5**. Recent changes against Covid-19 crisis for the Italian Jewellery IDs.

| | Valenza Po | Arezzo | Vicenza |
|---|---|---|---|
| Number of firms (2021) | 716 | 1374 | 654 |
| Variation, 2019-2021 | -1.38% | -2.41% | -5.22% |
| Number of employees (2021) | 4562 | 8201 | 4108 |
| Variation, 2019-2021 | 3.63% | -0.39% | -3.25% |
| Average number of employees (2021) | 6.37 | 5.97 | 6.28 |

*Source*: own elaboration on data given by Chambers of Commerce of Arezzo-Siena, Alessandria and Vicenza.
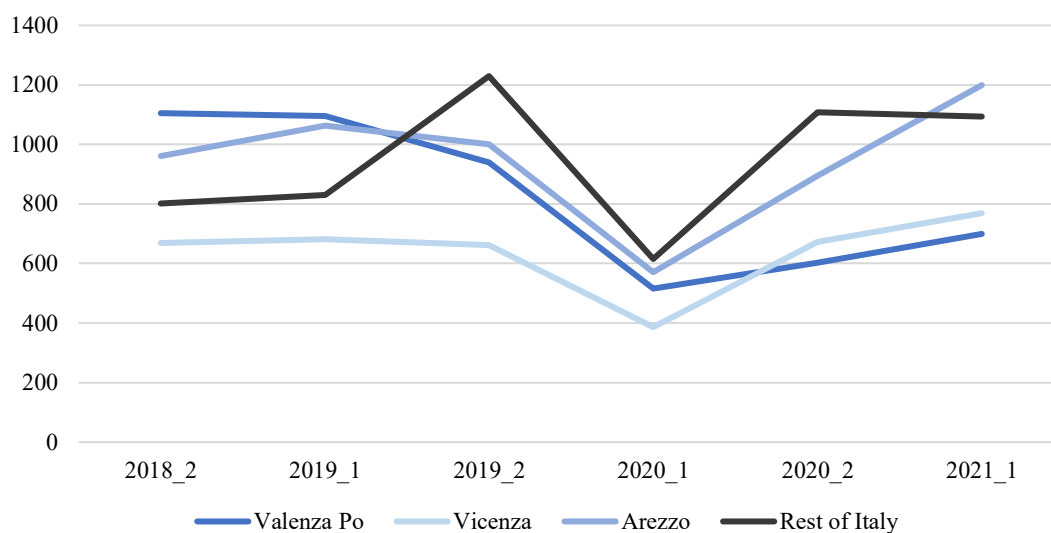
**Figure 3.17**. ID's and Italian Export trends for 2018-2021. Data are reported in million Euros, in semesters, from the second semester of 2018 to the first semester of 2021.



*Source:* own elaboration on COEWEB ISTAT. Data refers to ATECO 2007 code CM 32.1.

The graph (Figure 3.17.) reports some interesting trends. First of all, it is possible to see that there are three different reactions toward the Covid-19 crisis for what regard the export dynamics. All the three IDs were hardly hit in 2020: this is probably due to the countermeasures initiated by most of countries around the world. The shutdown of productive activities, the difficulties and the increased controls over international transportations and the customers' decline in demand made the first semester of 2020 the worst performing period for the jewellery Italian IDs. The "worst" performing district is Valenza Po, as during the last years is the only one ID which has not already reached back the pre-crisis export values, even though it was the leading district with respect to export values during the last semester of 2018. The overall decrease between 2018 and 2021 has been complexly of -36.65%; it is the case to mention that despite this negative trend, Valenza Po was the district that experienced the more sharpen decline within the three IDs in the pre-crisis period. The district of Vicenza reached the highest negative peak in the first half of 2020; however, the district is positively reacting as yet in the second semester of the same year it recovered to pre-crisis level. In the first semester of 2021 the growing trend was even outperforming the 2018 figures. According to the graph, however, the best performing district within the three is with no doubt Arezzo: as it can be noted, this virtuous district was in a growth phase even before the Covid-19 crisis, as from the last semester of 2018 to the second semester of 2019 it complexly grew of 4.05%. The impact of the 2020 strict countermeasures hardly impacted the export performance of Arezzo district, almost halving it in the first semester of the year; however, already during the second period of the 2020 year the ID rapidly recovered, getting close to pre-crisis levels of exports, and continuing

this growth trend until the second semester of 2021, with a net increase – with respect to the same period of the previous 2 years – of 12.83%. In the graph (Fig. 3.17.) it is also possible to make an early idea on how much divergence there could be between the decline experienced by the industrial districts and the situation of the rest of Italy. In order to make the understood of Figure 3.17. easier, a useful table is reported below (table 3.6.): combining both the sources of information, it is possible to see that the crisis hit the three IDs as well as other district and non-district Italian areas focused on jewellery, with a negative peak especially in the first semester of 2020. In this period, also the composition of the national exports (in values) changed, with the loss out of Valenza Po and Arezzo's strength in global trade (Valenza lost little less than 6%). The exception was Vicenza, that was able to gain ground in exports share also during the pandemic. However, as reported in table 3.6., it is also possible to note that 2021 seems to be a better year, with the first signs of recovery, as Arezzo and Vicenza showed a fresh increasing trend for what regard both the amounts (in Euros, see figure 4.14.) and the percentage of exports on the national context. Only Valenza Po seems to have difficulties in recovering from the impact of Covid-19, as the district even before the crisis was in a declining phase: this is also confirmed in table 3.6., given the fact that the ID's percentage of exports on the national amount passed from 31.2% in 2018 to 18.6% in 2021.

**Table 3.6**. Percentage of exports (in Euros) on the total national figure.

|      | Valenza Po | Vicenza | Arezzo | Rest of Italy |
|------|-----------|---------|--------|---------------|
| 2018 | 31,2%     | 18,9%   | 27,2%  | 22,7%         |
| 2019 | 27,2%     | 17,9%   | 27,5%  | 27,4%         |
| 2020 | 21,5%     | 19,5%   | 27,3%  | 31,6%         |
| 2021 | 18,6%     | 20,4%   | 31,9%  | 29,1%         |

*Source*: own elaboration on COEWEB ISTAT. Data refers to ATECO 2007 code CM 32.1.

After having seen this first analysis on the jewellery industry, it is now proper to shift the focus on the core of this thesis: the quantitative analysis aimed at understanding whether the three Italian industrial districts, that operate at international level within the industry, have been resilient during the first tough period of the crisis (2020) and how the fact that the IDs are embedded within GVCs has impacted their ability to survive and adapt to this unexpected new situation.

# Chapter 4

# The empirical analyses

## 4.1. ID firms economic performance during crises

### 4.1.1. Sample and variables

The strategy of research employed in ORBIS database was the following: first of all, all the firms pertaining to the NACE Rev. 2 code 32.1.2 - which refers to the production of high-end jewellery items and similar goods, according to chapter 3 - have been identified, combining also the "active firm" filter to the research in order to not include firms under liquidation or controlled by the governative authority. Then, the Boolean research "balance sheet availability" for years 2018, 2019 and 2020 has been applied, in order to exclude from the research firms with undeclared or missing documents for the three years of interest. Unfortunately, data of 2021, even the first quarter, were not available for any firm within the dataset. The sample, before some data cleaning, counted 5,613 observations. However, for most of the observation the data required to build the model were not available. The data cleaning phase consisted of dropping the observations within the sample with missing values. The number of observations

**Table 4.1**. Information on the variables employed in the model.

| | Formula | Explanation | Type |
|---|---|---|---|
| **Dependent variables** | | | |
| ROE 2020 | Net Income on Equity | Index that measures the overall performance of the firm | continuous |
| ROA 2020 | Earnings Before Interests and Taxes on Total Assets | Index that measures the performance of a firm with respect to its resources | continuous |
| EBITDA margin | Earnings Before Interests, Taxes and Depreciation & Amortization on sales | Index that measures the operative performance of a firm | continuous |
| **Independent variable** | | | |
| ID | It assumes value 1 if the firm *does* pertain to one of the three IDs, 0 otherwise | It measures the district characteristic of firms | dichotomic |
| Specific ID | It is a categorical variable that assumes value 0 when the firm is non-district, 1 when the firm pertains to Vicenza, 2 when it pertains to Valenza Po and 3 when the firm pertains to Arezzo | It is a different specification of the independent variable, in order to specifically see each ID's effect | ordinal |
| **Control variables** | | | |
| Size 2019 | Natural logaritm of n° of employees | Control for the size | continuous |
| Age | 2020 - year of incorporation | Control for the firms' age | discrete |
| Leverage | Total Liabilities on (Total Liabilities + Equity). Average value between 2019 and 2018 indexes | Control for the financial soldity of firms | continuous |
| Assets on Debts | Total Assets on Total Debts. Average value between 2019 and 2018 indexes | Control for the structural stability of firms | continuous |
| Capital Intensity | Total Assets on Turnover. Average value between 2019 and 2018 indexes | Control for the level of resources of firms | continuous |
| Current ratio | Current fixed Assets divided by Current Liabilities. Average value between 2019 and 2018 indexes | Control for the financial solidity of a firm | continuous |
| Liquidity ratio | (Current fixed Assets - Stocks) / Current Liabilities. Average value between 2019 and 2018 indexes | Control for the financial situation of the firm, with respect to the available liquidity | continuous |
| Liquidity ratio 2019 | (Current fixed assets 2019 – Stocks 2019) / Current Liabilities 2019 | Control for the financial situation of the firm, with respect to available liquidity of 2019 | continuous |

*Source*: own elaboration on ORBIS data.

after the data cleaning process was 920; despite the huge reduction of the dataset, the number of observations is still useful to do the analysis. It is important to mention that the relevant reduction of the dataset was a necessary choice, as for 4,693 observation there no available data useful for the models. At that point, the main variables to employ in the model were built: they are summed up in Table 4.1. and explained in the following section.

**Dependent variables**. The dependent variables utilized in the model were three, used as different proxies to represent the firms' performances, throughout different indexes: (1) Return On Equity (ROE), whose formula is income after taxes divided by the total amount of Equity; (2) Return On Assets (ROA), whose formula is earnings before interests and taxes divided by the total amount of assets; and (3) EBITDA margin, whose formula is earnings before interests, taxes, depreciation and amortization divided by total sales. The use of multiple proxies as performance indexes aims at avoiding self-criticism of using a single measure and to strengthen the measure itself (Xavier Molina-Morales, 2001).

**Independent variable**. The independent variable is a dichotomic dummy built in the following way: its value is 1 if a firm's legal headquarters are located within one of the three industrial districts (Arezzo, Vicenza or Valenza Po). For what regard the districts identification, the complete list of the Italian municipalities considered for each district is reported in chapter 3, paragraph 3.2. The dummy measures 0 otherwise, so it identifies all the other "external" firms with respect to these three IDs. The utilization of a dummy variable to identify the membership was employed in other previous studies (Hundley and Jacobson, 1998; Geringer *et al*., 2000 – as reported by Xavier Molina-Morales, 2001, p. 286). Moreover, an additional specification of such independent variable was added in order to isolate the statistical effect of pertaining to each single district and firms' performances.

**Control variables**. These variables are considered in the model in order to control for possible additional effects that have the potential to affect the dependent variables – the firms' performance – and are the following:

- Firm size. The control for firms' size was calculated as the natural logarithm of the number of employees. The logarithmic transformation has been chosen in order to normalize the distribution.
- Firms' age. This variable has been calculated as the number of years between 2020 (year of the latest available data) and the incorporation date of each firm.
- Indexes of firm structure and financial solidity. These indexes are the following: leverage ratio, operationalized as the amount of total liabilities on the sum of total

liabilities plus firm's equity; the assets on debts ratio, which measures the amount of assets with respect to the total amount of liabilities of a firm; the liquidity ratio, which measures for the liquid available resources of a firm; the capital intensity index, which measures the amount of total assets with respect to the total sales; and the current ratio, which measures the financial solidity of a firm, comparing its current assets with its current liabilities. The indexes in table 4.1. that are not written with the indication of a specific year are calculated considering the average values of 2019 and 2018, in order to smooth some potential time fluctuations.

### 4.1.2. Descriptive statistics

Before analysing the final results of the models, it is important to highlight some descriptive statistics in order to better interpret and understand the data. In table 4.2. the main information of each variable is reported, namely the number of observations, the mean, the standard deviation, the minimum and the maximum values. It is important to mention that some variables (leverage and capital intensity) were winsorized in order to eliminate the influence of outliers within the results. As it can be early seen by the table, it is possible to note that during 2020 the mean ROA was 0.93% (a small positive amount) and that the mean EBITDA margin was

**Table 4.2**. Descriptive statistics of each variable.

|  | Obs. | Mean | S.D. | Minimum | Maximum |
|---|---|---|---|---|---|
| **Dependent variables** | | | | | |
| ROA 2020 | 912 | 0,93 | 12,97 | -85,11 | 59,14 |
| EBITDA margin 2020 | 790 | 5,98 | 18,14 | -89,78 | 96,78 |
| | | | | | |
| **Independent variables** | | | | | |
| ID | 920 | 0,61 | 0,49 | 0 | 1 |
| ID (specific) | 920 | 1,34 | 1,26 | 0 | 3 |
| | | | | | |
| **Control variables** | | | | | |
| Size 2019 | 806 | 1,97 | 1,12 | 0 | 6,58 |
| Age | 920 | 21,48 | 14,51 | 1 | 78 |
| Leverage | 880 | 0,61 | 0,25 | 0,03 | 1,23 |
| Assets on Liabilities | 878 | 9,08 | 164,76 | 0,11 | 4.835,58 |
| Capital Intensity | 869 | 18,40 | 163,52 | 0,15 | 1.614,66 |
| Current ratio | 913 | 3,43 | 5,77 | 0,12 | 60,16 |
| Liquidity ratio | 872 | 1,80 | 2,46 | 0,03 | 23,78 |
| Liquidity ratio 2019 | 910 | 1,93 | 2,94 | 0,00 | 42,05 |

*Source*: own elaboration on Stata.

5.98%. The mean of the independent variable, which is the dummy that represents the district, measures 0.61, which means that the 61% of the sample is represented by firms pertaining to at least one of the three jewellery industrial districts, while the remaining 39% consists of external non-district firms. The specified version of the independent variable communicates some additional information with respect to the composition of the sample. The frequency table of the ordinal variable ID (specified) is reported in the following table (4.3.).

Table 4.3. Frequency of ID (specific) independent variable.

| ID (specific) | Frequency (n) | Percent | Cumulative |
|---|---|---|---|
| non-district firms | 358 | 38,91 | 38,91 |
| Vicenza ID's firms | 162 | 17,61 | 56,52 |
| Valenza Po ID's firms | 128 | 13,91 | 70,43 |
| Arezzo ID's firms | 272 | 29,57 | 100,00 |
| Total | 920 | 100,00 | |

Source: own elaboration on Stata.

It is also noteworthy to check the Pearson's correlation matrices reported in table 4.4. As it can be noted above, there are no particular correlations between the dependent variables and the independent variables: this would enforce a plausible conclusion that probably the results of the quantitative analysis will not detect any statistical relationship between the performance proxies and the dummy ID. In the next sections, further tests will be presented in order to investigate this aspect of the quantitative analysis.

Table 4.4. Correlation matrices.

| | ROE 2020 | ROA 2020 | EBITDA margin 2020 | ID | ID (specific) |
|---|---|---|---|---|---|
| ROE 2020 | 1,00 | | | | |
| ROA 2020 | 0,63 | 1,00 | | | |
| EBITDA margin 2020 | 0,51 | 0,74 | 1,00 | | |
| ID | 0,09 | 0,01 | 0,01 | 1,00 | |
| ID (specific) | 0,07 | 0,01 | 0,06 | 0,85 | 1,00 |

| | ID | ID (specific) | Age | Size | Leverage | Capital intensity | Assets on Liabilities | Liquidity ratio | Liquidity ratio 2019 | Current ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| ID | 1,00 | | | | | | | | | |
| ID (specific) | 0,85 | 1,00 | | | | | | | | |
| Age | 0,08 | 0,05 | 1,00 | | | | | | | |
| Size | 0,10 | 0,05 | 0,27 | 1,00 | | | | | | |
| Leverage | -0,07 | 0,02 | -0,25 | -0,07 | 1,00 | | | | | |
| Capital intensity | -0,06 | -0,05 | 0,04 | -0,09 | 0,02 | 1,00 | | | | |
| Assets on Liabilities | 0,01 | 0,04 | 0,08 | 0,00 | -0,10 | 0,34 | 1,00 | | | |
| Liquidity ratio | 0,00 | -0,03 | 0,12 | 0,02 | -0,46 | -0,01 | 0,26 | 1,00 | | |
| Liquidity ratio 2019 | 0,00 | -0,03 | 0,09 | 0,00 | -0,46 | -0,02 | 0,25 | 0,94 | 1,00 | |
| Current ratio | -0,01 | -0,04 | 0,17 | -0,01 | -0,42 | -0,02 | 0,28 | 0,78 | 0,79 | 1,00 |

*Source*: own elaboration on Stata.

**Figure 4.1**. EBITDA margin and ROA trend 2018-2020 for ID and non-ID firms.
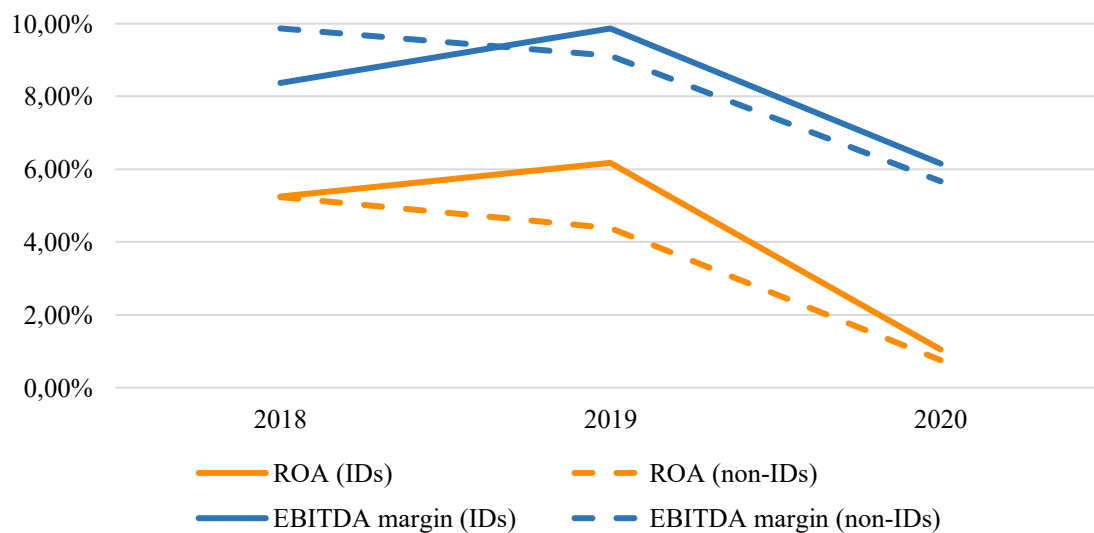


*Source*: own elaboration on ORBIS data.

In the graph above (Figure 4.1.) the average values of ROA and EBITDA margin are reported with respect to the different geographic location of the firms within the sample: as it can be noted, ID firms' seem to have better performed during the last two years, especially in 2019 but also during the crisis period, 2020. However, the difference recorded in 2020 seems to be smaller for ROA and a bit larger for EBITDA margin. For what regard the latter index, ID firms inverted the trend from 2018 up to 2020, with higher operative margins of non-district firms.

### 4.1.3. The models

The models were performed through the statistical program Stata, and as previously stated, linear regression models were performed with Ordinary Least Squares estimation method. The stepwise modelling technique was used in order to understand the evolution of the R squared coefficient and how much of the information (the progressive number of observations) was lost for each step. In tables 4.8. and 4.9. the two models that also passed the quality checks (for further information, see paragraph 4.1.4.) are reported. It is also important to mention the fact that several trials were made with ROE 2020 as dependent variable, however all the output models were not sufficiently specified and, thus, not possible to comment and interpret. In addition, some t tests were made in order to investigate whether some statistically significant differences between the two groups explained by the independent variable exist. The results of the t tests are reported in the following table.

**Table 4.5**. T-tests for IDs' performance variables basing on the dependent variable ID.

|  | p-value | Significant |
|---|---|---|
| Average ROA 2020 | 0,7412 | No |
| Average EBITDA margin 2020 | 0,7173 | No |

*Source*: own elaboration on Stata output. Table structure by De Marchi & Voltani (2014).

According to Table 4.5., some important and significant difference in terms of firms' performance do not seem to exist, as both average ROA and EBITDA margin of 2020 are not different with respect to the geographical location of firms. As reported in the tables above, only the EBITDA margin shows significant results: while this is not the case for the specification of the independent variable ID (the dichotomic dummy that measures 1 if the firms pertain to one of the three jewellery districts, 0 otherwise), the main result is found when the

**Table 4.6**. Analysis of variance (ANOVA).

|  | F-value | p-value | Significant |
|---|---|---|---|
| Average ROA 2020 (df: 3, 908) | 1,77 | 0,1513 | No |
| Average EBITDA margin 2020 (df: 3, 786) | 2,15 | 0,0931 | Yes |

*Source*: own elaboration on Stata output. Tables structure by De Marchi & Voltani (2014).

**Table 4.7**. Bonferroni multiples comparison tests for EBITDA margin 2020 with respect to the four geographical areas identified.

|  | non-district | Vicenza | Valenza |
|---|---|---|---|
| Vicenza | Not significant |  |  |
| Valenza | Not significant | Not significant |  |
| Arezzo | Not significant | Significant | Not significant |

*Source*: own elaboration on Stata output. Tables structure by De Marchi & Voltani (2014).

explicative variable is specified as ID (1), so when the ordinal dummy explains also in which district the firm is located. Considering the results found in the stepwise process of model building, also the Bonferroni test for multiples comparison confirms that a significant difference (with a significance level of 0.10) exists between the performances of Arezzo and Vicenza. This remarks the presence of intra-industry heterogeneity between the firms pertaining to the three districts and their capability to be resilient, always referring to performance terms, against the Covid-19 crisis.

### 4.1.4. Model quality tests

In order to judge the main features of the model, some statistical tests were made about the specification of the model, the heteroskedasticity and the normality of its residuals and the potential presence of multicollinearity. The specification tests executed on the regressive model were two: the Ramsey regression specification analysis for omitted variables (also called RESET test), which tests whether the model is mis-specified due to variables not included in the regression; the other specification test aims at determining whether the dependent variable is correctly specified and, in fact, is called specification link test for single-equation models. This test consists in a regression of the dependent variable on the prediction and on the prediction squared: in the case in which the prediction squared parameters are significant, it implies that the model is not well specified. The two models reported above passed the aforementioned tests of specification; moreover, these models did not show significant

**Table 4.8**. Stepwise process of ROA 2020 dependent variable model.

| ROA 2020 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| ID | 0,291 | 0,430 | 0,723 | 0,746 | 1,070 | 1,022 | 0,664 | 0,695 | |
| | (0,901) | (0,885) | (0,925) | (0,926) | (0,928) | (0,930) | (0,910) | (0,910) | |
| Vicenza | | | | | | | | | 1,079 |
| | | | | | | | | | (1,073) |
| Valenza Po | | | | | | | | | -1,228 |
| | | | | | | | | | (1,703) |
| Arezzo | | | | | | | | | 1,364 |
| | | | | | | | | | (0,985) |
| Age | | -0,055* | -0,090*** | -0,104*** | -0,123*** | -0,131*** | -0,133*** | -0,123*** | -0,121*** |
| | | (0,031) | (0,033) | (0,033) | (0,035) | (0,034) | (0,034) | (0,034) | (0,034) |
| Size19 | | | 1,777*** | 1,864*** | 1,781*** | 1,800*** | 1,613*** | 1,567*** | 1,596*** |
| | | | (0,443) | (0,445) | (0,457) | (0,456) | (0,447) | (0,450) | (0,453) |
| Current ratio | | | | 0,178** | -0,014 | 0,255* | 0,233 | -0,083 | -0,078 |
| | | | | (0,074) | (0,078) | (0,154) | (0,152) | (0,280) | (0,276) |
| Leverage | | | | | -7,917*** | -9,616*** | -9,712*** | -8,351*** | -8,615*** |
| | | | | | (2,443) | (2,464) | (2,471) | (2,486) | (2,493) |
| Assets on Liabilities | | | | | | -0,669** | -0,656** | -0,501 | -0,503 |
| | | | | | | (0,295) | (0,295) | (0,365) | (0,360) |
| Capital intensity | | | | | | | -0,008*** | -0,008*** | -0,008*** |
| | | | | | | | (0,001) | (0,001) | (0,001) |
| Liquidity ratio | | | | | | | | 0,702* | 0,764* |
| | | | | | | | | (0,408) | (0,405) |
| Constant term | 0,754 | 1,863 | -1,169 | -1,596 | 4,253* | 6,124** | 7,018*** | 5,453** | 5,424** |
| | (0,731) | (1,132) | (1,435) | (1,454) | (2,421) | (2,495) | (2,400) | (2,509) | (2,514) |
| Obs. | 912 | 912 | 801 | 799 | 776 | 775 | 773 | 773 | 773 |
| R squared | 0,0001 | 0,0039 | 0,0290 | 0,0339 | 0,0520 | 0,0569 | 0,0620 | 0,0659 | 0,0705 |

*Source*: own elaboration on Stata output. *Note*: (***) means p-value < 0.01; (**) means p-value < 0.05; and (*) means p-value < 0.10. Standard errors between parentheses.

**Table 4.9**. Stepwise process of EBITDA margin 2020 dependent variable model.

| EBITDA margin 2020 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| ID | 0,485 (1,381) | 0,615 (1,379) | 1,665 (1,385) | 1,997 (1,393) | 1,731 (1,370) | 1,794 (1,374) | 1,590 (1,376) | |
| Vicenza | | | | | | | | -0,685 (1,974) |
| Valenza Po | | | | | | | | 0,558 (2,001) |
| Arezzo | | | | | | | | 3,510** (1,398) |
| Age | | -0,062 (0,047) | -0,068 (0,047) | -0,132** (0,052) | -0,118** (0,051) | -0,115** (0,051) | -0,118** (0,051) | -0,112** (0,051) |
| Size19 | | | 1,192** (0,604) | 1,139* (0,602) | 0,919 (0,569) | 0,950 (*) (0,570) | 0,886 (0,573) | 0,948 (0,579) |
| Leverage | | | | -15,781*** (3,419) | -15,760*** (3,432) | -10,649** (4,315) | -14,497*** (4,341) | -14,505*** (4,266) |
| Capital intensity | | | | | -0,047*** (0,001) | -0,046*** (0,001) | -0,046*** (0,001) | -0,046*** (0,001) |
| Liquidity ratio 2019 | | | | | | 1,104* (0,572) | 1,547*** (0,591) | 1,642*** (0,604) |
| Assets on Liabilities | | | | | | | -0,927*** (0,268) | -0,940*** (0,268) |
| Constant term | 5,669*** (1,143) | 6,928*** (1,485) | 2,982 (1,899) | 14,112*** (3,094) | 14,554*** (3,085) | 9,343** (4,004) | 13,339*** (3,984) | 12,972*** (3,912) |
| Obs. | 790 | 790 | 716 | 694 | 693 | 691 | 691 | 691 |
| R squared | 0,0002 | 0,0025 | 0,0099 | 0,0564 | 0,0856 | 0,0966 | 0,1073 | 0,1155 |

*Source*: own elaboration on Stata output. *Note*: (***) means p-value < 0.01; (**) means p-value < 0.05; and (*) means p-value < 0.10. Standard errors between parentheses.

multicollinearity: the variance inflation factor was utilized in order to detect potential multicollinearity. The rule of thumb accepts single value of VIF for each variable smaller than 10, and it accepts an overall mean VIF of values that slightly move away from 2. This condition is satisfied both for the models with ROA 2020 and EBITDA margin 2020 as dependent variables. For what regard the heteroskedasticity, it was controlled by a command included within Stata, which allows to regress directly with robust standard errors. To check about the normality of the residuals, different methods were employed. In particular, the Shapiro-Wilk test for normality and the graphic analysis were used, and both confirmed a non-normal distribution of residuals for the models considered: however, this is potentially due to the large size of the sample.

### 4.1.5. Main findings

As it can be seen from tables 4.8. and 4.9., and as it was previously seen by the correlation matrix, the models report non-significant coefficients for the independent variable ID. However, there is a difference by using ROA or EBITDA margin as dependent variable when the explicative one is ID (specific), the ordinal dummy whose aim is to isolate each ID's effect on firms' performance. For the ROA 2020 model built with this specification of the explicative variable, the coefficients remain statistically non-significant. However, for the EBITDA margin 2020 model, Arezzo seems to verify the Hypothesis 1: as it can be seen in table 4.9., the district's coefficient is positive and statistically significant, confirming the hypothesis derived from literature. This could be interpreted as a considerable degree of heterogeneity that exists between IDs within the same national industry. Despite this result, there are some possible explanations that are needed to consider with respect to what has been found by this statistical analysis: in a first place, ORBIS data may be limited to only some typology of firms. To better explain, the database contains the financial data of all the Italian firms, however, only listed firms are legally required to communicate financial data and balance sheets; in fact, for most of the initial sample there were no available data, neither for the dependent variables nor for the control ones. As a support for this explanation and after some investigation, the sample seems to confirm this theory, as most of firms (74.46% of the sample) are micro-firms, according to the European criteria based on the turnover values. This percentage does not change so much when considering the number of employees (62.90%): more than two thirds (considering the turnover of 2019) and almost two thirds (considering the number of employees) of firms are micro-firms. Thus, as a consequence, these firms are not obliged to communicate any kind of balance sheets, as they only must deposit the official financial documents to the local Chamber

of Commerce. Another potential explanation could result intrinsically within data: financial data and balance sheets collect, in fact, past and final information of firms. Following this logic, it is possible that the time span considered in this analysis is not sufficient to explain and to make emerge the district effect researched within this thesis. It is not excluded that the "district effect", that materialises in higher performances and higher capability of overcoming crisis periods, actually verified: the previously mentioned limitations could potentially lead to a partial analysis that is not able to capture this district effect. From the previous analyses emerged two main results: the first refers to an intra-district firms' performances heterogeneity, not between district firms and external ones, but between Arezzo, Vicenza and Valenza. The second main finding refers, in turn, to the international dimension of such IDs, highlighting also here different paths for the three different districts. In order to complement the quantitative analysis, it is important to report some secondary sources, such as newspaper articles, industry publications and experts' interviews. According to an Intesa Sanpaolo recent report (2021), industrial districts have the potential to overcome the current crisis competitively: the report made a quantitative analysis on a sample of 83.550 Italian firms, of which a 24.9% pertain to one of the 159 industrial districts identified by the research. Despite some industries were harder hit by the negative effects of the crisis, as also reported in chapter 3, Intesa Sanpaolo (2021) found that in general, IDs counted on higher liquidity and higher capitalization levels by 2019. This major stability allowed IDs to better face the Covid-19 crisis started in 2020. Moreover, the relevant presence of know-how, knowledge and skills within the districts make reasonable to think that IDs will maintain their stable position of adapting organic groups of actors within the Italian productive fabric. The mix of competence and cooperation that characterizes local networks of IDs led many districts, especially within industries like fashion, to crystallize their role in GVCs. From the report, in addition, a complexity for the ID networks of the fashion industry emerged (jewellery expressively included): in fact, within these districts it exists a heterogeneous net of relationships with different products, from those functional to the productive process (raw materials or chemical products, for example) to those that complement the final product (final accessories for the final finishing) and those related to the distribution phase (Intesa Sanpaolo, 2022). Also another paper of Intesa Sanpaolo (2022) pointed out the great recovery capability of the three Italian gold districts, highlighting at the same time the heterogeneity across Arezzo, Vicenza and Valenza Po that also emerged throughout the quantitative analysis of this thesis: Vicenza and Arezzo reacted with more dynamism against the Covid-19 crisis, fully recovering during 2021 the pre-crisis export values, while Valenza Po is slowly recovering. This dynamic of Valenza is justified by the more intense presence in such area of multinational firms – and their related price policies – with respect to Arezzo and

Vicenza. In an interview with Romina Galleri (who is the economist of the Research and Studies Department of Intesa Sanpaolo), she explains that 2020 has been a tough year for Valenza Po district: however, thanks to the qualitative productive fabric that permeates the ID, to the solid degree of capitalization acquired through the time and thanks to the consistent investments made in human capital, Valenza Po has the potential to fully recover from the Covid-19 crisis. In addition, a considerable "stimulus" comes from a project undertaken by one of the lead firms of Valenza Po, Bulgari. The firm wants to consolidate its role with the expansion of the yet-biggest productive hub in Valenza Po, with the recruitment of 600 of new workers within the ID.

## 4.2. IDs importing and exporting strategies during crises

### 4.2.1. Import and export analysis of the Italian gold IDs

As stated in paragraph 2.8., previously in chapter 2, the second hypothesis refers to effects of the Covid-19 crisis on international oriented IDs. In order to have a complete picture about the international position of Arezzo, Vicenza and Valenza Po within the jewellery global value chain, a quantitative analysis will be carried out in the following paragraphs. The analysis has been made mainly employing the open-access COEWEB's tables about trade flows of import and export per economic activity (further information in paragraph 3.1.). Then, to deepen the level of the analysis, some supportive graphs and tables were added, showing interesting specific data on each industrial district. The third hypothesis outlined at the beginning of this chapter will be partially addressed here, specifically for what regard to the past behaviours that the three districts had during other critical events – such as the Great Recession of 2008-2009. The analysis will also take into consideration what has previously emerged within the literature (De Marchi *et al*., 2014) in order to give an updated picture by adding the latest found data. The quantitative analysis presented in the following paragraphs will be the contact point between the two theoretical frameworks introduced within the initial chapters, namely the GVC framework and ID theory. The analysis will investigate the internationalization degree and the integration strategies of the main Italian jewellery industrial districts, with respect to the changes that the Covid-19 crisis has brough both in supplying and destination markets (De Marchi *et al*., 2014).

### 4.2.2. Export performances

As it can be noted in table 4.10., the export performance of the three jewellery IDs has experienced different trends over the last 10 years. Valenza Po has been the district with the greatest increase of export values (in millions of Euros) growing of more than 138% from 2011 up to 2017. This virtuous district, however, experienced a sharp decline in 2020: Valenza Po recorded a value of exports of €1.166 million, which is a -43.3% with respect to 2017. Arezzo, on the other side, experienced a smaller increase of export values from 2011 to 2017, with a percentage increase of 29.2%: in 2020, the district recorded a value of exports of €1.514 million, which consists in a -20.9% with respect to the previous year. Differently from the just mentioned districts, Vicenza had a diverse path from 2011 to 2017: the ID reached the peak of export values around 2014, with €1.419 million (+8.1% with respect to 2011). The growth rate from 2011 to 2017 of export values was only a +5.5% (small if compared to Valenza Po's growth rate, for example). Unfortunately, even Vicenza's district recorded a consistent decline from 2017 to 2020, which was little less than -30%. As it can be concluded from these data about the export performances of Valenza Po, Vicenza and Arezzo, all the three districts drastically suffered the crisis that spread globally after Covid-19 outbreak. However, in Figure 4.2. the trend of each district's amount of export (in million Euros) can be seen: the three districts followed different paths during the last decade. In particular, Vicenza seems to be the "flattest" performing district, in the sense that from 2011 to 2021 it did not grow nor declined

**Table 4.10**. Export values of the three Italian jewellery IDs (data in millions of Euros)

|           | Valenza Po | Arezzo   | Vicenza  |
|-----------|------------|----------|----------|
| 2011      | 863        | 1480     | 1313     |
| 2014      | 1287       | 1867     | 1419     |
| 2017      | 2058       | 1913     | 1385     |
| 2020      | 1166       | 1514     | 1090     |
| 2011/2014 | +49,13%    | +26,15%  | +8,07%   |
| 2014/2017 | +59,91%    | +2,46%   | -2,40%   |
| 2017/2020 | -43,34%    | -20,86%  | -21,30%  |

*Source*: De Marchi *et al*. (2014) for the table, data are an elaboration of ISTAT COEWEB data on ATECO industry code 32.1.

considerably: of course, the district suffered in 2020, during the worst period of crisis, however the decline was relatively contained (-21.4% in the period 2019-2020). Arezzo's export trend reached its peak in 2013, and the district revived this growing phase in 2019; the fall from 2019

to 2020 was sharp, as Arezzo recorded a decline of -28.8%. Differently from the other two districts, the situation of Valenza Po before Covid-19 crisis could be considered as blooming: from 2011 to 2019, the growth rate of export values was a three-digit +141.3%. The decline for the period 2019-2020 was the greatest, with -44.1%.

**Figure 4.2**. Export values of the three jewellery industrial districts per year (from 2011 to 2021).
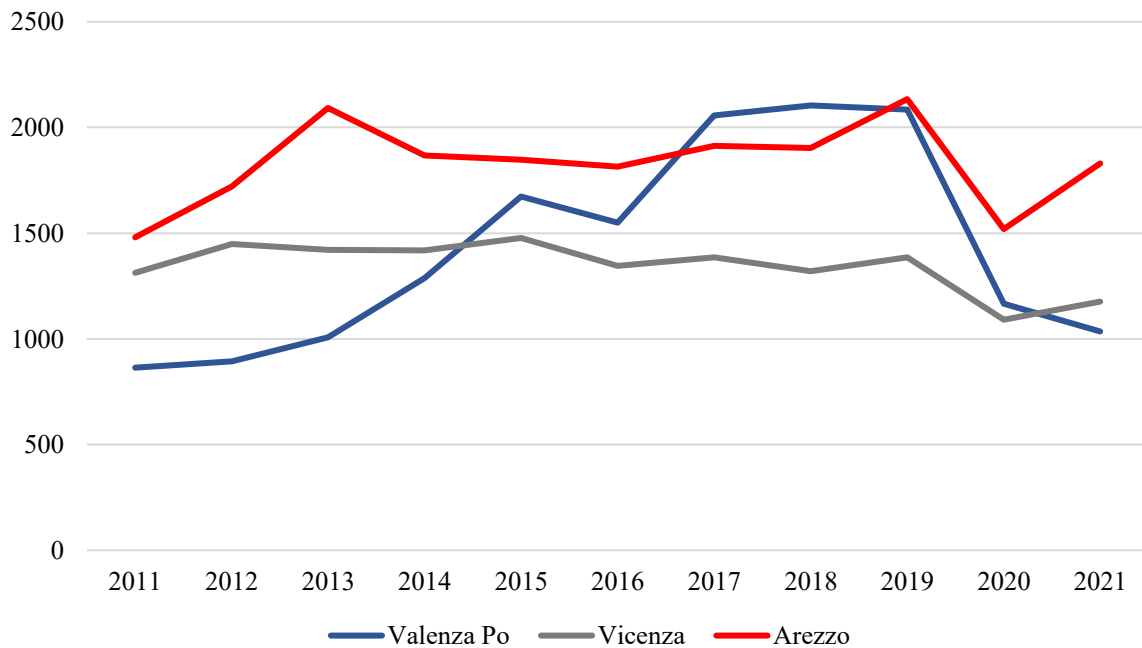


Source: own elaboration on COEWEB ISTAT. Data refer to ATECO 2007 code 32.1. Data are in million Euros. *Note*: data of 2021 only refers to the first, second and third quarter of the year.

Despite what was just said, 2021's data of export values seem hopeful, especially if considered that the available data for 2021 only go from the first to the third quarter of the year. In order to better understand how the latest crisis impacted on the three Italian IDs, a focus on the export data (in terms of value) referring to the period 2019-2021 will follow. Table 4.11. and Figure 4.3. show in detail the amount of export value (in million Euros) for each district, fragmenting the information per quarters. As it can be noted, during all the quarters of 2019, the export situation was good for all the districts: but already during the first quarter of 2020, a slight decline could be noticed. During this period, China started the first lockdown measures, with the early closures for cities and industrial productive areas in the quarantined areas. The greatest decline in export values, however, was recorded during the second quarter of 2020: in that period, also other countries started to active the health measures, and Italy was one of those

countries. Also, the third quarter saw not encouraging data; only during the last four months of 2020 the IDs experienced a recovery phase, however it did not last so much time.

**Table 4.11**. Jewellery IDs' export values (in million Euros) per trimester.

|  | 2019 | | | |
| --- | --- | --- | --- | --- |
|  | I | II | III | IV |
| Valenza Po | 458,50 | 637,69 | 525,71 | 461,79 |
| Vicenza | 325,37 | 356,44 | 325,16 | 379,57 |
| Arezzo | 530,27 | 533,12 | 495,88 | 526,22 |
|  | **2020** | | | |
|  | I | II | III | IV |
| Valenza Po | 329,91 | 185,77 | 298,17 | 352,08 |
| Vicenza | 273,35 | 112,86 | 305,72 | 398,51 |
| Arezzo | 438,50 | 132,20 | 380,09 | 568,33 |
|  | **2021** | | | |
|  | I | II | III | |
| Valenza Po | 341,63 | 358,35 | 335,86 | |
| Vicenza | 353,95 | 415,20 | 406,41 | |
| Arezzo | 557,93 | 641,19 | 630,24 | |

*Source*: own elaboration on COEWEB ISTAT. Data refer to ATECO 2007 code 32.1. Data are in million Euros.

The first quarter of 2021 marked a little decline with respect to the end of 2020, and only from the second quarter of 2021 onwards the recovery of the export values was consistent. Figure 4.3. is helpful to capturing at a glance how much consistent was the recovery phase for each district. Arezzo, in terms of export values, more than recovered from the worst phase of the crisis, outperforming since the end of 2020 its past values. In an article of Sole24Ore, it is interestingly reported a possible explanation to the reaction of Arezzo against Covid-19, that consists in its increasing dedication to the production of gold bars and similar goods destinated toward the investment gold market, whose main destinations has been USA, Switzerland, and UK. Arezzo is the only Italian pole that answered to the high-end jewellery crisis with the creation of a circular economy that transformed gold scraps generated by the industry into the inputs for the gold bar producers. Thanks to the expansion toward this business, the industry suffered smaller losses during 2020 and fully recovered to pre-crisis levels within 2021. Also Vicenza, although not at the same level of Arezzo, recovered in a good way, recording higher values in 2021 if compared with 2019. Valenza Po, on the other side, struggles to mark again

export values similar to those of 2019, even though that the district uplifted if considering the crisis period. According to another second source, the consistent recovery started from the end of 2021 also comes from the vital importance for IDs of international and local partners for fairs and similar events. The strong international presence within the gold GVC that Valenza Po, Vicenza and Arezzo have built, led to agreements and partnerships with international players such as Informa Markets Jewellery, the world's biggest organizer of jewellery fairs (it is the organizer of the high-end jewellery exhibition of Hong Kong).

At this moment it will be interesting to analyse in detail the downstream internationalization strategies of the three districts, by examining how their main export destination have changed over the past decade. Table 4.12. allows to appreciate the evolution of each district's downstream strategy during the last decade. Starting from Valenza Po, it is possible to note that until 2017 its main destination country of export values was Switzerland, with considerable weights on total value of exports (60.6% in 2011 and 59.3% in 2014). Also, in 2017 Switzerland represented more than half of export values destination for Valenza, while in 2020 the situation changed, seeing Ireland becoming the first destination country, even if it counted for a 25.6% on total export values. However, as it can be noted both in table 4.12. and in paragraph 3.4.1.,

**Figure 4.3**. Effects of COVID-19 crisis on jewellery IDs' export values (in million Euros) per trimester.
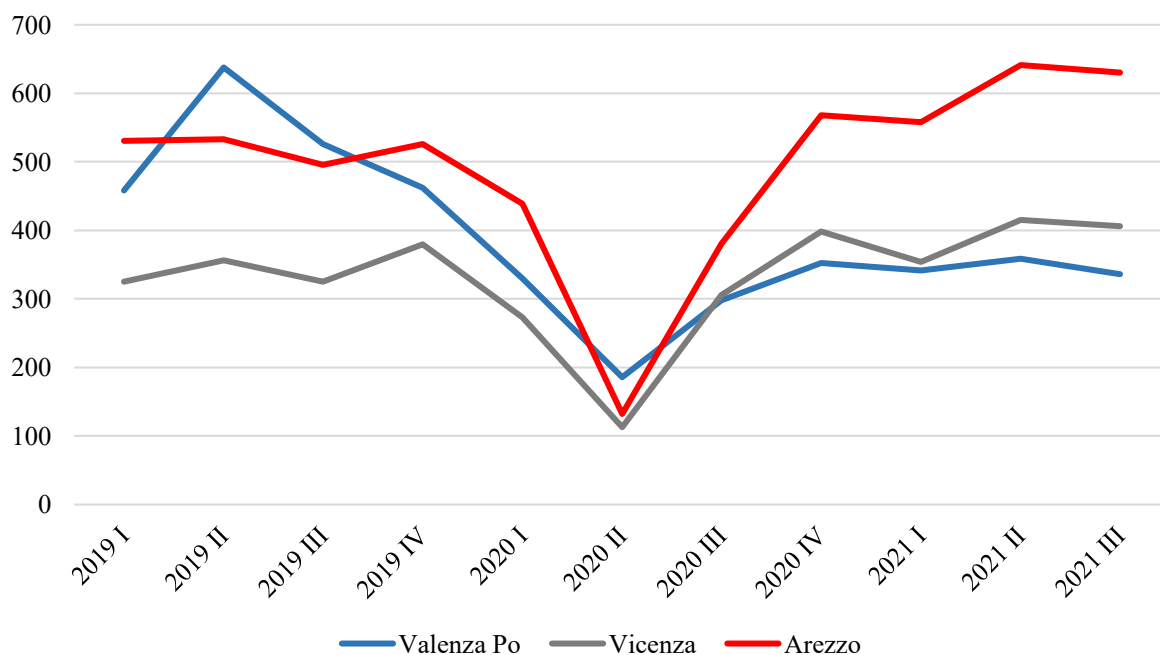


*Source*: own elaboration on COEWEB ISTAT. Data refer to ATECO 2007 code 32.1. Data are in million Euros.

despite the change of the destination country of the district, it is important to keep in mind that also the market changed, as it experienced a higher fragmentation during the last ten years. For what regard the main destination country of Arezzo, there are no doubts: United Arabian Emirates are the core foreign partner for the Tuscan ID, even though during the years the percentage on total export values changed, from a minimum of 19.8% in 2020 to a maximum of 46.4% in 2014. In an interview released by Giordana Giordini (director of *Orafi di Confindustria Toscana Sud* section and of the provincial jewelry consultation for Confindustria, Cna and Confartigianato) for Sole24Ore, she affirmed that Arezzo is searching for new destination markets, in order to pursue a diversification strategy aimed at amplifying the export markets beyond USA and UAE to avoid the negative economic effects of the crisis. This is possible, reminding at literature on GVCs, enlarging the plateau of reference foreign countries, both from supply and offer sides. Giordini also stressed the fact that local institutions and events such as fairs are crucial for the international dimension of IDs. Vicenza, on the other side, dramatically changed its main foreign partner from 2011 to 2017: in 2011 the district reference country for export values was Switzerland (16.5% on total export values), while from that year to 2014 the export target market changed, becoming Hong Kong (19.5% of export values). In 2020, the main foreign partner for Vicenza's district became United States, with a 18.7% on total export values. Differently from the other two districts, Vicenza never had a reference foreign country with a truly consistent relative weight, with maximum values always below 20%. Arezzo and especially Valenza Po, on the contrary, counted sometimes even more than a 60% of export values destined to a single country. The second part of the table shows the percentage of developing countries (the official World Bank classification of developing countries of 2020 was used) present within the top 10 export markets: the path of the three IDs will result heterogeneous even here. Valenza Po is the district that recorded the lowest value of exports destined to developing economies (with values that go from 0.9% to 1.4%), also concentrated in the Eastern Europe (Ukraine and Russia).

**Table 4.12**. Italian jewellery districts' downstream internationalization strategies.

| | Valenza Po | Arezzo | Vicenza |
|---|---|---|---|
| **Top export markets** | | | |
| 2011 | Switzerland (60,6%) | UAE (30,5%) | Switzerland (16,5%) |
| 2014 | Switzerland (59,3%) | UAE (46,4%) | Hong Kong (19,5%) |
| 2017 | Switzerland (51,2%) | UAE (31,0%) | USA (18,7%) |
| 2020 | Ireland (25,6%) | UAE (19,8%) | USA (24,8%) |
| **% of developing economies among the top 10 export markets** | | | |
| 2011 | 1,0% (Ukraine) | 12,7% (Dominican Republic and Turkey | 12,1% (Romania, Turkey and Jordan) |
| 2014 | 1,4% (Russia) | 11,7% (Turkey, Dominican Republic and Libya) | 17,4% (Jordan, Turkey, Romania and South Africa) |
| 2017 | 0,9% (Russia) | 18,9% (Turkey, Dominican Republic and Lebanon) | 23,1% (Jordan, Romania, South Africa and Turkey) |
| 2020 | 1,1% (Russia) | 21,5% (Turkey, Dominican Republic and South Africa) | 24,1% (South Africa, Romania, Turkey and Malaysia) |
| **Fastest growing export destinations** | | | |
| 2011/2014 | NAFTA (+71,9%); North America (+67,9%) | North Africa (+401,7%); Middle East area (+83,5%) | Central and South Africa (+391,1%); Mediterranean area (+52,5%) |
| 2017/2020 | Oceania (+176,2%); Eastern Asia (+50,2%) | Central Southern Africa (+118,5%); North America (+40,6%) | MERCOSUR (+118,5%); Central Southern Africa (+49,7%) |

*Source*: Own elaboration based on De Marchi *et al*. (2014) and ISTAT COEWEB data on ATECO industry code 32.1.

Arezzo and Vicenza, on the contrary, increased their percentage of developing economies among the top ten export destinations: during the period 2011-2020, Arezzo always exported to Dominican Republic and Turkey, and then to other Middle East or African countries. In 2020, Arezzo's export values to developing economies reached 21.5% (from a 12.7% in 2011 and a 11.7% in 2014). Vicenza passed from a 12.1% in 2011 to a 24.1% in 2020, quite doubling the relative weight of developing economies among its top ten export destinations. While in 2011 these countries pertained only to Middle East, in 2020 Vicenza amplified its export partners including also developing countries from Eastern Europe and East Asia, but it also consolidated

its relationships with African countries. The last part of Table 4.12. allows to appreciate the macro-areas that represent the fastest growing destinations for each district. As it can be seen from the table, Valenza Po drastically changed its focus from North America (for the period 2011-2014) to Oceania and Eastern Asia during the crisis. Arezzo maintained as growing destination Africa both in the period 2011-2014 and 2017-2020, even though on the other side it recently expanded in North America. Lastly, Vicenza consolidated its downstream strategy also during the crisis in Central and Southern Africa, also growing the value of exports in the MERCOSUR area (+118.5% in the period 2017-2020). In the graphs reported in Figure 4.4., 4.5. and 4.6. it is possible to see the relative weight – on total export values in million Euros – of the top five export destination markets of 2021 during the last decade. Valenza Po (Fig. 4.4.) seems to have consolidated over the time its trade relationship with three out of five main export reference markets (Hong Kong, USA, and France), while the relative weights of Switzerland and Ireland are quite different. The district reduced its export volumes (in value terms) toward

**Figure 4.4**. Relative weight of export values of the top 5 export markets of Valenza Po.
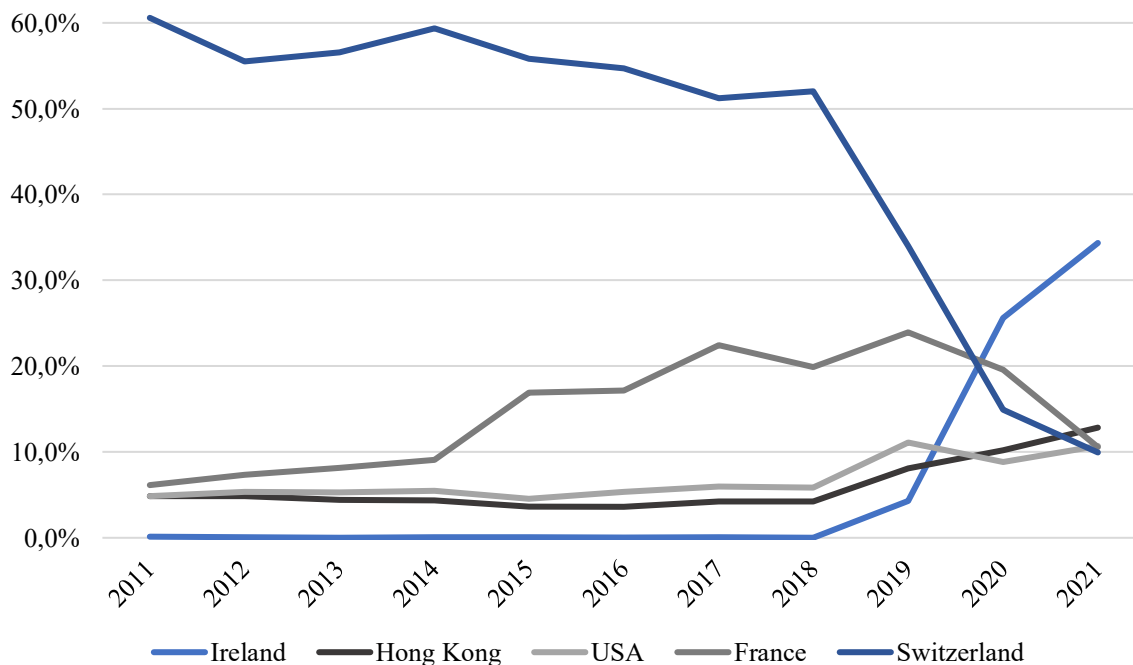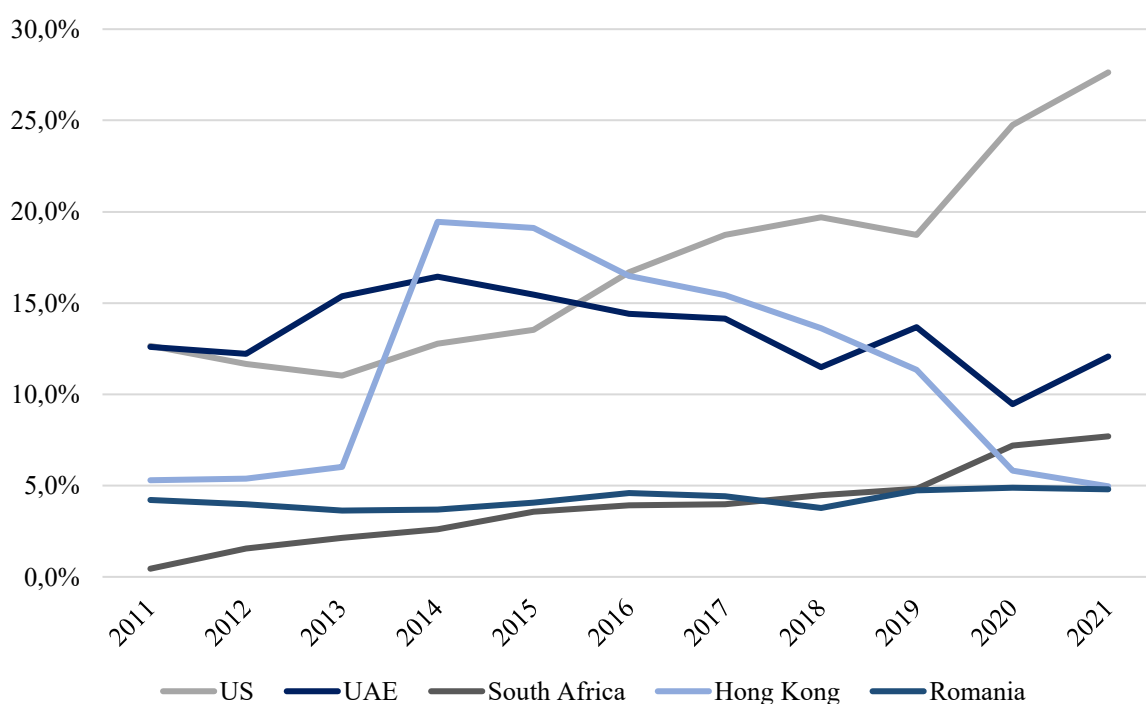


*Source*: own elaboration of COEWEB ISTAT data. Data refer to ATECO 2007 code 32.1.

Switzerland and, at the same time from 2018 onwards, drastically increased its export toward Ireland (with a +34.4% in the period 2018-2021). Vicenza (Fig. 4.5.) mainly kept constant its

relationships with most of its top five market destinations, that are UAE, South Africa, Romania, and Hong Kong. The only remarkable change that happened from 2019 is the rapid growth in the relative importance in export values of USA, whose growth rate was of +8.9% in the crisis period of 2019-2021. Lastly, Arezzo (Fig. 4.6.) has resulted to be the most consistent district among the three, as it mainly consolidated its export relationships with its top five destination markets during the last decade. This can be noted for USA, Turkey, Hong Kong, and France; a little different path characterized the relative weight on total export values of UAE, that have been from 2011 onwards the reference destination market for Arezzo, with peaks of more than 45% during 2013 and 2014.
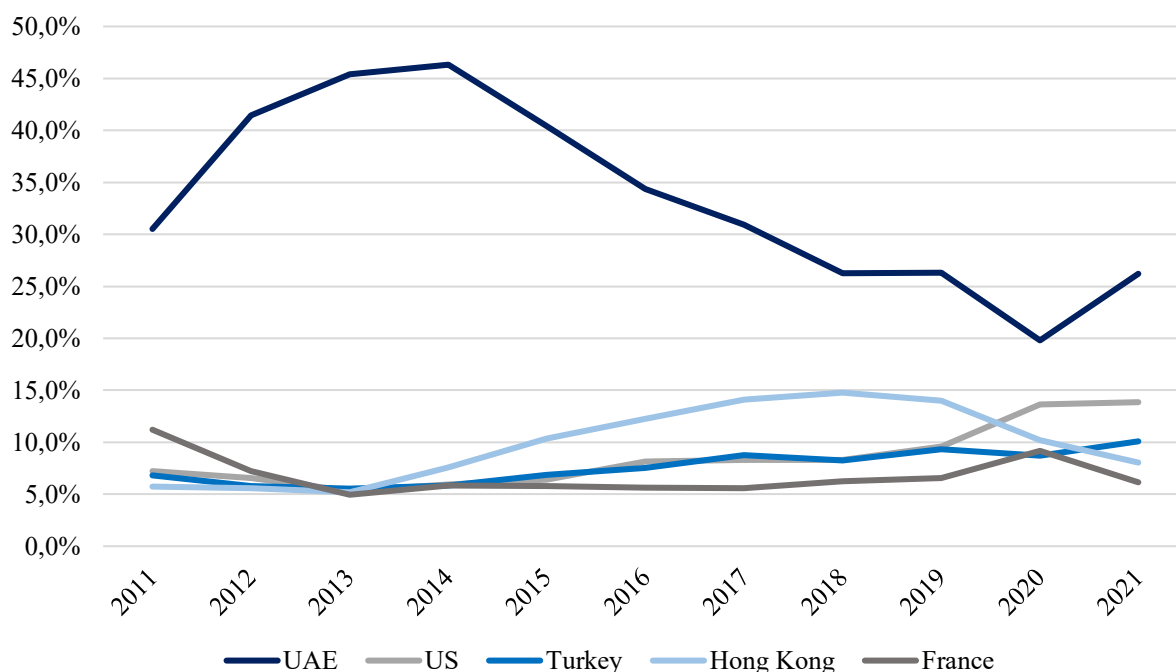
**Figure 4.5**. Relative weight of export values of the top 5 export markets of Vicenza.



*Source*: own elaboration of COEWEB ISTAT data. Data refer to ATECO 2007 code 32.1.

From 2015 the relative weight constantly decreased, due to the highest fragmentation of the market itself, until 2020: however, during the first three quarters of 2021 the relative weight of UAE reached the same level of 2018 (26.2%).

**Figure 4.6**. Relative weight of export values of the top 5 export markets of Arezzo.



*Source*: own elaboration of COEWEB ISTAT data. Data refer to ATECO 2007 code 32.1.

### 4.2.3. Import performances

In the next table (table 4.13.) the import values of the three IDs are reported: the table reports in absolute values only the import values of 2017 and 2020 (it is also possible to see the relative changes in total import values from 2011 up to 2020), the imports for production, which refers to the amount (in value terms) of imports destinated to further productive processes within Italy, and the percentage value of IfP on the export values of the relative year. As there are no direct data that measures how many imported goods are destinated to final markets, the IfP has been calculated by subtracting the estimated consumption of jewellery to the total provincial data of imports (the consumption amount has been in turn estimated using the ISTAT consumption survey). As it can be also seen by Figure 4.7., Arezzo was the unique district that increased its import values from 2017 to 2020, but this increasing trend also was recorded for 2021. Arezzo, however, was the only district that marked a negative sign for the IfP in the period 2017-2020, anyway increasing the relevance of IfP on export values within the same period. Valenza Po and Vicenza saw a declining trend for what regard the import values: they respectively reported a -71.4% and a -40.2%. They both increased their amount of IfP from 2017 to 2020, and this means that foreign suppliers were still important for IDs' firms even during the crisis. However,

**Table 4.13**. Import values of the three Italian jewellery IDs (data are in millions of Euros)

| | | Total imports | Imports for Production (IfP) | IfP/Exports |
|---|---|---|---|---|
| 2017 | Valenza Po | 936 | 926 | 45,0% |
| | Arezzo | 85 | 76 | 4,0% |
| | Vicenza | 175 | 156 | 11,3% |
| 2020 | Valenza Po | 546 | 535 | 45,9% |
| | Arezzo | 235 | 226 | 14,9% |
| | Vicenza | 125 | 103 | 9,5% |
| 2011/2014 | Valenza Po | +24,6% | +9,3% | -10,9% |
| | Arezzo | -65,1% | -10,7% | -11,3% |
| | Vicenza | +2,1% | -11,9% | -0,3% |
| 2014/2017 | Valenza Po | +26,9% | -21,0% | -11,4% |
| | Arezzo | +4,4% | +5,6% | +0,1% |
| | Vicenza | -3,3% | -24,1% | +0,3% |
| 2017/2020 | Valenza Po | -71,4% | +14,2% | +0,9% |
| | Arezzo | +63,5% | -2,0% | +10,9% |
| | Vicenza | -40,2% | +13,5% | -1,8% |

*Source*: Own elaboration based on De Marchi *et al*. (2014) and ISTAT COEWEB data on ATECO industry code 32.1.

**Figure 4.7**. Import values of the three jewellery industrial districts (from 2011 to 2021).
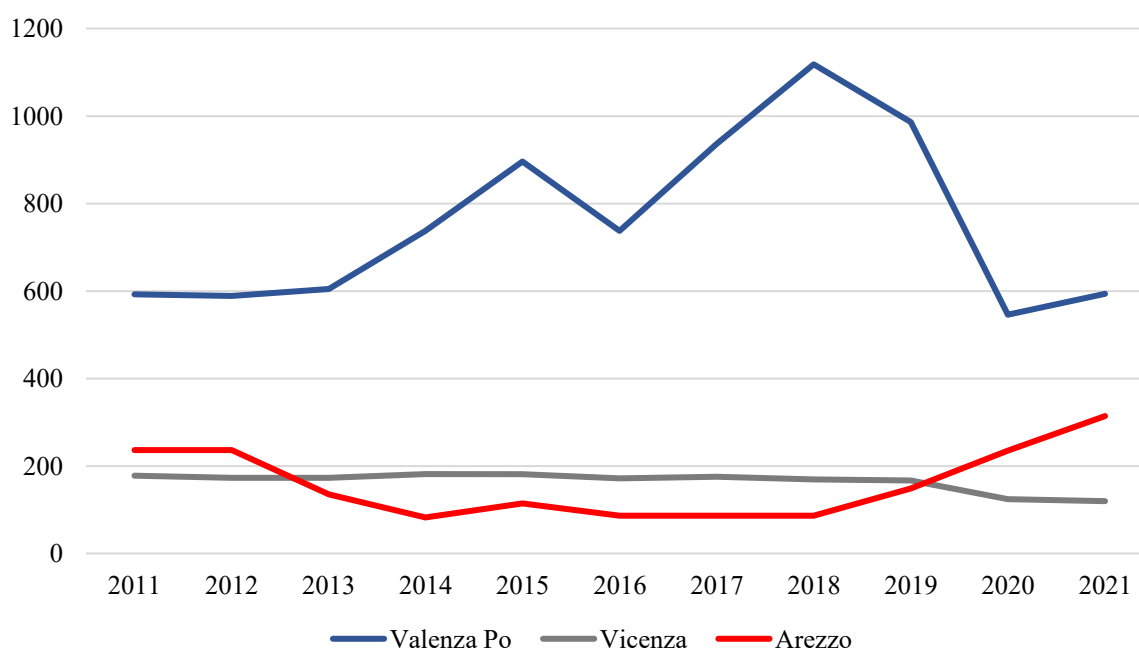


*Source*: own elaboration on COEWEB ISTAT. Data refer to ATECO 2007 code 32.1. Data are in million Euros. *Note*: data of 2021 only refers to the first, second and third quarter of the year.

Vicenza was the only ID that recorded a -1.8% for the period 2017-2020 of the ratio IfP on export values. It is also important to consider the trend of the price of the raw material when analysing the import values of the three district: as reported in Figure 4.8. and in the previous chapter (paragraph 3.4.1.), the trend of gold price is quite fluctuating. The price of gold, which is seen as a safe-haven good especially during crisis, saw its price increasing from the beginning of 2020, with fluctuations higher than the normal values recorded for the previous six years. Also, in the aftermath of the 2008-2009 crisis, the value of gold was considerable, until 2013. Valenza Po and Vicenza's data of 2020 on import values could be inflated by the higher price of gold, in the sense that probably the volume reduction was lower than the value reduction. In the same way, the growth recorded by Arezzo could be inflated too, with an increase of volumes presumably lower than the increase recorded in values. This reasoning must be applied also for export values, in fact Claudia Piaserico (president of *Federorafi*) stated that even though the increase of export values was due to an increase of exported quantities it is also necessary to understand the amount of the inflation generated to the rise of gold price.

**Figure 4.8**. Gold prices in US$ per troy ounce, from January 2011 to December 2021.



*Source*: data on FastMarkets, ICE Benchmark Administration, Thomson Reuters. World Gold Council.

In Table 4.14. a similar focus on the Covid-19 crisis period made for the export values is reported: as it can be noted here, Arezzo more than doubled its amount of import values from the fourth quarter of 2019 to the same period of 2020 (+103.7%). However, comparing figure 4.9. with figure 4.3., the fact that in Arezzo there has been a consistent growth of export values but not in import after the crisis might suggest that the cluster was able to produce domestically value added that was then appreciated in foreign markets. Valenza Po, especially in the second quarter of 2020, recorded its lowest import value, with a decline of -82.6% with respect to the same quarter of the previous year. Vicenza, similarly, reached its worse import performance on
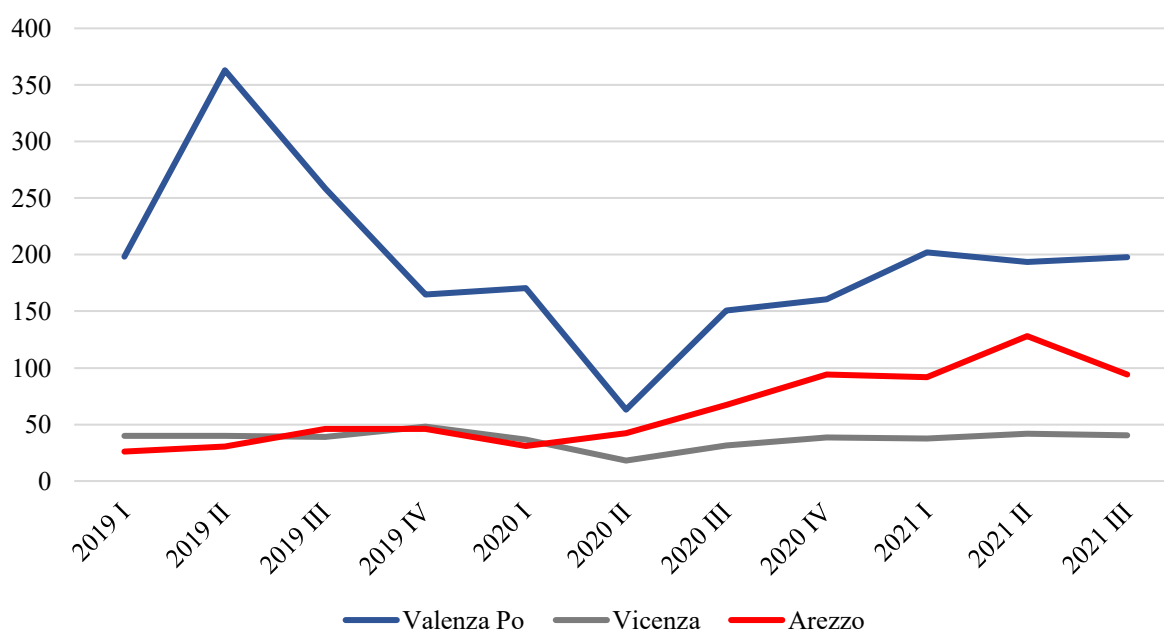
the second quarter of 2020, with a negative decrease of -54.9% with respect to the same period of 2019. Vicenza and Valenza, differently from Arezzo, reduced their export values as well as imports, suggesting that they just lowered the jewellery production. If 2020 has been the worst year, 2021 seems to become the trend inversion year, with increasing import values for all the three IDs. Also here, however, it is important to keep in mind the considerations made before when referring to the price of gold: even though in 2021 the containment measures did not last as much time as during 2020, the import values positive growth trends could be inflated by the higher peaks of gold price.

**Table 4.14**. Jewellery IDs' import values (in million Euros) per trimester.

| | 2019 | | | |
| --- | --- | --- | --- | --- |
| | I | II | III | IV |
| Valenza Po | 198,38 | 362,94 | 258,52 | 164,99 |
| Vicenza | 40,01 | 40,08 | 39,04 | 48,07 |
| Arezzo | 26,04 | 30,47 | 46,07 | 46,27 |

| | 2020 | | | |
| --- | --- | --- | --- | --- |
| | I | II | III | IV |
| Valenza Po | 170,55 | 63,09 | 150,67 | 160,55 |
| Vicenza | 36,64 | 18,08 | 31,37 | 38,51 |
| Arezzo | 31,04 | 42,31 | 67,05 | 94,26 |

| | 2021 | | |
| --- | --- | --- | --- |
| | I | II | III |
| Valenza Po | 201,85 | 193,80 | 197,59 |
| Vicenza | 37,45 | 41,63 | 40,39 |
| Arezzo | 91,90 | 128,06 | 94,03 |

*Source*: own elaboration on COEWEB ISTAT. Data refer to ATECO 2007 code 32.1. Data are in million Euros.

**Figure 4.9**. Effects of COVID-19 crisis on jewellery IDs' import values (in million Euros) per trimester.

Figure 4.9. graphically shows the import values changes happened during Covid-19 crisis. Valenza Po was the district that most suffered the crisis impact, as its fluctuations of import values were the sharpest. Table 4.15. report some specific data about the upstream internationalization strategies of the three IDs. The first thing that can be noted is that Valenza Po and Vicenza maintained over the last decade strong relationships with their foreign suppliers: whilst for Valenza Po Switzerland has represented the main supplier from 2011 until 2017, for Vicenza Romania is still today the reference import market, with increasing growth rate of relevance on total import values. Arezzo, on the other side, passed from France and UK as main suppliers (for the period 2011-2014) to a South American country, Bolivia. The composition of the first top ten suppliers for each district are shown in the second part of the table: Valenza Po increased the amount of developing economies as suppliers, passing from a concentration in 2011 in Eastern Asia to South America in 2020. Arezzo and Vicenza followed two opposite paths: on one side, Arezzo drastically reduced the relevance of developing economies as suppliers in the period 2011-2017, more than halving the percentage (-35.8%). The value of 2020 is growing; however, it is inflated by the increase of gold price, and the only conclusion that can be made is about the enlargement of the group of developing countries that supply the ID with the entry of Bolivia. Vicenza, on the other side, saw a considerable growth

**Table 4.15.** Italian jewellery districts' upstream internationalization strategies.

| | Valenza Po | Arezzo | Vicenza |
|---|---|---|---|
| **Top import markets** | | | |
| 2011 | Switzerland (48,0%) | France (20,9%) | Romania (29,1%) |
| 2014 | Switzerland (41,7%) | UK (32,6%) | Romania (29,4%) |
| 2017 | Switzerland (33,9%) | France (30,5%) | Romania (33,3%) |
| 2020 | Belgium (25,8%) | Bolivia (36,9%) | Romania (35,8%) |
| **% of developing economies among the top 10 import markets** | | | |
| 2011 | 8,2% (Thailand and India) | 63,3% (Romania, India, Philippines, Thailand and Turkey) | 8,2% (China, Romania and Jordan) |
| 2014 | 14,9% (India, Thailand, Sri Lanka and Colombia) | 21,1% (China, Thailand and Jordan) | 73,7% (Romania, Philippines, India, China, Turkey and Thailand) |
| 2017 | 13,3% (India, Thailand and Sri Lanka) | 27,5% (China, Turkey, India, Albania and Jordan) | 76,9% (Romania, Thailand, Philippines, India, China, Turkey and Vietnam) |
| 2020 | 21,3% (India, Colombia, Thailand and Sri Lanka) | 69,3% (Bolivia, India, China, Turkey and Vietnam) | 89,4% (Romania, Thailand, Turkey, China, India, Vietnam and Philippines) |
| **Fastest growing import destinations** | | | |
| 2011-2014 | Central Asia (+104,5%); North America and NAFTA (+90,2%) | Central Southern America (+73,8%); North America (+56,4%) | Middle East area (+84,3%); Mediterranean area (+60,4%) |
| 2017-2020 | Central Southern Africa (+126,3%); Central Southern America (+35,6%) | Central Southern America (+26.060,3%); Central Asia (+1.120,6%) | Central Southern Africa (+478,3%); Central Southern America (+107,2%) |

*Source*: Own elaboration based on De Marchi *et al*. (2014) and ISTAT COEWEB data on ATECO industry code 32.1.

of the relevance of developing countries as suppliers, passing from an 8.2% in 2011 to a 76.9% in 2017. Vicenza confirmed its composition of foreign suppliers for Eastern Asia, Eastern Europe, and Middle East countries, increasing the amount of import values throughout the years.

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The last part of the table refers to the fastest growing import destinations: Valenza Po seems to have changed its focus on upstream international strategy from Central Asia and North America (2011-2014) toward Central and Southern Africa and Central-Southern America. Arezzo consolidated throughout the last decade its supply from Central and South America too, also increasing the supply from Central Asia in the period 2017-2020. Vicenza changed its import partners from the Mediterranean and Middle East areas toward Central Southern Africa and Central Southern America: all the three districts commonly enlarged their supply bases toward Latin America and two out of three IDs also extended in Southern Africa, following a similar path.

**Figure 4.10**. Relative weight of import values of the top 5 import markets of Valenza Po.
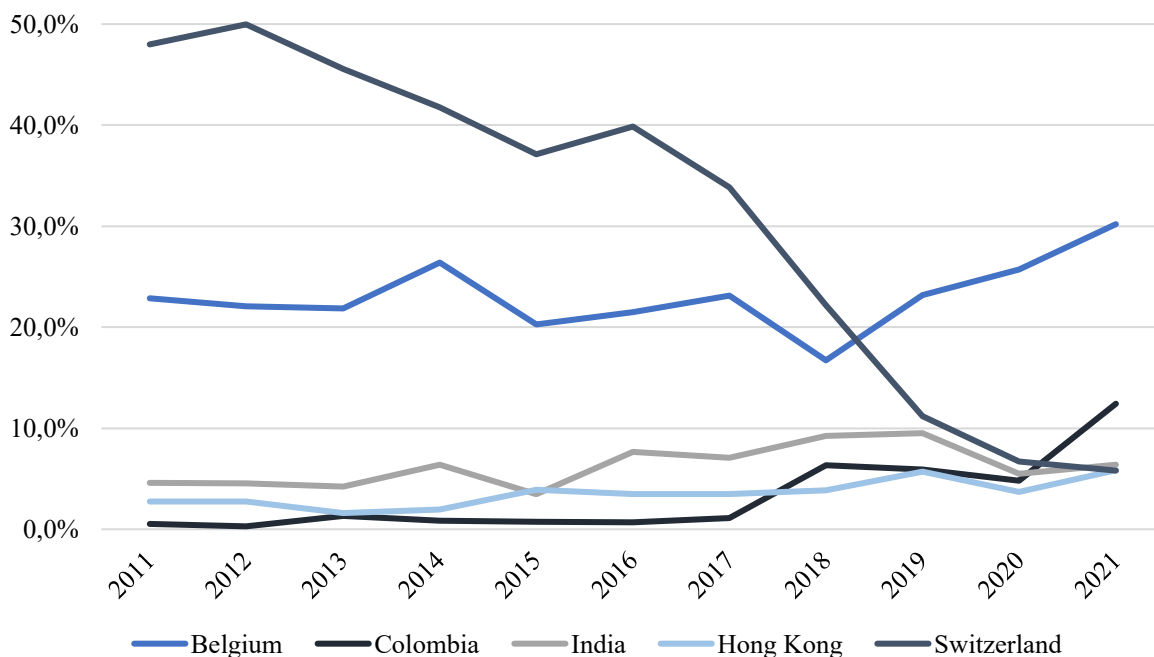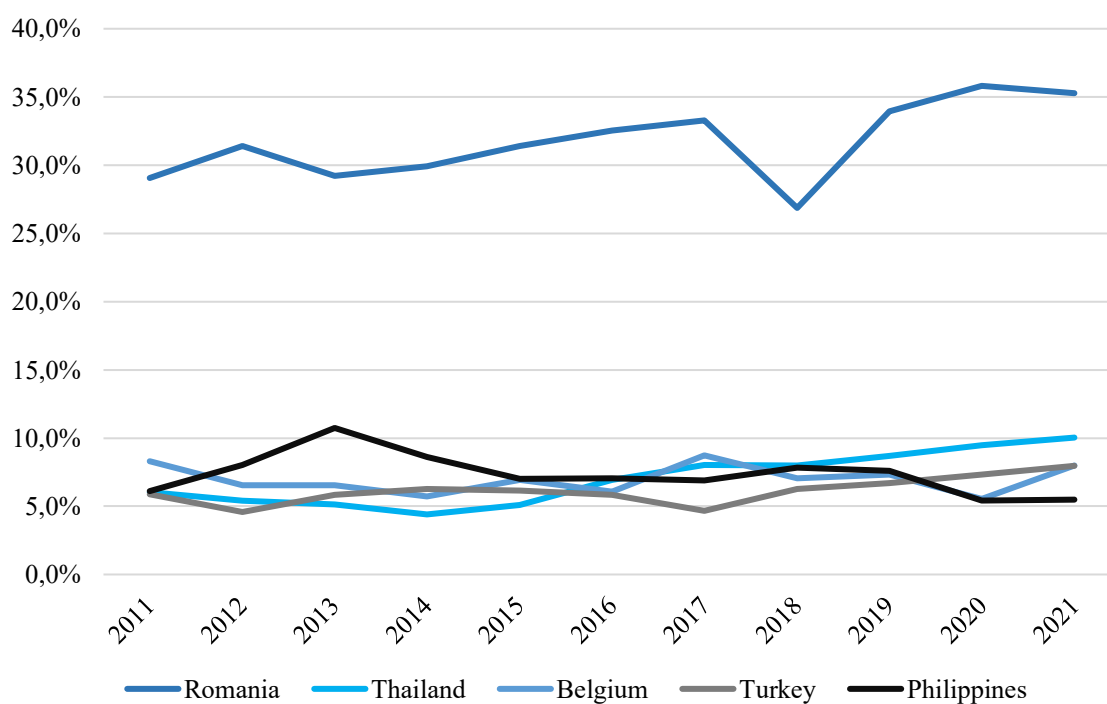


*Source*: own elaboration of COEWEB ISTAT data. Data refer to ATECO 2007 code 32.1.

In Figure 4.10., 4.11. and 4.12. it is possible to see each district's trend of the percentage of the first five import destinations on total import values. Analysing the first five foreign suppliers of Valenza Po (Fig. 4.10.), it is possible to note a sharp decline of the relevance of Switzerland from 2012 onwards; at the same time, Belgium, Hong Kong, Colombia, and India relatively maintain the same importance.

For what regard Vicenza (Fig. 4.11.), the ID has kept constant the relative quotes of the first supply sources over the period that goes from 2011 to 2021: Romania was the only country that

weighted for import values more than one third compared to the yearly total amount of imports (in terms of value). Lastly, Arezzo (Fig. 4.12.) had quite a heterogeneous situation. In fact, Arezzo maintained stable import trades with Vietnam and Hong Kong over the last decade. On the other side, import values from UAE slightly grew from 2020, probably due to the increasing price of gold of 2019-2020. Bolivia has become the first reference supplier since 2018-2019, while the path of France is quite "wavy": after a decline until 2015, it became the first import country for Arezzo during 2016 and 2017. Then, from 2017, its relative weight compared with the total amount of import in Euros basically stabilized from 2019 up to 2021.

**Figure 5.11**. Relative weight of import values of the top 5 import markets of Vicenza.



*Source*: own elaboration of COEWEB ISTAT data. Data refer to ATECO 2007 code 32.1.

**Figure 4.12**. Relative weight of import values of the top 5 import markets of Arezzo.
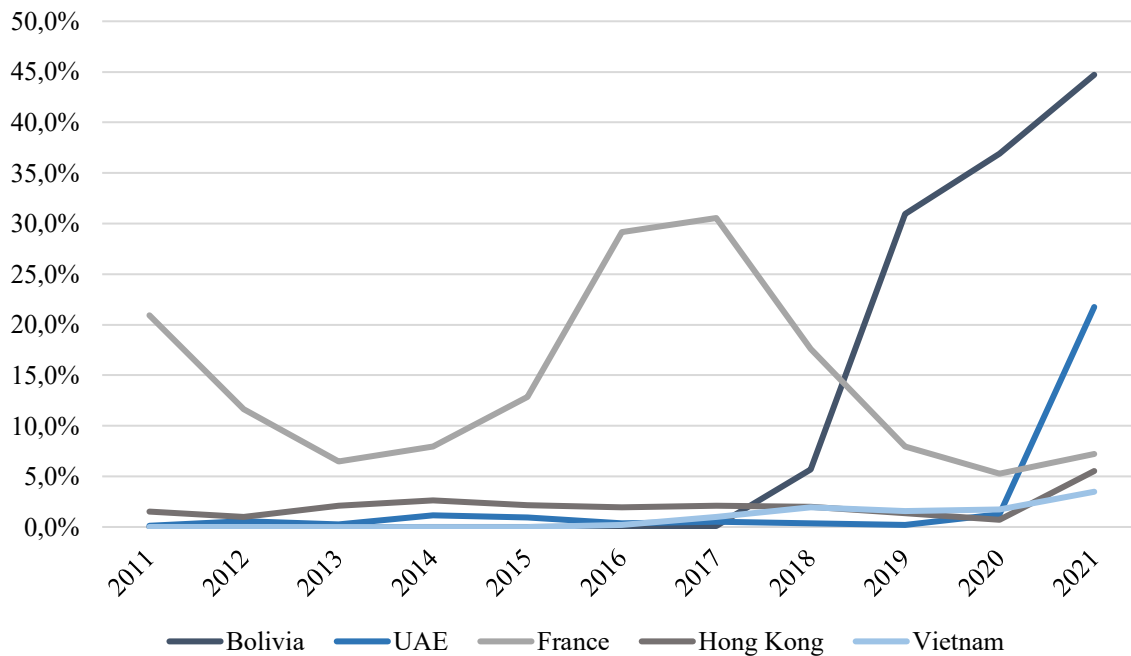


*Source*: own elaboration of COEWEB ISTAT data. Data refer to ATECO 2007 code 32.1.

## 4.3. A comparison with the previous crises

As mentioned at the beginning of this chapter, the third hypothesis refers to the potential differences between industrial districts in reacting against the current crisis and other past events, such as the Great Recession. The literature related to this aspect of the analysis has been addressed in chapter 2. De Marchi & Voltani (2014) made a research in which they conducted a statistical analysis about the existence of improved performances within district firms with respect to external ones, considering as time span the period of the 2008 crisis. This research has been carried out for the jewellery Italian industry, and what emerged from De Marchi and Voltani (2014) is that in general, jewellery IDs did not represent, in the aftermath of the Great Recession crisis, a positive context for the birth of new firms and productive realities, confirming what Rabellotti *et al*. (2009) and Grandinetti and De Marchi (2012) previously found about the decline of the Marshallian district. In statistical terms, when measuring the performance throughout ROA index, a difference between firms located in different specific geographic areas actually exists: however, main differences exist between the three IDs, highlighting and confirming the existence of a high degree of heterogeneity between Arezzo, Vicenza and Valenza Po when referring to the reactive behaviors – in terms of performances – against the 2008 crisis. In particular, Valenza showed a higher capability of being performing

during the Great Recession, with ROA values higher on average when compared with Arezzo and Vicenza. In the analysis made in this thesis, a similar result has emerged, as significant differences between performances of non-district and district firms were not encountered: however, the heterogeneity that emerged in the aftermath of the Great Recession still verified also for Covid-19 crisis, as Arezzo was the only district that showed higher performances during 2020.

At this point, it is interesting to make a comparison between the reaction of the three IDs against this crisis with respect to other negative economic periods of the past also under the GVC aspect. In a research made by De Marchi *et al.* (2014), the authors analysed downstream and upstream international strategy reactions of Arezzo, Vicenza and Valenza Po.

**Table 4.16**. Italian jewellery districts' export performance during the globalization and recession crises.

|  | Valenza Po | Arezzo | Vicenza |
|---|---|---|---|
| 2001 | 465 | 1756 | 1980 |
| 2004 | 400 | 1143 | 1441 |
| 2007 | 646 | 1440 | 1531 |
| 2010 | 562 | 1532 | 1220 |
| 2020 | 1166 | 1514 | 1090 |
| 2001/2004 | -13,9% | -34,9% | -27,2% |
| 2004/2007 | 61,4% | 26,0% | 6,2% |
| 2007/2010 | -12,9% | 6,4% | -20,3% |
| 2010/2020 | 51,8% | -1,2% | -11,9% |

*Source*: De Marchi *et al.* (2014, p. 874) for data before 2020. Own elaboration for 2020's data.

In tables 4.16. and 4.17., the data found by De Marchi *et al.* (2014) about the changes in downstream strategies of the three IDs are reported. The most important points to examine are the following:

- The export decline and the post-crisis recovery. De Marchi *et al.* (2014) found that during both the two crises of the early 2000s and 2008-2009, all the three districts particularly suffered in terms of export performances, with important negative growth rates (for example, Vicenza lost a -27.2% from 2001 to 2004 and a -20.3% from 2007 to 2010); the only district that saw its export values growing was Arezzo, with a +6.4% recorded in the aftermath of the Great Recession. Also, with the Covid-19 crisis, the export values for all the three IDs considerably declined, and this is especially true for

Valenza Po (-43.3% for the period 2017-2020), even though also Vicenza and Arezzo marked undeniable losses.

**Table 4.17**. Italian jewellery districts' downstream internationalization strategies.

| | Valenza Po | Arezzo | Vicenza |
|---|---|---|---|
| **Top export markets** | | | |
| 2001 | Switzerland (23,4%) | US (32,2%) | US (39,6%) |
| 2004 | Switzerland (35,8%) | US (31,4%) | US (26,8%) |
| 2010 | Switzerland (47,7%) | UAE (31,9%) | UAE (14,3%) |
| 2020 | Ireland (25,6%) | UAE (19,8%) | US (24,8%) |
| **% of developing economies among the top 10 export markets** | | | |
| 2001 | 0% | 13,0% (Panama, French Antilles) | 3,1% (China) |
| 2004 | 0% | 8,4% (Panama, Turkey) | 12% (China, Jordan) |
| 2010 | 0% | 14,6% (Turkey, Panama, Tunisia) | 19,4% (China, Libya, Jordan) |
| 2020 | 1,1% (Russia) | 21,5% (Turkey, Dominican Republic and South Africa) | 24,1% (South Africa, Romania, Turkey and Malaysia) |
| **Fastest growing export destinations** | | | |
| 2001-2004 | Central-Western Europe (+37%); Central Asia (+16%) | Central Asia (+334%); Central- Western Europe (+47%) | Central Asia (+123%); Mediterranean Area (+102%) |
| 2004-2010 | Mercosur (+305%); Central Asia (+265%) | Central Asia (+251%); Mercosur (+236%) | Northern Africa (+153%); Mercosur (+133%) |
| 2010-2020 | Central-Western Europe (+79%); Oceania (+68%) | Central-South Africa (+89%); North America (+50%) | Central-South Africa (+92%); Central Asia (+57%) |

*Source*: De Marchi *et al*. (2014, p.875) for data before 2020. Own elaboration for 2020's data.

- Changes in the export destination markets. After the two crises, all the districts rapidly changed their reference export destination market, namely the USA, after a considerable shock of the industry that hit the United States in the first years of 2000s (De Marchi *et al*., 2014). The fragmentation of the export market that started at the beginning of the century continued for Valenza Po and Arezzo, while Vicenza seems to consolidate its preference for exports toward USA.

- The greater role of developing countries for export values. With the only exception of Valenza Po, developing economies gained a more relevant role as destination markets: Valenza Po, in fact, passed from a 0% of developing economies across its top ten destination markets to a little 1% in twenty years. Vicenza and Arezzo, on the other side, confirmed the more relevant role of developing countries as export markets also during Covid-19 crisis, with higher rates for both the IDs.

In Tables 4.18. and 4.19. the data referred to the upstream strategies of the three jewellery IDs about the globalization and the Great Recession crises are reported (De Marchi *et al*., 2014). The crucial points that emerged are summarized in the following section:

- Import decline during the crises. As reported in the paper (De Marchi *et al*., 2014), and equally to what happened during 2020 with Covid-19 crisis, import values declined for the jewellery IDs. It is interesting to note a similarity for Arezzo: both during the period

**Table 4.18**. Italian jewellery districts' imports (millions of Euros).

|  |  | Total imports | Imports for production (IfP) | IfP/Exports |
|---|---|---|---|---|
| 2001 | Valenza Po | 298 | 284 | 61,0% |
|  | Arezzo | 34 | 18 | 1,0% |
|  | Vicenza | 106 | 66 | 3,3% |
| 2010 | Valenza Po | 430 | 412 | 73,2% |
|  | Arezzo | 98 | 92 | 6,0% |
|  | Vicenza | 129 | 94 | 7,7% |
| 2020 | Valenza Po | 546 | 535 | 45,9% |
|  | Arezzo | 235 | 226 | 14,9% |
|  | Vicenza | 125 | 103 | 9,5% |
| 2001/2004 | Valenza Po | -16,9% | -18,8% | -5,7% |
|  | Arezzo | 1,8% | 21,3% | 86,4% |
|  | Vicenza | 33,7% | 59,8% | 119,6% |
| 2007/2010 | Valenza Po | -3,9% | -2,8% | 11,7% |
|  | Arezzo | 95,0% | 156,0% | 140,6% |
|  | Vicenza | -46,8% | -55,0% | -43,6% |
| 2010/2020 | Valenza Po | 27,0% | 29,9% | -27,3% |
|  | Arezzo | 139,8% | 145,7% | 8,9% |
|  | Vicenza | -3,1% | 9,6% | 1,8% |

*Source*: De Marchi *et al*. (2014, p. 875) for data before 2020. Own elaboration for 2020's data.

2007-2010 and 2017-2020, it was the only ID that grew its import values. During Covid-19 crisis, this recovery started during the last four months of 2020, making the district reach better performances in 2021 than 2019.

**Table 4.19**. Italian jewellery districts' upstream internationalization strategies.

| | Valenza Po | Arezzo | Vicenza |
|---|---|---|---|
| **Top import markets** | | | |
| 2001 | Belgium (54,9%) | US (21,0%) | Switzerland (23,6%) |
| 2004 | Belgium (49,5%) | China (15,4%) | Hong Kong (13,9%) |
| 2010 | Switzerland (45,5%) | France (28,6%) | Belgium (12,7%) |
| 2020 | Belgium (25,8%) | Bolivia (36,8%) | Romania (35,8%) |
| **% of developing economies on top 10 import markets** | | | |
| 2001 | 9,0% (India, Thailand) | 44,3% (Turkey, China, Thailand) | 33,6% (Thailand, China, Turkey) |
| 2004 | 8,5% (India, Thailand, China) | 61,6% (Turkey, China, Jordan, Thailand, India, Romania) | 33,8% (Thailand, China, Turkey) |
| 2010 | 10,3% (India, Thailand, China) | 33,3% (Tunisia, China, India, Jordan, Thailand, Romania) | 58,8% (India, China, The Philippines, Thailand, Turkey, Romania) |
| 2020 | 17,9% (Colombia, India, Sri Lanka, Thailand) | 58,9% (Turkey, India, Vietnam, Bolivia) | 69,3% (Turkey, Romania, India, Thailand, Vietnam, The Philippines) |
| **Fastest growing import markets** | | | |
| 2001-2004 | Africa (+22,990%); Oceania (+1278%) | Central-Western Europe (+296%); Central Asia (+232%) | Central-Western Europe (+1010%); Africa (+965%) |
| 2007-2010 | Mercosur (+147%); European non-EU (+66%) | Mercosur (+1469%); Europe (+456) | North Africa (+4842%); Central Asia (+335%) |
| 2010-2020 | Center-Western Africa (+86,9%); Central-Western America (+80,6%) | Central-Western America (+99,4%); Central Asia (+94,4%) | Eastern Europe (+78,8%); North America (+4,1%) |

*Source*: De Marchi *et al.* (2014, p. 876) for data before 2020. Own elaboration for 2020's data.

- Increasing value of IfP and import/export ratio. Generally, during the globalization and the Great Recession crises districts increased their IfP: this means that they either

increased the division of labour across firms within the ID or the price of the raw material experienced higher valuations. The same happened in the period 2017-2020, with a smaller but still positive sign of import on export ratio (with the only exception of Vicenza, however with a -1.8%).

- The greater relevance of developing economies, both for imports and exports. This was particularly true as during the period that goes from 2001 to 2010 developing suppliers played an important role for all the three IDs. Even considering the period of the latest crisis, the same situation is represented by the import data of all the three districts, with increasing percentages of developing suppliers within the top ten importers.

The main result of this comparison between past crises and the Covid-19 ones is that IDs, within the same economic and industrial context, actually reacted differently: even though still in 2010 and in 2020 IDs showed a considerable degree of heterogeneity, it is also worthy to remember that from the Great Recession and the globalization crisis to the current crisis the performance, import and export dynamics changed across Vicenza, Valenza Po and Arezzo, confirming what expected by the third hypothesis of this thesis.

## Conclusions

This thesis main aim was to investigate how Italian gold-jewellery industrial districts reacted against the crisis originated by the outbreak of Covid-19. To carry out the research, the theoretical background, the scope of the analysis and three specifically outlined hypotheses were employed: proceeding with order, the first thing outlined has been the literature background that fit the topic of the thesis.

The two main frameworks used within this research has been the GVC theory and the ID ones: GVC studies emerged quite recently, around the '90s, with a focus on the international dimension of national economies, their interconnectedness and their degree of integration, and with a particular emphasis posed on understating the dynamics that emerge during crisis periods all over the world. From the early 2000s, globalization raised, connecting under different aspects (politically, economically, and socially) even farthest countries: from that period, long and fragmented production chains, that crossed national and continental borders, became one of the reference productive paradigms. On the other side, ID framework focuses on the opposite aspect with respect to GVCs, as its main studies investigated the local development of particular organic groups made of small and medium enterprises, called industrial districts. The reference author for IDs is with no doubt Marshall, who was the first researcher that studied the industrial agglomerations of artisans and small factories in the 19th-century England. Despite these two theoretical frameworks could seem opposite, the blend of these theories creates a conceptual parallel of the "productive process": if it is true that on side the production process is analyzed with respect to its international scope, on the other side it is also interesting to maintain the focus on its local dimension. Thanks to this blend it is possible to investigate the effects of GVCs on the local social fabric and, *vice versa*, so what IDs are able to bring within global productive chains. For what regard the scope of the analysis, the Italian economy has been chosen as national context for the thesis, because it has been considerably exposed to the economic crisis emerged after Covid-19 outbreak and the national countermeasures taken against the spread of the virus (namely, total lockdowns, closure of any industrial, social and

leisure activity) and also because Italy has been object of studies on IDs for years, as various industrial poles developed within the country. However, in order to avoid a potential sectoral effect, the thesis focused on a single industry, which is the jewellery one: this choice is justified by the fact that the three reference IDs involved into the national production of jewels are also districts that, during the last 30 years, developed virtuous linkages within the international production process of jewels and successfully established an important role within the GVC of gold jewellery. Moreover, jewellery is embedded within the fashion macro-industry, which is of course one of the brightest stars of the "Made In Italy" in the world, but also was one of the hardest hit industries by the pandemic. The three Italian IDs taken as unit of analysis are Arezzo, Valenza Po and Vicenza.

Having said this, the contribution that this thesis wants to give to the existing literature consists in conducting quantitative empirical research about the reaction of IDs against the recent Covid-19 crisis, posing the attention also on the international dimension of the districts chosen as unit of analysis. In order to pursue this research, three specific hypotheses were built: the first refers to the ability of IDs of being more performing and resilient with respect to non-district firms; the second is related to the import and export performances of Arezzo, Vicenza and Valenza Po and to the potential advantages that this international role within GVCs brings to the jewellery IDs. The last hypothesis wants to create a link between the latest crisis and other past crises, such as the Great Recession or the globalization crisis, in order to investigate whether IDs better reacted against this crisis with respect to the last 20 years.

The quantitative analysis consisted in a statistical model for what regard the first hypothesis, an elaboration of the official import and export data for the second one, and a comparison of past and recent data for what regard the third hypothesis. The overall analysis has been complemented by a qualitative review of second-source information, in order to understand and properly interpret the results found in the quantitative analysis. From the statistical analysis conducted for the first hypothesis, statistically significant differences between the performances of district and non-district firms did not emerge: EBTIDA margin of 2020 and ROA 2020 indexes were used as proxies for firms' performances, while the independent variable was a dichotomic dummy that represented the district. Using another specification of the independent variable, a different result emerged only for the EBITDA margin model: the binary dummy was changed into an ordinal one built in a way that each district's specific effect of firms' performance could be investigated. From this model, a significant positive difference emerged only for Arezzo, meaning that the district performed in a better way (the coefficient had a positive sign) during the 2020 Covid-19 crisis with respect to other district and non-district

firms. According to some secondary sources, Arezzo started a diversification strategy aimed at not suffering too much the negative effect of the pandemic crisis, which consisted in an increasing focus on another gold-related core business, the investment gold bar production. In order to have a complete picture even about the international dimensions of IDs, the official values of import and export collected from ISTAT were analyzed for each district. Before Covid-19 crisis, the overall jewellery industry, in global terms, were in an expansive and growing phase, as witnessed by the impressive export and import data of Valenza Po and Arezzo until 2019; Vicenza was the "flattest" performing across the three, both for what regard import and export values (it was the only one district with a declining IfP on exports ratio in the period 2017-2020). Thus, it can be said that also before the Covid-19 crisis the three IDs already showed heterogeneous characteristics, despite they shared at least one common dynamic, which was the increasing concentration (with few firms and more employees per firm) trend started in the last decade. The crisis signed a tough step to overcome for the three Italian gold productive poles, with huge losses in terms of export and import and also trade values, given the self-distancing measures and the lockdowns imposed during 2020 and 2021. The fact that such districts are involved within GVCs seemed to sharpen, at least at the beginning, their decline: this is especially true for Valenza Po, the Italian ID that most suffered the crisis negative impact and that struggles the most in recovering the pre-crisis export and import values. Even Arezzo and Vicenza suffered incredible losses, and in general the three IDs' losses on export values were around -70% and -75% considering the second quarter of 2020 and 2019. A hoping light came from the last quarter of 2021, with Arezzo and Vicenza starting to fully recover up to pre-crisis levels. The reason why Valenza Po has been the district that encountered more difficulties could be, as reported by an interview to Romina Galleri (economist at *Direzione Studi e Ricerche*, Intesa Sanpaolo) for Sole24Ore, the strong local presence of multinationals that undertook strict price policies in order to smooth the price fluctuations of gold, considerably increased over the last two years. It is also interesting to note that Arezzo was the only ID that overcame the 2019's levels of import and export values, and also in this case the improvement of the gold bars production to the investment market played a crucial role. For what regard the destination markets, the IDs engaged in different downstream strategies, with Arezzo, Vicenza and Valenza diversifying their end markets focusing on different geographical areas; on the contrary, talking about the supplying markets, the districts commonly concentrated mainly on Central and Southern Africa and Central and Southern America, and only Arezzo expanded its foreign supply also in Central Asia. Around the final part of the thesis, a comparison between the behaviors of IDs against the current crisis and other

past crises has been made, and the most interesting aspects that emerged from this analysis are reported in the following bulleted list:

- Top performing IDs. The first difference spotted is referred to the top performing IDs: during the globalization and the Great Recession crises, Valenza seemed to be the most resilient ID, as De Marchi & Voltani (2014) found statistical bases to affirm that, on average, Valenza Po's firms ROA was better with respect to other districts and non-district firms' one. In the analysis carried out throughout this thesis, the same "best performer" role seems to pertain to Arezzo, with a positive statistically significant EBITDA margin value of 2020 with respect to other firms located in other geographical areas.

- Export values decline. During each crisis happened within the last two decades, all the three Italian jewellery IDs experiences huge losses in terms of export values, and Covid-19 crisis was not different: as previously seen, during globally spread crises these international IDs suffered more the negative economic effects.

- Downstream diversification strategies. The IDs differently activated downstream oriented diversification strategies in response to different crises. Valenza Po seems to be the only district that changed its first reference destination market during Covid-19 crisis, while Arezzo and Vicenza consolidated past downstream strategies. Valenza is also the only district that count on a small percentage of developing countries across its top ten destination markets. From the early-century crises, the three IDs developed their relationships with destination markets very differently: Vicenza, for example, maintained its focus and consolidated its presence in Central Asia, while on the other hand Arezzo completely diversified its reference end markets in response to tough periods.

- Import values trends. For what regard the import value trends, both for the current crisis and for past crises only Arezzo recorded positive values, while Vicenza and Valenza Po suffered also on the supply side the economic downturns. Another similarity with past crises is the increase of the IfP on export ratio (Import for Production), caused by the fluctuating gold price trends that generally verifies during economic recessions.

- Foreign suppliers. For all the three jewellery IDs developing countries played an important role during economic crises, as both during past crises and during Covid-19 Arezzo and Valenza Po basically confirmed their foreign supplying markets, increasing their share of import values from, respectively, Europe, Asia, and Latin America for

Arezzo; Africa and Latin America for Valenza Po. Vicenza was the only district that diversified its suppliers' base, leaving Central Asia as a fast-growing import market and expanding its supply in North America from 2010 to 2020.

Despite these results, there are some considerations to keep in mind that could explain the failure of the statistical analysis – made for the first hypothesis – in finding supportive results to the district effect cited within literature. The potential limitations that probably affected the empirical process are the following:

- Data limitation. A first few limitations could be originated from the data of the sample: in fact, due to the fact that most of IDs' firms are small and medium entities whose communication of balance sheet data is not mandatory. The sample considerably diminished after the data cleansing process, as a lot of crucial data were missing making thus impossible the utilization of almost 4/5 of the observations within the model. Another data limitation comes directly from the intrinsic nature of the data themselves: balance sheet data have the advantage to be homogeneous, allowing comparisons across different firms; however, their main limitation is that all financial data tend to represent past information about a firm's performances. These two data limitations could have made the quantitative analysis partial, both because of missing data that could have been important for the analysis and also for the fact that post-crisis data (related to 2021) were not included.

- Limited time span. An additional cause that potentially limited the analysis is strictly related to data limitations, as it refers to the time span considered within the statistical models. The district effect did not emerge because considering the 2020's performances of firms could have been too restrictive, and maybe including financial data of 2021 or even 2022 would add some crucial information.

In view of the above explanations, an interesting cue arises for a further analysis (maybe reproducing the same analysis on another industry), considering a larger time span in order to continue to investigate about the empirical support to the "district effect" emerged within literature. The fact that during the course of this thesis the district effect was not confirmed by the statistical results does not exclude the fact that it would not exist at all. For what regard the second hypothesis, the main potential limitation lies in the approximations made in order to collect the data: the main issue could come from the fact that ISTAT data allows only to have provincial information about import and export values, and even though it is reasonable to assume that provincial data related to the jewellery industry are likely to correspond to IDs, it

still remains an assumption – so data could slightly differ from the IDs real ones. Also, the same limitation could affect also the IfP (import for production) figure, as it has been calculated utilizing an approximation from data of the ISTAT consumption survey. The last issue related to Coeweb's data refers to the granularity that the analysis could reach: it is, in fact, only possible to circumscribe the data collection up to three digits ATECO 2007 code. This implies that import and export data about the IDs may also include information not properly related to the core business of Arezzo, Vicenza and Valenza Po. The data limitations just explained, of course, could also affect the comparison with previous crises made for the third hypothesis: however, the trends reported within the analysis are not consistently affected by the limitations encountered, meaning that the conclusions drawn throughout the thesis are useful and valuable.

To conclude, this analysis explored the effects and the impacts of a tumultuous period as Covid-19 pandemic with respect to organic groups of firms such as IDs. The Italian gold jewellery industrial districts were the main object of analysis: even though a statistical confirmation to the fact that a district effect that could affect the resilient attitude of IDs was not found within this research, from the analysis on the import and export performances a great attitude toward adaptation during crisis periods emerged for Arezzo, Vicenza and Valenza Po. This also matches the main findings of second source, according to which Italian gold districts, in general, showed their resilient attitude against an unprecedent and unexpected event like Covid-19, taking adaptive behaviors such as diversifying their destination and supply markets in order to release the negative shocks of the jewellery industry demand or enlarging, during the emergency period, different related business like the investment-gold production. Industrial districts are resilient, adaptive and they are evolving in answer to Covid-19 crisis: despite their ability of adapting to conditions of deep economic uncertainty, in order to maximize this great advantage, government should enhance and support the net of institutions that permeates and holds the local social fabric typical of IDs, especially during tough recession periods such as Coronavirus pandemic has been.

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