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Global Value Chains - The Rise of China

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SUMMARY

Introduction

Since the last two decades of the 20th century, the world has gone through a huge series of social and economic transformations, most of which were made possible by the significant advancements achieved in the information and communication technologies. In this context, companies have started to internationalize their operations in a completely different way compared with the previous years and this brought to the birth of a new phenomenon that reshaped the world's production arrangements: global value chains.

A value chain describes the whole range of activities that are performed to bring a product or service from its conception through all of the different stages of production, up to the end users and beyond. These tasks may be executed within a single firm or divided among different companies; thanks to the rise of global value chains, whole processes have been fragmented across the industries and the production activities have been increasingly carried out by inter-firm networks on a global scale.

The reason behind this relies on the big multinational enterprises' willingness to increase efficiency, lower costs and speed up the production by taking advantage of larger factor endowments, lower wages and advantageous policies all around the world.

This new tendency brought to a sharp increase in international trade; worldwide exports boosted and complex cross-border flows of goods, know-how, investments, services and people have risen as it never happened before.

Supply-chain trade has been common for decades among developed countries, as it is witnessed by the 1965 Auto Pact between Canada and the United States of America that institutionalized cross-border supply chains within the automobile industry. Nonetheless, the revolutionary shift comes from the fact that in the recent years also low-wage emerging countries have been involved in international production networks,

thus giving the possibility to many local companies to join the already existing global value chains. This was a huge advantage for domestic firms, since it prevented them from the necessity to invest for decades in order to set up their own global operations, even carrying the risk of never being able to reach the same level of developed countries' multinationals.

Global supply chains are not just a series of multiple across-borders transactions, but they rather consist of integrated networks of production operations; thus, they involve transformations in various policy areas and most of the governments in developing countries are striving to promote foreign investment-friendly administrative frameworks. This happened for example in the case of China where, after decades of protectionism, a huge liberalization process started in 1978 and accelerated after its entrance into the World Trade Organization (WTO) in 2001, bringing the country to become one of the most prominent players in the international trade scene.

Another important issue for the governments of those emerging countries participating in global production networks, then, concerns the upgrading of firms along the value chains. This refers to the dynamic movement through which producers shift between different stages of a value chain, or even from one chain to another, trying to build more specialized capabilities and to reach a stable and sustainable income growth, by generating more and better jobs and capturing more profits thanks to the performance of higher value-adding activities.

In the first chapter of this paper we will go through this complex, globalized context in order to gain some insights about the birth of global value chains, the drivers and trends of their development, the policies and governance frameworks within them and the effects that this phenomenon is having on worldwide growth and jobs.

In the second chapter then, one of the most important players worldwide, China, will be analyzed in a deeper way providing some insights about the path that brought this

country to occupy a prominent position in the international business environment and investigating about the drivers of its recent development.

Finally, in the third chapter, we will consider the cases of some Chinese firms, in the specific Lenovo and Haier, which will be taken as an example of successful upgrading in global value chains, thus getting an overview about how enterprises in China are evolving from joining foreign-led supply chains at the lower levels to build their own international production networks and to expand their presence all around the world.

Chapter 1 - Global Value Chains

1.1 The birth of GVCs

Before the advent of globalization, the world was much more spread and homogeneous in terms of economic production and consumption; each village or region used to produce most of what it consumed and economic differences among the various areas or countries were not really significant. Indeed, as we can see in **Figure 1**, in the mid-18th century the per capita industrialization levels were almost the same all around the world (in this case, the benchmark is given by the industrialization level of the UK in 1900=100). This pattern was forced by the poor transportation technologies at that time, which made it very dangerous and expensive to move goods from one country to another, so that every nation had to be almost self-sufficient.

Figure 1 - Per capita industrialization levels, 1750 –1913 (United Kingdom in 1900 = 100)

Country	1750	1800	1830	1860	1880	1900	1913
France	9	9	12	20	28	39	59
Germany	8	8	9	15	25	52	85
Italy	8	8	8	10	12	17	26
Russia	6	6	7	8	10	15	20
United Kingdom	10	16	25	64	87	100	115
Canada	-	5	6	7	10	24	46
United States	4	9	14	21	38	69	126
Japan	7	7	8	7	9	12	20
China	8	6	6	4	4	3	3
India	7	6	6	3	2	1	2

Source: table 9, Bairoch (1982)

This framework was profoundly affected by the **first globalization wave**, which happened between the 1830s and the 1870s thanks to the steam engine revolution and

the consequential ease to move people and products across the boundaries, which made it feasible to spatially separate production and consumption. Once trade costs had become a secondary issue thanks to the sharp decline of transportation costs, in fact, it started to make sense for firms to produce at a vast scale; therefore, they increasingly clustered production in some particular places, in order to take advantage of scale economies. This gave birth to a huge process of industrialization in the so-called "North'' of the world (Europe, United States and Japan), while the ''South'' began to de-industrialize and many places lost their production in favor of those new big clusters, as in the case of China and India.

Due to this situation, income and wealth became to cluster too and the divergence increased massively between the North, were growth took place at a really fast pace, and the South. In fact, scale and specialization economies gave to firms in the North of the world a huge cost-advantage towards the industries of the South, incentivizing at the same time the location of more production facilities in the former and the abandoning of activities in the latter.

In this context, countries tent to specialize their production onto some particular goods, subsequently engaging in trade with other countries producing different things and giving birth to a phenomenon called country specialization. David Ricardo[1] tried to explain this evolution in 1817 with its theory of comparative advantage, demonstrating that countries should specialize in those areas where they have the highest comparative advantage with respect to the others.

In fact he asserted that, thanks to the specialization, it is more efficient for nations to engage in free trade exporting the produced goods and importing the others, instead of trying to shield their weak industries from foreign competition through protectionist policies. In this way, the overall production and consumption will increase. This

[1] David Ricardo (1772-1823) was a British political economist and one of the most influential classical economists in the 19th century.

mechanism worked really well for Britain in the 19th century, since it focused on manufacturing goods to export while it essentially outsourced its food production, thus becoming the workshop of the world during the industrial revolution.

These concepts have been widely accepted for decades, until the rise of a **second wave of globalization** brought by the incredible developments in ICT technologies started in the 1970s, which revolutionized again the international trade and production patterns. In fact, thanks to the technological advances, communication costs experienced a sharp drop in those years and, therefore, it has been made possible for companies to coordinate the various production stages even at a long distance.

Whether the communication costs are high indeed, it is usually better and more profitable for firms to locate their activities close to each other, as for example when people working in the same production lines need to be coordinated; however, thanks to the drop of these costs companies had the possibility of fragmenting production and, if economically convenient, they could move some of the production stages to other countries, where lower factor costs could be enjoyed.

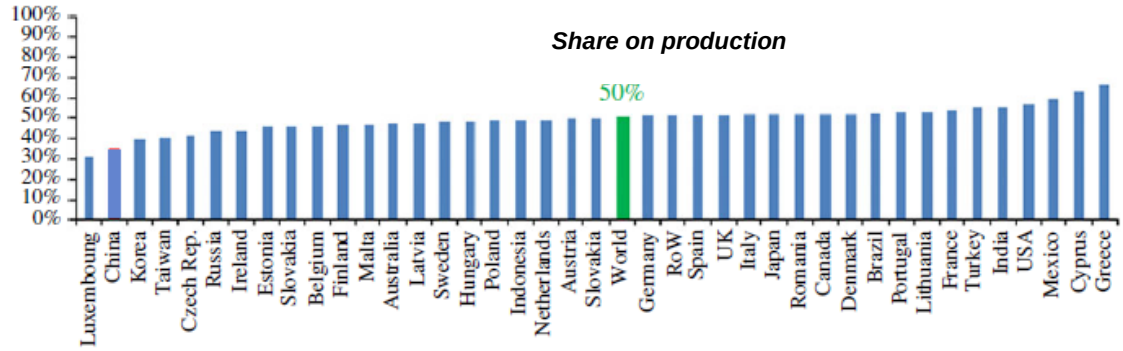
Before this second wave of globalization, most of the international sourcing used to happen among mature economies. Starting from the 1970s and especially through the 1990s, instead, the participation in global supply chains of Asian, South American and East European countries massively increased, especially due to the big gap in terms of costs of labor that incentivized many firms to dislocate the low-skilled stages of production in such countries like China, Poland or Brazil.

This brought to an inverse process compared to the one mentioned above; in fact, countries in the ''North'' of the world started to de-industrialize, while the ''South'' ones began a strong process of industrialization. This enabled some emerging countries to grow at an incredible rate over the recent years and to increasingly fill the income divergence with the developed ones.

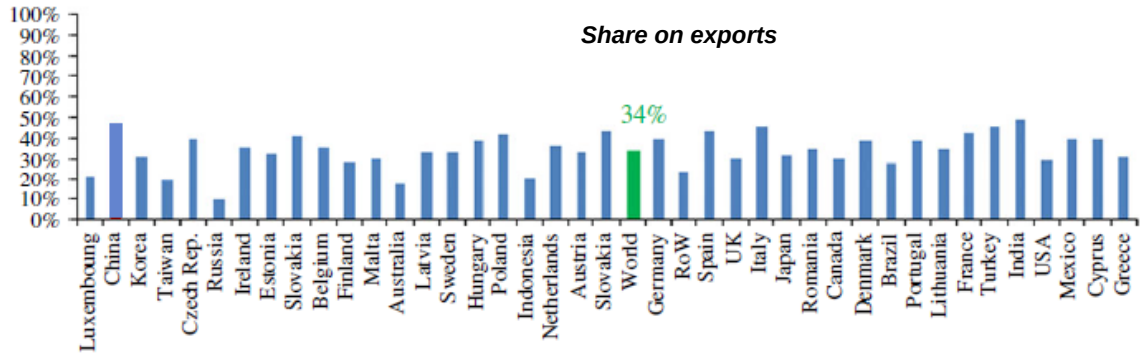
Clearly, it is much more convenient for firms in emerging nations to join an already existing global value chain than starting to build from zero a deep and wide industrial base through which become competitive, so that many developing countries liberalized tariffs and dropped the old protectionist policies in order to attract off-shored manufacturing activities and foreign direct investments. As a result of this evolutional path, by the late 1990s Asia surpassed the North Atlantic economies in terms of international exchanges.

Hence, in the 21st century a totally new framework emerged as regards international trade, which presents four main features that are worthy to be remarked. First of all, there have been an exponential increase in the worldwide trade of goods and services compared to the previous years, especially due to the climb experienced in the production and exchange of parts and components. In order to have a better insight it is possible to see in **Figure 2** how, on average, only one half of the goods and services produced in the world in 2009 were destined to final usage and just 34% of total countries' exports were, on average, in final goods.

Figure 2 - Final goods as a share of total production and exports, 2009



Source: www.WIOD.org and Balwin's & Lopez Gonzalez's (2012) calculation



Source: www.WIOD.org and Balwin's & Lopez Gonzalez's (2012) calculation

As a second, very important feature of this century's trade pattern, it could be underlined how international investments are not only directed towards the building of production facilities, but also to the training of employees and the development of technologies, so to establish long-term relationships with the investors' foreign suppliers. This is happening because international trade does not concern anymore just final products being shipped from one country to another but, instead, it increasingly involves companies that take part into the same value chains. For this reason, all of the activities need to be managed in a proper way and the leading firms have to make sure that suppliers act in compliance with their standards and procedures, so to be perfectly integrated in their system.

This consideration is also helpful to introduce the third main feature of 21st century international trade framework, which regards the worldwide massive improvement of infrastructure services, necessary to coordinate at best the dispersed production activities. In fact, both the off-shoring firms and the emerging countries' governments are deeply involved in enhancing this kind of services, especially the telecommunication and the internet ones, which play a crucial role in global value chains' development.

As a final consideration, the off-shoring of production activities gave birth to huge flows of know-how from developed countries to developing ones, including general managerial and marketing capabilities. This has been reflected by the increased efforts

of the international community towards the joint recognition of Intellectual Property Rights, whose protection and enforcing are essential and have become a primary issue in order not to dampen the process of internationalization.

1.2 Agglomeration and dispersion forces

Before to move part of a firm's activities abroad, managers clearly have to make a big number of considerations and, above all, they should find a balance between agglomeration and dispersion forces by calculating the existing trade-off between the lower direct costs resulting from the off-shoring and, on the other side, the costs of separation. Once this task is accomplished, they will be able to take the most efficient decision in order to maximize their company's profits.

Agglomeration forces can be defined as those elements that push managers not to off-shore a firm's activities, since the costs of separation[2] would be higher than the gains resulting from the enjoyment of lower direct costs[3]. Of course, the typology and the extent of those forces strongly depend on the environment the firms operate in, such as the industry they act in, the places where their current facilities are located, the technological degree of their products or services and so on.

However, the most important agglomeration forces are basically two, plus the influence of trade costs, which exert an ambiguous role and can be considered both as pushing for dispersion or agglomeration, depending on their amount.

The first element to be taken into account as an agglomeration force is the presence of some local **spillovers** enjoyed by the firms. Those are, namely, a positive externality: a

[2] Costs of separation refer to those costs coming from the loss of efficiency, the increase in communication and transport costs or the deprivation of some benefits originated by the movement of a company from its original location to another one.

[3] Direct costs refer to those costs that can be completely attributed to the production of a particular good or service, as for example inputs and labor costs.

secondary effect of somebody's economical activity that is positively reflected into the activities of those operating into the same environment. Spillovers can be of various kinds, such as the technological and knowledge ones and they can be generated both through competition and collaboration among firms.

According to Marshall, Arrow and Romer[4], the proximity of firms that operate in the same industry or in related ones usually affects in a positive way the extent to which knowledge is exchanged among them and their employees, with the result of facilitating innovation and growth. Indeed, the closer the firms are to each other, the easier is to spread ideas all around and to foster the innovation of products and processes. According to Porter's[5] vision, instead, innovation is fostered by local competition, where a large number of specialized firms are located nearby and fiercely compete to innovate in order not to lose their market shares.

One of the most famous examples of spillover effect can be observed in the Silicon Valley, California, where all of the biggest high-tech enterprises clustered together and gave birth to a unique environment for high-tech innovation and development, in addition to having created a great startup ecosystem that accounts for about one-third of all of the venture capital investments in the United States.

In addition to spillovers, another important element that pushes managers not to separate their activities is represented by the **coordination needs,** which are often specific to certain sectors or firms. As an example, in the fashion clothing industry the proximity between designers and producers could be considered as a critical element of success, since both of these activities have to respond as fast as possible to the indications coming from the continuously-changing market. Furthermore, in some

[4] Alfred Marshall (1842-1924) was a British economist and one of the most influential of his time and one of the recognized founders of neoclassical economic theory. Ken Arrow (1924-now) is an American neoclassical economist and the youngest winner of the Nobel prize for Economics at the age of 51, in 1972. Paul Romer (1955-now) is an American economist, currently teaching at the Stern School of Business at New York University.

[5] Michael Porter (1947-now) is an American economist, author and teacher at Harvard Business School.

industries the product development stages could be run in a cheaper, faster and more effective way if they are co-located with certain fabrication stages they have to constantly interrelate with.

As for dispersion forces, they are those elements that push decision-makers to separate and off-shore part of their activities, since the costs of separation would be completely offset by the savings resulting from lower direct costs. Even in this case, there are two dominant forces pushing for production to be dislocated in another country.

The first element to be taken into account is the consistent **wages gap** existing between developed and developing economies. This represents a strong encouragement for firms in advanced countries to off-shore the labor-intensive stages of production in the emerging ones, where they can take advantage of a low-skilled labor force that is much cheaper with respect to their own nations. On the other side, those companies usually tend to retain the skill-intensive stages of production in their home countries, since high-skilled workers remain pretty abundant and, given the supply, relatively cheap.

Another reason for enterprises to off-shore their production does not concern factors' lower prices but, instead, it is given by countries' firm-level excellence and **specialization** in some tasks or in the fabrication of some components. This does not only happen between developed and developing countries but also among high-wages nations, thanks to the attainment of some scale and scope economies that make it convenient for everybody to source a particular good or service from the country that is specialized in its production.

As an example, it is possible to point out that in the major producers of air conditioners the automobile industry are the Japanese company Denso and the French one Valeo, which dominate market thanks to their excellence and not through low costs. In fact, even if in line of principle any auto maker could produce its own air conditioners, scale economies make it cheaper for foreign firms to source from those two countries.

Finally, as it was mentioned above, every company has to take into account the ambiguous role exerted by **trade costs** which, depending on their amount, can be considered both as an agglomeration or dispersion force. Whether these costs are very high, indeed, the production tends to be dispersed all around the world, following the "one production plant for one market'' pattern; in fact, if the transport of goods and services among countries is difficult and expensive, production activities need to be located close to the consumption centers. At the same time, production also tends to be widely dispersed if trade costs are very low, since the location becomes irrelevant when transport is almost costless. As a consequence, agglomeration is not necessary when trade costs are close to zero and it is not possible when they are very high while, in the between of these two extreme situations, clustering is possible and rewarding.

1.3 Headquarter VS Factory economies

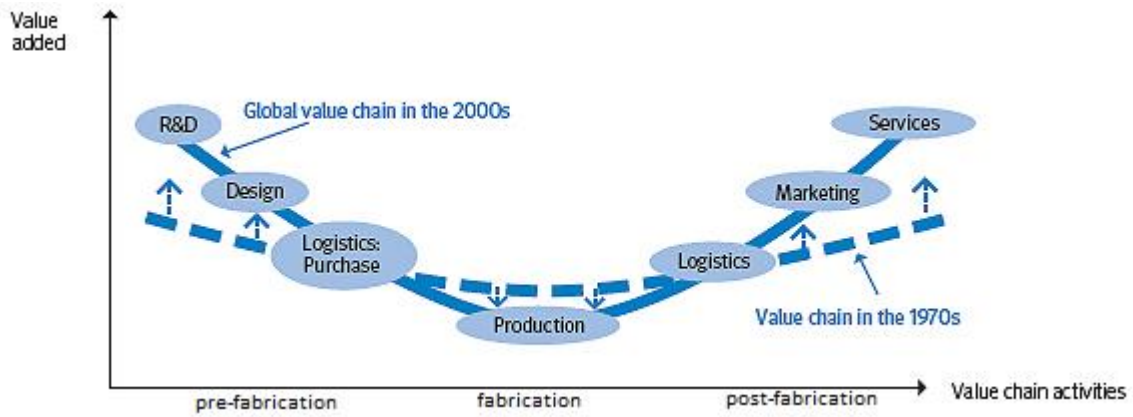
Having a look at what kind of activities are usually off-shored by the companies and which ones are, instead, preferably retained in-home, a clear tendency can be pointed out. Indeed, the pure fabrication stages of production are usually the ones to be dislocated in emerging countries, in order to take advantage of the vast wage differences. On the other hand, the pre- and post-fabrication stages such as research and development (R&D), marketing, branding and customer services, which are the ones involving more value creation and accounting for the biggest part of firms' differentiation with respect to their competitors, are usually kept in the home countries giving birth to a fundamental distinction in global value chains, which is the one between **Headquarter and Factory economies**.

This also causes significant differences as regards the quality of jobs performed within the two different groups of countries: in fact the headquarter ones, whose firms are usually the ones off-shoring activities and leading global value chains, tend to retain

fewer but higher-skilled, better paid jobs; factory economies, instead, experienced a consistent increase in terms of low-skilled jobs amount. However, the value added by the off-shored fabrication stages is continuously decreasing and shifting to the pre- and post fabrication ones.

Indeed pure manufacturing tasks, especially assembling, involve much less value creation today than before the second globalization wave. This is reflected by the so-called **smiling curve**, a definition originally used by Acer's founder Stan Shih in 1992[6] to illustrate the problems faced by information technology manufacturers in Taiwan that, being a world base for products assembling, found themselves at the bottom of the curve.

Figure 3 - Smiling curve and its progressive deepening



Source: "Interconnected economies benefitting from global value chains", OECD, 2013

The reason behind this phenomenon is that the value added by each stage is mainly based on costs and since those are heavily reduced by off-shoring activities to take advantage of lower factors' prices, also the share of value added by the separated

[6] Based on this observation of its founder, the Taiwanese computer maker Acer strived to reinvent itself in order to become more than a mere manufacturer, focusing on global marketing to build-up an internationally recognized brand-awareness and also investing aggressively in R&D to propose itself as one of the world's technological leaders in the PC industry.

stages falls. In addition to this, whether the off-shoring firms also move their advanced technologies to the new locations, a further drop in the cost of tasks is experienced, thanks to automation and increased efficiency.

As a final consideration, it is important to underline that off-shored activities could be usually performed in a large number of low-wages countries without making a remarkable difference, so that they became kind of commoditized given the large supply of low-cost labor around the world. On the other hand, the non-off-shored activities are usually those upon which firms build their differentiation strategies and their value is not decreasing but instead, given their distinctiveness, in the recent years they are experiencing a rise in both value created and profitability.

Due to these reasons, many policy-makers in emerging economies are striving to implement some actions in order to let their countries rise up the value chains and be able to capture a bigger share of value from the produced goods.

Thanks to this particular subdivision of activities among countries, where low-skilled workers in the emerging economies usually perform tasks accounting for a relatively little amount of value added, another manner to point out the differences between headquarter and factory economies is by looking at the data concerning the flows of intermediate goods that are re-imported or re-exported between countries[7].

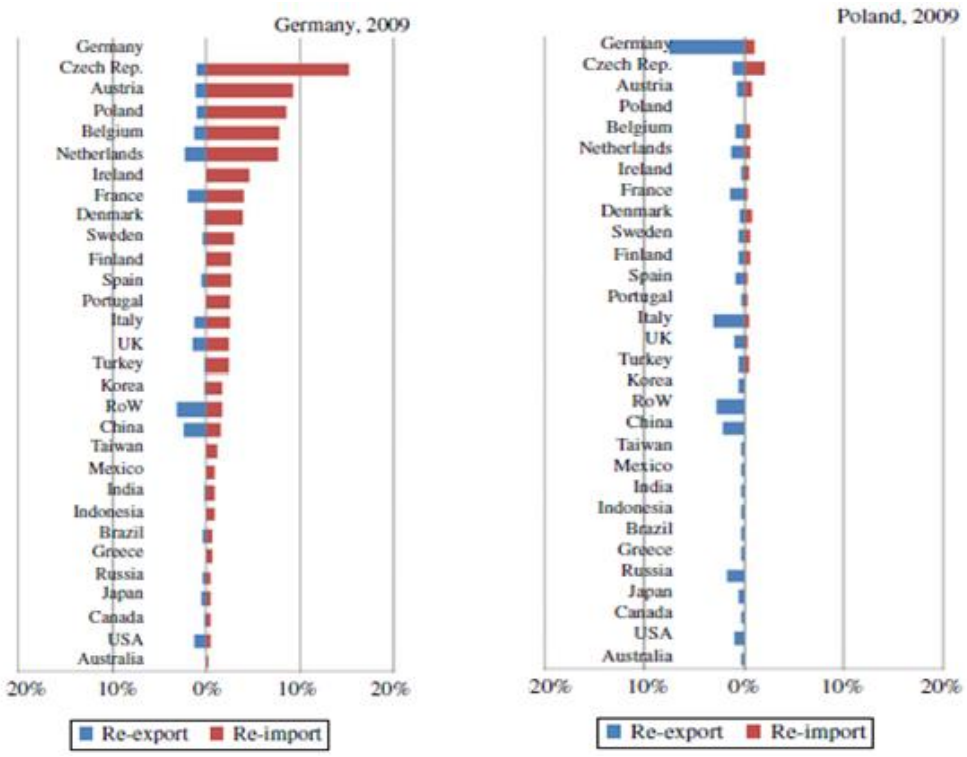
In fact, it is easily understandable how headquarter countries tend to re-import goods much more than they re-export them, while the opposite is true for factory countries. Indeed, goods are usually sent to the latter after they have been conceived, designed and initially developed by firms in their home countries. Later, after they have been assembled or some other low-skill-intensive activity have been operated, they are re-exported to reach consumers in the original country and all around the world. As an

[7] This particular set of data takes into account two kind of bilateral flows: intermediate goods that are exported from a country to another one and later re-imported to the first and intermediate goods that do the opposite path, being imported by some nation in order to be subsequently re-exported to the same country that supplied them.

example, **Figure 4** shows the re-importing and re-exporting patterns of Germany and Poland in 2009, where the flows are normalized as a percentage of the total bilateral imports between the considered countries.

As it is possible to see, Germany is heavily engaged in supply-chain trade with both high-wage and low-wage nations, mainly focusing on the re-importing activity. On the other side, Poland can be taken as a perfect case of factory economy, where re-importing is almost irrelevant while re-exporting is a crucial activity, especially towards high-wages nations such as Germany and Italy, whose firms have off-shored the fabrication stages of many goods to this country (for instance the Italian automaker FIAT, which set up some huge manufacturing facilities in Poland).

Figure 4 - Germany and Poland re-imports and re-exports, 2009



Source: Lopez-Gonzalez (2012) calculation on WIOD tables

On top of this, a final way to underline the differences between headquarter and factory economies is by looking at nations' input-output tables[8] which, reordering the data, allow us to measure the share of a country's exports total value that is made up of value added from imported intermediates. Staring at **Figure 5** the contrast is evident; indeed, exports from headquarter nations usually include a relatively small part of value added by intermediate inputs imported from other countries (technologically advanced economies present shares below 20%), while the situation is completely opposite for those countries classified as factory economies, whose exports contain a large share of value added by imported intermediates (about 37% of Mexican exports' gross value consists of US intermediate inputs). Of course, this creates significant asymmetries as regards the dependence of factory nations on headquarter ones' intermediate inputs, heavily affecting the reciprocal market and bargaining power.

Figure 5 - Share of countries' exports made up of value added from imported inputs

Partner	Reporter	United States	Canada	Mexico	Japan	China	India	Indonesia	Korea, Rep. of	Germany	United Kingdom	Italy	France	Spain	Poland	Portugal	Brazil
	US		18%	37%	1%	2%	2%	3%	3%	1%	2%	1%	2%	2%	1%	1%	5%
	Canada	4%		2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Mexico	2%	1%		0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%
	Japan	1%	1%	5%		5%	1%	5%	6%	1%	1%	0%	1%	1%	1%	1%	1%
	China	3%	3%	9%	2%		5%	6%	7%	2%	2%	2%	2%	3%	3%	1%	3%
	India	0%	0%	0%	0%	1%		1%	1%	0%	0%	0%	0%	0%	0%	0%	1%
	Indonesia	0%	0%	0%	2%	1%	1%		1%	0%	0%	0%	0%	0%	0%	0%	0%
	Korea, Rep. of	1%	0%	4%	1%	4%	1%	2%		0%	0%	0%	0%	1%	1%	0%	1%
	Germany	1%	1%	3%	0%	1%	2%	2%	1%		4%	5%	5%	7%	12%	7%	2%
	UK	1%	1%	1%	0%	0%	1%	0%	0%	2%		1%	2%	2%	1%	2%	1%
	Italy	0%	0%	1%	0%	0%	1%	1%	0%	1%	1%		3%	4%	3%	3%	1%
	France	0%	0%	1%	0%	0%	0%	1%	0%	2%	2%	3%		5%	2%	4%	1%
	Spain	0%	0%	1%	0%	0%	0%	0%	0%	1%	1%	1%	2%		1%	15%	0%
	Poland	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%		0%	0%
	Portugal	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%		0%
	Brazil	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	
	Total	15%	27%	65%	8%	16%	16%	20%	21%	11%	13%	16%	17%	29%	26%	35%	16%

Source: Baldwin's (2013) manipulation of Lopez-Gonzalez (2012) data.

[8] The world input-output tables, available at http//:www.wiod.org, are used to keep explicit track of the bilateral flows of inputs and outputs happened from 1995 between 40 major countries, accounting for 85% of the world's GDP.

1.4 Governance in GVCs

As it has been mentioned in the above section, power asymmetry is one of the main characteristics of 21st century global value chains. In fact, there are always some leading companies in control of value chains, which assume the responsibility for the inter-firm division and coordination of labor and ensure that interactions among the firms participating in the same chain reflect some kind of organization, thus providing a form of governance. In addition to this, they also have to make sure that all of the cooperating companies act in compliance with some pre-determined standards and that all the produced components are provided with the necessary features to be perfectly integrated into the final products.

However, usually there is not just a single enterprise engaging in those activities; indeed, multiple nodal points are present in the governance and coordination of a global value chain and they can also change over time, according to the shifts in prominence experienced by the firms taking part in the network.

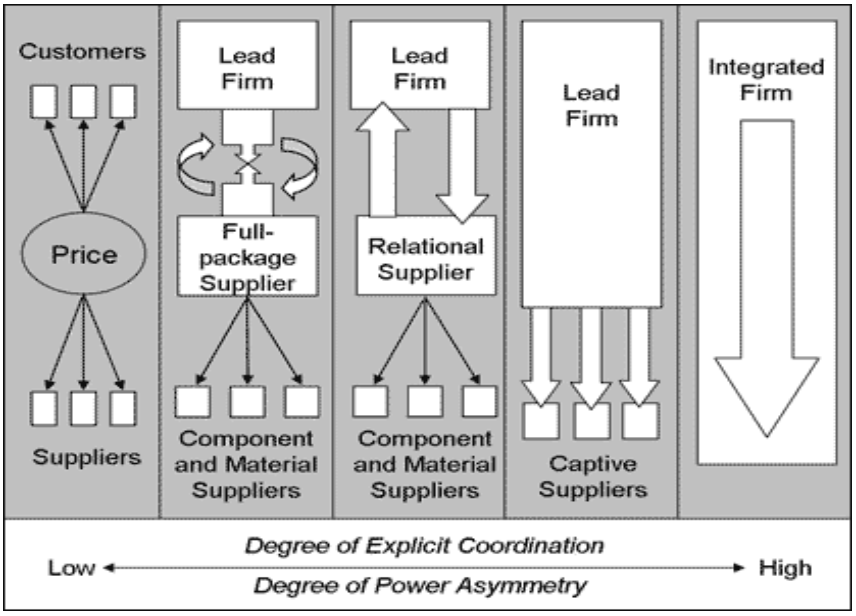
A first, rough distinction in terms of governance can be pointed out by identifying buyer-driven value chains and producer-driven ones. **Buyer-driven** value chains highlight the powerful role of large retailers, such as Wal-mart and Tesco, as well as other successful merchandisers such as Nike or Reebok, who guide the operations along the whole chain by requiring the suppliers to comply with certain standards and protocols, in spite of having themselves a very limited, or even non-existent, production capability. This form of organization is typical of labor intensive industries such as footwear, furniture, clothing and toys.

On the other hand, **producer-driven** value chains are usually led by some large, transnational manufacturers, which generally have the control over crucial technologies and take the responsibility to assist both suppliers and customers in relation to the efficiency of processes and the quality of components. Producer-driven value chains are

characteristic of capital- and technology-intensive industries and this second kind of organization is usually more likely to generate foreign direct investment than buyer-driven chains, giving birth to huge flows of know-how and technologies directed to the host countries.

Anyway, most of the worldwide supply chains do not respond precisely to this categorization, so that more elaborate governance structures have been identified in the GVC literature[9], which are determined by three variables: the complexity of information among actors in the chain, how the information for production can be codified and the level of suppliers' competence. According to these criteria, five models of governance emerged: market, modular, relational, captive and hierarchy, which are displayed in **Figure 6**.

Figure 6 - Five global value chains' governance types



Source: Gereffi, Humprey, Sturgeon - The Governance in Global Value Chains (2005)

[9] Gary Gereffi, John Humphrey, Timothy Sturgeon - The Governance in Global Value Chains (2005).

Market governance involves simple transactions, the product specifications are transmitted in an easy way and suppliers can make products with a minimal interference from buyers, which are not much interested in controlling the production and provide their suppliers with little information about what the market wants. These simple exchanges do not require a big amount of cooperation between counterparties and the cost of switching to new partners is relatively low on both sides. The central governance mechanism in this case is not represented by a powerful lead firm, but rather by the price.

Modular governance occurs when complex transactions are relatively easy to codify. Typically, suppliers in modular value chains make products or provide services to a customer's specifications. Suppliers in modular value chains tend to take full responsibility for process' technology and they often use generic machinery in order to spread the investments across a wider customer base. This is done in order to keep switching costs relatively low and limits the supplier's transaction-specific investments, thus reducing their risks. Relationships play a more important role in this case than in the first one, due to the high volume of information flowing between firms; moreover, data are codified according to common rules in order to keep interactions from becoming too complex and difficult to manage.

Relational governance, instead, occurs when buyers and sellers rely on a complex flow of information that cannot be easily transferred or learned, resulting in frequent interactions and knowledge-sharing between parties. This network-style governance pattern is based on trust, mutual reliance, reputation, social and spatial proximity, familiar and ethnical ties, and so on. Despite mutual dependence, the leading firm is the one that specifies what is needed and controls the highest-valued activities in the chain, thus having the ability to exert a sort of control over the supplier. Producers operating within this kind of relational chains are likely to supply products that are perceived as differentiated by customers, due to their complexity and quality. According to the fact

that the knowledge shared within this kind of networks cannot be easily codified, relational linkages take several time in order to be built, so that costs and other difficulties involved in switching to new partners are usually high for firms. The desire to establish relational linkages with suppliers, instead of more controlled ones, can also be attributed to cultural preferences; for example, in the automotive industry Japanese firms prefer to maintain relational business ties with their suppliers; instead, their colleagues in US prefer either to have captive relationships or to maintain distant, market relationships.

In **Captive** chains, small suppliers are dependent on one or a few buyers that exert a great amount of power over them. These networks are characterized by an elevated degree of monitoring and control by the leading firms, which usually force their suppliers to accept their buying conditions. This brings to the building up of thick linkages within the value chain and to high switching costs for both sides, especially for the vendors. Anyway, thanks to this particular kind of structure leading firms are more likely invest in the process and product upgrading of their suppliers, since it is advantageous for them to increase the overall efficiency along the supply chain. A crucial issue regarding this kind of governance is that the leading firm should behave as competent and ethical, in order to ensure suppliers to receive a fair treatment and an equitable share of the market price.

Finally, the last identified model is the **Hierarchy** one. It describes chains that are characterized by a strong vertical integration and managerial control of the leading firms, which develop and manufacture their products in-house. This kind of governance typically occurs when products are complex, specifications cannot be codified or it is not possible to find highly competent suppliers. Even if this kind of structure is less common than in the past, it is still plays an important role in the global economy; moreover, there are some significant advantages both for consumers and people employed along

the value chains. In fact, the hierarchical structure usually provides regular employment, guarantees quality and improves the producer's capabilities over time, in addition to other less tangible social benefits that come to those communities under the protection of influential firms, like for example the provision of education, health facilities or consumer credit.

1.5 Upgrading

One of the main issues regarding the participants in a global value chain is that of upgrading. This concept focuses, adopting a bottom-up perspective, on the strategies adopted by firms, countries and regions to improve their position in the global economy, so to be able to capture a bigger share of value by performing more profitable activities and to reach a sustainable growth in terms of income, social welfare and quality of jobs.

From a dynamic point of view, upgrading can be seen as one's ability to improve its economic role and the capabilities associated with the production and export activities, following such a path as: starting by joining a global value chain at its lower end by performing **assembling** operations based on imported inputs; moving later to original equipment manufacturer (**OEM**) providing a full-package production and arriving finally to perform even the most value-adding activities as an original design manufacturer (**ODM**), which also designs its product lines but still according to the buyer's specifications and as an original brand manufacturer (**OBM**), which performs independently also the highest-value-adding tasks. Clearly, it is not easy nor inevitable to succeed into following this path and the challenge for firms, regions and countries is to find the right mix of policies, institutions, corporate strategies, technologies and skills in order to reach the upgrading success.

Of course, the upgrading patterns differ both by industry and country, depending on the input-output structure of the single global value chains and also on the institutional context of each nation; for instance, certain industries require linear upgrading paths and countries, together with their firms, have to gain expertise in one segment before moving to the next, more value-adding one.

A famous case used to illustrate upgrading trajectories is that of the firms operating in the apparel industry in Torreon, Mexico, which initially entered the value chain of US blue jeans in the early 1990s. At that time, the Mexican assembly plants used to receive cut parts from the US manufacturers, which were sewn into garments and then re-exported. Meanwhile, brand marketers and retailers pushed Mexican firms to increase their production volume and range of activities, so that they quickly developed more expertise in providing trim, labels, distinct washes and finishes and, by 2000, they were also expert in the distribution of finished products to the various points of sale.

It is possible to see from this case how the upgrading experienced by Torreon firms followed a linear pattern and happened in concomitance with the increasing US buyers' demand for full-package production; nevertheless, this did not guarantee a sustainable success to the Mexican companies, since the competition coming from China and other international suppliers sharply increased during those years. For this reason, manufacturers in Torreon were required to continue their upgrading path beyond OEM, to ODM and OBM, testifying how crucial is not to rely on the already accomplished successes, but instead continuously strive towards more improvements.

From a more specific perspective, we can identify four main types of upgrading experienced by firms, which usually happen consequentially and allow companies to move along the path going from assembling to the performance of the most profitable and value-adding activities in a value chain:

- **Process** upgrading, which allows to transform inputs into outputs in a more efficient way
- **Product** upgrading, which regards moving to a more sophisticated product line
- **Functional** upgrading, which entails acquiring new functions (even abandoning the old ones) in order to increase the skill content of the activities performed
- **Chain or inter-sectoral** upgrading, where firms move into new (but often related) industries to perform more specialized and valuable activities

A final important consideration is that countries, regions and firms should spend their efforts in order to make economic and social upgrade to coincide. Social upgrading refers to the improvement in both income and life conditions experienced by the whole communities involved in the upgrading path of firms, especially as regards the promotion of good employment and respect for labor standards.

These two phenomena are interrelated and economic upgrade can be followed by social one, but this does not happen automatically, since the inappropriate insertion of firms, regions or even whole national economies in the global markets can sometimes result into declining employment or deteriorating working conditions, a paradox that has been called **immiserizing growth**[10].

Namely, immiserizing growth is a negative outcome taking place when a country's overall economic activity increases in terms of output or employment but, nonetheless, the benefits for that economy fall, as it happens for instance when the prices of some goods or services fall faster than the export volume increases.

For this reason, according to the specific characteristics of every single global value chain and of the countries performing the various activities within it, different sets of

[10] This term has been originally proposed in 1958 by Jagdish Bhagwati (1934-now), an Indian-American economist and teacher at Columbia University, in his publication "Immiserizing growth, a geometrical note".

actions and policies have to be implemented in order to make sure that economic improvements will be also mirrored by a climb in social welfare.

1.6 The role of policies

As it has been anticipated above, the growing fragmentation of production across borders presents very important policy implications. In fact, in a world where countries are becoming more and more interdependent, it is of crucial importance for policy-makers to do the best choices in order to be able to reap as much benefits as they can from global production networks. In addition to this, they should also strive for creating a solid base for further growth in a transparent, open and predictable trade environment.

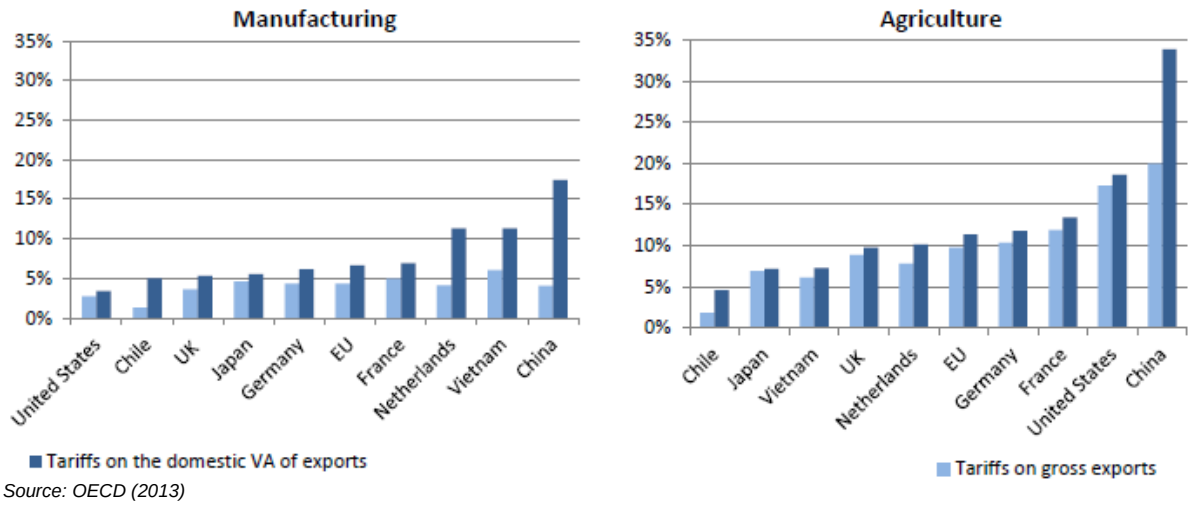
Policies are necessary to help a country's firms along the whole path going from joining global value chains at their lower end, through all the stages of upgrading that are hopefully experienced over the years, up to the possible arrival at the top of the respective chains. In fact, all the necessary actions have to be taken by governments in order to make the growth sustainable and to increase the countries' comparative advantages, together with social welfare and per capita income.

The first policy area to be taken into account is that of **trade tariffs**. After many years of trade liberalization, tariffs in developed economies are generally low nowadays, as it can be observed in **Figure 7** with regard to the average fee on manufacture and agricultural products. As for emerging countries, although some exceptions are still present, the general trend of the last decades has brought them to the reduction of trade fees, due to the reason that nowadays the cost of protectionism has been made higher than ever by the global value chains-related commerce, which triggers every day multiple cross-border exchanges of intermediates that are used within the same chain.

Indeed, fees are cumulative when intermediate inputs are exchanged across borders many times and, therefore, firms are forced to face tariffs both when they import their inputs and again when they export their outputs.

As a matter of fact, the value of acquired inputs is also embedded in the final value of output, so that double tariffs have to be paid in case of re-exporting or re-importing patterns. This mechanism makes tariffs add-up to a significant level before goods reach their final consumers, thus dampening demand and affecting the production and investment levels.

Figure 7 - Tariffs on the gross value and the domestic value-added of exports, 2013



Source: OECD (2013)

For the same reasons as before, a boost in the stipulation of **trade agreements** has been experienced in the recent years. In fact, those are necessary tools in order to arrive to the international convergence of standards and a big number of initiatives have been taken worldwide, driven by both the World Trade Organization (**WTO**)[11] or by single

[11] The World Trade Organization (WTO) is an international organization founded in 1995 in Switzerland, whose main objective is to foster the worldwide trade opening and the convergence of trade standards through multilateral negotiations among the Member States.

countries or regions. Anyway, the amount of regional and bilateral openings have been overwhelming during this years and the central role of WTO has been partially eroded.

Nonetheless, Regional Trade Agreements (RTAs) are critical to the development path of a worldwide liberalized trade framework and they have to be considered as a valuable starting point towards the consolidating and multilateralising of preferential agreements into a clearer and more effective international regime, involving all actors participating in global value chains.

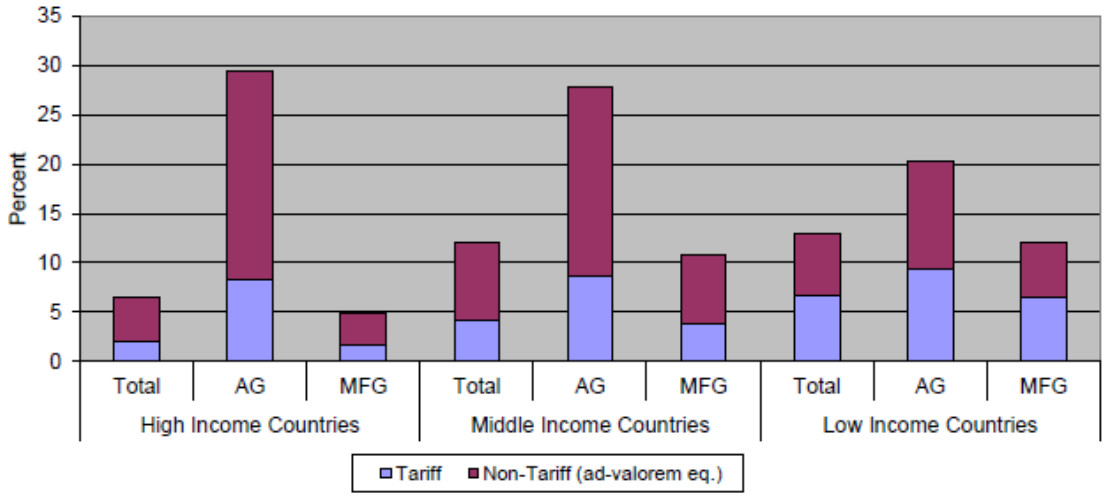
An additional, important type of policies to be implemented is related to the enhancing of **trade facilitation**. In fact, it is essential to dispose of fast and efficient procedures in order to improve the efficiency of global production networks and to smooth the daily operations. For this reasons, firms will prefer to invest and develop their value chains into those countries that allow them to import and export their inputs and outputs in a quick and reliable time frame, without experiencing any unpredicted delay or complication.

Of course, it is simpler and more effective to implement a comprehensive set of rules instead of issuing them piece by piece and these reforms should encompass the harmonization and simplification of forms and documents, the streamlining of the needed procedures, the automation of processes and the availability of trade-related information.

As another element that profoundly affects global supply chains, the range of **non-tariff measures** adopted by the various countries has to be considered. Despite this kind of measures are not supposed to have a protectionist intent indeed, they nevertheless have a massive impact on trade costs, much larger than proper tariffs as it is noticeable in **Figure 8,** with regard to the average level of restrictiveness imposed on the imports of agricultural and manufactured goods. One of the most burdensome non-tariff measures, especially for SMEs willing to enter in global value chains, is represented by

the required compliance with multiple standards and technical regulations, which are one of the main barriers keeping those firms from participating. So, the promotion of internationally harmonized standards and certifications can enhance the competitiveness of many firms and their respective countries.

Figure 8 - Impact of tariff and non-tariff measures on import, 2013



Source: UNCTAD (2013), based on UNCTAD TRAINS/WITS database

Furthermore, policy-makers should pay much attention to the **reduction of inefficiencies** in services markets and to the improvement of the whole infrastructure system, so to enhance the competitiveness of all firms. Of course, the birth and development of global value chains heavily rely on well-functioning logistics, finance, transport, communication and other professional services, which are essential to move goods around and to coordinate production. For this reason, the liberalization of services' trade is an essential step in order to allow more efficient and higher-quality performances, able to foster in turn the overall competitiveness of countries and their firms.

As it was acknowledged above, then, 21st century's across-boundaries flows are not only characterized by the exchange of goods, services and components, but also by an increasingly large movement of people, technologies and know-how. Therefore, the international protection and harmonization of **Intellectual Property Rights** (IPRs) has become a policy issue of growing importance over the years. This kind of problem had already been addressed during the last century and in 1967 the World Intellectual Property Organization (WIPO) was founded as a specialized UN agency, with the aim of promoting the worldwide protection of IPRs and the harmonization of the various countries' legislations. In addition to this, throughout the last decades many agreements have been stipulated by the international community for the joint recognition of IPRs, the most important of which is the Agreement on Trade-Related International Property Rights (TRIPs)[12], officialized by GATT[13] in 1994 after the meeting in Marrakech and signed by 153 countries.

Finally, it has to be taken into account the critical relevance of **product and labor market reforms**, that should be implemented by the various governments in order to keep pace with the fast changes experienced by the economic environment. Indeed, it is necessary to enforce some policies that are complementary with the development of new technologies and with the changes in the range of a country's performed activities, so that new workers can be educated in such a way that guarantees their successful insertion in the market by developing the necessary and most requested skills, while the old workforce should be reallocated without having to experience long periods of inoccupation.

[12] Within TRIPs, the commitments that every member of WTO (and previously of GATT) should respect as concerns IPRs are specified, so to guarantee a minimum degree of international protection. They also establish some guidelines to enforce those rules and to solve conflicts among members.

[13] The General Agreement on Tariffs and Trade (GATT) is an international agreement signed in 1947 in Switzerland by 23 countries, aimed to establish a common basis for commerce relationships in order to foster a global trade liberalization. It has been replaced by WTO in 1995.

As a matter of fact, without sufficient investments in skills those people will languish on the margins of society, technological progress and participation in global value chains will not translate into sustainable growth and countries will not be able to compete in the increasingly knowledge-based global economy for a long time.

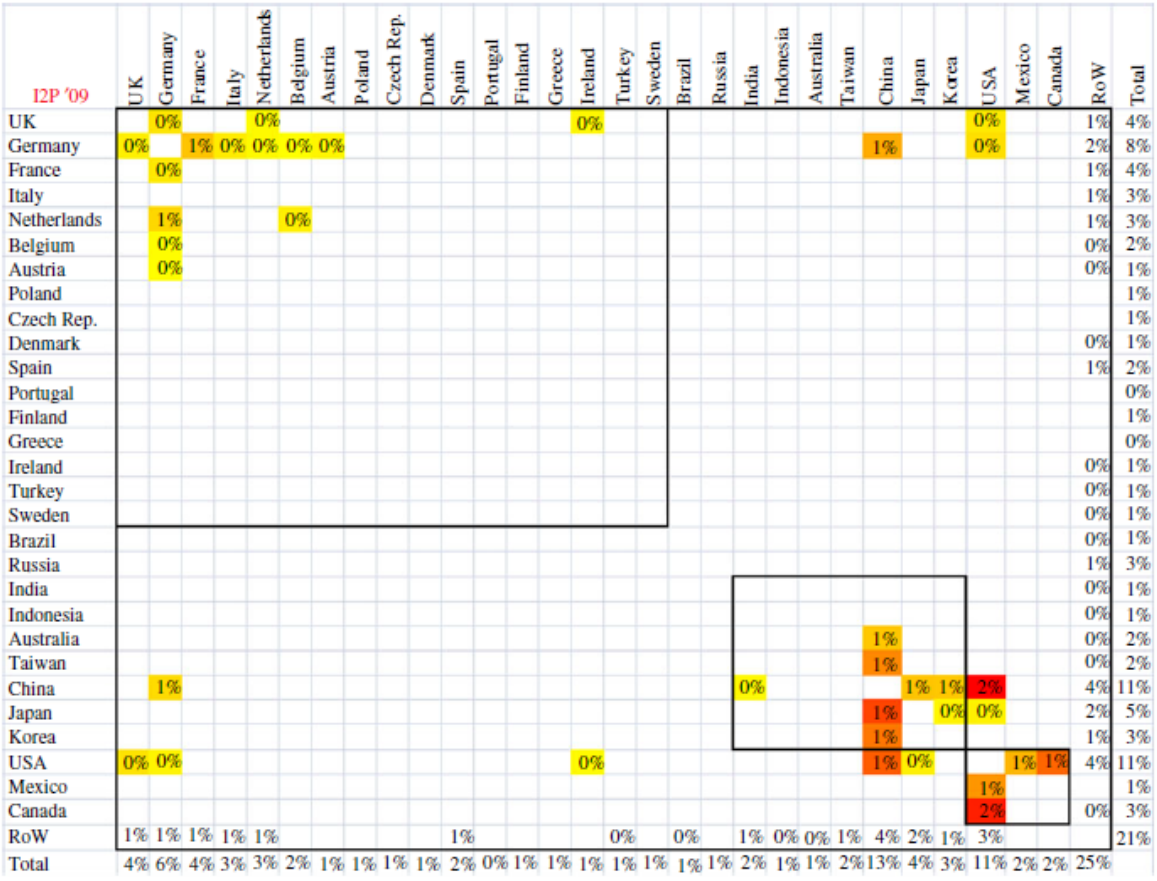
1.7 Measuring GVCs

After having examined the main features of modern global value chains, it would be now useful to get a deeper insight about the material entity of these international production networks and how the various countries participating in them are interconnected and interdependent. In order to accomplish this, nations' input-output tables have to be used again.

First of all, it is possible to reorganize the data so as to show the world Import-to-Produce (**I2P**) trade pattern, which allows to see how much of countries' production is done relying on inputs imported from foreign nations. This can be observed in **Figure 9**, which displays the supply-trade flows among some major countries. Each element of the matrix shows the goods that column-nations import from each row-nation as a percentage of total global flows, without taking into consideration any bilateral flow that accounts for less than 0.3%.

As we can see Germany, Japan, China and US are the only nations supplying a globally relevant amount of intermediates to a large number of partners and, on the sourcing side, these four nations are also the ones presenting the largest number of relevant import flows. Moreover, we can observe how the major part of the intermediates' flows happen between countries belonging to the same region.

Figure 9 - Global I2P trade matrix, 2009



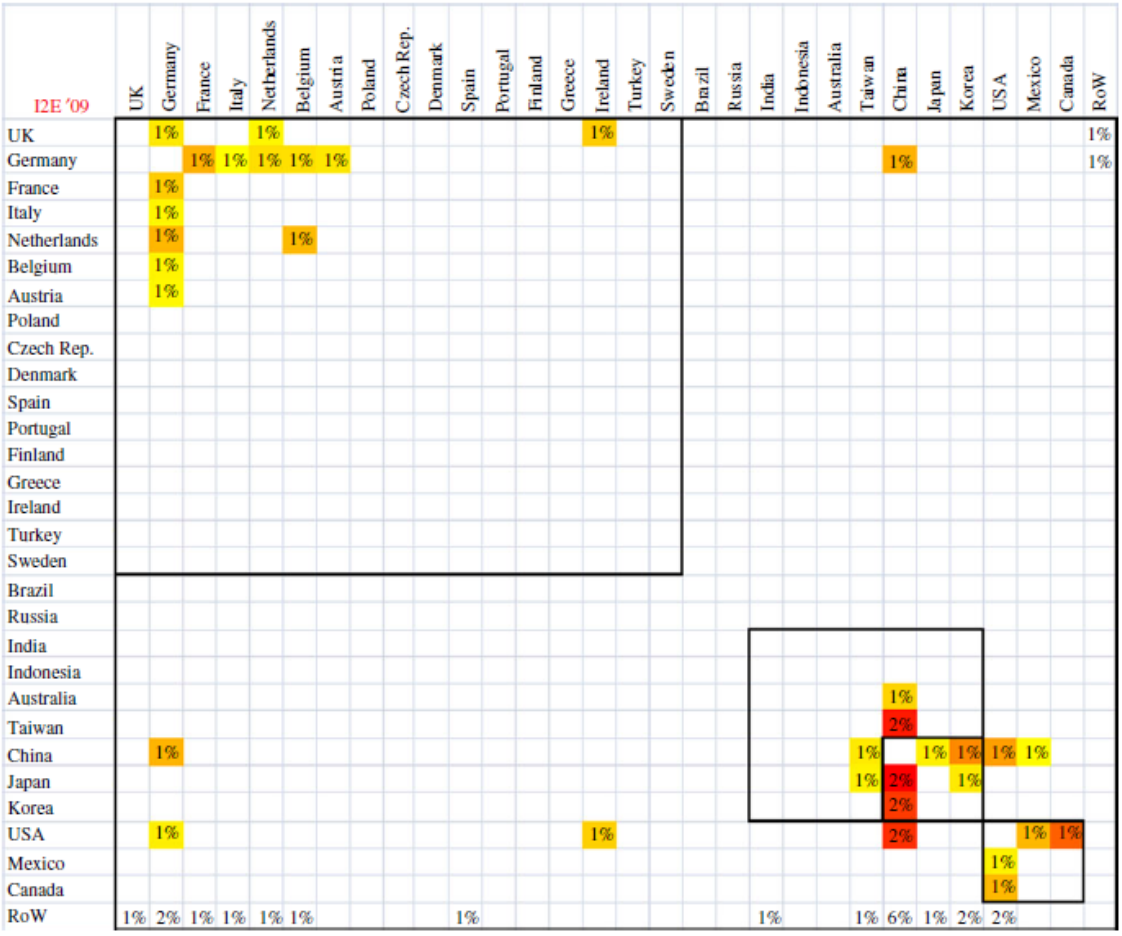
I2P '09	UK	Germany	France	Italy	Netherlands	Belgium	Austria	Poland	Czech Rep.	Denmark	Spain	Portugal	Finland	Greece	Ireland	Turkey	Sweden	Brazil	Russia	India	Indonesia	Australia	Taiwan	China	Japan	Korea	USA	Mexico	Canada	RoW	Total
UK		0%			0%										0%												0%			1%	4%
Germany	0%		1%	0%	0%	0%	0%																	1%			0%			2%	8%
France		0%																												1%	4%
Italy																														1%	3%
Netherlands		1%				0%																								1%	3%
Belgium		0%																												0%	2%
Austria		0%																												0%	1%
Poland																															1%
Czech Rep.																															1%
Denmark																														0%	1%
Spain																														1%	2%
Portugal																															0%
Finland																															1%
Greece																															0%
Ireland																														0%	1%
Turkey																														0%	1%
Sweden																														0%	1%
Brazil																														0%	1%
Russia																														1%	3%
India																														0%	1%
Indonesia																														0%	1%
Australia																								1%						0%	2%
Taiwan																								1%						0%	2%
China		1%																		0%					1%	1%	2%			4%	11%
Japan																								1%		0%	0%			2%	5%
Korea																								1%						1%	3%
USA	0%	0%													0%									1%	0%			1%	1%	4%	11%
Mexico																											1%				1%
Canada																											2%			0%	3%
RoW	1%	1%	1%	1%	1%						1%					0%		0%		1%	0%	0%	1%	4%	2%	1%	3%				21%
Total	4%	6%	4%	3%	3%	2%	1%	1%	1%	1%	2%	0%	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	2%	13%	4%	3%	11%	2%	2%	25%	

Source: R. Baldwin and J. Lopez-Gonzalez "Supply-chain trade: a portrait of global patterns and several testable hypothesis" (2014)

Refining the focus and looking at a subset of I2P, we can observe another very important trade pattern, which is the Import-to-Export (**I2E**) one, shown in the table in **Figure 10**. This second matrix allows us to see, taking into account the same simplifications as in the previous one[14], the extent to which every column-country uses intermediate inputs coming from row-countries in order to produce goods and services that are subsequently exported, as a percentage of the total world flows.

[14] It is not taken into consideration any bilateral flow accounting for less than 0.3% of the world's total. Not all of the WTO countries are considered, but only those for which www.wiod.org disposed of harmonized input-output tables.

Figure 10 - Global I2E trade matrix, 2009



R. Baldwin and J. Lopez-Gonzalez in "Supply-chain trade: a portrait of global patterns and several testable hypothesis" (2014)

As it is possible to recognize, being I2E a narrower definition of I2P, the patterns shown in the last two figures are not very dissimilar and they are pretty helpful in order to understand two major facts about global value chains.

First of all, it is very noticeable how Japan, Germany, US and China are the four countries dominating the global-supply-chain-related flows. As it has been seen in Figure 9 indeed, they are both the biggest buyers and the largest sellers of those intermediates used in the worldwide production networks and this is also confirmed by

data in Figure 10, which concern the trade of intermediates used to produce goods and services that will be later exported. These countries present the largest number of trade partners with which they engage in globally significant bilateral flows, meaning that they are at the center of the hub-and-spoke networks that define the patterns of the international flows of intermediates.

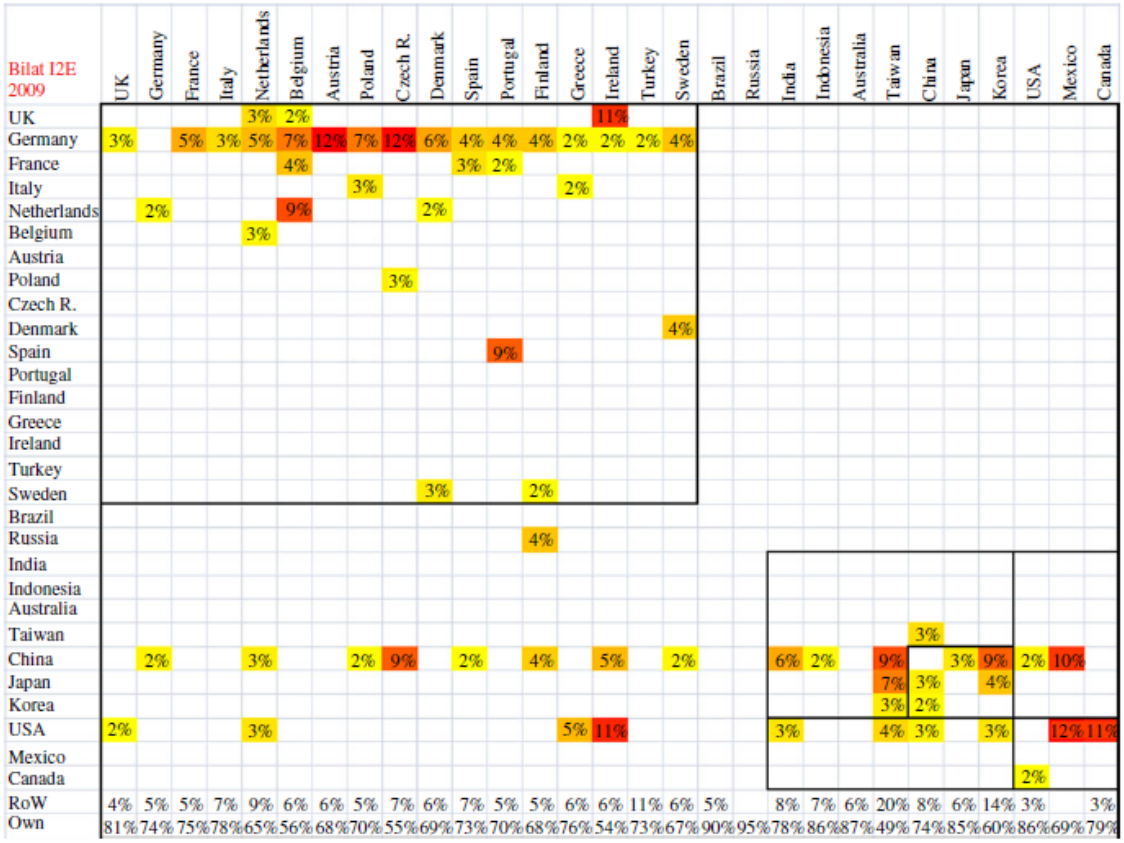
As a second remark, it has to be underlined again how global value chains are not really global, as the same word would suggest; in fact, most of the bilateral relevant flows of intermediates happen at a regional level and the worldwide production network is marked by the existence of three main commercial blocks: Europe, Asia and America. The principal outliers in this sense are Germany, China and US, which engage in significant flows also with countries outside their respective regional blocks and especially among each other.

Having a further look at the interdependencies among the principal nations acting in global value chains from an I2E point of view, we can observe in **Figure 11** how much is the percentage of intermediates sourced from foreign countries by every column-nation, out of the total amount used to produce goods that will be subsequently exported. Looking at the rows, then, we can see how much the intermediates sold by each row-nation account on the total exports of the column-ones, with the final row showing, instead, the percentage of domestically-sourced inputs by every country.

As it can be recognized, most of the nations taken into account are heavily engaged in international production networks and their exports depend significantly on imported intermediates, with the notable exceptions of Russia and Brazil that mostly trade in natural resources. The role of US, China and Germany is still dominant, but there are some differences among the trade schemes of these three countries. In fact, Germany's only significant sales flows are those happening in a regional context, while China and

US have their sales more spread worldwide, with the former being by far the dominant supplier of intermediate inputs in the world.

Figure 11 - I2E interdependency matrix, 2009

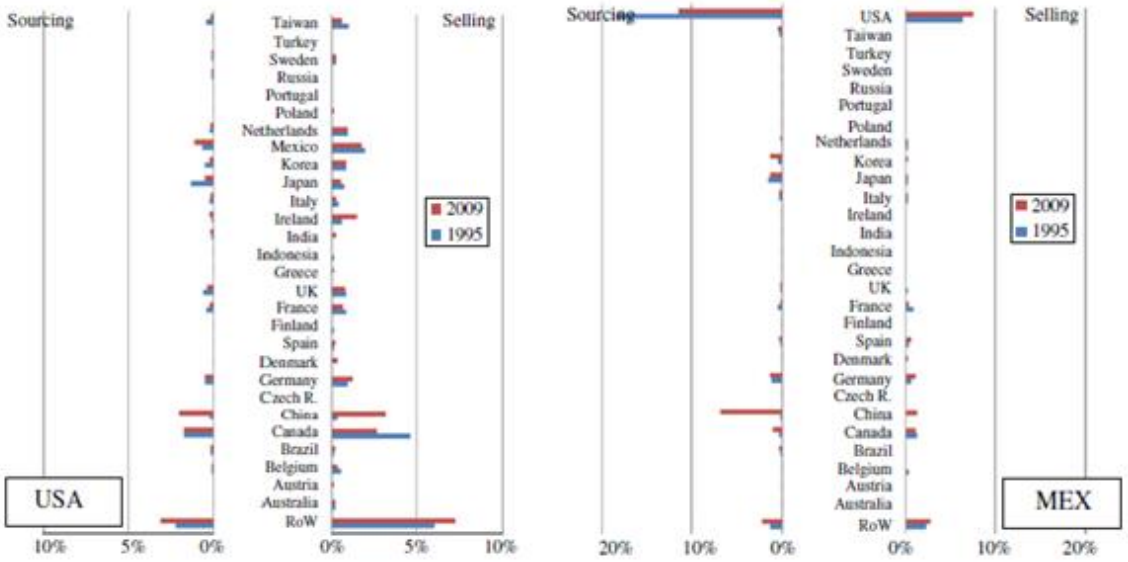


Source: Lopez-Gonzalez (2012) elaboration from www.wiod.org

In addition to this, a final insight into the existing trade relationships among the major countries participating in global value chains can be gained by looking at the I2E sales and sourcing patterns by nation, that allow us to see where a certain country sources the intermediates it uses to export and where it sells the intermediates that are used for other countries' exports. In **Figure 12**, US and Mexico have been taken as an example; on the right side of the charts there is shown the percentage of I2E exports directed to each foreign country out of the total ones done by the considered nation, while on the

left we can see the percentage of the country's I2E imports from foreign nations out of the total ones. Shares in 1995 and 2009 have been taken into account, in order to illustrate the evolution of their commercial schemes.

Figure 12 - Sourcing and sales patterns, US and Mexico, 1995 & 2009



Source: Lopez-Gonzalez (2012) calculation on WIOD tables

These charts are useful to observe one more time the differences between flows in headquarter economies, which mainly export their intermediates to other countries, and factory economies that massively rely on the import of foreign inputs. In fact, it is really clear from the chart how the role of Mexico is that of a factory economy, being extremely dependent on the US for both the sourcing and selling of intermediates, even if the amount of US-sourced inputs dropped along the years due to the increasingly important role assumed by China.

On the other side, we can see how the US patterns follow the typical headquarter economy's ones, since the country is much more engaged in selling its I2E intermediates to other nations than in sourcing from them.

Studying I2E and I2P flows is very useful in order to understand global production networks but, nonetheless, there is a major drawback in using those data: since I2E and I2P are recursive concepts, double counting is pervasive. In fact, every imported intermediate could embed further intermediates from a large number of different countries and, sometimes, even from the importing nation itself.

For this reason, the statistics addressing the flows of goods are in a certain sense misleading and, in order to understand who really creates and captures value along a global value chain, a different approach have to be adopted.

1.8 Who creates and captures value from GVCs?

According to the globalized production patterns of the 21st century, a product may be designed in a country, manufactured in another one and the components could be sourced from several others. It is thus a critical issue to measure the extent to which the benefits coming from the participation in global value chains are distributed among those nations and, in order to illustrate it, the case of Apple's iPod[15] can be taken as an example. In fact, the product is designed and marketed by an American company, assembled by Taiwanese manufacturers in China and includes many key components from Japanese, Korean and US suppliers.

The retail price for the 30GB model at the time of the analysis was $299 in the US, while the total cost of inputs including materials, direct work and the margins gained by suppliers during the production phases was $144.40. So, the difference of $154.60 could be decomposed into transportation costs, retailer margins and Apple's gross profit.

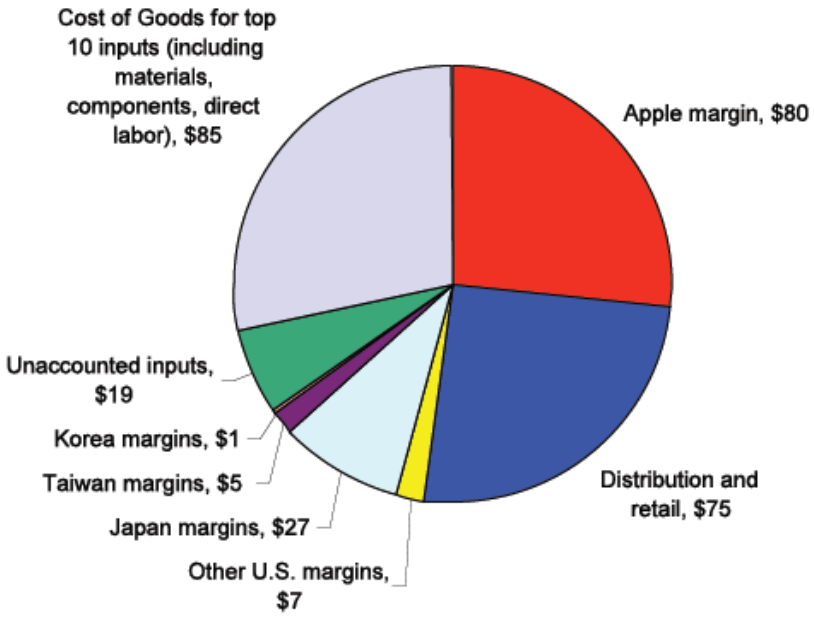
[15] This case has been analyzed in 2009 by G. Linden, K. Kraemer and J. Dedrick in the paper: "Who captures value in a global innovation network? The case of Apple's iPod".

Based on empirical evidence, the wholesale discount on the final product is attested to be 25% of the retail price ($75) including the cost of transportation from China, where iPods are assembled, to the final markets.

According to these data, Apple's gross profits on every unit sold through non-Apple stores amount to $80, which is given by the difference between the $224 wholesale price and the cost of inputs. As we can see in **Figure 13**, this is the biggest margin gained by a single firm along the whole iPod global value chain.

All the other margins earned by the enterprises participating in the value chain have been also calculated as the difference between the direct cost of inputs and the price at which every supplier sold its output to the firms running the next step of the chain; later, those margins have been aggregated at the country level.

Figure 13 - Breakdown of iPod $299 retail price



Source: Linden, Kraemer, Dedick, "Who captures the value in a global innovation network?", Figure 3

In this example it is suggested that the US capture most of the value created, especially when the product is sold in the same country, providing us with a first very important indication about global value chains: **nationality matters**. This is due to the fact that the leading company in this global value chain, Apple, keeps all of the higher-skilled, most-value-adding activities such as design, software development and marketing in its home-country.

Of course, the same could be asserted for other countries whose firms lead some global value chain: if Toshiba or Nokia would have been taken into account we could have observed, in the same way, how the biggest share of value would have been captured by Japan or Finland, respectively.

Another very important indication that it is possible to figure out from Figure 13 is that **innovation** also **matters**. In fact, the producers of high-valued, critical components are usually able to capture a large share of the final price of a product; in this case indeed, where the highest-valued components are supplied by Japanese companies that own critical and differentiated technologies, we can reckon how the second-largest share of the iPod's retail price is retained by Japan[16]. By contrast Taiwan, which is represented by the company Inventec, responsible for the assembling of Apple's products in China, earns a relatively small part of the value, amounting to $5 for every sold iPod.

Thanks to this example we can notice, as it was easy to foresee, that developed countries are those who succeed in capturing the biggest share of the value created through the global value chains, since their firms are commonly the ones that lead the networks of activities. They are, indeed, in control of the most advanced technologies and retain in their home countries all of those high-skilled activities that provide for the most of differentiation and value-adding, leaving to the countries where the low-skilled fabrication activities are off-shored just a small percentage of the final price.

[16] It is assumed, as in the above sentences, that the considered iPod is sold in the US by a non-Apple distributor; otherwise, the second-largest share would be retained by the country where the non-Apple retailer is located.

As it has been already suggested above, this is the reason why many governments in emerging countries are trying to climb up global value chains and to upgrade to more value-adding activities, so to be able to grab more profits.

1.9 Services in GVCs

In order to have a complete understanding of how firms, regions and countries strive to capture more value by retaining the more high-skilled jobs, it is also really important to have a better insight about the role played by services in global value chains.

Services figure in every economical activity and this pervasiveness makes them crucial contributors to the productivity of capital and labor. Pure service-based activities such as finance, distribution, marketing and transport are at the core of the value created along a value chain and, of course, they play a fundamental role in capturing a bigger share of it.

The globalized trade environment and the huge improvements in communication and transport technologies enhanced the tradability of services and this facilitated their incorporation in supply chains' production as traded inputs. In fact, a phenomenon called by the literature[17] ''**modularization**'' led to the bundling of services, together with the outputs of manufacturing processes, into composite products. It is not an easy task, then, to separate the value added by the service components from that coming from pure manufacturing activities.

In **Figure 14**, it is possible to observe the breakdown of the $425 retail price of a suit made in China and sold in the US. As we can see from the left chart, 86% of the value goes to US, where the firm leading the global value chain is probably located, while the rest goes to four East Asian countries that provide some of the inputs and the

[17] This term has been used by Patrick Low in "The role of services in global value chains", 2013.

manufacturing of the product. In the right chart instead, it can be observed what is the percentage of costs due to manufacturing activities, which encompasses also the inputs cost, compared to the one due to service-intensive activities, including of the cost of intellectual property rights and the final profits.

It is thus clear from the figure how service components account for the lion's share of a product's value, especially in those industries where the cost of inputs is low. As a matter of fact, it has been possible to see in the previous section how in the case of iPod most of the profits are gained by the retailers and by Apple, which mainly performs high-skilled, service-intensive activities .

Figure 14 - Cost breakdown of a suit

Source: Fung Global Institute, Li & Fung case study

This observation is very important as regards upgrading; as it was noticed above indeed, in order to succeed into climbing the global value chains, governments have to develop complementary skills to keep track with the technological advances and the changes experienced by the markets. This process heavily involves the ability to provide high

quality, reliable services and both countries and their firms should strive to improve the quantity of services embedded in their exported goods and intermediates.

1.10 Trends and future of GVCs

After having gained a comprehensive overlook about the main features of modern global value chains and the most important actors participating in them and having also analyzed the entity of flows and the distribution of profits among the world's major countries, it is now time to look at the possible future developments of this scenario. According to this, it is relevant to highlight the major trends that are being experienced around the world, trying to guess the future landscapes within which global production networks will take place.

First of all, it is of primary importance to underline the on-going process of **polarization of work**, which refers to the worldwide rise in employment experienced by low- and high-skilled workers and the consequential decrease faced by the medium-skilled ones. This resulted into **underemployment** for many workers, who were forced to accept jobs for which they would have been otherwise overqualified. This phenomenon has been generated by two main causes: the skill-biased technological change and the opening up of countries with a huge supply of low-cost, unskilled labor.

As for technology, it is pretty clear how thanks to product and especially process innovation, the composition of labor has dramatically changed; in fact, the introduction of better and more efficient capital goods requires complementary skills to be developed. For this set of capabilities the worldwide demand and wages are going up, while they are increasingly dropping for the substituted skills, heavily affecting the already existent workforce.

Furthermore, thanks to the availability of a huge amount of low-skilled labor supply in developing countries, rich nations have progressively specialized themselves into the performance of skill-intensive activities, so that both employment and wages of medium- and low-skilled workers experienced a huge decrease in those areas.

Adopting a global perspective and a quantitative point of view, these losses have been offset by the climbing amount of low-wage jobs in emerging nations, together with the rise experienced by the same countries also in terms of high-skilled jobs due to their efforts towards upgrading; in any case, workers having medium skills have been penalized all around the world.

So far, the net effect on worldwide employment has been positive, since the lost jobs have been less than the gained ones. This happened because the world is still experiencing a phase of growth but, nonetheless, a crucial issue is to understand what is going to happen when this expansion is going to slow down. For now, it is not possible to know if the new countries entering the world economy will be ultimately able to sustain this path of growth.

Another remarkable trend in the recent years regards the increasingly **narrowing wage differences** between developed and developing economies, which is causing two major effects. The first outcome is a shift in the nature of the goods traded between advanced countries and converging nations; in fact, such economies as China or Mexico are experiencing a significant climb in the manufacture of sophisticated intermediates and are becoming increasingly professional in producing certain categories of goods. This is boosting the commerce related to specialization in those areas, as it already happened for decades among high-income countries such as the West European ones, US and Japan.

The second effect caused by the wages' convergence is the on-going widening of global production networks which, as the salaries began to rise sharply in many developing

countries, are being extended to new low-wage nations. This is clearly observable in Southeast Asia, where the fast industrialization of such countries as China or India and the relative climb in wages is triggering the off-shoring of some low-skill jobs to other nations like Vietnam or Bangladesh.

As for the future, the issue concerning the localization of low-skilled activities will probably lose much importance until it will become irrelevant, due both to the progressive filling of the salary gap among advanced and emerging countries and to the rising automation of processes, which will lower even more the workforce component in this kind of tasks.

Chapter 2 - China

China is the most populous country in the globe and the third largest one; nonetheless, it has been closed for decades to the rest of the world up to the big opening in 1978. This triggered the beginning of a path characterized by incredible growth and development for the country, which started with the Chinese firms joining global value chains at the lower ends thanks to their huge supply of unskilled labor and proceeded with the progressive evolution of those companies, together with the country itself, thanks to the support given by the government's policies and strategies. These succession of events brought China to become a central counterpart in all of the world's major trade patterns and to occupy a dominant position in the global economic landscape.

2.1 From 1949 to 1978

After the establishment of the People's Republic of China in 1949, massive reforms have been implemented by the government of the country, led by the head of the Chinese Communist Party Mao Zedong[18]. Between 1958 and 1961 a program called ''Great Leap Forward'', aimed to transform China from a mostly agrarian economy into a socialist society by rapid industrialization and collectivization, was sponsored and put into action by the Party. Anyway, this turned out to be a big failure and it triggered the Great Chinese Famine, which provoked the death of several millions of people[19]. Later, during the 1960s and specifically in 1966, feeling that the leadership of the Party was going too far from the pure Communist ideology since some elders were experiencing a revisionist

[18] After the fall of the Qing dynasty in 1912, the Republic of China was established. Some years later, the Chinese Communist Party was formed and became increasingly popular, until it took the control of the country, led by Mao Zedong, after the Chinese Civil War (1927-1949), giving birth to the People's Republic of China.

[19] It is estimated that the failure of the agricultural policies implemented between 1958 and 1961 brought to the dead of about 45 million people in the Chinese countryside.

phase, Mao strived to reassert its power over the government and launched another major program called ''The Great Proletarian Cultural Revolution''.

During those years, the previous legal system was completely dismantled, since the law was seen as creating constraints over the Party's power, many schools were shut down and everybody who was felt as an enemy or an ideological opponent was severely and sometimes cruelly punished. Throughout this whole period a strong isolationist policy was put into action in China, so that the country turned inward and shunned foreign trade and investment with the rest of the world with the notable exception of Soviet Union, the other Communist giant.

2.2 From 1978 to the entrance in WTO

After the death of Mao Zedong[20] and the consequent end of the Cultural Revolution, Deng Xiaoping came to power in China as the new Secretary of the Communist Party[21] and a significant turnaround was experienced by the country. In fact, Party elders realized the failure of isolationist policies and shifted the focus on modernization in order to let China be able to join the new era of globalization and economic development, in particular by pursuing the entrance of domestic firms in global value chains. Of course, the rapid shift of the country could have been accomplished only by fostering the introduction in China of foreign capital and technologies, so that the whole legal system was rebuilt and many reforms were done in order to set up a more reliable and stable environment for investments.

Thanks to this opening, China experienced a real boom in international trade and all the biggest multinational enterprises turned their attention on the country. This was mostly

[20] September 9th, 1976.

[21] Deng Xiaoping (1904-1997) was never appointed as the head of Chinese government but, nonetheless, thanks to its strong influence within the Party, it was de facto the leader of the People's Republic of China from 1978 to the early 1990s.

due to two factors. First of all, China presented the biggest potential market in the world, with over one billion citizens. Indeed, even if this market was totally underdeveloped at the time, enterprises didn't want to lose the opportunity to be first movers and to gain the biggest share of benefits when the time of development would have come. As a second reason, which is even more important in a global trade perspective, China's opening up provided the world with an offer of several millions of low-skilled people, able to perform manufacturing jobs at a really small price.

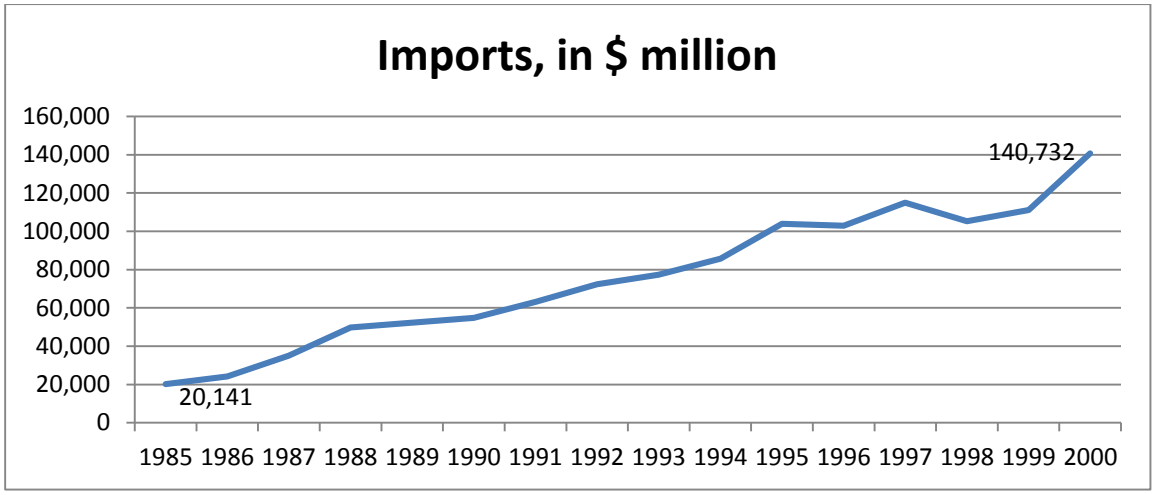
On top of this, the government incentivized foreign companies to invest in the country by granting them many facilitations. Thus, a growing number of enterprises first coming from Taiwan, Hong Kong and other Asian countries and later from all around the world started to invest in China, mainly off-shoring the low-value-added activities of their value chains to the country.

As a result China, especially during the 1990s, became the so-called **workshop of the world**, first starting with textiles and apparel and later evolving to mainly manufacture electrical components, growing up to be a fundamental player in the international trade landscape.

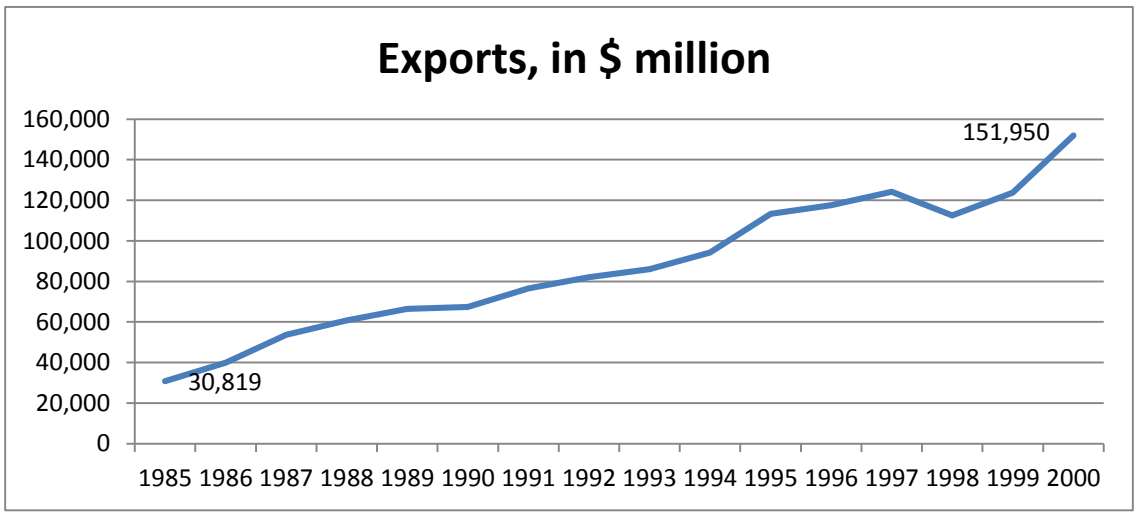
It is also worthy to mention the big role played in this process by the raise of some huge Taiwanese firms[22] with operations in China, which specialized themselves in the electrical-related industries and rapidly grew from performing assembling tasks up to become contract manufacturers (OEM), providing full-package production services for famous brand-name companies. In **Figure 15**, we can observe the massive evolution of international trade in China between 1985 and 2000.

[22] In the early 1980s, under the pressure of globally dropping prices as regarded electronic products, in addition to the rising production costs in Taiwan, some huge manufacturers like Foxconn and Inventec moved their entire manufacturing processes to the Mainland China. This allowed the Chinese electronic equipment industry to access global value chains at their low-end and to progressively increase in importance over the years.

Figure 15 - China's imports and exports, 1985-2000



Source: China Statistical Yearbook, 2014



Source: China Statistical Yearbook, 2014

As it is appreciable from the graphs, the amount of Chinese imports raised by seven times in 15 years and the same is true for exports, which in 2000 accounted for five times more than in 1985.

As it has been already mentioned, the role played by the government with the issuance of investment-friendly policies was fundamental for this evolution; after 1978 indeed, China began to liberalize its foreign trade regime by reducing tariff rates and non-tariff

trade barriers, in addition to the abolishment of many trade limits to the benefit of both foreign and domestic enterprises. Nevertheless, the economic reforms and the opening-up have been pursued in a gradual manner by the Party leaders, in order to be able to develop in accordance with the national objectives but still succeeding into having a strong influence over the national economy.

In fact, a big series of **restrictions** still affected the Chinese economic environment, especially regarding the foreign direct investments and, specifically, the degree of control that foreign firms were allowed to have over their assets in the country. As a matter of fact, foreign investments have been allowed in China since 1979 but only with the entry modes desired by the government, in the industries and locations specified by them. In addition to this, the role played by State-Owned Enterprises in this new framework was overwhelming compared both to private-owned Chinese enterprises and foreign-invested ones.

As regards the entry modes, in the first period after its opening-up China allowed foreign investors to enter the market mostly in the form of equity joint ventures. In fact, in 1979 the government issued a law[23] in which it was clearly specified that this entry mode was encouraged, while the establishment of wholly foreign-owned enterprises was highly limited. This happened for two reasons: first of all, thanks to the joint ventures Chinese firms could have gained access to the advanced technologies and know-how of their counterparties from industrialized countries and, as a second reason, through the restriction of foreign-owned equity shares the government could maintain a considerable control over the assets.

Another remarkable issue was that foreign investors couldn't perform within the country all of the activities they were willing to but, especially in some particular

[23] Law on Sino-Foreign Equity Joint Ventures, 1979.

industries, they had to rely on a network of local enterprises in order, for example, to distribute their products in the Chinese market.

As for locations, China initially opened up just its coastal region and did not allow foreign firms to move to the interior ones. This had been done in order to facilitate the success of the new policy framework adopted by Chinese authorities towards investors, since that region was the one with the best infrastructures and many **Special Economic Zones** were also established along the coastline, where huge facilitations were granted to companies coming from abroad. Later, as foreign direct investments and international trade boomed, further Special Economic Zones were established also in the internal provinces.

As it comes to the industries where foreign investments were allowed, Chinese government issued in 1995 the **Guidance Catalog of Industries with Foreign Investment**, in order to direct the flows of assets towards the desired sectors. In this context, it is noteworthy how more severe restrictions were maintained about the entrance in service industries, which were considered as strategic by the authorities and, for this reason, they could not be entrusted to foreign companies.

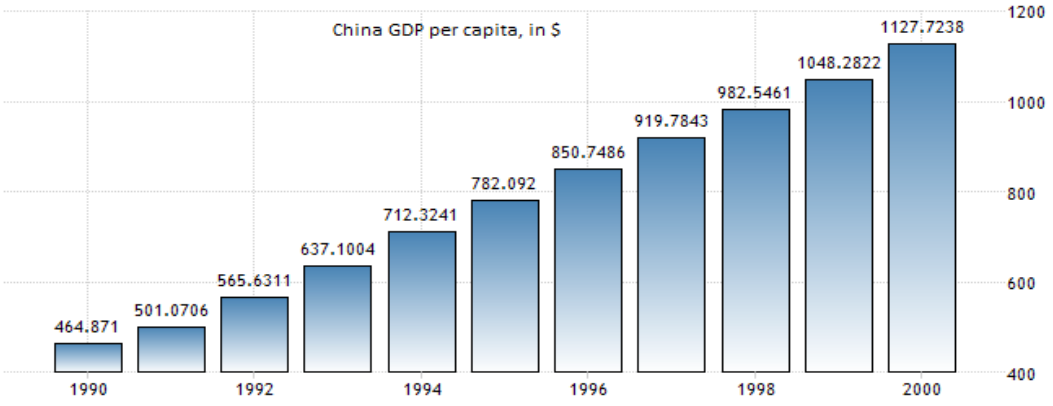
Finally, taking into consideration the role of **State-Owned Enterprises**, it is remarkable how the biggest part of Chinese economy was held in their hands. In fact, those huge companies were controlled by the State in both direct and indirect ways and they could enjoy many forms of preferential support as for example low-interest financing and the coverage of their debts by the various ministries.

As a matter of fact, those firms acted on behalf of the State as in the case of **designated trading**, where the government used to identify some enterprises in order to make them import and export certain categories of products in an exclusive way. Another example is about the **State Trading** which, instead, refers to the State monopoly in trading some particular goods through its directly-controlled firms.

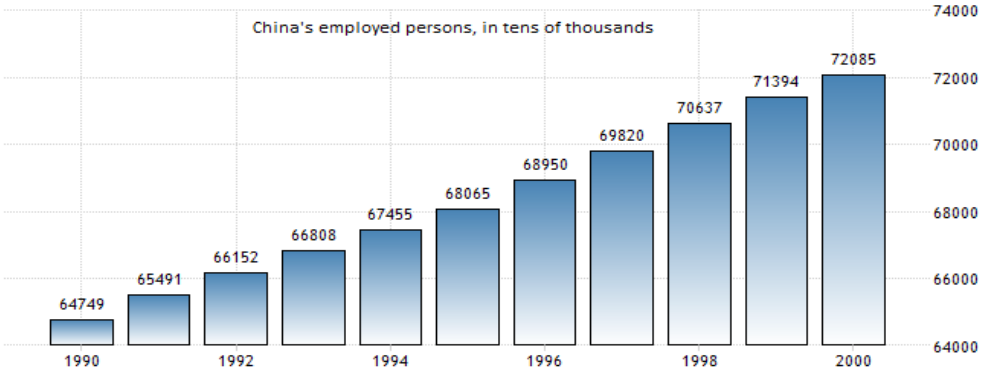
However, this mixture of allowances and restrictions brought China to experience a huge expansion in terms of GDP, GDP per capita and occupation, especially through the 1990s as we can observe in **Figure 16**, so that the nation became a global point of reference for international commerce and prepared itself for the entrance in the World Trade Organization .

Figure 16 - China's GDP, GDP per capita and employed persons, 1990-2000

Source: World Bank Group



Source: World Bank Group



Source: MOHRSS, China

2.3 The 21st century

The beginning of the 21st century was marked by a fundamental turnaround in China's recent history: the country entered in the **WTO**, the worldwide organization whose principal aim is to promote free trade, to monitor and enforce its members' commitments and to solve disputes that could arise among nations. After its entrance, China promised to further remove restrictions on foreign trade and investments in a gradual manner, making many commitments in terms of liberalization, tariffs, non-tariff barriers, designated trading and so on.

First of all, the government allowed companies from other countries to invest in China in a freer way, permitting to wholly foreign-owned firms to operate in more sectors and also granting them the right to trade every kind of goods throughout the territory of China, except for the monopolized ones. Designated trading was abolished but State trade remained, even if it was promised to progressively suppress it. Moreover, the government updated the Guidance Catalog of Industries and increased the range of authorized activities, defining four categories of foreign investment: encouraged, permitted, restricted and prohibited as it is possible to appreciate in the extract reported in **Figure 17**, where some examples for each group are provided. Permitted industries are not shown in the table, since it is considered as a residual category.

Figure 17 - The Guidance Catalog of Industries with Foreign Investment, 2007, extract

ENCOURAGED INDUSTRIES
I. Agriculture, Forestry, Animal Husbandry and Fishing Planting of rubber, sisal and coffee II. Mining and Quarrying Venture prospecting and exploitation of petroleum and natural gas (limited to joint ventures) III. Manufacturing Beverage manufacturing Development and production of fruit, vegetable, albumen, tea, coffee and plant drinks Pharmaceutical manufacturing Production of new medicines using bio engineering technologies Communication and transportation equipment manufacturing Design, manufacture and maintenance of civil plane, main-line and side-line planes (Chinese Party as the controlling shareholder), general plains (only joint ventures) IV. Leasing and Commercial Services Accounting and auditing (limited to joint ventures) X. Education Institutes of Higher Education (limited to joint ventures)
RESTRICTED INDUSTRIES
I. Agriculture, Forestry, Animal Husbandry and Fishing Cotton (raw) processing II. Mining and Quarrying Prospecting and exploitation of precious metals (gold, silver and platinum) III. Manufacturing Beverage manufacturing Production of carbonic acid bevenrages VII. Finance Insurance companies (foreign equity in life insurance companies not over 50%)
PROHIBITED INDUSTRIES
I. Agriculture, Forestry, Animal Husbandry and Fishing Fishing of aquatic products on the territorial seas and inland waters of China III. Manufacturing Processing of green tea and special tea using China's traditional crafts X. Culture, sports and entertainment Construction and running of golf courses

Source: Fudan University, Chinese Business Law

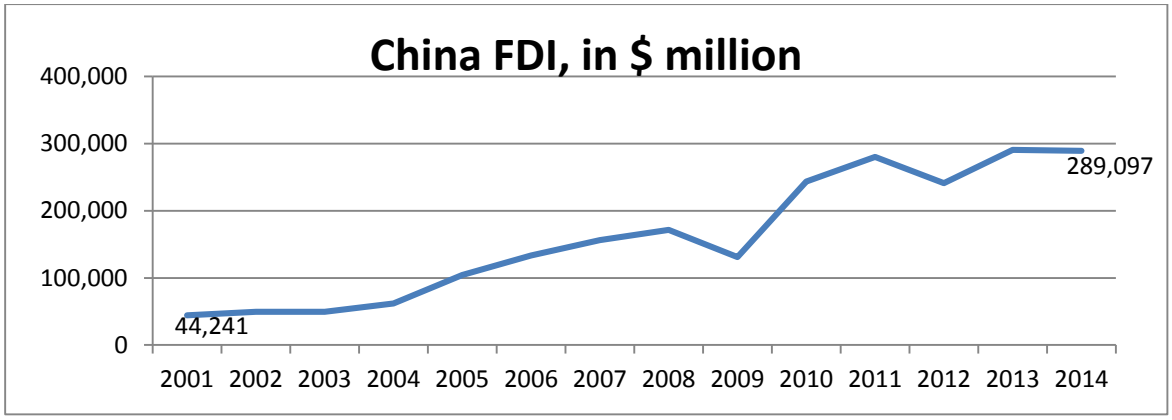
Taking into account tariffs and non-tariff barriers, the efforts of Chinese authorities brought to considerable results with the abolishment of more than 400 elements in less than 5 years, together with a substantial cut of the remaining ones. Moreover, right after 2001 China entered into negotiations over many bilateral and regional Free Trade Agreements; as a matter of fact, within a few years it joined the ASEAN regional free-trade zone[24], made Closer Economic Partnership Arrangements with Hong Kong and Macau[25] and signed some free-trade agreements with Chile[26], Pakistan[27] and New Zealand[28], progressively arriving to deal also with some Western developed countries[29].

After this historical change, the amount of FDI and the trade volume sharply increased in China and reached previously unrecorded peaks. In fact, all of the most important multinationals in Asia and in the world were striving to get a foothold in that country to widen the market for their final goods and, above all, to off-shore their low-skilled activities in a place that was still offering an incredible pool of low-salaried workers, but without all of those restrictions that dampened global value chains-related exchanges during the previous years.

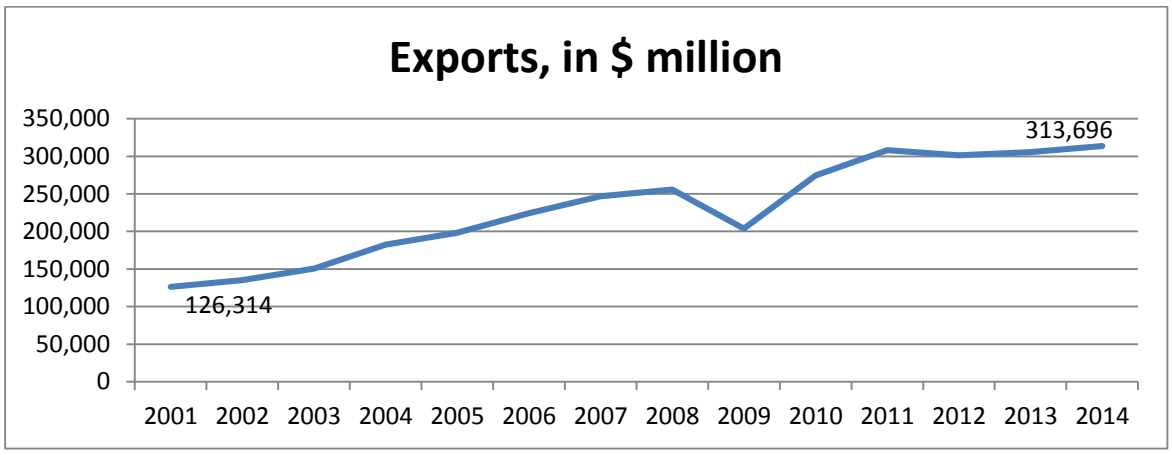
As we can see from **Figure 18**, the FDI level grew constantly through all the 2000s and the same thing can be said about imports and exports, which were massively affected by the huge increase in the trade of intermediates; in fact, as it has been possible to observe in Figure 2 of section 1.1, as of 2009 almost 50% of China exports were represented by intermediates, well above the world average of 34%, witnessing the very active role played by the country within the modern global production networks.

[24] 2002
[25] 2003
[26] 2005
[27] 2005
[28] 2008
[29] China has recently signed a FTA with Switzerland in 2014 and it is currently in dialogue with the United States to reach a historical free-trade agreement.

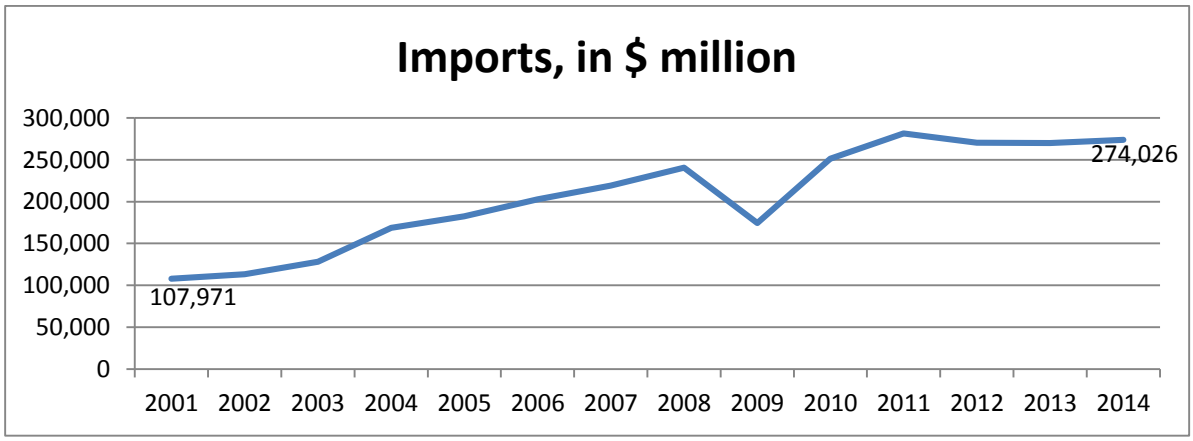
Figure 18 - China FDI, imports and exports, 2001-2014



Source: data.worldbank.org



Source: China Statistical Yearbook, 2014



Source: China Statistical Yearbook, 2014

The nationality of the principal foreign investors is another important feature of 21st century FDI inflows in China. As we can observe in **Figure 19** in fact, among the top ten nations which engaged in FDIs in the country some relatively small nations such as Hong Kong, Taiwan, South Korea and Singapore occupy the first three positions in the ranking.

The reason relies on the emergence during the 2000s of a particular phenomenon, named **round tripping**, through which funds originally coming from China are taken out of the country by some firms, brought to another nation such as Hong Kong or Taiwan where the companies' headquarters are located and subsequently re-introduced in China and invested in some activity, so to be able to exploit the advantages granted to the foreign-owned enterprises operating in the Mainland. Skimming the ranking, then, it can be noticed how the other countries among the top ten investors in China are the headquarters of the biggest and most important multinational enterprises in the world: Japan, US, Germany, UK, France and Netherlands.

Figure 19 - Top ten home areas for FDI in China, in billion $ (in terms of practical capital utilized)

Country	2013	2014
Hong Kong	78.3	85.74
Singapore	7.33	5.93
Taiwan	5.25	5.18
Japan	7.06	4.33
South Korea	3.06	3.97
USA	3.35	2.67
Germany	2.1	2.07
UK	1.04	1.35
France	0.76	0.71
Netherlands	1.28	0.64

Source: Dr Youzhen Zhao, Fudan University (2014)

Thanks to all of the above elements, China's GDP continued to grow at incredible double-digits rates all over the 2000s[30], so that the country arrived to be the world's second biggest economy after the US and one of the most prominent players in global production networks. As a consequence of this evolution, also Chinese firms started to expand themselves across boundaries, directing their Outward Direct Investments towards fiscal heavens like Caymans and Virgin Islands, close Asian countries like South Korea and Hong Kong and other emerging countries such as Brazil and Russia. In the latter, those investments have been mainly aimed to the extraction of natural resources and to the building of infrastructures, both of which are usually carried out by the Chinese giant State-Owned Enterprises.

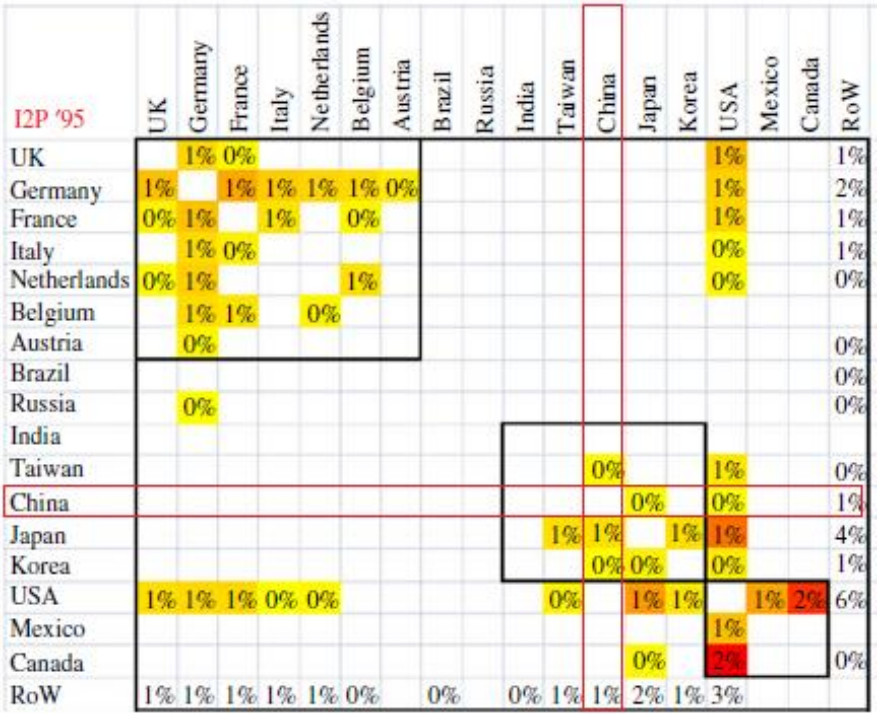
2.4 China's position in GVCs

In order to analyze more in depth the actual participation of China in global value chain-related trade flows and its evolution over the recent years, it could be useful to get back to the Import-to-Produce perspective (I2P), where the flows of a country's imported intermediates used for production are taken into consideration.

In **Figure 20**, two input-output tables referring to the world's I2P trade pattern in 1995 and 2009 are illustrated. As it was explained above in section 1.7, each element shows the amount of intermediate goods destined to production that column-nations import from every row-nation, as a percentage of total global flows, without taking into account any flow that does not account for at least 0,3% of global ones.

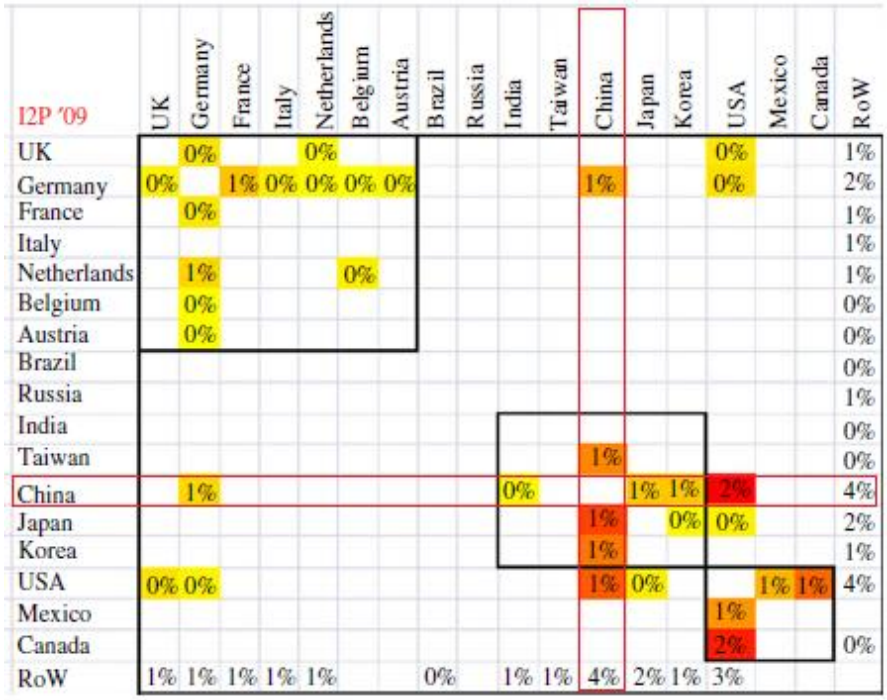
[30] See Figure 26, page 67.

Figure 20 - Global I2P matrices, comparison between 1995 and 2009



I2P '95	UK	Germany	France	Italy	Netherlands	Belgium	Austria	Brazil	Russia	India	Taiwan	China	Japan	Korea	USA	Mexico	Canada	RoW
UK		1%	0%												1%			1%
Germany	1%		1%	1%	1%	1%	0%								1%			2%
France	0%	1%		1%		0%									1%			1%
Italy		1%	0%												0%			1%
Netherlands	0%	1%				1%									0%			0%
Belgium		1%	1%		0%													
Austria		0%																0%
Brazil																		0%
Russia		0%																0%
India																		
Taiwan												0%			1%			0%
China													0%		0%			1%
Japan											1%	1%		1%	1%			4%
Korea												0%	0%		0%			1%
USA	1%	1%	1%	0%	0%						0%		1%	1%		1%	2%	6%
Mexico															1%			
Canada													0%		2%			0%
RoW	1%	1%	1%	1%	1%	0%		0%		0%	1%	1%	2%	1%	3%			

Source:www.WIOD.org



I2P '09	UK	Germany	France	Italy	Netherlands	Belgium	Austria	Brazil	Russia	India	Taiwan	China	Japan	Korea	USA	Mexico	Canada	RoW
UK		0%			0%										0%			1%
Germany	0%		1%	0%	0%	0%	0%					1%			0%			2%
France		0%																1%
Italy																		1%
Netherlands		1%				0%												1%
Belgium		0%																0%
Austria		0%																0%
Brazil																		0%
Russia																		1%
India																		0%
Taiwan												1%						0%
China		1%								0%			1%	1%	2%			4%
Japan												1%		0%	0%			2%
Korea												1%						1%
USA	0%	0%										1%	0%			1%	1%	4%
Mexico															1%			
Canada															2%			0%
RoW	1%	1%	1%	1%	1%			0%		1%	1%	4%	2%	1%	3%			

Source:www.WIOD.org

From these images it is possible to observe the significant evolution of the role played by China in the worldwide I2P trade, since the country grew a lot in importance over time both on the sales and sourcing sides and it became the biggest trader in I2P intermediates around the world.

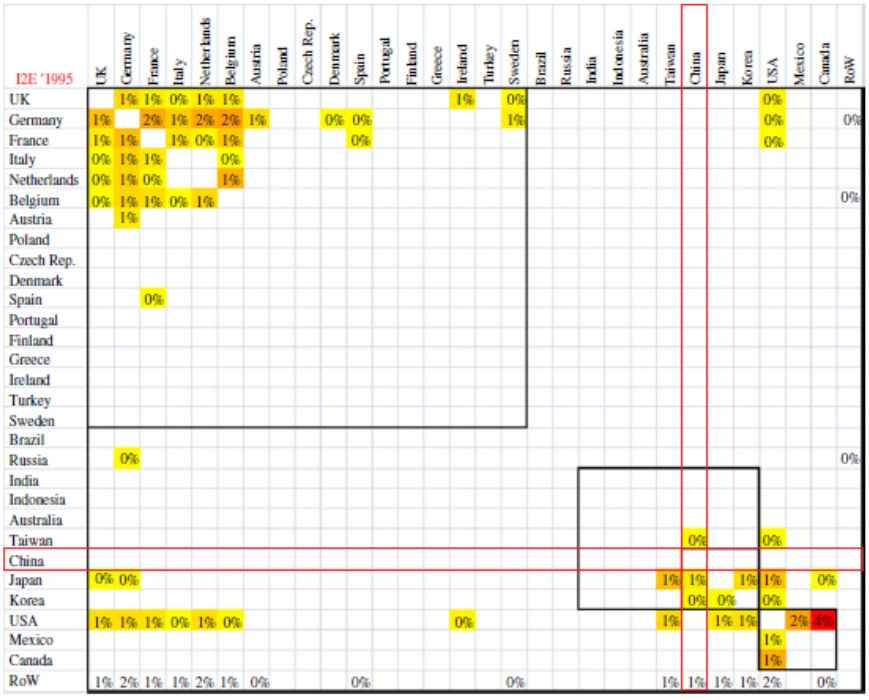
In fact, in 1995 China accounted for just about 1,5% of the global sales of intermediates and for 2,5% as regards imports while as of 2009, thanks to the further boom experienced in the reception of off-shored activities after the country's entrance in WTO, it controlled about 9,5% and 9% of global I2P sales and purchases relevant flows, respectively.

This makes China the only big manufacturer country to have improved its position during the lapse of time taken into consideration; as a matter of fact, even because of the Chinese rise, the other major countries such as Germany, US and Japan lost part of their trade volume in I2P intermediates.

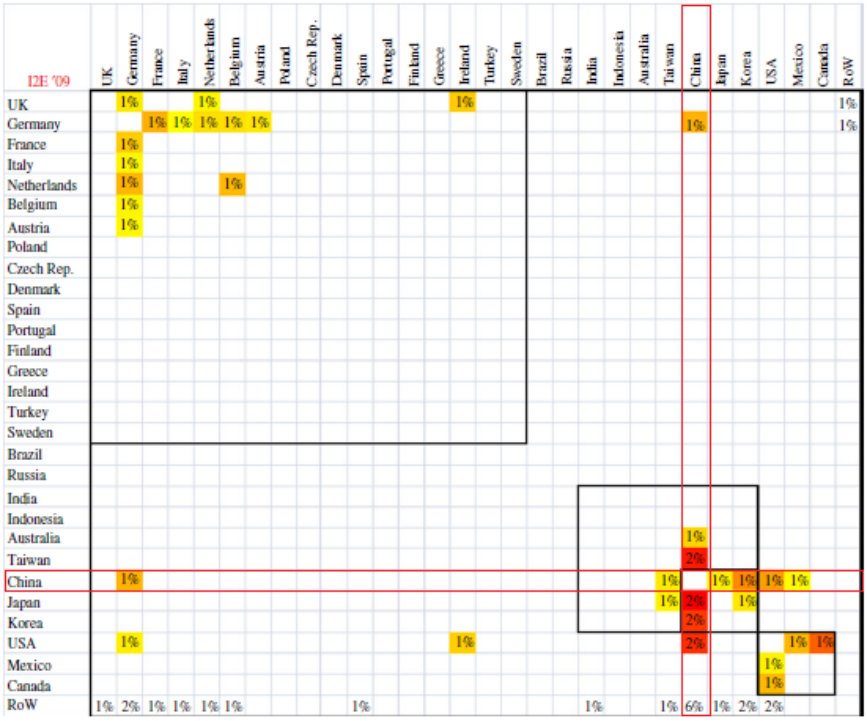
Moreover, during those years, China passed from principally trading with the other countries within its regional block (with the exception of US), to be a central counterpart for nations all around the three blocks into which the world's commercial scheme is ideally divided: Asia, America and Europe.

This powerful evolution path can be also confirmed by taking into account the world Import-to-Export (I2E) trade pattern, where a country's imported intermediates that will be subsequently included into exports are quantified. In **Figure 21** we can observe again the comparison between the worldwide trade patterns in 1995 and 2009, measured as a percentage of the global flows, but this time from an I2E perspective.

Figure 21 - Global I2E matrices, comparison between 1995 and 2009



Source:www.WIOD.org

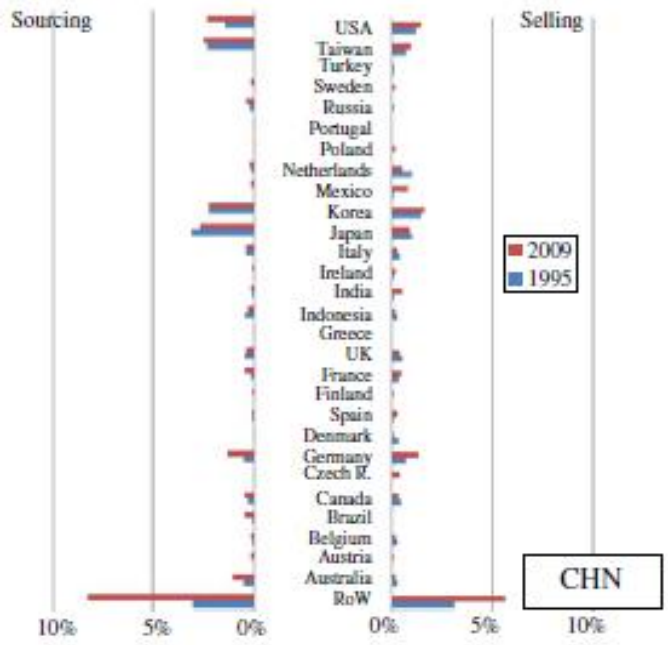


Source:www.WIOD.org

It comes clear from these tables how China also improved its position both on the global I2E sales and sourcing sides, having grown during the years taken into account up to be the world's biggest receiver of foreign intermediates destined to export and, at the same time, the second biggest seller after Germany.

This last observation, indeed, is very important in order to understand the qualitative evolution experienced by the firms operating in China. As a matter of fact, in 1995 the country's role was totally negligible as an intermediates' seller, with practically no relevant bilateral flows, while as of 2009 China came to be a major I2E supplier for such countries as Germany, US, Mexico, Taiwan and Japan, demonstrating how a big number of Chinese companies increased the complexity of their production and switched to produce and export some higher-level intermediates, which during the previous years were imported from abroad.

Figure 22 - China's I2E sourcing and sales patterns, 1995 & 2009



Source: Lopez-Gonzalez (2012) calculation on WIOD tables

Remaining on the I2E perspective, it is possible to have a clearer insight about China's bilateral relations and to understand which ones are its most important trade partners by looking at the country's sourcing and sales flows. In **Figure 22** these flows are shown as a percentage of total Chinese exports, comparing the situation in 1995 and 2009.

It is noticeable from the figure how the country presents similar patterns in both sales and sourcing, even if it is slightly more dependent on buying intermediates abroad.

Indeed, it can be observed that China heavily relies for its exports on inputs imported from countries like Japan, Korea or US, which underlines the existing linkage between Chinese manufacturing activities and the technologies coming from those nations. Another very significant aspect to be remarked is the strong raise that China experienced as regards inputs sourced from other emerging countries that are not explicitly mentioned in the data set, which are mostly represented by natural resources.

On the sales side, instead, the Chinese I2E pattern resembles those of developed economies, since it is extremely active in supplying other nations with intermediate inputs. As it was easy to foresee, the most important Chinese counterparties in this sense are the same as for sourcing, since a huge amount of intermediates are sent from technologically advanced nations to China in order to be assembled or further processed and subsequently sold back to the foreign companies, which will export those goods worldwide.

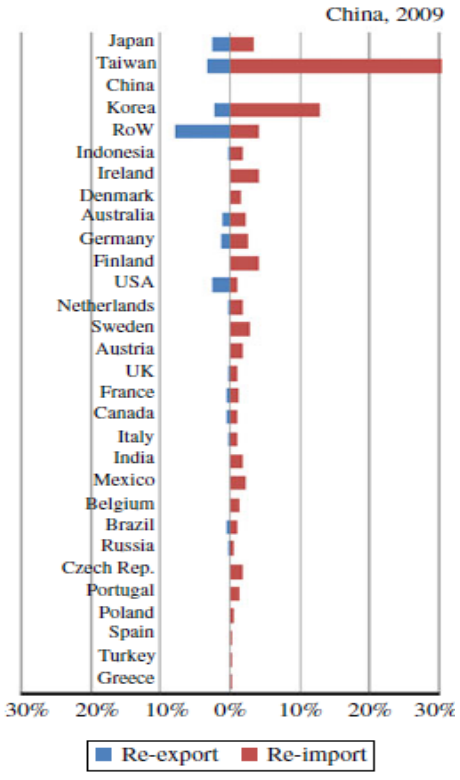
In addition to this Chinese enterprises, as it was mentioned above, also evolved to export some higher-level, more specialized industrial intermediates to firms all around the world and it is noteworthy how the country is strongly engaged in supplying other emerging nations with goods that will be subsequently embedded in the latter's exports.

According to these considerations, it can be stated that China resembles a headquarter economy on the sales side, since it supplies a broad range of partners all around the

world. Nonetheless, it also looks like a factory economy on the sourcing side, as it buys inputs mainly from advanced-technology nations, giving us a hint about how the country still relies massively upon its comparative advantage in assembling and in other manufacturing activities.

Another insight about this ambivalence in Chinese trade patterns can be gained by looking at the country's re-import and re-export flows, as it is shown in **Figure 23**. Of course, this point of view just takes into account direct bilateral relationships and does not allow to point out those intermediates that are indirectly re-exported or re-imported among two or more countries.

Figure 23 - China's re-imports and re-exports



Source: Lopez-Gonzalez (2012) calculation on WIOD tables

Nonetheless, the graph is really useful to understand how the position of China as a re-importer of goods has grown in importance over time, thanks to many firms in the country that started to off-shore activities in order to later re-introduce and sell the final goods into their home market, which has now reached huge dimensions and whose consumers are raising to the same levels of sophistication as the ones in developed economies. In addition to this, it is of critical importance to underline that the activities off-shored by Chinese enterprises are often skill- or technology-intensive tasks, in the development of which China is still lagging behind the most advanced countries.

One of the most clarifying examples in this sense can be figured out by looking at the path that some technological goods go through. In fact, Chinese companies often produce low-tech intermediates and then off-shore the middle stages to firms in Korea and Japan, which embody them in high-tech components and send those back to China, in order to be assembled and sold.

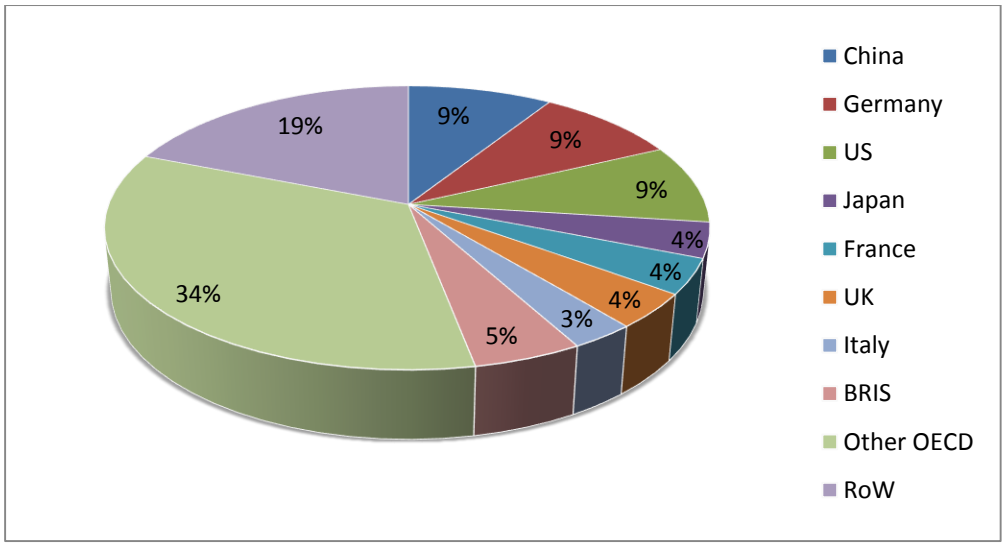
For the rest, the chart remarks again the dependence of the country over inputs mainly coming from the close Asian advanced countries like Japan, Korea and Taiwan and from the US, which after having been assembled in China are re-exported to those countries in order either to be sold in their markets or shipped abroad.

As a final point, in order to have a comprehensive overview about China's position in global value chains it is also relevant to measure how much of the value generated along these production networks the country is able to retain. In **Figure 24**, the distribution by nation of the total value created within global value chains during the year 2009 is shown and, as it is possible to appreciate, the role of China is surprising.

Indeed, even though it is still considered as the world's workshop, the country succeeded into retaining about 9% of the created value, as much as US and Germany did.

This is due, of course, to the massive participation of China in international trade, as it is a crucial partner for almost every country in the world engaging in GVC-related commerce, but it is also very important to testify how the general opinion about China being just a huge pool of low-skilled labor is wrong; in fact, the country has demonstrated to be able to learn and successively develop considerable skills and capabilities, which made it able to go through a very significant evolution and granted to many of its firms the possibility of retaining a good share of the value created along global production networks.

Figure 25 - Share of global value added created by GVCs, 2009



Source: OECD/WTO TiVA, 2013

According to all of the observations made above it is well understandable how China, together with its firms, is moving up the value chains trying to absorb as much as possible from foreign companies' know-how and technologies. In fact, after having been confined for almost 30 years to lower-end production, the country's competitiveness is now raising at a really fast pace also in those areas that were previously monopolized by advanced economies.

Nevertheless China, although presenting some notable exceptions at the firm level as it will be seen later, has not reached the most developed nations yet, neither in terms of technological advancement nor in the quality of services and it is still not able to fully compete with them for the performance of the highest-value-added, most profitable activities.

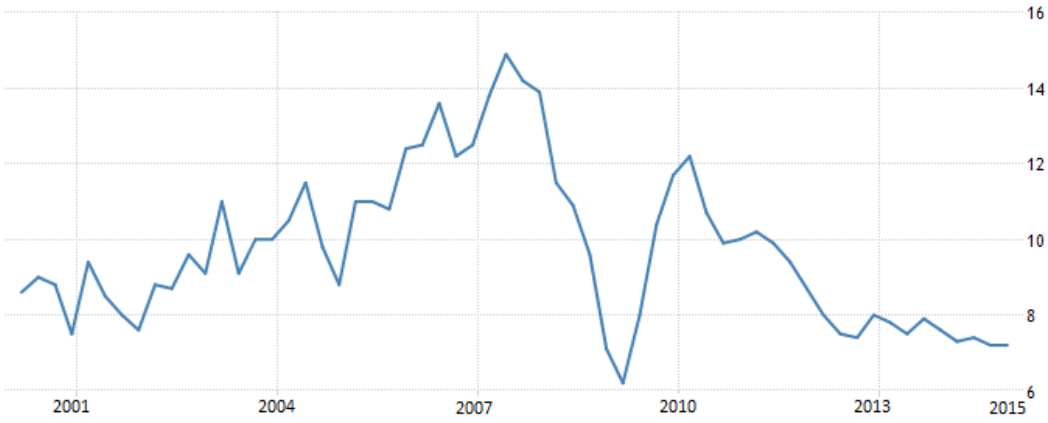
2.5 China's current upgrading strategy

For more than three decades China has been able to grow at a very fast pace thanks to the push of its government towards the opening up to the rest of the world and the adoption of an economical model based on quantitative growth. Indeed, the reception of low-value-added activities off-shored by multinational enterprises has been strongly encouraged and used as a starting point for the modernization of the whole country, which saw a massive growth in terms of GDP over the years. In particular, throughout the 2000s China experienced incredible double-digit GDP annual growth rates, arriving at a maximum of over 14% between 2007 and 2008.

In the last years however, this model of growth has been put into discussion and this has been also reflected in the GDP growth, which has been slowing down to more "normal'' standards reaching a 6,9% annual variation in 2015 as it can be observed in **Figure 26**. This rate remains very high compared to that of developed countries, but still far from the levels experienced in the previous years.

The reason behind this recent slowdown can be found in the fact that the Chinese competitive advantage in terms of wages and other costs is being progressively eroded and this is not fully offset by a parallel growth in quality. In fact, although there are some peaks of excellence in the country, most of the Chinese firms are not as advanced as the ones in developed countries yet, especially in the skill-intensive sectors.

Figure 26 - Chinese GDP annual growth rates, 2000-2015 (%)



Source: National Bureau Of Statistics Of China

According to this situation, the Chinese government agreed on the necessity of adopting a development strategy aimed to allow the domestic firms to further improve their position in global value chains, in order to render the growth of the country more sustainable over the next years. Thus, China shifted from a model based on quantitative growth to another focused on a qualitative one, as it has been testified by the renewed strategy launched in occasion of the issuance of the 12th Five-Year plan[31], which covered the years from 2011 to 2015 and was based on three main pillars: innovation, services and private enterprises.

As for **innovation**, China is now pursuing a growth pattern oriented to the elimination of outdated production capacity and, in addition to this, the government is heavily pushing to promote high-end manufacturing. In fact this sector, which was previously on a small scale and mainly dependent on imports, performed noticeably better in the last years and led to the strengthening of China's upstream industry, further encouraging domestic firms to improve their technology.

[31] China's Five-Year Plans are the social and economical mid-term development initiatives defined by the plenary session of the Communist Party, through which it shapes the country's strategies and targets for the next future. The first Five-Year Plan was issued by the Chinese government in 1953.

Of course, the fastest and most effective way for Chinese firms to upgrade themselves is that of establishing strategic partnerships with enterprises in developed countries, in order to take advantage of their better knowledge and technologies. For this reason, in the most recent years Chinese companies shifted their attention on advanced economies, pouring their investments into the purchasing of R&D capabilities, talents, brands, technologies and so on.

This new trend can be confirmed by looking at **Figure 27**, which shows the top ten destinations for Chinese firms' overseas M&A by total deals value in 2014, compared with the 2010 ranking. As it is possible to see, indeed, nine out of the top ten targets in 2014 are developed economies, the first among which is the US, while in 2010 investments were mostly focused on developing, resource-rich countries such as Brazil and Argentina.

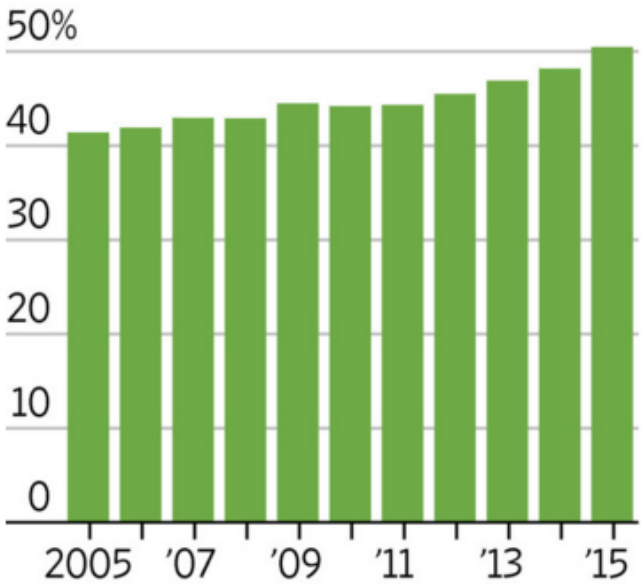
Figure 27 - Top countries for Chinese overseas M&A by total deals value, 2010 & 2014

Source: KPMG analysis

As regards the second pillar of the Chinese current development strategy, it has to be taken into consideration the role of **services**. Indeed, as it has been previously mentioned in section 1.9, services play a fundamental role in global value chains and it is usually the qualitative and reliable performance of these kind of activities that allows firms to retain the biggest shares of value created. As a matter of fact, in most of the developed economies services account for more than 60% of GDP, while in China this percentage has been far lower along the years.

Nonetheless, as it can be seen in **Figure 28**, the country has been experiencing a continuous improvement on this side during the 2000s, reaching a share of 50,5% of the total GDP value provided by services sectors in 2015.

Figure 28 - Services share of China GDP, 2005-2015



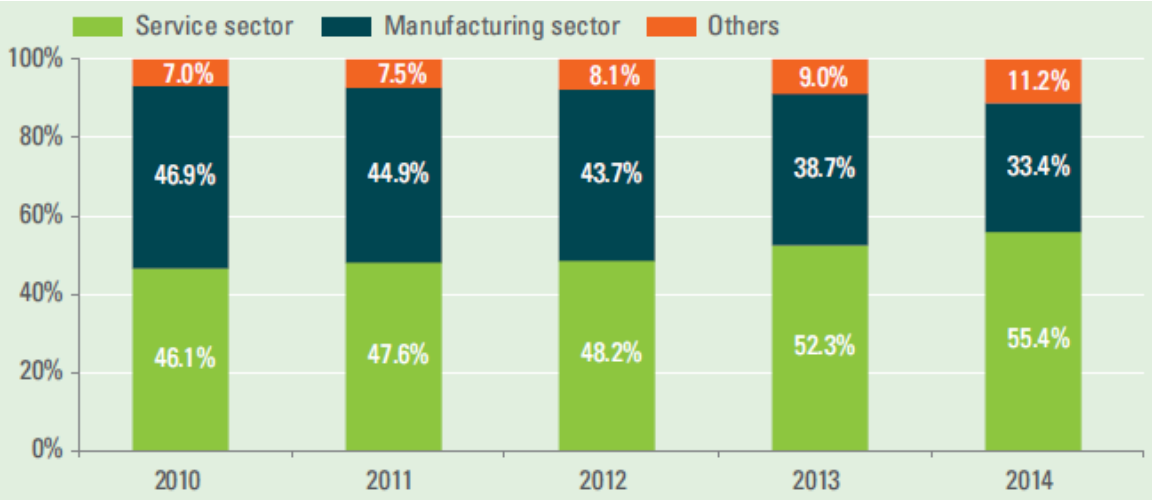
Source: National Bureau Of Statistics

On top of this, the government is strongly pushing for further improvement and the annual growth rate of services is climbing year over year, having expanded to 8.3% in

2015 from 7.8% a year earlier[32]. In contrast, the industrial sector's growth is currently experiencing a slowdown and it dropped to 6% in 2015, compared to 7,3% in 2013[33]. Another evidence of the expansion of the Chinese service sector can be attained by looking at **Figure 29**, which shows a breakdown of China's FDI from 2010 to 2014 and underlines the dominance gained by investments in services over manufacturing, as a result of the government's efforts to encourage foreign firms to focus more on the development of these kind of activities.

In fact, over the last years Chinese institutions issued a big number of policies in order to facilitate FDI in service industries, as for example the ones promulgated in 2014 to abolish some of the restrictions for foreign investors in the markets for financial services and healthcare, allowing them to enter in an easier way into those industries that were previously monopolized by State Owned Companies and to compete with the latter in a more transparent and fairer business environment.

Figure 29 - China's FDI breakdown by sector, 2010-2014



Source: www.mofcom.gov.cn

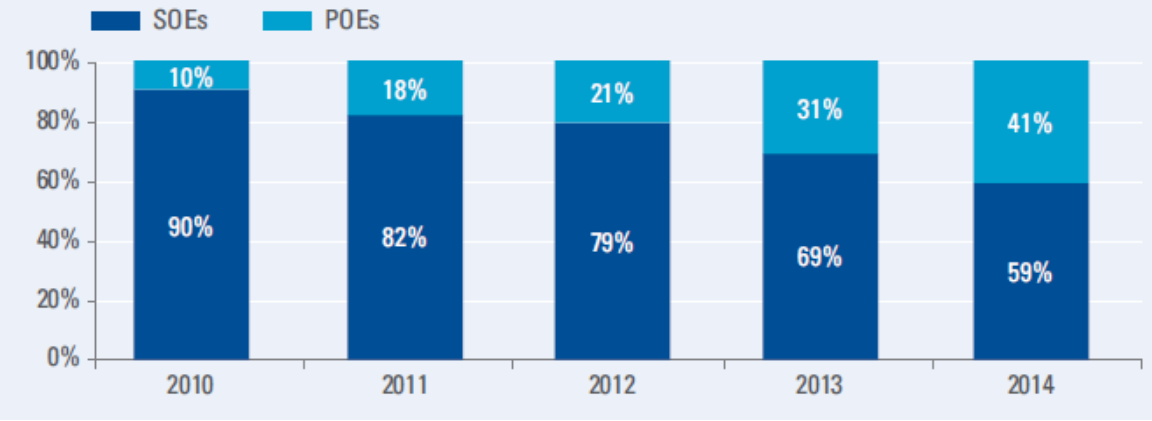
[32] Source: National Bureau of Statistics, China.
[33] Source: National Bureau of Statistics, China.

Finally, the last driver of Chinese recent and future growth relies on the increased importance of **private capital**. In fact, as it has been previously pointed out, during the past Chinese economy was heavily marked by the predominance of State-Owned Enterprises, as regards both the activities performed within the country and also the Outward Direct Investments, with their massive deals in resource extraction in other emerging countries.

In recent times, instead, it has been possible to assist to a huge increase of the importance of private companies in the Chinese economical landscape, since some of them have succeeded into climbing up their value chains up and subsequently started to set up their own networks of activities abroad, in order to participate in international competition and find new markets overseas.

As a matter of fact, it is possible to see in **Figure 30** how the outward investment pattern of Chinese enterprises has evolved from 2010 to 2014, with private companies getting more ambitious and completing larger transactions overtime, up to reach 41% of the total value of China's overseas M&A deals in 2014.

Figure 30 - Chinese overseas M&A deals by value, SOEs and POEs, 2010-2014



Source: KPMG

In addition to this, it could be mentioned as another proof of the transformation experienced by the Chinese environment the fact that five out of the top ten M&A deals in 2014 have been carried out by private firms, among which Lenovo's purchasing of Motorola and IBM's x86 Server Business ranked 2nd and 5th, respectively[34].

In order to sum up, it is clearly possible to state that in the most recent years China has been able to implement in a very successful way the development strategy launched by the government, shifting its emphasis on innovation, services and private capital. As a consequence, an increasing amount of domestic firms have been able to go beyond the phases of process and product upgrading, arriving to improve themselves also as regards the functions performed; therefore, their position within global production networks experienced a further enhancement and sometimes it also resulted into the fortunate launch of their own brands worldwide.

Indeed, the country is quickly going through its path towards the reaching of a sustainable growth but, nonetheless, China is facing many challenges and the road to become a fully developed country is still long to be covered.

2.6 The road ahead

For many years after the opening up of its boundaries to foreign investments, the composition of Chinese production factors and, thus, the comparative advantage of the country have remained pretty unchanged, especially as regards the high redundancy of low-cost labor force which, together with taxation preferences and incentives, made China a preferential destination for firms to off-shore processing and manufacturing stages.

[34] Source: KPMG.

On account of this, the country experienced a spectacular growth for decades but, since the beginning of the new century, a series of changes in the worldwide landscape implied that traditional Chinese advantages are progressively fading out. Therefore, national authorities adopted a new industrial development strategy aimed to a more sustainable growth and, together with this, also started to face in a more resolute way some issues that, during the previous years, have not been given the priority they would have deserved in order not to dampen the country's GDP climb.

To be more specific, there are three main challenges to be addressed by Chinese institutions during the next years, namely the high divergence in welfare among citizens, the environmental issue and the rising wages and operating costs in the territory.

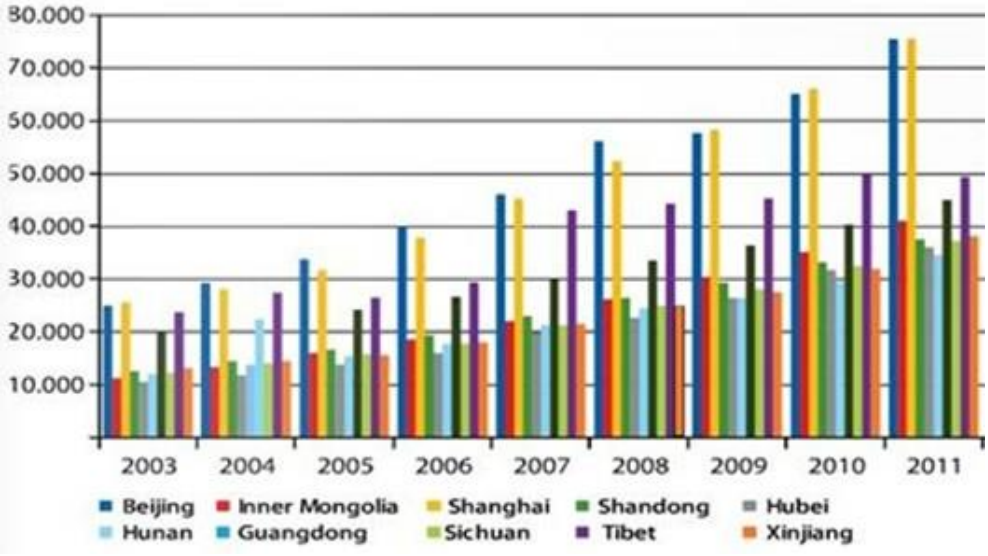
Taking into consideration the country's internal **divergence in welfare**, it is possible to analyze this topic from two different points of view: the existing gap between provinces and that between urban and rural areas. As for the provinces, it comes clear how they benefited in a different way from Chinese huge economic growth; in particular, the preference granted to coastal regions during the first years of development made them experience a significant leap forward in terms of GDP and workers' salaries, while the more internal and occidental areas of the country remained pretty undeveloped.

As a matter of fact, China's three biggest and richest cities Beijing, Shanghai and Guangzhou are located on the Eastern coast and heavily benefited from the strengthening of infrastructures and the promotion of FDI, which rendered them some of the most industrialized places in the world.

On the other hand, the reforms adopted between the end of the 20th century and the early 2000s did not provide other Chinese internal regions with the same advantage; indeed, the salaries of people living in those areas increasingly diverged with the ones of those living and working in the coastal regions up to reach a considerable difference.

As it is possible to see in **Figure 31** indeed, average annual salaries in 2011 in Shanghai and Beijing were over 70'000 Yuan (almost 10'000 Euro), while in Xinjiang, Sichuan, Hunan and Hubei they were slightly below 40'000 Yuan (about 5'500 Euro)

Figure 31 - China average annual salaries in CNY by selected province, 2003-2011



Source: Centro Studi Imprese, Fondazione Italia-Cina

For this reason, one of the main objectives of the Chinese government in the last years has been that of increasing the promotion of FDI in the internal regions of the country, as it can be testified by the most recent data: in fact, in 2014 FDI in Central China increased by 7,5% compared to the previous year, while in the Eastern provinces it climbed just 1,1%[35], although the coastal cities still receive a much larger amount of investments in terms of absolute value.

In addition to this, the social and economical mismatch between Chinese citizens can be also analyzed in terms of people living in urban and rural areas. According to the statistics, the overall urbanization rate in the country in 2014 was 54%[36], although in

[35] Source: KPMG.
[36] Source: data.worldbank.org.

some Central and Western provinces it is still below the 50% threshold and the differences in wealth are evident between people living in the countryside compared with those in the cities; in fact, the latter have an income that is on average more than three times bigger and they also enjoy a 5-year longer life expectancy.

In order to address this issue, in 2014 the Chinese State Council[37] unveiled the ''National New-Type Urbanization Plan 2014-2020'', the first official one ever enacted in the country, aimed to push for a further urbanization whose drivers will be the growth of the lifestyle quality and the enhanced welfare of residents.

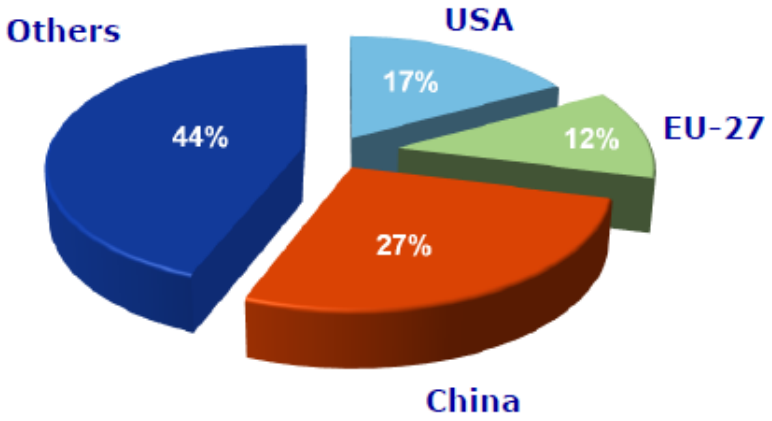
Another fundamental challenge for China is the one regarding the **environment** and its protection. In fact, during the 21st century the country has become the biggest worldwide energy consumer and its CO2 emissions increased more than three times compared to 1990 levels; as of 2013, China accounted on its own for 27% of the worldwide emissions, as it is possible to see in **Figure 32**.

Nonetheless, it still lags behind the other big energy consumers such as the US, Japan and EU in terms of renewable energies and energy efficiency measures, so that pollution has become a really burdensome problem for the people living in the country. As an example to describe the gravity of the Chinese situation, it can be considered that the daily limit of Pm10[38] particles in the air for European cities is about 50 µg/m³, while in cities like Beijing and Tianjin this parameter can reach incredible values, especially during the winter, arriving to peaks of over 500 µg/m³, which are defined as seriously hazardous to human health.

[37] The State Council, or Central People's Government, is the highest-state administrative institution in China, which carries out the laws enacted and the decisions adopted by the National People's Congress.

[38] Pm10 (Particular matter) particles refers to a particular element, smaller than 10 micro-meters, coming from the aggregation of various substances originated by energy combustion, transports, heating and so on. Both in the liquid and solid state, the presence of this particle in the air is considered as seriously polluting and dangerous for health.

Figure 32 - Shares on world's total CO2 emissions, 2013



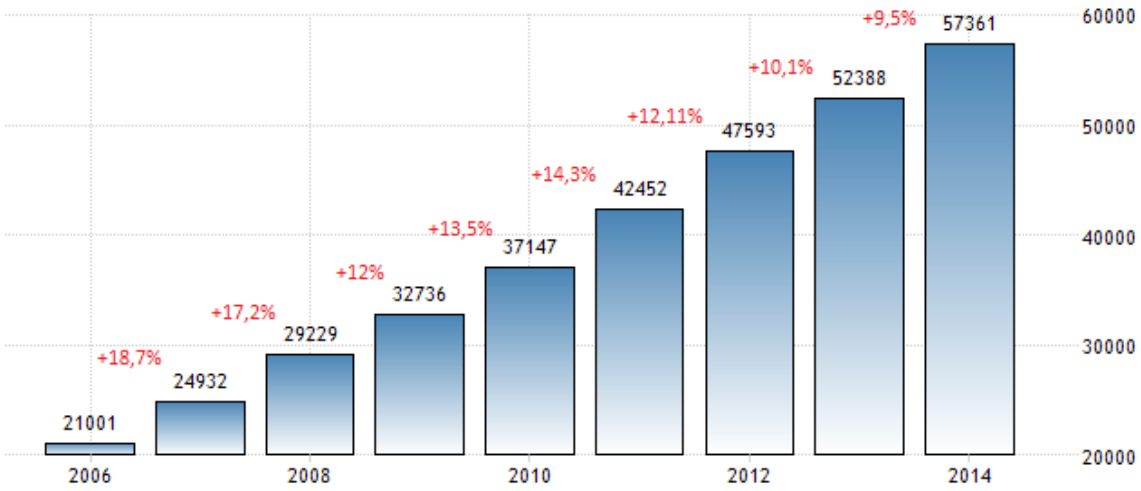
Source: Simone Mori - The Green Shift, Coping with Global Warming

In order to solve this problem, the government has mapped out ambitious environmental initiatives while issuing the last two Five-Year plans and in 2016 it also pledged to spend over $700 billion to clean up the air and the water, although the effective implementation of these measures still has to be verified. In addition to this China's National Development and Reform Commission, the most important economic planning agency in the country, defined in 2013 an extensive list of objectives for 2020 encompassing significant improvements in energy efficiency, in the use of renewable energies and in the decarbonization of the country, which were also confirmed during the conference held in Paris at the end of 2015 about climate change (COP 21) and testify the sudden shift of the country's behavior in relation to this subject.

As a final consideration about the future challenges to be faced by China, it has to be taken again into account the progressive erosion of Chinese competitive advantage in labor and operating costs, due to the sharp **increase in wages** and in the price of goods that the country has been experiencing during the late years. In fact, since 2006 the nominal wages have gone up at double-digits rate for many years, as it is shown in

Figure 33, especially thanks to the huge climb experienced by people working in the coastal regions.

Figure 33 - China average yearly wages in CNY and annual variation, 2006-2014



Source: MOHRSS, China

This affected every activity performed in the country and it is currently provoking an increasing displacement of activities to the inner regions of China, were salaries and other costs are still much lower on average. Moreover, as it has been mentioned above, this movements are also encouraged by the authorities in order to pursue a double objective: to enhance the further development of those areas and, in the meanwhile, to allow the country to go on exploiting its residual advantage in low-cost labor until a more sustainable growth pattern based on services, innovation and quality is not fully achieved.

Nevertheless, in some cases this raise in operating costs has already caused the dislocation of manufacturing activities from China to other cheaper countries in the South East of Asia, like Vietnam and Cambodia, with the effect of widening the participation in global value chains to these new countries.

On top of this, as a further remark of the evolution experienced by Chinese firms along the years, it has to be underlined that in many cases those latter companies have been the ones off-shoring some stages of their production processes, so to take advantage of more favorable situations around the world and thus giving birth to their own global value chains.

Chapter 3 - Climbing up GVCs: Haier and Lenovo

3.1 The rough path towards upgrading

As it has been extensively explained in Chapter 1, the modern fragmentation and dislocation of production activities allowed many firms in developing countries to join global value chains at their lower end, capitalizing on their cheap labor supply by assembling on behalf of others or operating other low-value-added activities, while initially avoiding the expenses and risks related to the development of the skills necessary to perform activities like marketing, R&D and design and preparing themselves for a future upgrade along value chains.

Anyway, not all of the firms headquartered in emerging economies have been subsequently able to upgrade themselves, going through the whole path from being mere assemblers (or distributors, as in the case of Lenovo as it will be seen later) on behalf of foreign companies, up to progressively become Original Brand Manufacturers (OBM) and perform even the most profitable activities by producing, marketing and distributing their own-branded products.

Of course, the upgrading pattern is far to be smooth in practice; in fact, it depends on a huge amount of factors such as the company-specific resources and efforts and the economic environment in which the firms operate, which includes the policies enacted by national and local governments, the availability of inputs and the features of the various industries in the country.

In addition to this, it is also very important to consider the relationships that enterprises in emerging economies have with the ones leading and coordinating the international production networks and the extent to which the latter allow the former to access those

information and technologies that are necessary to upgrade in terms of process, product and function.

According to these considerations, it is clearly understandable how the process of upgrading is very complex and every single firm has to face it in a different way, giving birth to a huge amount of disparate outcomes.

In the next paragraphs there will be illustrated the successful cases of Lenovo and Haier, two Chinese enterprises that, after China's opening up to the rest of the world, have been able to join global value chains and to climb them up to become some of the world's leading companies in their respective industries, having found their own way to take full advantage of all the favorable endogenous and exogenous conditions occurred during their whole development path.

3.2 Haier

Haier was founded in 1984 in Qingdao by the Chinese government, under the initial name of Qingdao Refrigerator Factory, as a Township and Village Enterprise (TVE), a particular kind of collective company where 800 workers jointly owned the assets and shared the profits; nonetheless, major decisions were heavily influenced by the city's municipal authorities.

This kind of structure had been used in China during the first years of the 1980s, right after the country's opening up to the rest of the world, on an experimental basis as an alternative source of employment to the State Owned Enterprises before the emergence of private capitals and it testifies the efforts deployed by the government in order to find the best modes to join global value chains, but still maintaining a high degree of control over the economy.

The Qingdao factory was set up as a part of the Chinese early moves to improve the domestic firms' knowledge and technologies by absorbing them from the most advanced countries; as a matter of fact, the company immediately signed a licensing agreement with the German refrigerator maker Liebherr in 1984, obtaining the concession to use some of their technologies in China.

In addition to this, in 1985 the Chinese government also launched a series of international auctions directed to the world leading companies in the house appliances sector, aimed to build various producing plants in China in partnership with local enterprises. About one third of these projects were won by Merloni, a big Italian manufacturer and some others by the Japanese Mitsubishi, both of which entered in Joint Ventures with Qingdao Refrigerator Factory and provided the firm with Western industrial methods and design, in addition to the technical assistance and the training given to the local suppliers they went into business with.

Thanks to these first arrangements, the company have been able to learn a lot from its foreign counterparts while performing some minor tasks like the assembling of products and allowed it to imitate them and build its own production line, growing in importance within the domestic market along the 1980s.

Indeed, in 1991 Qingdao Refrigerator Factory was already the leading fridges' manufacturer in China with its own-branded goods, especially thanks to the superior quality it used to provide compared with the other Chinese firms acting in the industry .

In fact, since its foundation the company's strategy has been committed to brand building and the to the provision of first-quality goods and after-sales services, which allowed it to price its products at a 15% premium[39] compared to other domestic competitors while continuously gaining market share over them. Of course, the company couldn't be able to compete with foreign multinationals in terms of product

[39] Source: J. Yi, S. Ye - "The Haier way: the making of a Chinese business leader and global brand", p 30.

quality yet, but it was advantaged in the local market since it was still very difficult for non-domestic enterprises to penetrate in a widespread way.

After this first period, then, the company started to diversify itself and bought Qingdao General Freezer Factory and Qingdao Air Conditioner Factory, two moribund State Owned Enterprises that it succeeded into turning up, making them profitable within one year.

Later, in 1992, the corporate changed its name into **Haier** in order to give the final push to its brand creation, adopting a German-sounding name that should have inspired consumers with an idea of reliability. Moreover, it was listed in the nascent Chinese stock market so to raise the funds necessary to its expansion, which resulted into the acquisition of 15 smaller local companies within a short lapse of time[40].

In fact, during the 1990s the whole Chinese economy was experiencing its greatest leap forward, with the boom of international trade and FDI in the country caused by the loosened policies towards foreign investors. This brought hundreds of firms to invade the Chinese market, seriously hampering the survival of those companies that were not able to keep track with the fast changes of the country's economic environment. As a matter of fact, the death rate among refrigerators manufacturers in China was very high during those years and just three local enterprises survived, among which Haier, thanks to their ability to join global value chains in a more effective way, definitely entering in the international markets as contract manufacturers for foreign-branded products.

In fact, up to that moment Haier mainly focused on developing itself in the Chinese market, although it used to perform some low-value added activities for some firms it was into business with, as it was mentioned above. However, starting from the early 1990s the company improved its role and became an Original Equipment Manufacturer

[40] Between 1990 and 2004 Haier acquired 15 smaller SOEs, sometimes even under the authorities' pressure to concentrate the industry.

(OEM) for some multinational brands, exporting its products under client brands' names first to Germany and UK and then also to France and Italy. Haier products were received very well in the European markets and especially in Germany, where they had been marketed by Liebherr.

In addition to Europe, the company also entered the US market in 1994 as a full-package contract manufacturer for a New-York-based company, Welbilt Appliances, which in 1994 bought 150'000 units to sell them in the country. Welbilt focused on getting Haier's products into large chain retailers such as Home Depot, Best Buy and Wal-Mart and within three years it captured 30% of the US market share for compact refrigerators[41], since this was a particular niche that American manufacturers did not take much into consideration.

After this early successes in foreign markets and especially after Haier's refrigerators beat Liebherr's ones in a blind quality test conducted by a German consumer magazine, in the late 1990s the head management of the company made the decision to start exporting their products abroad under their own brand name, in order to establish a brand reputation overseas and therefore putting the basis to become an internationally-recognized Original Brand Manufacturer (OBM).

According to this, it is remarkable how the strategy adopted by the company in order to expand overseas and start building its own global production network has been quite different from the ones usually implemented by firms headquartered in emerging countries; in fact, Haier began its path by immediately bringing its activities into the most difficult and complex markets worldwide: Europe and United States. As a matter of fact, the enterprise established in 2001 a $40 million industrial park and refrigerator factory in South Carolina which, as of 2002, reached an annual production capacity of 400'000 units.

[41] T. Khanna, K. Palepu, P. Andrews - "Haier: Taking a Chinese company global", p 5.

At the same time, Haier established its European headquarter in Varese, Italy and in 2001 it invested $8 million to acquire a refrigerator plant in Padova from Meneghetti Spa, one of Italy's major manufacturers in kitchen appliances at the time, whose products Haier also marketed in China under its own brand name. This testified in a clear way the rapid turnaround experienced by the firm as regards its position within global value chains.

Of course, running factories in Europe and US was not as convenient for the company as it would have been to do it in China, but Haier's management adopted this approach in order to reach two main objectives: first of all, they located their plants into areas where important clusters of home appliances' producers were present, so to benefit from the spillovers and improve at a faster pace thanks to the knowledge of local staff; as a second reason, Haier opted to enter the more ''difficult'' developed markets in the first place in order to be able to learn how to meet the highest quality standards and to gain credibility and experience before further expanding in the emerging markets, including China itself, which were considered to be much easier to penetrate.

For this reasons, Haier invested $80 million in Europe between 2001 and 2004 and the Italian headquarters progressively experienced a strong development up to build and coordinate their own, huge logistics and distribution network. Haier arrived to serve 17 countries in the continent as of 2004, bringing the European share of Haier's profits to 17%[42] in a really narrow time especially thanks to the particular features of its products, which were designed specifically for European consumers' tastes and covered the underdeveloped niche of small-size refrigerators.

In addition to the overseas investments aimed to build or acquire production plants, during the early 2000s Haier also engaged in many long-term relationships with specialized firms, which helped the company to further upgrade itself by transferring

[42] Source: Euromonitor International.

technologies, introducing new managerial techniques and training employees in a better way.

This powerful network of relationships has been built by Haier over a few years and it included specialists in design, such as the Japanese industrial design consultancy studio based in Tokyo named GK Design[43], technological pioneers like the Swedish firm Ericsson[44] or the Korean Samsung[45], with which the firm pursued the joint development of some next-generation products and also some pure R&D firms in Australia, France and South Korea, to which Haier off-shored the research and development related to some of its secondary product lines such as TVs and mobile telephony[46].

As a direct consequence of its expansion abroad, Haier also improved its position in the Chinese domestic market, both importing foreign products under the Haier label and also introducing new specialized products every year, in order to retain its significant market share from foreign firms' assaults.

In fact, since China entered in WTO in 2001 the Chinese market was filled by hundreds of foreign products and all of the biggest multinationals worldwide strived to get a foothold in China; as of 2002 indeed, overseas brands accounted for 31% of refrigerators' sales[47] in the country and for 38% of washing machines ones[48].

Therefore, in order to protect itself from the fierce competition brought by firms that, in many cases, were also provided with a better technological expertise, Haier tried to exploit at best the better knowledge it had about the Chinese market and introduced several products that were differentiated with small and cheap innovations. These

[43] Haier and GK Design jointly set up in China the Qingdao Haigao Design and Manufacturing Co. as a Joint Venture.
[44] The collaboration between Haier and Ericsson was aimed to the joint development of home appliances working with Bluetooth technology.
[45] Haier and Samsung cooperated to develop network-enabled digital appliance operations.
[46] The Korean facility was in charge of TV-related R&D, while the Australian and French ones were in charge of the mobile telephony-related one.
[47] Source: Euromonitor International.
[48] Source: Euromonitor International.

features resulted as very valuable to the local consumers in order to satisfy their daily needs, which in many cases foreign companies did not even imagine.

As a consequence of this successful evolutional path, Haier arrived in 2010 to be the third major consumer appliances manufacturer in the world and the first one in China, as it is possible to see in **Figure 34**. Moreover, the company's diversification resulted in almost 100 different product categories with more than 15'000 specifications, the vastest range of products held by any company in the industry.

Figure 34 - Global & China market share of consumer appliances manufacturers, 2010

BRAND	GLOBAL SHARE IN 2010 (RETAIL VOLUME)
Whirlpool	10,5%
Electrolux	7,3%
Haier Group	**6,9%**
Bosch-Siemens	5,8%
LG Group	5,1%
Panasonic	4,5%
GD Midea Holding	3,5%
Samsung Corp.	3,4%
General Electric	3,3%
Indesit Spa	3,3%
Others	46,4%

BRAND	CHINA SHARE IN 2010 (RETAIL VOLUME)
Haier	**22,3%**
GD Midea Holding	13,6%
Glanz	5,6%
Panasonic	4,2%
Hisense Kelon	3,9
Henan Xinfei	3,3%
Bosch - Siemens	2,9%
Hefei Meiling	2,4%
LG Group	1,9%
Whirlpool	0,4%
Others	39,5%

Source:www.euromonitor.com

As of today, Haier intensified its presence overseas and became an important player also in other emerging markets such as the Indian one and in particular in Southeast Asia, where the company exponentially raised its presence after it acquired in 2011 the white-goods business of Sanyo.

In addition to this, Haier also increased the range of activities performed abroad: in fact, the company has established 5 R&D bases, 4 industrial parks, 24 manufacturing plants and 19 trading companies outside China, as it is shown in **Figure 35**, which made it a very important multinational and the first globally-leading consumer manufacturing company from China.

Figure 35 - Haier's worldwide operations, 2015

Source: www.haier.com

3.3 Lenovo

The history of Lenovo started in Beijing in 1984, when it was founded under the name of New Technology Development Company (NTDC Co) by the Institute of Computing

Technology internal to the Chinese Academy of Sciences (CAS)[49], as a part of the government's effort in reforming the scientific and technological sectors during the 1980s.

The company was set up under the scheme of a ''state-owned, people-managed company'', a particular kind of structure where the State retained the ownership of the firm and, therefore, it was expected to cover for its losses; on the other side, a full autonomy in management was allowed in order not to hamper the efficient development of the company.

The firm's first success came with the development and launch of a Chinese-language add-on card, which was followed by the successful commercialization of other specialized Chinese-language inputs for PC and contributed to the establishment of a good technological basis for the company. As a proof of the importance of this early achievements, it is remarkable how the name of the add-on card, Lianxiang, has remained the Chinese name of Lenovo to this days.

Later, in 1988, the company decided to widen its range of activities and entered in a Joint Venture with the Hong Kong small manufacturer DAW, reorganizing itself under the name of **Legend Computer Group Co** and moving its headquarters to Honk Kong. This was a critical step for the firm's development: in fact, DAW had manufacturing capability and a good knowledge of foreign markets, due to some important connections with such firms as IBM and 3com; on the other hand, NTD Co had a direct relationship with the Chinese intrusive government and a better awareness of the country's business environment. In addition to this, thanks to the new headquartering in Hong Kong, Legend Group would have been able to exploit all the favorable policies issued by the Chinese national and local governments to encourage foreign investments.

[49] The Chinese Academy of Sciences of Beijing is an academic body under the government's direct control, which provides advisory and evaluation services about economical, social and technological issues.

This brought to a fast evolution of the company, which in 1989 diversified itself by starting to design and manufacture PC motherboards and in 1990 began to produce its own computer systems becoming one of the largest domestic manufacturers in China, although it still trailed behind the leading firms in the country's PC market like the California-based second-tier producer AST and Compaq.

Nevertheless, during the early 1990s the primary focus of Legend Group shifted to the sales and distribution of foreign-branded computers, especially AST and Hewlett-Packard ones, due to the reason that the Chinese government, in those years, did not allow foreign firms to establish their own distribution networks within the country.

As a consequence, they had to rely on domestic firms in order to sell their computers and provide post-sales services to their customers. This gave to many Chinese companies the opportunity to join global value chains at the downstream levels and reap some of the benefits, in addition to the chance to develop their own network of clients and suppliers.

As of 1992 then, China removed tariffs on imported PCs and eliminated import quotas, bringing all of the multinationals in the computer industry to participate in the battle for a potentially huge market that, at the time, was still pretty underdeveloped. This led to a major boom in imports; foreign PC makers were able to conquer the Chinese market and to erode the domestic firms' residual shares in virtue of their technological advancement and the enjoyment of scale economies. In fact, thanks to the massive production of over 1 million units per year, multinationals were provided with a significant price advantage over the Chinese companies in terms of purchasing inputs and spreading costs over a large number of products.

Nonetheless, this period was very beneficial for Legend as it could expand its web of partnerships and, therefore, it had the opportunity to acquire both technical and managerial expertise from its foreign counterparts. In fact, the company was able to

develop a huge sales, distribution and service network for such companies as Toshiba, Apple, Canon, Hewlett-Packard, Sun and IBM, in addition to perform some minor tasks as an assembler for the same firms that allowed it to absorb a considerable expertise in manufacturing and to improve its own production capabilities.

Anyway, the company's own-branded PC sales were still considered as a secondary business compared to the foreign PC ones until 1996, when a major turnaround was experienced and Legend's strategy changed substantially. In fact, given the low incomes of Chinese people, American and Japanese companies did not really consider China as a priority market and they never introduced the newest lines of PCs. Legend, instead, started to order microprocessors from Intel, the world leader in the sector, embedding them in its new own-branded models and, at the same time, it cut prices four times to just above the production costs.

Together to its superior knowledge of the local market, its faster responses to customers' needs and the huge distribution network it created over the years, this move brought Legend to increasingly gain market shares over its foreign rivals and it rapidly became the leading PC vendor in China, acquiring credibility as an Original Brand Manufacturer. Indeed, as of 1999 Legend was the market leader in the whole Asia Pacific region with its 9.1% share[50], having surpassed the former leaders IBM and Compaq.

After China's entrance in the World Trade Organization (WTO) in 2001, however, this framework was completely re-shaped and Legend had to face a much more competitive environment. In fact, the government put an end to the exclusion of foreign companies from running sales and distribution networks, so they were made able to deploy in the Chinese marketplace their huge expertise in those activities. Therefore, for Legend Group it was time to face a difficult decision: going global or staying stuck to the home

[50] Source: Ibid, 8.

market with the evident risk of losing part of its 30% share in China to the benefit of its foreign rivals. So, in 2003 the company changed its logo into **Lenovo**, keeping the ''Le'' of Legend and adding the Latin word ''novo''[51] to its name, in order to make the consumers perceive that a new era of international expansion was starting.

Lenovo's first move on the global scene was a huge one: indeed, the company purchased IBM's ThinkPad business in 2004 for $1,25 billion[52] and crowned its successful development path, which started 20 years earlier from being a R&D spin-off of a Chinese Academy and led the enterprise to become the world's third-largest PC producer[53], in possession of a well-established brand and also of IBM's leading R&D operations, as well as experienced managers and employees.

After the acquisition, from 2005 Lenovo focused its efforts on further improving its technology, in order to become one of the world's leading innovators and to erode the advantage that some multinationals like HP and Dell still used to retain. Therefore, the company built three R&D centers in Japan, US and China, which were specialized in different areas such as software and hardware, compact notebooks designing and Chinese costumers' analysis respectively.

Lenovo also established a Center of Excellence located in Singapore aimed to develop high-tech components for its factories and entered in many partnerships with specialized firms such as China Telecom, National Semiconductors and D-Link. Among the relationships the company built all over the 2000s, some of most remarkable were the agreements signed with Intel, directed to the co-foundation of a center aimed to

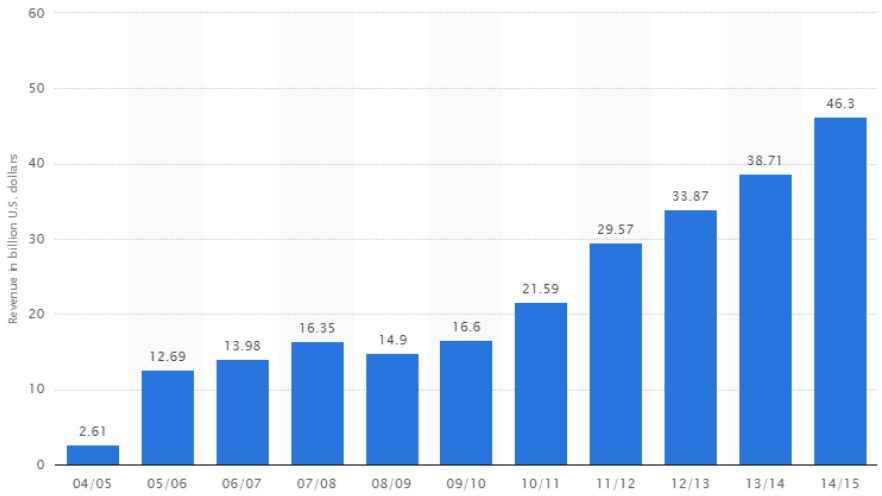
[51] The word "novo" literally means "new" in Latin language.
[52] Source: www.repubblica.it
[53] In 2005, Lenovo had a global market of 6.9%, compared with the 14.5% of HP and 16.8% of Dell. Source: www.lenovo.com

develop key technologies for the next-generation Internet and the Joint Venture with NEC, a Japanese electronics firm, to jointly produce personal computers[54].

In addition to this, as a part of its global branding strategy Lenovo continued to push for further market growth and engaged in many other acquisitions abroad, setting up a strong presence overseas along the years. In fact, it acquired the German electronics manufacturer Medion[55] in 2007 and the Brazilian company Digibras in 2012, thus gaining a significant share in those markets and also getting an important foothold into the respective continents, which were used as a base to increase the customers' brand awareness and further expand Lenovo's presence all over those regions.

As a consequence of this strategic evolution, Lenovo was able to continuously raise its revenues throughout the 21st century, as it is shown in **Figure 36**, with the exception of the 2008/2009 fiscal year when it experienced a slight drop due to the global economic downturn and the consequential decline of sales.

Figure 36 - Lenovo revenues in $ billion, 2004-2015

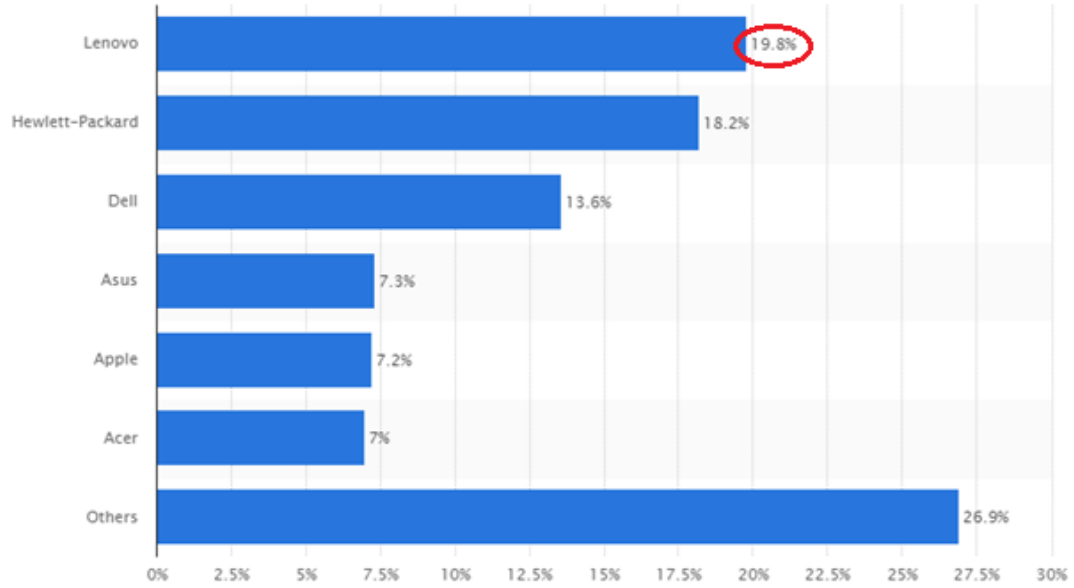


Source: www.statista.com

[54] This move was aimed to gain more market share the Japan, since NEC had a 20% share at that time, while Lenovo barely arrived to 5%.
[55] Thanks to this acquisition, Lenovo gained 14% of the German computer market.

Moreover, as of 2013 the company overtook Hewlett-Packard in terms of global market share and became the world's biggest PC maker in the world, a position that Lenovo has been able to maintain over the next years as it can be observed in **Figure 37**.

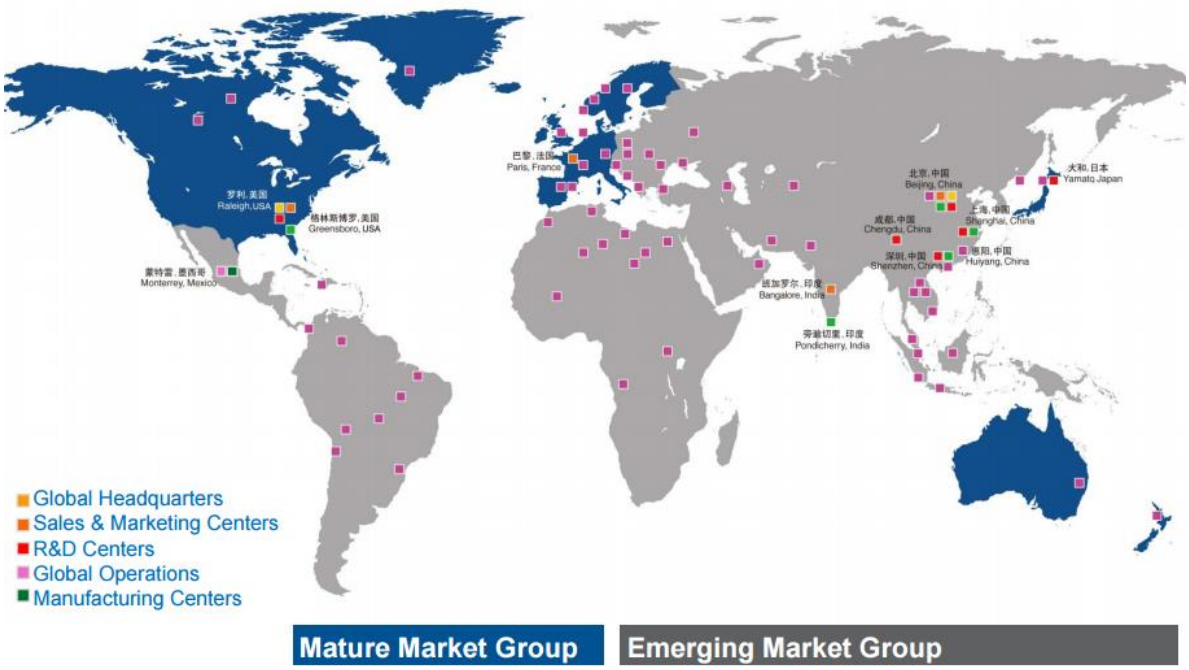
Figure 37 - Global market share for PC vendors, 2015



Source: www.statista.com

As a matter of fact, Lenovo is currently a dominant global player and a technological leader in the personal computer industry, with operations spread all around the world as it is possible to see in **Figure 38**. In fact, in addition to the above mentioned R&D centers established in China, US and Japan, the company also expanded its production activities to such regions as US, Mexico and India in order to take advantage of the different factors endowments present in those countries and also set up global divisions and sales centers in all of the worldwide relevant markets.

Figure 38 - Lenovo worldwide operations, 2015



Source: www.lenovo.com

3.4 Comparative analysis

As it has been illustrated in the above sections, Lenovo and Haier are two of the companies that had the most success into upgrading their positions along global value chains after the Chinese opening up in 1978 and also into expanding themselves internationally. In fact, both of the companies were able to join the global production networks at the right time, to absorb the necessary know-how and technologies from foreign firms and, later, to exploit the cumulated capabilities in addition to their own comparative advantages to widen their activities in both functional and geographical terms, becoming themselves multinational enterprises with a wide presence overseas.

Nonetheless, the two companies present some significant differences as regards the route they followed before becoming global players, due to the specific features of the

industries they operate in, to the relative policies enacted by the Chinese government and the also to the firms' internal philosophies.

As a first difference, it can be observed how those two companies joined global value chains, in the first place, carrying out very different tasks. In fact Haier, as the major part of Chinese firms, had its first contact with foreign enterprises by performing on their behalf some low-value-added activities such as assembling while Lenovo, thanks to the particular structure of the computer industry shaped by the policies issued by the Chinese authorities, entered in partnerships with multinational companies by running sales, distribution and service activities for them.

This is also very important to underline the opposite upgrading path of the two firms; indeed, Haier followed a pretty linear pace, starting from being an assembler and then progressively evolving to be a contract full-package manufacturer (OEM), an original design manufacturer (ODM) and, finally, a globally recognized original brand manufacturer (OBM). On the other side, Lenovo followed a very singular way starting from the downstream activities of the global value chain, which in other industries are usually monopolized by the leading firms due to the high value added that it is possible to provide with them. In fact, the company put aside its own manufacturing activities for many years in order to focus on building a comprehensive distribution and service network and only in 1996, when it cumulated enough capabilities by absorbing them from its foreign partners, it launched on a big scale its own-branded products, quickly climbing the market up to become the leading Original Brand Manufacturer in China and Asia Pacific.

Another big difference between the evolutional paths followed by the two companies relies on their first approach to expansion in overseas markets. Indeed, although both of the firms already reached the position of market leaders in China, Haier started to invest in international markets at an early corporate age, in order to increase in a faster

way its capabilities and take advantage of the acquired knowledge to succeed even in the other emerging markets. Lenovo, instead, waited until it attained the maximum expansion in the domestic market that it was allowed to reach given its technological level. Indeed, it went global just when the competition became too fierce to gain further shares and also after it cumulated a lot of capital, which was later used to buy IBM's PC business.

According to these considerations, it is also possible to state how decisive the role of the Chinese business environment has been as regards both Lenovo's and Haier's upgrading. First of all, the rise experienced by Chinese people's average income over the years allowed a progressively big share of consumers to buy products that were previously considered as luxury goods and that most of the population could not afford, especially such things as personal computers or house appliances.

Indeed, the continuous expansion of the country's market allowed domestic firms to benefit from the biggest potential customer base in the world and this advantage was even widened by the fact that foreign competitors were in some ways limited by the Chinese government and they were not allowed to trade in the whole country, especially during the 1980s and 1990s. In addition to this, domestic firms were perfectly aware of the local consumers' needs and this in particular helped Lenovo and Haier to gain a prominent position in China before deciding to go international.

In the second place, it is very important to underline the critical advantages offered by China to its firms thanks to the huge low-wage labor supply present in the country. This can be analyzed from two different perspectives; as a first consideration, it is important to say that the Chinese low-cost labor base includes not only people performing manufacturing activities but also designers, engineers and administrators are cheaper compared with many other nations. Therefore, being able to save significant amounts of money due to the lower salaries of workers employed in their Chinese facilities, both

Lenovo and Haier could invest a progressively bigger share of capital in R&D and qualitatively better inputs, which were crucial for those enterprises in order to fill the gap with their foreign competitors in a very fast way.

As a second advantage, it has to be taken into account that the raise of China as the workshop of the world brought foreign firms to off-shore to the country an incredible amount of activities and, thus, as soon as investors moved manufacturing to China, the cost of many inputs started to decrease sharply. Therefore, it had been possible for Haier and Lenovo to purchase many important components directly in their own country at a cost much lower than it would have been previously feasible.

In order to sum up, it is thus possible to state that Lenovo and Haier succeeded, although with different modes, into exploiting in the best possible way all the favorable features of the business environment they found themselves in, successfully going through the whole path from being small domestic companies up to become multinationals that run their own global value chains and thus setting the example for all firms in developing countries that strive to upgrade themselves and to reach a more relevant position in the international markets.

Conclusion

During the last 35 years, the exceptional improvements attained in many technological fields and especially in the telecommunication industry brought to a complete turnaround of the already established commerce patterns. This gave birth to a worldwide phenomenon that reshaped the role of many economies into the international trade framework: the birth of global value chains.

Indeed, all the biggest multinational enterprises in the world started to delocalize their lower-value adding activities moving them to various emerging countries, where they could take advantage of a wide offer of low-skilled cheap labor force.

On the other side, this gave to many firms in developing economies the opportunity to join international production networks, without having to afford burdensome investments to develop those skills and capabilities that are necessary to fully compete in the international markets.

However, once they have succeeded in properly joining global supply chains, the most important issue for domestic firms is that of upgrading themselves by improving the range of activities they perform, so to be able to reach the higher levels of their respective chains and to retain a bigger share of the value created.

On account of this, local companies strive to absorb as much knowledge as they can from multinational enterprises which, given the long-term perspective of their investments, usually engage into huge transfers of know-how, technologies and intellectual property rights, together with the material exchanges of goods.

Within this framework, the role played by developing economies' governments is of primary importance, since the policies issued and the general economic framework of a nation heavily affect the choices of multinationals about where to move their activities.

For these reasons, most of them made a solid effort in order to set up a foreign-investment-friendly environment and this brought to a global wave of liberalization policies, together with a major series of international agreements aimed to harmonize the worldwide investment environment.

Given this context, during those years one country in particular has been able to dramatically change the world balances: China. In fact, the most populous country in the world had been completely closed to foreign influences since the end of the Second World War and especially during the Cultural Revolution, launched by Mao Zedong.

After 1978 then, together with the switch at the head of the Communist Party, a new path of growth started for China, which opened its boundaries to the rest of the world and caused a massive flow of off-shored activities from every part of the globe. In fact, the country presented two major advantages to foreign investors: it had the biggest potential consumer market in the world and it also offered an incredible supply of cheap workforce.

The Chinese government, then, immediately started to issue hundreds of policies in order to build up a favorable environment for investments but, at the same time, it avoided to grant too much freedom to foreign investors not to lose control over the general progress of national economy.

On top of this, it limited for many years the modes of entry of multinational enterprises and the range of activities they were allowed to perform in the country, progressively liberalizing the various areas but, in this way, endowing local firms with the necessary time to absorb competences from them and start to rise up the global value chains.

Among the Chinese firms that succeeded the best into joining international production networks and to subsequently upgrade themselves to the top of their respective chains, the cases of Lenovo and Haier could be taken as an example. In fact, although these two

companies started from pretty diverse situations and also went through their upgrading paths in a different way compared with each other, they have both been able to flourish within the Chinese context of the 1980s and 1990s, taking advantage of all the favorable conditions and government allowances. During the 21st century then, they further grew up to become part of the world's leading multinationals in their industries and two of the most important companies in China.

As another remark of the incredible journey of the country towards economic and social growth, during the 2010s China became the second biggest economy in the world in terms of GDP. However, this growth mostly relied upon the country's comparative advantage in terms of low-salaried workers, a position that is now being eroded by the progressive convergence of employees' wages with those of people in advanced economies.

Therefore, China is now experiencing a temporary phase of deep change, shifting the focus to a more sustainable growth based on three pillars: services, innovation and private capital. In fact, although presenting some exceptions at the firm level, the country still lags behind the most advanced economies in these terms and it is now trying to fill the gap, together with the implementation of some measures aimed to improve the overall welfare of the population.

To sum up, it is possible to state that China has been one of the most successful examples in the world of how a country should manage to enter global value chains and to evolve along with its firms. As a matter of fact, thanks both to the huge endowment of resources and to the strategies appropriately implemented by the government during the last decades, the nation's economy experienced a continuous enhancement and this is also reflected by local enterprises, some of which like Haier and Lenovo have reached positions at a global level that would have been unimaginable twenty years ago.

Nevertheless, the country has not fully reached developed nations yet and it still facing many tough challenges, especially at the social level. However, as China has accustomed us to rapid learning and sudden changes, it seems definitely capable to overcome this barriers and to go on playing an increasingly dominant role in the world economy.

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Synthesis

Chapter 1

During the last 35 years, the world has gone through a great series of social and economic transformations, most of which were made possible by the significant advancements in information and communication technologies. This new wave of globalization completely turned around the established commercial patterns and opened up the participation to international trade to many countries which, during the 19th century, were almost disappeared from the global scene in terms of production.

In fact, up to the revolution in the transport industry that happened between the 1830s and the 1870s, all countries in the world were at a similar level of industrialization. After that period instead, thanks to the reduced trade costs and the advantages given by scale economies, production started to cluster and a small group of countries including West Europe, US and Japan, the so-called "North'' of the world, heavily overtook the rest, or ''South'' of the world, coming to dominate the international industrial and commercial settings.

Between the 1980s and the early 2000s, then, the international landscape changed again thanks to the massive drop in information and communication costs. In this context, it has been possible to assist to the birth of **global value chains**.

Namely, a value chain describes the full range of activities performed by one or more firms to bring a product or service from its conception through all of the different stages of production, to the end users and beyond.

Thanks to the rise of international production networks, an increasing number of multinationals were made able to fragment their production processes all around the world, so to take advantage of some favorable conditions like larger factor endowments or lower salaries.

This new kind of internationalization was completely different compared with the previous years, when firms were more focused on widening their market. In fact, in order to build up integrated networks of activities, multinational enterprises engaged in complex cross-border flows of goods, know-how, investments, services and people as it never happened before. This phenomenon gave to local companies in the ''South'' of the world the possibility of improving themselves and their countries by entering international supply networks at their lower end, without having to develop from zero all of the skills needed to fully compete with the ''North'' multinationals.

Of course, the dislocation process did not happen on an automatic base. Before moving part of their activities abroad indeed, managers always have to consider the trade-off between separation costs, given for instance by the loss of local spillovers or by some particular coordination necessities, and the advantages brought by an increased efficiency and lower operational costs. Nonetheless, the off-shoring tendency rose over the years and it brought to a sharp increase in international trade.

Usually the activities off-shored by multinational enterprises tend to be related with pure manufacturing, like the assembling ones, so to benefit of the significant wages differentials in emerging economies. On the other hand, the most skill-intensive tasks that account for more value creation and allow to retain more profits are usually kept in-home by the same firms. This provoked the rise of a fundamental distinction among the countries participating in global supply chains, the one between headquarter and factory economies.

During the years, this brought to a substantial difference as regards the quality of jobs performed by the citizens of the two groups and it strongly affected the dependence of some nations over some others; in fact, since emerging countries usually perform the lower-value-adding stages of a value chain their imports, exports and production processes massively rely on the advanced inputs coming from developed economies.

Due to this reason, firms participating in the same chain experience a strong asymmetry as regards bargaining and market power; in fact, companies from headquarter economies are usually the ones that assume the role of leaders and take the responsibility for the inter-firm division and coordination of labor, the compliance of suppliers with the industry's standards and the monitoring of the whole set of activities.

Global value chains can be organized according to many different governance structures: a first rough distinction can be made between producer-driven chains, which are usually led by some large transnational manufacturers in control of crucial technologies and buyer-driven chains, which highlight instead the role of some powerful retailers or merchandisers that lead the activities and dictate the standards, in spite of having a limited production capacity by themselves.

A fundamental issue for those participating in global production networks, then, concerns the upgrading. This concept refers to the dynamic movement through which producers shift between different stages of a value chain or even from one chain to another, trying to build up more specialized capabilities and to reach a stable and sustainable income growth.

In fact, once they have succeeded in properly joining global supply chains, the most important issue for local producers is that of upgrading themselves by improving the range of performed activities, so to be able to reach higher levels in their respective industries and to retain a bigger share of the value created.

Indeed, after having joined a global value chain at its lower end by performing assembling operations or other low-skilled activities, firms should move through the upgrading path and start to provide full-package productions as original equipment manufacturers (OEM), later arriving to perform even the most value-adding activities as original design manufacturers (ODM) and finally as original brand manufacturers (OBM).

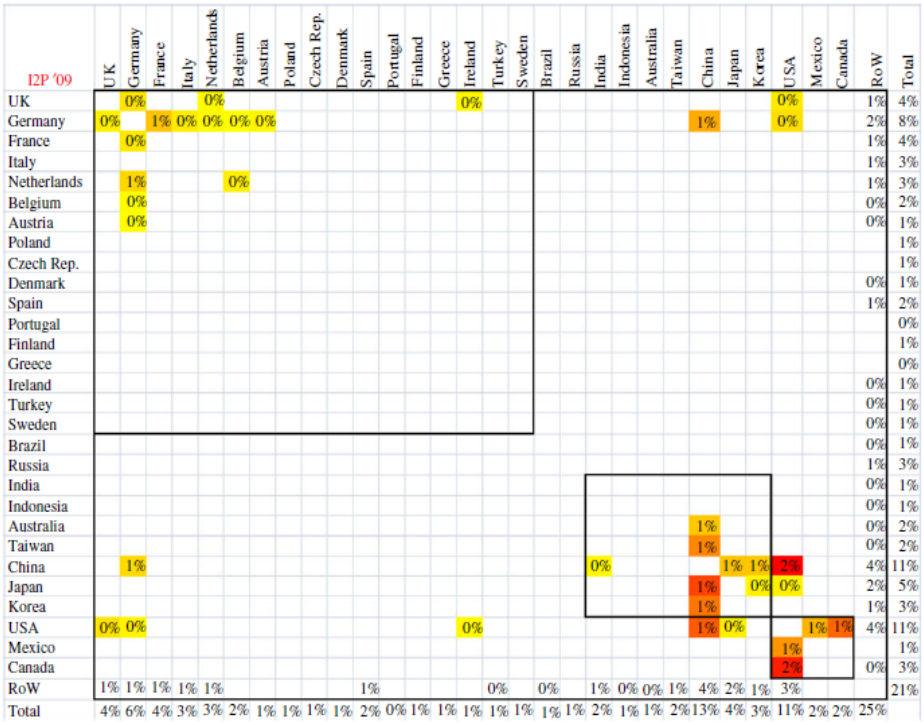
Clearly, it is not easy nor inevitable to succeed into following this path; on account of this, local companies should strive to absorb as much knowledge as they can from the multinational enterprises which, given the long-term perspective of their investments, usually engage into huge transfers of know-how, technologies and intellectual property rights together with the material exchanges of goods.

Within this framework, the role played by developing economies' governments is of primary importance, since the policies issued and the general economic framework of a nation heavily affect the initial choices of multinationals about where to move their activities. For these reasons, most of them made a solid effort in order to set up a foreign-investment-friendly environment and this brought to a global stream of liberalization policies, together with a major series of international agreements aimed to harmonize the worldwide investment environment.

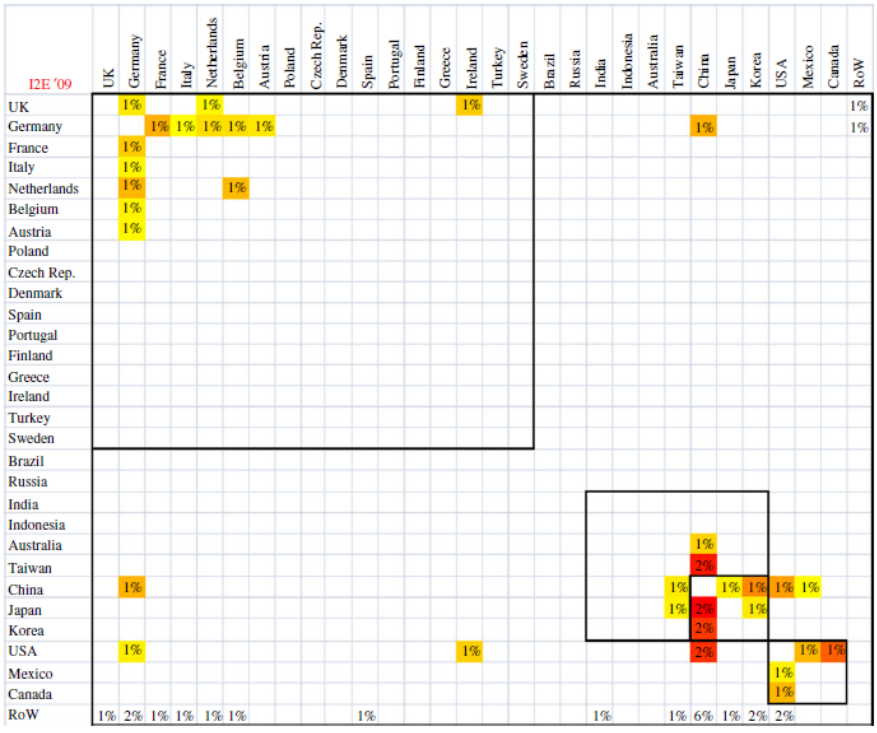
Having a deeper look about the real entity of the global value chain-related commerce and how the various firms participating in it are interconnected and interdependent, it is then very useful to take into account the Input-Output tables provided by WIOD, whose data can be reorganized into many ways in order to show the principal trends in the worldwide trade patterns.

As a first approach, it is possible to look at the data in both an I2P and an I2E perspective. These are helpful to understand the actual volume of intermediates exchanged among countries, which will be subsequently used to produce (I2P) or to be integrated in goods destined to export (I2E). Looking at the tables below, the goods that column-nations import from each row-nation are shown as a percentage of total global flows, without taking into consideration any bilateral flow that accounts for less than 0.3%. Thanks to this, it is possible to point out some major features of the modern supply-chain related commerce.

Global I2P and I2E matrixes, 2009



I2P '09	UK	Germany	France	Italy	Netherlands	Belgium	Austria	Poland	Czech Rep.	Denmark	Spain	Portugal	Finland	Greece	Ireland	Turkey	Sweden	Brazil	Russia	India	Indonesia	Australia	Taiwan	China	Japan	Korea	USA	Mexico	Canada	RoW	Total
UK		0%			0%										0%												0%			1%	4%
Germany	0%		1%	0%	0%	0%	0%																	1%			0%			2%	8%
France		0%																												1%	4%
Italy																														1%	3%
Netherlands		1%				0%																								1%	3%
Belgium		0%																												0%	2%
Austria		0%																												0%	1%
Poland																															1%
Czech Rep.																															1%
Denmark																														0%	1%
Spain																														1%	2%
Portugal																															0%
Finland																															1%
Greece																															0%
Ireland																														0%	1%
Turkey																														0%	1%
Sweden																														0%	1%
Brazil																														0%	1%
Russia																														1%	3%
India																														0%	1%
Indonesia																														0%	1%
Australia																								1%						0%	2%
Taiwan																								1%						0%	2%
China		1%																		0%					1%	1%	2%			4%	11%
Japan																								1%		0%	0%			2%	5%
Korea																								1%						1%	3%
USA	0%	0%													0%									1%	0%			1%	1%	4%	11%
Mexico																											1%				1%
Canada																											2%			0%	3%
RoW	1%	1%	1%	1%	1%					1%						0%		0%		1%	0%	0%	1%	4%	2%	1%	3%				21%
Total	4%	6%	4%	3%	3%	2%	1%	1%	1%	1%	2%	0%	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	2%	13%	4%	3%	11%	2%	2%	25%	



I2E '09	UK	Germany	France	Italy	Netherlands	Belgium	Austria	Poland	Czech Rep.	Denmark	Spain	Portugal	Finland	Greece	Ireland	Turkey	Sweden	Brazil	Russia	India	Indonesia	Australia	Taiwan	China	Japan	Korea	USA	Mexico	Canada	RoW
UK		1%			1%										1%															1%
Germany			1%	1%	1%	1%	1%																		1%					1%
France		1%																												
Italy		1%																												
Netherlands		1%				1%																								
Belgium		1%																												
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India																														
Indonesia																														
Australia																								1%						
Taiwan																								2%						
China		1%																		1%					1%	1%	1%	1%	1%	
Japan																				1%				2%		1%				
Korea																								2%						
USA		1%													1%									2%				1%	1%	
Mexico																											1%			
Canada																											1%			
RoW	1%	2%	1%	1%	1%	1%					1%										1%			1%	6%	1%	2%	2%		

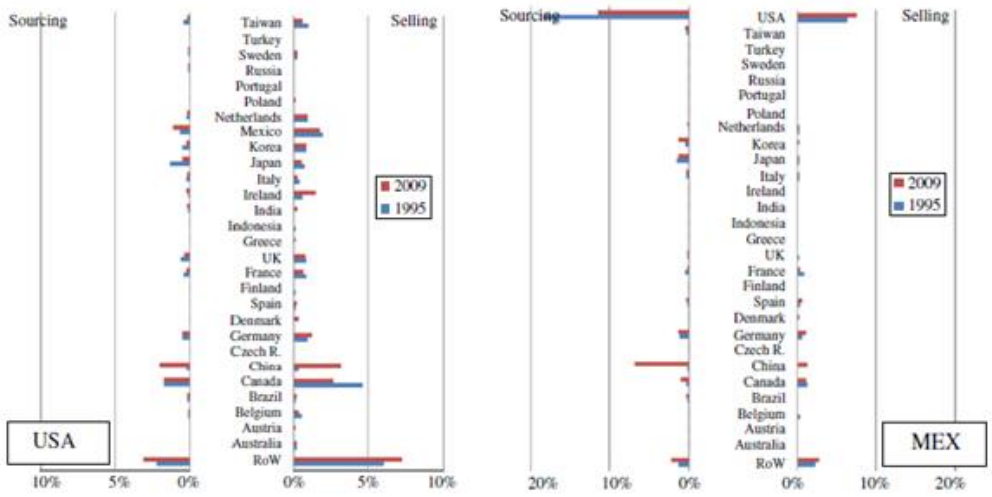
Source: www.WIOD.org

First of all it is very noticeable how Japan, Germany, US and China are the four dominating countries in terms of intermediates' flows, being both the biggest buyers and the largest sellers of inputs worldwide. These nations have the major number of significant trade partners and they are clearly at the center of the hub-and-spoke networks defined by the patterns of international flows.

In the second place, it can be recognized how global value chains are not really global in practice; in fact, most of the bilateral flows of intermediates happen at a regional level and the world is marked by the existence of three main commercial blocks: Europe, Asia and America. The principal outliers in this sense are Germany, China and US, which engage in significant flows also with countries outside their respective regional areas and especially among each other.

On top of this, from an I2E point of view it is also possible to measure the single countries' sourcing and sales patterns, which allow us to see where a certain nation sources the intermediates it uses to export and where it sells the intermediates that are used for other countries' exports.

Sourcing and sales patterns, US and Mexico, 1995 & 2009



Source: Lopez-Gonzalez (2012) calculation on WIOD tables

This is really useful in order to underline again the difference between flows in headquarter and factory economies. In fact, the first ones (like the US) are mainly engaged in exporting their intermediates, while the latter (like Mexico) massively rely on the import of foreign inputs, which will be re-exported after the assembling or other manufacturing tasks have been performed.

Studying I2E and I2P flows is very helpful in order to understand global production networks but, nonetheless, there is a major drawback: since they are recursive concepts, double counting is pervasive. In fact, every imported intermediate could embed further intermediates from a large number of different countries and, sometimes, even from the importing nation itself. Therefore, these statistics are in a certain sense misleading and it is not easy to point out which countries actually succeed into creating and retaining the most value.

A different approach has thus to be adopted in order to understand the extent to which benefits coming from the participation in global value chains are distributed among nations. A first rough clarification in this sense is attainable by analyzing the case of Apple's iPod. Indeed, after having decomposed the retail price of an iPod and having identified the cost of inputs and direct labor along the various steps of the chain, the margins gained by the companies of every country involved in the production can be pointed out allowing us to get some important information.

First of all, nationality matters. As it was foreseeable in fact, companies that lead global value chains like Apple tend to keep all of the higher-skilled, most-value-adding activities in their home-countries and, thus, contribute to the retention of major profits in that nation. Furthermore, it is also evident how innovation matters, since the nations where the producers of high-valued, critical components operate are usually able to capture a large share of the final price of a product.

This analysis is really useful in order to understand the role of services in global value chains. In fact, as it is possible to see in the iPod case, most of the profits are gained by those firms that perform service-intensive activities or provide knowledge-intensive components. Services account for the lion's share of a product's value, especially in those industries where the cost of inputs is low.

This is also very important as regards the upgrading issue since, in order to succeed into climbing the global value chains, emerging economies should develop complementary skills to keep track with the technological advances in capital goods and the changes experienced by the markets. This process heavily involves the ability to provide high quality, reliable services and to embed them into exported goods and intermediates.

In accordance with these considerations, it is understandable how the world is now experiencing a process of polarization of work, especially as concerns Western economies and Japan. In fact, the continuous striving towards the development of skills that are complementary to the new technologically advanced goods and mostly aimed to the provision of services, together with the opening up of countries with a huge supply of low-cost unskilled labor, led to a huge change in the composition of labor. Indeed, high- and low-skilled workers experienced a consistent raise in employment and wages all around the world while, on the other side, those medium-skilled workers who have been substituted are struggling to retrain themselves and are often forced to accept jobs for which they would be overqualified.

So far, the net effect on worldwide employment has been positive, since the world is still experiencing an expansion phase; nonetheless, it is not possible to know if the new countries entering the world economy in the future will be able to sustain this path of growth.

Given this global framework, during the last decades one country in particular has been able to dramatically change the world balances: China.

The most populous and third biggest country in the world, indeed, had been completely closed to foreign influences since the end of the World War II and especially during the Cultural Revolution, launched by Mao Zedong. After 1978 then, together with the switch at the head of the Communist Party, a new path of growth started for China, which opened its boundaries to the rest of the world and caused a massive flow of off-shored activities from every part of the world.

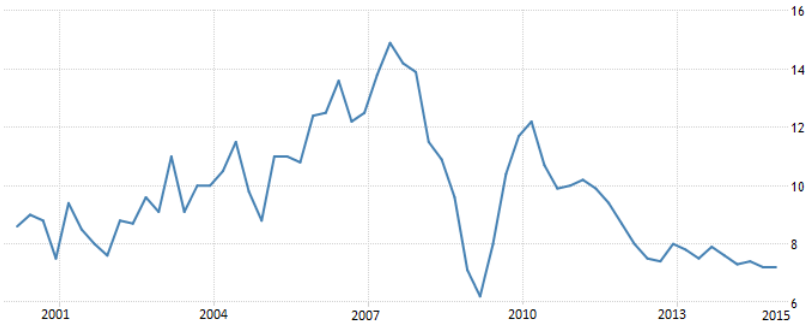
In fact, the country presented two major advantages to foreign investors: it had the biggest potential consumer market in the world and it also offered an incredible supply of cheap workforce.

The Chinese government, then, immediately started to issue hundreds of policies in order to build up a favorable environment for investments but, at the same time, it avoided granting too much freedom to foreign investors not to lose control over the general progress of national economy.

Due to this reason, Chinese authorities limited for many years the modes of entry of multinational enterprises and the range of activities they were allowed to perform in the country, progressively liberalizing the various areas but, in this way, endowing local firms with the necessary time to absorb competences from them and start to rise up the global value chains.

After the Chinese entrance in WTO in 2001, then, the country's growth path and the liberalization process towards foreign direct investment further accelerated; the government removed many other limitations and this led to a material increase in FDI, imports and exports.

Chinese GDP annual growth rates, 2000-2015 (%)



Source: National Bureau Of Statistics Of China

This process brought China's GDP to grow all over the 2000s at incredible rates, as it is shown in the chart above, and the country completely reshaped its position in the worldwide commerce patterns. As a matter of fact, within less than three decades China passed from being almost irrelevant in the global scene to become a central counterpart for nations all around the world.

This is also confirmed by the fact that in 2009, as it was illustrated in the tables above, the country was already the one of the largest worldwide traders of I2E and I2P intermediates.

Moreover, taking into account how much China is able to contribute to the value creation along international production networks, it is pretty remarkable how the country accounted for about 9% of the total value created by GVCs in 2009, as much as the US and Germany did.

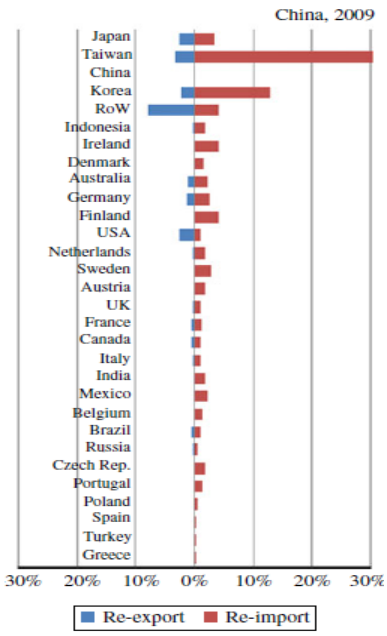
This is due, of course, to the massive participation of China to international trade, as it is a crucial partner for almost every country in the world engaging in GVC-related commerce, but it is also very important to testify how the general opinion about China being just a huge pool of low-skilled labor is wrong; in fact, although the country's growth mostly relied upon its comparative advantage in terms of low-salaried workers, many local enterprises also succeeded into upgrading themselves along their value

chains and, in some cases, they even arrived to perform the highest-value-adding activities.

In order to point out the country's situation in a clearer way, in the image below China's re-import and re-export pattern is shown, where the flows are normalized as a percentage of the total bilateral imports/exports with the row-country taken into account. As it is possible to observe, the position of China as a re-importer of goods has grown in importance over time and, as of 2009, domestic firms already started to off-shore activities in order to later re-introduce and sell the final goods into their home market.

Anyway, it is of critical importance to underline that the activities off-shored by Chinese enterprises are often skill- or technology-intensive tasks, in the development of which China is still lagging behind the most advanced countries.

China's re-imports and re-exports



Source: Lopez-Gonzalez (2012) calculation on WIOD tables

One of the most clarifying examples in this sense can be figured out by looking at the path that some technological goods go through. In fact, Chinese companies often produce low-tech intermediates and then off-shore the middle stages to firms in Korea and Japan, which embody them in high-tech components and send those back to China in order to be assembled and sold.

As a consequence of this incredible journey towards economic and social growth, during the 2010s China arrived to be the second biggest economy in the world in terms of GDP after the US, confirming itself as the most successful example in the world of how a country should manage to enter global value chains and to evolve along with its firms.

However, as it is happening in many other emerging economies, the Chinese advantage in terms of low salaries is progressively being eroded and the country, although presenting some notable exceptions at the firm level, still lags behind the most advanced economies under many aspects. For these reasons, China is currently experiencing a phase of deep change and it shifted the focus to a more sustainable growth based on three pillars: services, innovation and private capital.

Together with this, the Chinese government is also going through the implementation of some measures aimed to improve the overall welfare of the population, among which the most important ones are those addressing the environmental problem and the income divergence between citizens living in different areas.

Chapter 3

Among the Chinese firms that succeeded the best into joining international production networks and subsequently upgraded themselves to the top of their respective chains, the cases of Lenovo and Haier could be taken as an example. In fact, both of the companies were able to join global production networks at the right time, to absorb the

necessary know-how and technologies from foreign firms and, later, to exploit the cumulated capabilities in addition to their own comparative advantages, widening their activities in both functional and geographical terms. As a matter of fact, those enterprises became themselves multinationals with a wide presence overseas and two of the biggest and most important firms in China.

Nonetheless, the two companies present some significant differences as regards the route they followed before becoming global players, due to the specific features of the industries they operate in, to the relative policies enacted by the Chinese government and the also to their internal philosophies.

As a first difference, it can be observed how those two enterprises joined global value chains, in the first place, carrying out very different tasks. In fact Haier, as the major part of Chinese firms, had its first contact with foreign enterprises by performing on their behalf some low-value-added activities such as assembling while Lenovo, thanks to the particular structure of the computer industry shaped by the policies issued by the Chinese authorities, entered in partnerships with multinational companies by running sales, distribution and service activities for them.

This is also very important to underline the opposite upgrading path experienced by the two firms; indeed, Haier followed a pretty linear pace, starting from being an assembler and then progressively evolving to be a contract full-package manufacturer (OEM), an original design manufacturer (ODM) and, finally, a globally recognized original brand manufacturer (OBM).

On the other side, Lenovo followed a very singular route starting from the downstream activities of the PC global value chain, which in other industries would be monopolized by the leading firms thanks to the high value added that it is possible to provide with them. In fact, the company put aside its own manufacturing activities for many years, in order to focus on building a comprehensive distribution and service network and only in

1996, when it cumulated enough capabilities by absorbing them from its foreign partners, it launched on a big scale its own-branded products, quickly climbing the market up to become the leading Original Brand Manufacturer in China and Asia Pacific.

Another big difference between the evolutional paths followed by the two companies relies on their first approach to expansion in overseas markets. Indeed, although both the firms already reached the position of market leaders in China, Haier started to invest in international markets at an early corporate age, in order to increase in a faster way its capabilities and take advantage of the acquired knowledge to succeed even in the other emerging markets. Lenovo, instead, waited until it attained the maximum expansion into its domestic market that it was allowed to reach given its technological level, having gone global just when the competition became too fierce to gain further shares and after it cumulated a lot of capital, which was used to buy IBM's PC business.

According to these considerations, it is also possible to state how decisive the role of the Chinese business environment has been as regards both Lenovo's and Haier's upgrading. First of all, the rise experienced by Chinese people's income over the years allowed a progressively big share of consumers to buy products that were previously considered as luxury goods and that most of the population could not afford, especially as regards such things as personal computers or house appliances.

Indeed, the continuous expansion of the country's market allowed domestic firms to take advantage of the biggest potential customer base in the world, especially given the fact that foreign competitors were in some ways limited by the Chinese government and they were not allowed to trade in the whole country, especially during the 1980s and 1990s. In addition to this, domestic firms were perfectly aware of the local consumers' needs and this helped Lenovo and Haier to gain a dominant position in China before deciding to go international.

Furthermore, it is very important to underline the critical advantages offered by China to those firms thanks to the huge low-wage labor supply present in the country.

This can be analyzed from two different perspectives; as a first consideration, it is important to say that the Chinese low-cost labor base included not only people performing manufacturing activities but also designers, engineers and administrators were cheaper compared with many other nations. Therefore, being able to save significant amounts of money due to the lower salaries of workers employed in their Chinese facilities, both Lenovo and Haier have could invest a progressively bigger share of capital in R&D and qualitatively better inputs, which was crucial for those enterprises in order to fill the gap with their foreign competitors in a very fast way.

In the second place, it has to be taken into account that the raise of China as the workshop of the world brought foreign firms to off-shore to the country an incredible amount of activities and, therefore, as soon as investors moved manufacturing to China, the cost of many inputs started to decrease sharply. So, it had been possible for Haier and Lenovo to purchase many important components directly in their own country at a cost much lower than it would have been previously feasible.

In order to sum up Lenovo and Haier succeeded, although with different modes, into exploiting in the best possible way all the favorable features of the business environment they found themselves in during the last decades. Indeed, they successfully went through the whole path from being relatively small domestic companies up to become global multinationals that run their own global value chains and, by doing so, they set a great example for all of those firms in developing countries that strive to upgrade and to reach a more relevant position in the international markets.