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Ph. D. Thesis

Spatial Adjustments of Furniture Industry.

a Comparison of Spain and Denmark

(2006-2015)

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Acknowledgement

Abstract

The main objective of the thesis is to analyse the most important factors of location strategies of the furniture industries in Spain and Denmark. The analysis combines both qualitative and quantitative research. Qualitative research includes the macro location strategies analysis of the industry and micro location strategies analysis of the companies in the clusters. Quantitative analysis (Grubel and Lloyd-GL index and multiple linear regression analysis) is to ascertain the important geographic economics factors affecting the Intra-Industry Trade.

The analysis of the macro situation of the furniture industries of the two countries shows that Denmark has advantages in production and design. To compete with Denmark, Spain is trying to remedy their production decline by providing direct financial aid to these companies and encouraging furniture exports to emerging countries. Furthermore, Spain is putting more effort into its design-phase R&D. The analysis of the micro situation of the furniture companies in the clusters in the two countries shows that Denmark has advantages in transportation due to high consolidation levels. In this way, they reduce more costs than Spain. However, the companies in the two countries do not have comparative advantages in production and design due to the companies' differing situations. The result also exhibits that production, design and promotion are important for the companies in clusters in the two countries. Transportation is less important than these three factors. However, from the macro point of view of the cluster, transportation is important since producers' efficient consolidation of transport can lower the cost of the whole cluster. In the analysis of the Intra-Industry Trade, there are two important findings. One is that the Intra-Industry Trade in Spain is more diversified than in Denmark for the following two reasons. First, all the five major trade partners of Denmark are European countries. However, in the five major trade partners of Spain, only three of them are European countries, whilst two are non-European countries. Spain has much two way trade with these two countries because they can use the transportation

advantage of the Mediterranean Sea. Second, the result of the regression analysis demonstrates that Spain undertakes frequent two way trade with high GDP countries. This phenomenon is not found in Denmark. Another finding is that the two countries compete for the European market due to geographical distances; additionally, common borders are important to both, and the main import and export markets for both countries are Europe.

The dissertation has both contribution in the method and content. The method used in this thesis has some differences compare to the literature of the geographic economics. For example, in the quantitative research of the Intra-Industry Trade, the generalized least square regression method was used, which is different from the regression method used in other research. From the point of view of the content, the dissertation has contributions in the following three parts. First, it identified that the strategies used in the clusters in the two countries are different. The strategies of Spanish companies focus on the quality. Denmark emphasises the cost advantage and quality at the same time. Second, this dissertation discovered the characteristics of the national cluster of Denmark. Third, this analysis also talked about factors that are not mentioned in other analyses such as location decisions and two new trends of outsourcing.

Key words: location strategies, furniture industry, cluster, Intra-Industry Trade, GL index, multiple linear regression

Resumen

El objetivo principal de la tesis es analizar los factores más importantes de las estrategias de ubicación de la industria del mueble en España y Dinamarca. El análisis combina investigación cualitativa y cuantitativa. Con la investigación cualitativa se desarrolla el análisis de estrategias de macro ubicación de la industria y el análisis de estrategias de micro ubicación de las empresas en clústeres. Con el análisis cuantitativo (índice de Grubel y Lloyd-GL y análisis de regresión lineal múltiple) se determinan los factores económicos geográficos importantes que afectan el Comercio Intra-Industrial.

El análisis de la macro situación de las industrias de muebles de los dos países muestra que Dinamarca tiene ventajas en la producción y el diseño. Para competir con Dinamarca, España está tratando de remediar el declive de su producción al proporcionar ayuda financiera directa a estas empresas y al alentar la exportación de muebles a países emergentes. Además, España está dedicando mayor esfuerzo en su fase de diseño de I+D. El análisis de la micro situación de las empresas de muebles en clústeres en los dos países muestra que Dinamarca tiene ventajas en el transporte debido a altos niveles de consolidación. De esta forma, reducen más costes que España. Sin embargo, las compañías de ambos países no tienen ventajas comparativas en la producción y el diseño debido a las diferentes situaciones de las compañías. Los resultados del estudio también demuestran que hay tres factores, la producción, el diseño y la promoción, que son significativamente más importantes para las compañías en clústeres en los dos países. El transporte es menos importante que estos tres factores. Sin embargo, desde un punto de vista macro del clúster, el transporte es importante ya que puede reducir el costo de todo el clúster debido a la consolidación eficiente. El análisis del Comercio Intra-Industrial genera dos hallazgos importantes. Una es que el Comercio Intra-Industrial en España está más diversificado que en Dinamarca por las siguientes dos razones. La primera, los cinco principales socios comerciales de Dinamarca son países europeos. Sin embargo, en los cinco principales

socios comerciales de España, solo tres de ellos son países europeos, mientras que dos son países no europeos. España tiene comercio bilateral con estos dos países no europeos porque pueden utilizar la ventaja de transporte del Mar Mediterráneo. La segunda razón, que se extrae del análisis de regresión, es que España realiza frecuentes intercambios comerciales con países con un PIB alto. Este fenómeno no se encuentra en Dinamarca. Otro hallazgo es que los dos países compiten por el mercado europeo debido a las distancias geográficas; además, las fronteras comunes son importantes para ambos, y los principales mercados de importación y exportación para ambos países son Europa.

Esta tesis aporta implicaciones valiosas a nivel de método y de contenido. El método utilizado en esta tesis tiene algunas diferencias en comparación con la literatura de la economía geográfica. Por ejemplo, en la investigación cuantitativa del Comercio Intra-Industrial, se utilizó el método de regresión por mínimos cuadrados generalizado, que es diferente del método de regresión utilizado en otras investigaciones. Desde el punto de vista del contenido, la tesis tiene contribuciones en las siguientes tres partes. Primero, identificó que las estrategias utilizadas en los clusters de los dos países son diferentes. Las estrategias de las empresas españolas se centran en la calidad. Dinamarca enfatiza la ventaja de costos y la calidad al mismo tiempo. En segundo lugar, esta tesis descubrió las características del clúster nacional de Dinamarca. En tercer lugar, este análisis también identifica factores que no se mencionan en análisis previos en la literatura, como las decisiones de ubicación y dos nuevas tendencias de subcontratación.

Palabras clave: estrategias de ubicación, industria del mueble, clúster, Comercio
Intra-Industrial, índice de GL, regresión lineal múltiple

Content

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Acronyms

AIDIMA: R&D Technology Institutes Network in Valencia Autonomous Government
ANIEME: National Association of Furniture Manufacturers and Exporters of Spain
BRIC: Brazil, Russia, Indian and China
CAD-CAM: Computer-Aided Design and Manufacturing
CAM: Computer Assisted Manufacturing
CEEI: European Centers for Companies Innovation
CNC: Computer Numerical Controlled
CSDP: the Common Security and Defence Policy
CSIL: Center for Industry Studies in Milan
CTBA: Technical Center of Wood and Furniture
DfE: Design for the Environment
DI: Organization Confederation of Danish Industries
EAGGF: European Agricultural Guidance and Guarantee Fund
ECB: European Central Bank
EFG: The European Furniture Group
EIF: European Investment Fund
EMU: the Economic and Monetary Union
EU: European Union
EXW: EX (Point of origin)-Works
FDI: Foreign Direct Investment
GL: Grubel and Lloyd
GLS: Generalized Least Square
HIIT: Horizontal Intra-Industry Trade
HS: Harmonized System
ICEX: Institution of Spanish Exports and Investments
ICT: Information and Communication Technology
ICTs: Information and Communication Technologies
IIT: Intra-Industry Trade
IMF: International Monetary Fund
IMPIVA: Institute of Small and Medium Industry of the Valencia government
IPO: Initial Public Offering
IVACE: Valencian Institute of Business Competitiveness
JHA: Justice and Home Affairs
MDF: Medium Density Fiberboard
MoS: Motorways of the Sea
NAFTA: North American Free Trade Agreement
NLS: Non-Linear Least Squares
OLDSS: Outsourcing Logistics Decision Support System
OLS: Ordinary Least-Squares

OSB: Oriented Strand Board

GPN: Global Production Network

RIS3: Intelligent Specialization Strategies

RMB: Renminbi, another name of Chinese currency 'yuan'

RTA: Ready To Assemble

SACE: Insurance Services of Foreign Trade

SIMEST: Association of Foreign Business for Italian Companies

SITC: Standard International Trade Classifications

SMEs: Small and Medium-sized Enterprises

SSS: Short Sea Shipping

TA: Associations of Danish Woodworking Industries

TI: Technology Institutes

VIIT: Vertical Intra-Industry Trade

Chapter1. Introduction

1.1 Background

The nature of location has its inherent strengths and weaknesses. Also, the economic activity based on location fluctuates (Narula and Santangelo 2012). For this reason, a company's purchasing, production, and marketing processes will be influenced by the location. By choosing right location strategies, the companies can obtain advantages in cost, human resources, know-how, and sales, among others (Chapman and Walker 1991).

Location is especially important to the furniture industry. The furniture industry has preserved its localised character under the influence of serious competition. Thus, agglomeration is very critical to the industry's competitive success (Lorenzen 1999; Scott 2006).

Nowadays, the furniture industry is changing rapidly. On one hand, it was negatively affected by the 2008 world economic crisis. Furniture industries in some countries have still not recovered. It caused furniture production and consumption to decrease in these countries. Companies need to beat the strong competition caused by the crisis to survive (Renda et al. 2014). On the other hand, the furniture industry is positively affected by the globalisation. Companies can gain access to raw material, design, technology, and labour from all over the world to achieve competitive advantages. The most significant feature of globalisation of the furniture industry is the increase in outsourcing and offshoring. This trend further changed the locations of the furniture production. Companies are seeking more advantages in cost and quality through relocation (Renda et al. 2014; Scott 2006; ITTO and ITC 2004). Therefore, investigating the location strategies of the furniture industry will bring rewards.

1.2 Research objectives

The main objective of the thesis is to analyse the most important factors of location strategies of the furniture industries in Spain and Denmark. The objective is further developed into three specific objectives.

1. Identify the important macro factors of the location strategies of the furniture industry.
2. Determine the important micro factors of the location strategies of companies in the clusters in the industry.
3. Ascertain the important macro factors affecting the location strategies of Intra-Industry Trade (IIT) in relation to geographic factors.

1.3 Research question and scope

This dissertation's research question is how the furniture industries in Denmark and Spain compete with each other through location strategy of production, design, and transportation. There are four reasons to compare these two European countries. First, European furniture is very representative in the world furniture industry. Furniture design in Europe leads the world trends, and most of the top furniture manufactures in the world are from Europe (Renda et al. 2014; EESC 2011 in Vasile and Radu 2013; IPeuropAware 2009). Second, the two countries seem to compete for the European market in export, because their main export market is the European market (Renda et al. 2014; Campos et al. 2008; ANIEME 2011a; Ministry of Foreign Affairs of Denmark 2016). Third, both countries have their special competences as strong furniture countries in the world. Spain is one of the three major European furniture producers (the other two are Italy and France) with European art and cultural traditions (Wang 2012). Although Denmark is a small country with high costs, its furniture industry is experiencing an above-average economic performance (Maskell

1996). Fourth, the design styles of Spain and Denmark are different. The furniture designed in Spain is classic Mediterranean style from Western Europe, which pays attention to the decoration (Rodríguez et al. 2014; Wang 1999), but Denmark is a Nordic country whose design style focus on briefness and nature (Jiang and Gong 2014; Lu and Bai 2015; ITTO and ITC 2004; Hansen and Petersen 2007). For these reasons, it is interesting to compare the two countries to see how they compete.

The whole dissertation includes both qualitative research and quantitative research. Qualitative research is applied in macro location strategies analysis of the furniture industry and micro location strategies analysis of the companies in the furniture clusters in the two countries. Quantitative research is used in the macro analysis about the Grubel and Lloyd (GL) index and multiple linear regression analysis of IIT in the two countries.

The furniture industry analysis of the two countries includes analysis of the supply and demand, import and export, input of the furniture, and spatial distribution of the companies. Supply and demand also means production and consumption, respectively. Production can reflect demand for the furniture. If demand is high, it means the product is competitive, thus the production will increase, and vice versa. Therefore, supply and demand should be the important factors affecting the competitiveness of the furniture industry. The research about them determined: the production methods and processes, the production and consumption trends, how the economic situation of the country affects the furniture production and consumption, and if other significant factors affect them.

Import and export analysis decides if the two countries can gain competitive advantage in import or export in the international arena. The analysis identified whether the two countries focus on import or export and their import and export intensity.

Raw material, capital, labour, and design are considered as important input

affecting the competitiveness of the furniture. The reason is that these four factors strongly influence the competitiveness in the upstream portion of the value chain of European furniture companies (Renda et al. 2014).

In Europe, the quality of raw materials is high, but the cost is also high and getting higher. It is important for European furniture producers to seek low-cost raw materials and maintain the high quality at the same time (Renda et al. 2014; Kristensen 2004 in Gazo and Quesada 2005; Kristensen 2006; FPInnovations 2008). Furniture design in Europe leads the design trends in the world. Therefore, design can be used by the European countries with high wages to beat the competition of low-cost products from less developed countries (Renda et al. 2014). Capital should also be the import factor affecting the furniture industry. The reason is that most of the companies in the furniture industry are small- and medium-sized enterprises (SMEs) with limited access to finance. In addition, the 2008 economic crisis weakened them. Thus, access to sufficient capital should be very important for the furniture industry (Renda et al. 2014; Scott 2006; Hedemann and Nissen 2013). Labour can also be important because labour costs are relatively higher and the workforce is ageing in Europe. Therefore, the European furniture producers need to find solutions to eliminate this weakness (Renda et al. 2014; Scott 2006; Hedemann and Nissen 2013). In general, these four input factors can affect the competitiveness of the furniture, which can stimulate the demand, thus leading to greater output. This part of the research identifies how the two countries access raw materials, capital, and labour. What are the different design styles in the two countries? How do they achieve advantages in these four aspects?

Spatial distribution of the companies can show the location situation of the furniture industry. The purpose of this part of the analysis is to demonstrate where the companies or regions analysed in this research are located. What are the characteristics of the locations of companies or regions?

In the company analysis, nine companies in the three agglomerations in the two countries were chosen as case studies. The reason to choose the companies in the agglomerations is that localisation is the most crucial factor influencing the competitiveness of the furniture industry (Lorenzen 1999; Scott 2006). In Spain, the regional furniture agglomeration in Valencia was selected. There are many furniture agglomerations in Spain. The situation of the agglomerations varies, but the furniture agglomeration in Valencia is more representative than the others. It is the most important furniture agglomeration in Spain, and the largest Spanish producers are located there (Generalitat Valenciana 2007 in Robertson and Jacobson 2011). The agglomeration structure in Denmark is different from Spain. Denmark is small, thus the situation is homogenous. Therefore, Denmark can be considered as a national agglomeration. There are only two regional furniture agglomerations in Denmark. These two agglomerations are similar in size and location. They are located in two small towns in North Jutland. They contribute most to the competitiveness of the furniture industry in Denmark (Hedemann and Nissen 2013). The regional agglomeration in Skive on the Salling peninsula in this analysis is one of the two regional furniture agglomerations. Therefore, the companies in these three agglomerations are very interesting cases to investigate. This part of the research compared nine companies in aspects of agglomeration, clustering, outsourcing, and production subcontracting. It also analysed whether production, design, and transportation are important for the three agglomerations and nine companies. In addition, it discusses if these three factors are not important, what should be the important factors.

IIT analysis has been done after the industry and the companies have been investigated. There are two reasons to carry this out. First, IIT is a useful indicator of competitiveness of the manufacturing industry of an economy (especially developed countries in Europe) (Brulhart and Hine 1999; Zeljko 2011; Molendowski and Polan

2010; OECD 2002). Second, recent improvements in communication and transportation technologies have increased IIT of the furniture industry, including outsourcing and offshoring (Scott 2006). In this part of the analysis, five major trade partners of the two countries were identified using the GL index. Important geographic-economic factors affecting IIT were determined by multiple linear regression analysis. Finally, there is a discussion about how the two countries compete through IIT.

1.4 Hypothesis

There are three hypotheses in relation to the furniture industry, companies in the clusters, and IIT analysis.

Hypothesis 1: Production, design, and transportation are important elements affecting the location competitive strategies in the furniture industries in the two countries.

Production is an important factor affecting the industry because production competence may have more effect on business performance than other strategies. It has a positive effect on sales turnover, return on assets, and growth in sales turnover. The production competence includes cost, quality, flexibility, delivery competences, and environmental competence (Vickery et al 1993; Choe et al. 1997; Levente et al. 2015). Therefore, this dissertation will assess the furniture production competitiveness of the furniture using mainly these five aspects.

Design has a significant impact on a firm's overall performance (Porter 1990; Kretzschmar 2003; Renda et al. 2014; Olkowicz 2013; Fabisiak 2016). Design can be seen as knowledge and creativity, even as art. In more knowledge-based and sophisticated societies, the importance of design will increase further as a strategic tool for competitiveness, communication, and branding (Kretzschmar 2003). Design is especially important for the furniture industry for the following two reasons. From a

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macro point of view, furniture has strong national characteristics. Each country has different design characteristics, which are greatly influenced by their cultures and histories. This kind of difference gives each country comparative advantages in design (Nakatani 2011). From a micro point of view, furniture design can be also differentiated by the designers. By using internal and external designers, the furniture companies can make their products specialised and customised (Olkowicz 2013; Renda et al. 2014). Therefore, differentiation in design will be a key strategy for the furniture industry.

As mentioned, transportation is one of the five most important production competences (Levente et al. 2015). Transportation cost and its influence on the assembly of input and distribution of output are the main concerns of industry location theory (Chapman and Walker 1991). It is particularly crucial to the furniture industry, because furniture is most often bulky. The cost of transportation is high. Therefore, an effective furniture strategy can lower the cost of the final product (Healey and Ilbery 1990).

Hypothesis 2: Agglomeration, clustering, linkage, and subcontracting are important factors affecting location competitive strategy of furniture companies in the two countries.

These four factors are the most important factors affecting the furniture industry in the literature review. Most researchers found that agglomeration and clustering are striking characteristics of the furniture industry (Lorenzen 1999; Scott 2006; Maskell et al. 1998). It helps companies who are located in it obtain advantages. It also contributes most to the competitiveness of the whole industry (Marshall 1920 in Giuliani 2005, Bell 2005 and Folta et al. 2006; OECD 2001and Marshall 1923 in Pallares-Barbera, et al. 2004; Hoen 2001; Jakobsen et al. 2003 in Hansen and Clasen 2010; Beerepoot 2007; Bathelt et al. 2004; Bathelt et al. 2004 in Howells and Hedemann 2008; Lorenzen 1999; Maskell 1998 et al.). Linkages among companies

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and institutions support the development of the companies in the agglomerations or clusters (Powell and Grodal 2005; Edquist 2005; Lazerson and Lorenzoni 1999 in Heanue 2008; Scott 2006; Bosworth and Rosenfeld 1992 in Heanue 2008; Grzegorzewska et al. 2014). Production subcontracting is the main trend in the furniture industry (Campos et al. 2008; Bullard and West 2002; Molotch 1996 in Drayse 2008; Drayse 2008). Therefore, it is important to identify whether they are important for the furniture industries in the two countries.

Hypothesis 3: Geographic distance, common borders, GDP, and income/capita are the important determinants of IIT in the two countries.

These four characteristics were chosen because of the following. First, all of the macro factors related to IIT can be used as determinants. This analysis chose four country-specific characteristics. This is because the method of this analysis is regression, and regression analysis can better reflect a generalised situation (Matveev 2002; Muijs 2004). Country-specific characteristics are more generalised factors than the other macro factors. Furthermore, this dissertation is a research from the perspective of geographic economics, and these four factors are all related to the geographic economics. Second, they are important for both Spain and Denmark. The other country-specific characteristics related to only one of the two countries were not chosen. For example, common language is one of the country-specific characters, but it was not selected, because common language is only relevant to Spain, since Spanish is spoken in many countries in the world. However, it is not relevant to Denmark owing to the fact that Danish is spoken only in Denmark. Meanwhile, although English is not an official language, it can be spoken by most of the Danish population. Therefore, language is not a problem for Denmark when they do business with the other countries. Some other country-specific characteristics also have similar problems, such as a country's economic policies and trade agreements between countries.

1.5 Significant meaning of the research

This dissertation is a new and comprehensive study. It compares the most recent location strategies of Spain and Denmark. Both countries can learn from this analysis to figure out how to improve themselves. Furthermore, it examines how Spain, as one of representative furniture producing countries in Europe, maintains their special and high quality. Meanwhile, it also determined how Denmark as a high-cost country could lower costs and differentiate itself at the same time. This research analysed not only regional clusters in the two countries, but also a national cluster—Denmark. No previous research has considered the national cluster, only investigating the regional clusters. Therefore, it will be fresh for the readers to know about the situation and strategies of a national cluster. This research also focuses on some factors that are not mentioned in previous research, such as location decisions of the companies, new trends in the furniture industry like outsourcing and offshoring, five major trade partners of the two countries, and characteristics of the IIT of the two countries.

1.6 Structure of the dissertation

The thesis is organised as follows: Chapter 2 is the literature review about the world furniture industry. Chapter 3 is the literature review of the four important factors affecting the furniture industry. Chapter 4 is the methodology. It explains the data collection for both qualitative research and quantitative research. Then, it clarifies the qualitative method of semi-structured, in-depth interviews and questionnaires. The last chapter discusses the literature review and quantitative method for IIT analysis. Chapter 5 compares the furniture industries in Spain and Denmark. Chapter 6 includes the case studies and comparison of the furniture companies in the clusters in the two countries. Chapter 7 is the analysis and comparison of the IIT in the two countries. Chapter 8 is the conclusion. Finally, there are reference and appendix.

Chapter 2. The situation of the world furniture industry (1999-2015)

2.1 Introduction

The leading manufacturers are spread all over the world. Among the top 200 manufacturers, 57 companies are headquartered in emerging countries (less developed countries) and 143 are based in the most developed countries (from the point of view of the degree of development of the countries). Of these 200, 84 companies are headquartered in the EU (from the point of view of the continents). Overall, around 40 per cent of the 200 leading furniture companies operate plants outside the country where their headquarters are located. Globalization leads companies to have more choices when deciding their strategies. They can consider trade-offs in terms of whether to use high-cost local resources or low-cost foreign resources, the expense then related to distance. The globalization process in the furniture industry involves many aspects, such as relocation of production, and access to raw materials and equipment from foreign countries. An example of globalization in the furniture industry comes from a Dutch furniture company that established a plant in China. Its furniture is produced using wood from Romania and machinery from Germany and Denmark. The process of globalization is inarguably leading to tighter linkage and collaboration between nations, institutions and people from all parts of the globe. New information technologies are encouraging globalization in the furniture industry. Therefore, a common trend in the furniture industry observed in the past decade is a growing degree of market openness. Many situations in the furniture industry reflect this kind of openness, such as declining tariffs, penetration of emerging markets, outsourcing of many phases of the furniture production, and improvements in infrastructure and logistics (particularly in emerging countries) (Renda et al. 2014; World Furniture 2015a; Bullard and West 2002; Walcott 2011; Alexandra 2015).

In the furniture industry, the main participants come from Italy, which represents 40 per cent of the world's participants. Second is Western Europe, which represents 21

per cent, while Asia represents 15 per cent. The remainder comprises participants from North and South America (12%), Central and Eastern Europe, Russia and Turkey (10%), and North Africa and the Middle East (2%) (Figure 2.1) (World Furniture 2015a).

Figure 2.1 Breakdowns of the participants in the world furniture industry by geographic area, 2015(Units: percentage of participants)
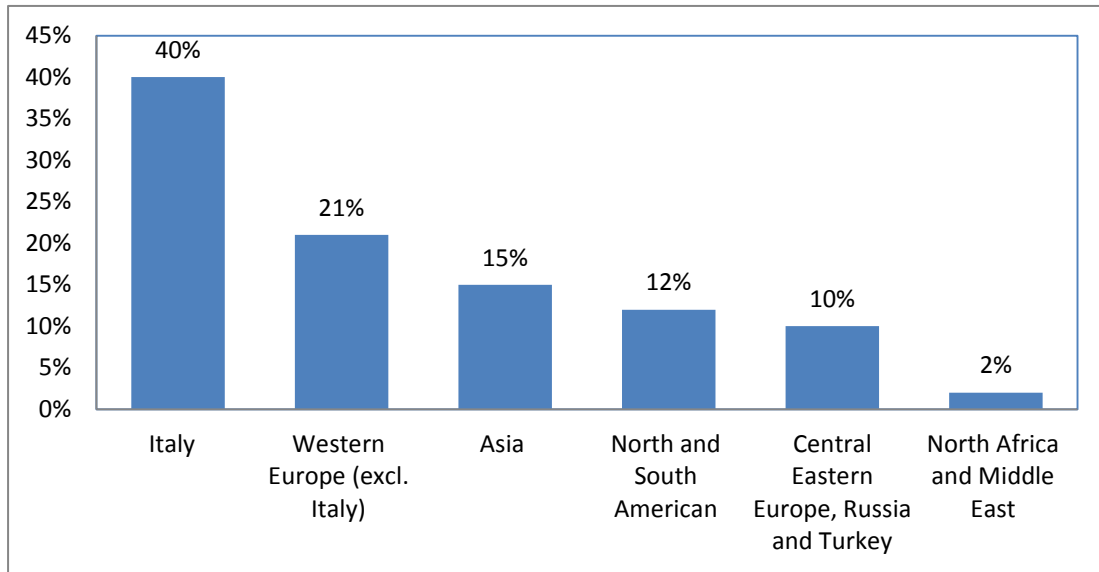
Source：World Furniture (2015a)

2.2 The changing location of furniture production

Production in the world has relocated from the most advanced developed countries to less developed countries. Compared to high-tech industries such as the computer industry, furniture manufacturing can thrive on low-level technologies. Therefore, production in the industry is gradually moving from the most developed countries to those that are less developed. These countries have adequate production conditions, particularly the availability of raw material (wood) and skilled labour (ITTO and ITC 2004). National governments in less developed countries are opening up their borders to investment and trade in order to promote economic growth. These countries are also establishing policies and incentives to foster favourable local conditions for

investment (Kaplinsky et al. 2009; Drayse 2008; Krugman and Hanson 1993). For example, Bangladesh offers foreign investors tax holidays and exemptions, and reduced import duties on capital goods, machinery and spare parts. Sudan's Investment Act 2013 offers tax and customs privileges to investors in strategic industries. Other examples of countries that have introduced tax incentives include Burundi, Malawi, Sao Tome and Principe, and Zambia (Sauvant and Mallampally 2015).

Therefore, there are two strategies for relocation of the production centre. One is to those countries with close geographic location to the consumption market and low costs, such as Poland and Mexico. Poland is close to Western Europe, and Mexico is close to the USA. There is regional integration between Poland and Western Europe, as well as between Mexico and the USA. Poland joined the European Union in 2004. NAFTA is likely a key issue that promotes business between Mexico and the USA. Poland and Mexico are geared towards Western European and American markets, respectively. The second strategy for furniture production relocation is to less developed countries with low costs in Asia, like China, Malaysia and Vietnam (Kaplinsky et al. 2009; Drayse 2008; Krugman and Hanson 1993).

The USA and China can illustrate how the world's furniture production has relocated from the most advanced to less developed countries. The reason for choosing the USA and China is because they are major furniture producers in the world, and can be representative. According to the data in 2016, China ranked as the largest furniture producer in the world, representing 39 per cent of the world's furniture production. The USA ranked second, representing 12 per cent of the world's furniture production (CSIL 2018).

Furniture production in the USA is decreasing. It fell from 80.236,2 million dollars in 2006 to 54.109 million dollars in 2010. Since 2011, there has been a slight growth, but the production level cannot recover to the same level as in 2004 (Table 2.1).

Table 2.1 Production of furniture and related product in USA, 2004-2012

(Units: million dollar)

2004	2005	2006	2007	2008	2009	2010	2011	2012
74.590,557	79.557,8	80.236,2	77.839,7	73.283,3	54.781,4	54.109	56.818,3	60.810,7

Source: Bureau of Labor Statistics, United States Department of Labor (2013)

Furniture production in China is increasing. The output from furniture manufacturing enterprises in China with foreign investment and companies from Hong Kong, Taiwan and Macau rose steadily from 12,56 billion yuan in 2000 to 72,14 billion yuan in 2012 (Table 2.2).

Table 2.2 Output in enterprises of furniture manufacturing industry in China invested by foreign companies and companies from Hong Kong, Taiwan and Macau, 2000-2012(Units: billion yuan)

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
12,56	13,75	13,19	17,68	33,86	36,93	42,22	51,45	59,83	59,73	63,83	68,41	72,14

Source： National Bureau of Statistics of China (2014) (exchange rate in December 2012 is 1 dollar=6.23 yuan)

However, in China, the number of enterprises in the furniture manufacturing industry with foreign investment and companies from Hong Kong, Taiwan and Macau shows a decline. It increased from 421 in 2000 to 1.436 in 2008; after 2008, this number started to reduce (Table 2.3).

Table 2.3 Number of the enterprises of furniture manufacturing industry in China invested by foreign companies and companies from Hong Kong, Taiwan and Macau, 2000-2013(Unit: number of enterprises)

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
421	480	533	616	1.059	1.051	1.151	1.265	1.436	1.361	1.359	1.007	1.000	1.007

Source： National Bureau of Statistics of China (2014)

There are two reasons for this. One is that tax is increasing. After the reform and opening up, in order to accelerate economic development further, the government

provided some concessions in other aspects of foreign taxation and land, such as urban maintenance and construction tax, and education surtax. These two taxes were set up in 1985, when only Chinese citizens and domestic enterprises were levied. In 2010, China promulgated and implemented the "Opinions on Further Improving the Utilization of Foreign Investment"[1], which stated that from 1 December 2010, the urban maintenance and construction tax and education surcharge tax would be levied on foreign-invested enterprises. Foreign individuals and foreign-funded enterprises in China had been enjoying the tax 'super-national' treatment since the reform and opening up ended (Zhou 2013). The second reason for the reduction in number of foreign-invested enterprises is that the market is already mature and saturated. Since 2011, furniture manufacturing enterprises have faced unprecedented opportunities and challenges. These include the arrival of foreign furniture brands, further advancement of the national affordable housing policy, adjustment of the real estate policy, and the gradual saturation of the furniture market in first-tier cities. The furniture market has changed from a seller's market to a buyer's market: the abundance of goods means that buyers' choice has increased significantly. Therefore, competition in the market is intensive (Ye 2012; Zhao 2015).

Therefore, although furniture production is growing in China, the growth rate of foreign-invested companies has fallen. Production is moving from China to other less developed countries such as Vietnam. Vietnam is an outstanding and fast-growing furniture producer in Asia (Tracogna 2014). It is one of the three countries within the middle- and low-income group whose production is rapidly increasing (the other two are China and Poland) (Renda et al. 2014).

The gross output of the foreign-invested sector in the furniture industry in Vietnam has increased almost constantly from 3.878,4 billion dong in 2005 to 12.290,5 billion dong in 2011, except for a slight decrease from 7.331 billion dong in 2008 to 6.980,5

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[1] The file is a landmark document.

billion dong in 2009. In 2011, the output was almost three times higher than 2005 (Table 2.4).

Table 2.4 Industrial gross output of foreign invested sector in the furniture industry in Vietnam at constant 1994 prices, 2005-2011 (Unit: billion. dong)

2005	2006	2007	2008	2009	2010	2011
3.878,4	6.007	6.721,8	7.331	6.980,5	9.801,1	12.290,5

Source：General statistics office of Vietnam (2014) (exchange rate is 1 dollar = 20.879,4 dong in 2013)

Over the last 20 years, Vietnam has become a preferred location to set up furniture factories and a major base for furniture exports. The furniture industry is one of the country's largest export contributors. Furniture from Vietnam is now exported to over 120 countries, its main markets in 2013 being the USA, the UK, Canada, Australia and Japan. In 2016, a major new development of international trade is that the decrease of Chinese furniture exports. The fastest growing furniture exporter is Vietnam. Vietnamese furniture is even found in China, which is traditionally regarded as the 'heaven' of low-cost furniture production (Embassy of Denmark in Vietnam 2015; CSIL 2018).

2.3 Demand and supply

The world's furniture industry developed rapidly from 2003 to 2012. Both furniture production and consumption increased constantly. In 2012, the global production of furniture was worth 361 billion € (Table 2.5). This estimate is based on CSIL processing of data from official sources, both national and international, covering the 70 most important countries. These countries have 5 billion inhabitants, which is roughly 75 per cent of the world's population. Their total trade accounts for 92 per cent of the world's trade of goods and almost all the world's furniture production in terms of value. Over the last decade, world furniture production has increased year on

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year, with the exception of 2008 and 2009. In 2012, world furniture production was 60 per cent higher than ten years previously (Renda et al. 2014).

Table 2.5 World furniture production and its growth rates, 2003-2012

Units \ Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
€billion	223	230	248	268	279	278	264	299	321	361
Growth rates%	-	3	8,2	7,9	4	-0,1	-5,3	13,6	7,2	12,4

Source：Center for Industry Studies in Milan (CSIL) (2013) in Renda et al. (2014)

Around 80 per cent of the world's production was concentrated in ten countries in 2012. China alone accounted for 40 per cent of global production, an increase of 30 per cent on 2003. The USA ranked second: its production represented 14 per cent of the world's production, a decreased of 13 per cent compared to 2003. Two EU Member States, Germany and Italy, followed at some distance, accounting for 5 per cent and 4 per cent respectively. The other six countries represented 3 per cent or 2 per cent each (Table 2.6).

Table 2.6 Top 10 producing countries in the world furniture industry, 2003 and 2012

Year	2003		2012	
Units \ Countries	€million	%share	€million	%share
China	22.555	10%	145.318	40%
USA	60.677	27%	51.642	14%
Germany	15.492	7%	17.738	5%
Italy	19.338	9%	15.950	4%
India	5.386	2%	11.624	3%
Japan	11.925	5%	10.743	3%
Poland	4.393	2%	8.323	2%
Canada	8.385	4%	8.262	2%
Brazil	3.168	1%	7.970	2%
France	7.817	4%	7.929	2%
Total	159.137	71%	285.499	79%
Others	63.877	29%	75.363	21%
World	223.014	100%	360.862	100%

Source：CSIL Center for industrial studies (2013) in Renda et al. (2014)

The World Bank definition of the classification of the countries is by income groups according to 2007 per capita income, which is calculated using the World Bank Atlas method. Therefore, economies are categorised as high, middle and low income countries. Furniture production of middle- and low-income countries shows growth. It constantly increased from 25 per cent to 59 per cent from 2003 to 2012. In 2010, the share of middle- and low-income countries reached 53 per cent, being over half of the world's furniture production (Table 2.7) (Renda et al. 2014). This is the result of two factors. One is the increasing share of production in emerging economies such as Brazil and India. Domestic suppliers of these countries carry out the production. They are growing rapidly to satisfy the increasing demand from their domestic markets. The second factor is the productive investments made by companies from advanced economies. Indeed, within the middle- and low-income group, there are three countries—China, Poland and Vietnam—where production is rapidly increasing. Their investments in new plants have increased in order to boost growth in exports (Renda et al. 2014).

Table 2.7 Percentage of furniture production of high and middle/low income countries in the world, 2003-2012

Percentage ⟍ Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
High-income countries, %	75	72	69	66	62	57	51	47	45	41
Middle/low income countries, %	25	28	31	34	38	43	49	53	55	59

Source：CSIL (2013) in Renda et al. (2014)

Conversely, production in high-income countries shows a decrease, gradually falling from 75 per cent in 2003 to 41 per cent in 2012 (Table 2.7). In the USA, Italy, Japan and Canada, production levels are now lower than a decade ago. Production in France is almost stable. Only Germany continues to grow among the most advanced economies (Renda et al. 2014) (Table 2.6).

The consumption situation is similar to the production situation, showing an increasing trend. Total world furniture consumption grew from 226 billion € in 2003 to a peak of 281 billion € in 2007 and showed only a slight decrease in the period of the world recession in 2008 and 2009. Growth resumed to 347 billion € in 2010, well above pre-recession levels (Table 2.8) (Renda et al. 2014).

Table 2.8 World furniture consumption and its growth rate, 2003-2012

Units Years	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
€billion	226	233	253	272	281	278	261	295	314	347
Growth rates %		3,1	8,5	7,6	3,4	-1	-6,2	13,2	6,3	10,4

Source: CSIL (2013) in Renda et al. (2014)

Furniture consumption in middle- and low-income countries shows growth. It increased from 18 per cent in 2003 to 47 per cent in 2012 (Table 2.9), the reason being the rising disposable incomes in emerging markets and market opening of these countries (Renda et al. 2014).

Table 2.9 Percentage of furniture consumption of high and middle/low income countries in the world, 2003-2012

Percentage Years	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
High-income countries, %	82	80	78	75	72	68	61	59	56	53
Middle/low income countries, %	18	20	22	25	28	32	39	41	44	47

Source: CSIL (2013) in Renda et al. (2014)

Consumption growth is mainly concentrated in Asia, and North and South America. The growth of Chinese consumption is the largest in the world, at 9 per cent in 2013. China is at present the largest foreign furniture importer and consumption is growing year on year (World Furniture 2015b). Next is India, with 7 per cent growth in 2013. The consumption growth of Russia, Brazil, South Korea, Australia, Canada and the USA ranged from 2 per cent to 5 per cent in 2013. There is almost no growth in

Germany, Japan, France and the UK. In Italy and Spain, consumption has decreased (Table 2.10).

Table 2.10 Furniture consumption growth rate in major markets in the world in 2013
        (Units: percentage of consumption growth)

China	USA	Germany	Japan	France	Italy	India	UK	Canada	Russia	Australia	Spain	Brazil	South Korea
9	2	0	1	0	-3	7	1	2	4	2	-1	5	3

Source: CSIL (2014)

The European Union's share of worldwide furniture consumption shows a decrease. In 2003, the EU market accounted for 36 per cent of the world furniture market. In 2012, this fell to 23 per cent (Figure 2.2). Consumption in the EU in 2012 was below the pre-crisis level. The statistics break down furniture consumption according to EU production and imports from extra-EU countries into the EU. The main proportion of demand in the EU is currently satisfied by EU production. In 2012, EU production accounted for 85 per cent of total EU consumption: the remaining 15 per cent was imported from extra-EU countries. However, imports show an increasing trend, rising from 8 per cent in 2003 to 15 per cent in 2012. This means that countries outside the EU are progressively penetrating the EU market and eroding EU manufacturers' share. Countries outside the EU are becoming more competitive (Figure 2.3) (Renda et al. 2014; The Statistics Portal 2016a; The Statistics Portal 2016b).

Figure 2.2 EU share of furniture consumption worldwide, 2003-2012 (Units: percentage of furniture consumption)

Source：The Statistics Portal (2016)

20
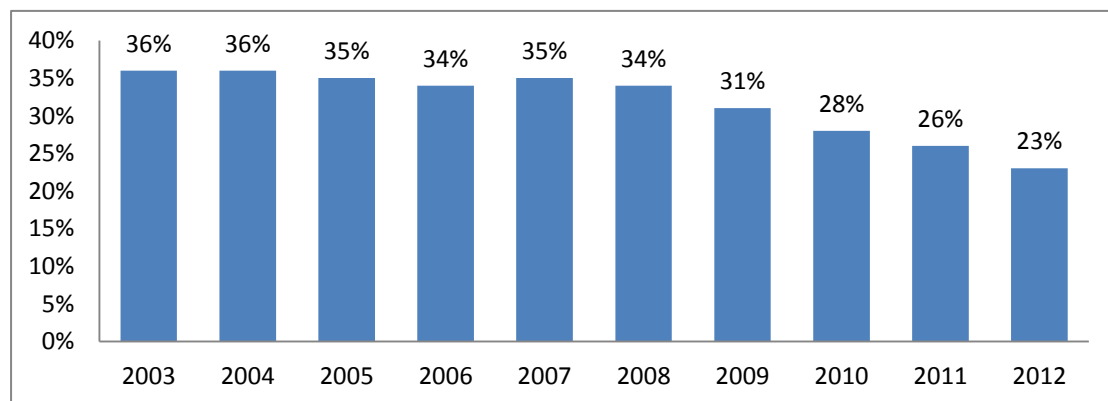
Figure 2.3 Distribution of furniture consumption in the European Union by EU and
extra-EU production, 2003-2012 (Units: percentage of furniture
consumption)
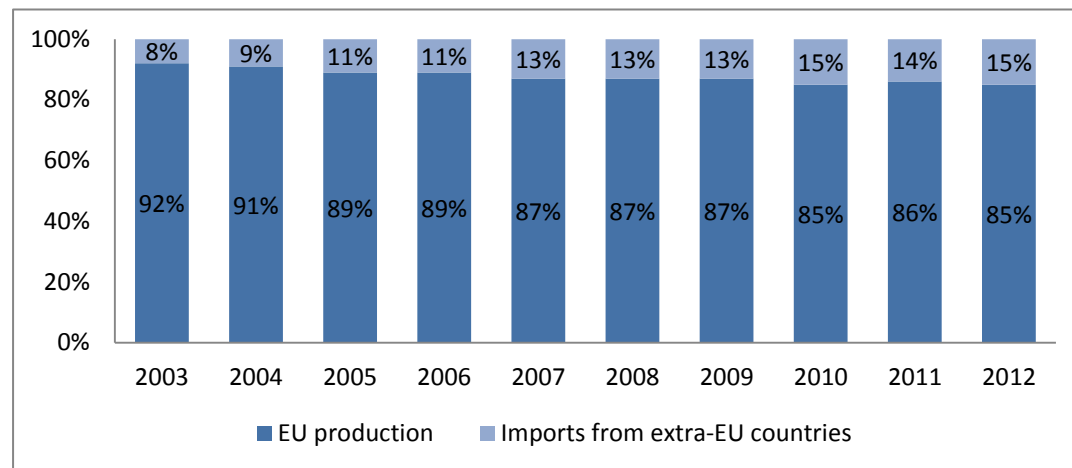
Source：The Statistics Portal (2016)

2.4 Import and export

From 1999 to 2008, both imports and exports increased constantly across the world.
Imports grew from 58,6 billion dollars in 1999 to 140,6 billion dollars in 2008.
Exports rose from 57,1 billion dollars in 1999 to 136,4 billion dollars in 2008.
However, in 2009, both sharply declined compared to 2008. Imports fell to 113,4
billion dollars and exports fell to 112,5 billion dollars, the rates of decrease being 19,3
per cent and 17,5 per cent respectively. The year 2008 is a turning point: the sharp
decline could be because of the global economic crisis.[2] In 2010, growth began again.
Imports went up to 130,5 billion dollars and exports to 129,1 billion dollars, the
growth rates being 15,1 per cent and 14.8 per cent respectively. In 2011, both imports

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[2] In August of 2008, the American financial crisis led to a financial market tsunami. This financial
crisis had a large effect on the world's economy. Many Asian countries were affected, such as Japan,
Korea, Taiwan, Hong Kong, Malaysia, the Philippines and China. The most affected countries in
Europe were England and Germany. The rest of Europe was affected to some degree. The financial
crisis brought about a recession in the non-financial sector in the USA and global economies (Liu, 2009;
Kotz, 2009; Frankel and Saravelos, 2010).

and exports recovered to the same level as 2008: imports rose to 143,4 billion dollars and exports to 145,9 billion dollars. After that, both imports and exports increased year on year (Table 2.11).

Table 2.11 Imports and exports in furniture industry in the world in current price of US dollar and their growth rates, 1999-2013

Units Year	Import $Billion	Growth rate%	Export $Billion	Growth rate%
1999	58,6	--	57,1	--
2000	63,4	8,1	61,4	7,5
2001	63,7	0,4	60,8	-1,0
2002	70,1	10,0	65,4	7,6
2003	82,5	17,7	76,1	16,4
2004	97,2	17,8	89,8	18,0
2005	107,0	10,0	97,5	8,6
2006	117,6	9,9	108,3	11,1
2007	135,1	14,9	127,0	17,3
2008	140,6	4,1	136,4	7,4
2009	113,4	-19,3	112,5	-17,5
2010	130,5	15,1	129,1	14,8
2011	143,4	9,9	145,9	13,0
2012	145,4	1,4	156,3	7,1
2013	152,1	4,6	165,9	6,1

Source: UN Comtrade and UN Service Trade (2014)

The most developed countries are the major importers. The USA is the largest furniture importer in the world, with an import value of 41.218,2 dollars in 2013. Germany is the second largest, with an import value of 13.819,0 dollars in 2013. It is also the largest importer in Europe. The other significant importing countries are France (USD 7.863,7), the UK (USD 7.779,2), Japan (USD 6.819,8), Canada (USD 6.621,9) and Belgium (USD 3.770,9) (Table 2.12).

Imports in less developed countries are increasing rapidly. From 2009 to 2013, fast growth was seen in Russia (23,5%) , Mexico (21,9%) and China (18,6%) (Table 2.12). .

Table 2.12 Top importing countries or areas in world furniture industry in 2013

Units / Countries or areas	Value (million US$)	Average Growth Rate (%) 09-13	Growth rate (%) 12-13	World share%	Cum.
World	152.120,5	7,6	4,6	100	
USA	41.218,2	11,5	6,7	27,1	27,1
Germany	13.819,0	5,0	4,6	9,1	36,2
France	7.863,7	0,6	-6,6	5,2	41,3
United Kingdom	7.779,2	2,6	5,0	5,1	46,5
Japan	6.819,8	8,6	-1,3	4,5	50,9
Canada	6.621,9	8,5	-0,8	4,4	55,3
Belgium	3.770,9	4,3	21,4	2,5	57,8
Switzerland	3.547,7	5,9	5,9	2,3	60,1
Russian Federation	3.462,9	23,5	7,4	2,3	62,4
Netherlands	3.408,3	2,6	-1,7	2,2	64,6
Australia	3.064,3	10,1	1,9	2,0	66,6
Mexico	2.708,7	21,9	16,2	1,8	68,4
Spain	2.597,5	-2,9	3,5	1,7	70,1
Austria	2.584,6	1,6	1,9	1,7	71,8
China	2.424,5	18,6	9,5	1,6	73,4

Source: UN Comtrade and UN Service Trade (2014).

The largest exporter in the world is China, with an export value of USD 59.488,2 in 2013, followed by Germany, with an export value of USD 12.356,0 in 2013. Germany is also the largest exporter in Europe. Italy, Poland and the USA are also strong exporters, with export values of USD 11.434,5, USD 9.730,6 and USD 7.549,6 dollars respectively (Table 2.13).

Exporting in less developed countries is growing fast. From 2009 to 2013, the fastest growing countries were Mexico (19,6%), China (18,6%), Turkey (16,6%) and Vietnam (13,6%). They are all less developed countries. In France, Denmark,

Malaysia, Italy and Sweden, there was almost no growth. Among them, only Malaysia is a less developed country: the rest are developed countries (Table 2.13).

Table 2.13 Top exporting countries or areas in world furniture industry in 2013

Units / Countries and Areas	Value (million US$)	Average Growth Rate (%) 09-13	Growth Rate (%) 12-13	World share%	Cum.
World	165.938,8	10,2	6,2	100,0	
China	59.488,2	18,6	5,9	35,8	35,8
Germany	12.356,0	4,5	2,0	7,4	43,3
Italy	11.434,5	2,3	6,1	6,9	50,2
Poland	9.730,6	8,3	13,5	5,9	56,1
USA	7.549,6	12,0	5,3	4,5	60,6
Mexico	6.471,8	19,6	11,5	3,9	64,5
Vietnam	4.032,2	13,6	10,8	2,4	66,9
Canada	3.828,8	7,4	-0,4	2,3	69,2
Czech Rep	2.972,2	10,9	19,4	1,8	71,0
France	2.854,3	-2,6	6,0	1,7	72,7
Malaysia	2.408,9	2,0	-9,7	1,5	74,2
Sweden	2.354,8	3,1	-2,2	1,4	75,6
United Kingdom	2.217,8	9,6	7,8	1,3	77,0
Turkey	2.185,1	16,6	17,1	1,3	78,3
Denmark	2.175,5	0,1	-1,8	1,3	79,6

Source: UN Comtrade and UN Service Trade (2014)

2.5 Input for furniture production

The main inputs for furniture production—raw materials, capital, labour and design—are analysed below.

2.5.1 Raw materials used in furniture production

Raw materials used in modern furniture are abundant. Due to the current shortage of timber in the international market, the position of the wood furniture is gradually

being substituted by wood-based panel furniture, such as plywood, MDF (Medium Density Fiberboard) and fibreboard furniture. In the world's wood furniture production, solid wood furniture represents 10 per cent and wood-based panel furniture represents 90 per cent. Wood-based panel furniture is mainly plywood, shaving board, MDF, block board and fibre furniture. For example, in the USA, 10 million cubic feet of softwood plywood and OSB (Oriented Strand Board) are used as substitutes for lumber in the production of furniture and fixtures (ITTO and ITC 2004). Furniture made from these materials is challenging and revolutionizing traditional furniture. It not only greatly improves production efficiency, but also makes the style and shape of the furniture more elegant. The function is closer to the customer's reality and thus user friendly, which can better satisfy the wishes of the customer (Ren 2011).

Forests have matured in Asia, Latin America and Oceania. Natural forests in these continents will continue to provide unique raw materials for the world's furniture industry (ITTO and ITC 2004).

There are also adequate raw material bases in the USA and Europe. US manufacturers use lumber, hardwood, plywood and MDF to produce furniture. The Amish-based furniture and related products manufacturing cluster located in and around Holmes County, Ohio, uses sizeable quantities of hardwood lumber, but little softwood, plywood or OSB are used. The latter two materials are used mainly for cabinet interiors and backs and caskets (coffins), mostly with surface coverings of veneer, vinyl or paint (ITTO and ITC 2004; Bumgardner et al. 2011). The EU accounts for approximately 5 per cent of the world's forests. Contrary to what is happening in many other parts of the world, the forested area of the EU is slowly increasing. Apart from the forests' ecological value and impact on the EU landscape, the forest sector is also an economic resource (Eurostat 2017).

In the EU, veneers, panels, MDF and wood are the most used raw materials in furniture production, representing 26 per cent of the total materials used (Figure 2.4).

Figure 2.4 Share of materials used in furniture production in EU in 2008 (Units: percentage)
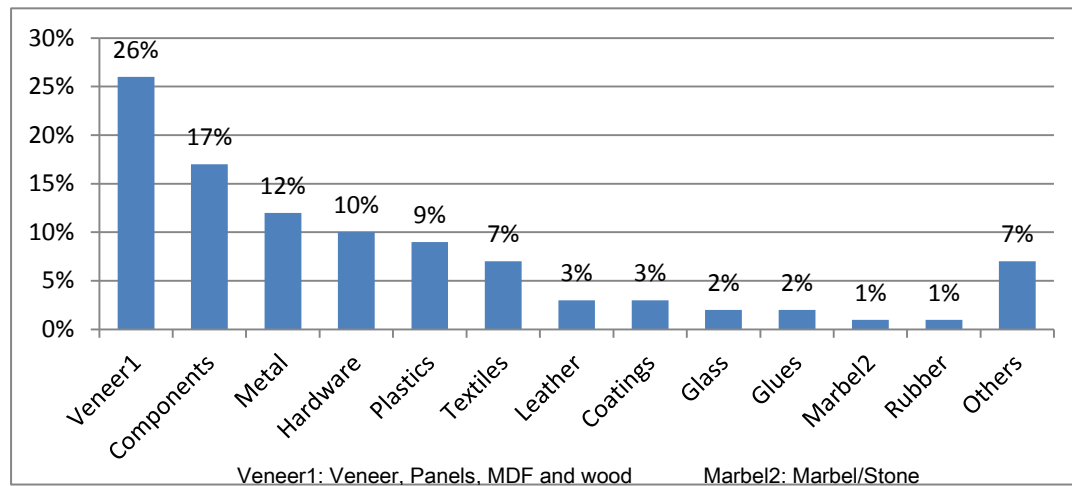
Source：European commission (2008)

There is also a trend away from the use of wood in the EU. For example, office furniture production tends towards plastic and metal, although wood still accounts for an important share of production (80% in office desks, 30% in worktops, 50% in cabinets, storage and filing system and wall to wall units) (Renda et al. 2014).

Wood raw material supplies in some of the countries in the world are limited. For example, in Malaysia, the shortage of timber is increasingly serious. To better differentiate the export of furniture, the furniture industry is seeking substitute materials. The Forestry Research Institute in Malaysia thinks that the economic recession and the appearance of low-cost producers have made competition in the world furniture industry more serious. They are considering how to improve the value of their products. One possible method is to use different materials to make the product diversified. This will also help to moderate the problem of timber shortage in the furniture industry (Xiu 2010). China has implemented the policy of limiting the cutting of wood. Raw materials for the furniture industry are mainly imported from

foreign countries (Li and Tang 2011). Vietnam is an outstanding and fast-growing furniture producer in Asia. CSIL ranks the country the 17th furniture producer at the world level. However, the rapid growth in production does not solve the problem of the shortage of raw materials, rising input costs and the low value added of the product. In addition, Vietnam has to cope with the increasing prices of imported raw materials. The country is also forced to import about half of its domestic demand for wood-based panels and many wood species (hardwood from the USA and Europe, radiate pine from New Zealand and Chile, rubber wood from Malaysia and Laos). Laos recently became the largest timber exporter to Vietnam. Remarkably, wood imported from the EU is an increasing trend. MDF imports have also increased noticeably (Tracogna 2014; Embassy of Denmark in Vietnam 2015).

In some countries, semi-finished and finished components are used as raw materials. For example, China imports raw materials and semi-finished products. They export value added wood furniture of high quality. In this way, China is becoming an ace player in the world wood business (Li and Tang 2011). In Western Europe, the cost pressure on manufacturing furniture is high, especially from the lower-priced products from Eastern Europe, and increasingly from China. To compete with these low-cost countries, Western Europe needs to make its quality high enough and its price as low as possible. The price of wood is a critical factor since it represents the largest proportion of the price of furniture raw materials. Traditional North American hardwoods, including hard maple, white oak, cherry and red alder, continue to have a strong position in Europe's furniture sector. Companies also look for lower priced wood raw materials in Eastern Europe. Furniture manufacturers increasingly demand semi-finished and finished components (outsource), being one of the strategies to reduce cost. Furniture manufacturers are thus becoming furniture assemblers (FP Innovations 2008).

Metals, boards and energy use appear to be the elements contributing most to the environmental impact of the different products. This assessment result is according to research on improving the eco-design for wood products from the world's furniture sector. The total contributions of these materials range from 40 per cent to 90 per cent. Eco-design strategies are proposed by means of the methodology known as DfE (Design for the Environment). Improvement strategies viable for implementation in the short term are considered and analysed in detail. The improvement strategy will account for remarkable reductions in the equivalent CO_2 emissions (up to 60%). These strategies would focus on the use of renewable energies such as photovoltaic cells, the promotion of national fibres or changes in the materials used (González-García et al. 2011).

2.5.2 Methods of accessing capital

One method to access capital is through FDI (Foreign Direct Investment). For example, in China in 2001, FDI amounted to USD 46,8 billion, an increase of 14,9 per cent on the previous year. The number of t certified foreign-invested enterprises was 26.139, which is 16 per cent higher than in 2000. China is attracting strong investment from American companies (ITTO and ITC 2004).

Companies may get capital through IPO (Initial Public Offering). For example, many furniture companies in China are beginning to use IPO to raise funds and increase their market share, such as the wood furniture companies Tubaobao, Yihua, STT Guangming and Meike Ltd (Wang et al. 2007). Chinese companies also use IPO in foreign countries to increase their capital. For example, while many domestic enterprises were waiting in the queue in the A-share market, two additional domestic enterprises opened the door to foreign capital markets. On 2 July 2014, Dongguan furniture company Nova held a formal ceremony at the NASDAQ listed trading centre. They became the first Chinese furniture enterprise listed on NASDAQ. On 14 July,

Fuyou wood furniture was listed in the UK. It became the first European listed company in the Chinese wood industry (Chen 2014).

Companies may obtain capital through mergers and acquisitions. For example, in the USA, a large decline in employment has been seen in North Carolina's manufacturing sector, leading furniture companies to seek new ways of staying competitive. One way is through merger (Learn NC 2017). In China, on 6 January 2009, Meike Ltd. acquired Schnadig in the USA. Schnadig has a 56 year history and is very famous in the USA. Through the acquisition, Meike Ltd. could improve its core competence and profitability. It could also enhance its productivity and sales ability by combining with the several decades' old brand name and reputation of Schnadig (Hu and Hu 2010). The Swedish company IKEA also acquired companies like International Fund Management SA to gain business advantages (Oduro 2014).

Furniture companies may also seek funding from financial institutions. In Sweden, for example, IKEA borrowed money from a financial institution to invest projects and assets (Oduro 2014).

Furniture companies also gain capital through government support. For example, the French government has traditionally helped the furniture industry to expand production and engage in export. The wood industry (including the furniture sector) benefits from state assistance to modernize equipment. This assistance is provided through the Ministry of Industry and Trade, as well as regional and local authorities. Moreover, the state supports research and technical institutions such as CTBA (Technical Center of Wood and Furniture). There is a structure for export assistance that includes export credit insurance and financing. The Italian government actively supports export-oriented companies. Export credits are financed by the state organization SIMEST (Association of Foreign Business for Italian Companies) and are insured by another state organization, SACE (Insurance Services of Foreign Trade). In Sweden, in 2002, the new government supported a high personal tax policy,

strong social services and increased investment. This indicates that the economy was set for continued growth (ITTO and ITC 2004).

Furniture companies in the EU may receive financial support from the European Union. The EU has provided a large number of funding opportunities for entrepreneurs to develop and upgrade their business. Business associations play an important role in providing information on European support programmes. A number of firms have made use of these opportunities by sourcing much needed funding which allowed them to expand their business (Lenihan et al. 2010).

Furniture companies also use many other ways to access capital, such as outsourcing, crowdfunding, investment from partnerships between companies and agencies. Denmark and Spain offer examples of how companies obtain capital through these methods.

2.5.3 Employment situation in the furniture industry

The furniture industry is a labour intensive industry; therefore, in most countries, unskilled workers represent the greatest share of employees. For example, in 2017, the top five ranking jobs in the USA were production occupations (63,58%), woodworkers(27,24%), cabinetmakers and bench carpenters(17,68%), assemblers and fabricators, and miscellaneous assemblers and fabricators(11,42%) (US Bureau of Labor Statistics 2017).

In India, about 97 per cent of the workforce involved in the furniture sector is school dropouts. Around 88 per cent of the workforce has an education level of secondary education or less. In the organized furniture segment, manual workers account for more than half of the total workforce. Managers and supervisors account for 10 per cent of the total workforce and contract workers for nearly 25 per cent (KPMG 2014).

There is a global shift of jobs in the furniture industry away from high-wage countries and towards low-wage countries. Much of this is certainly a transfer of relatively unskilled workers, since the furniture industry is a low technology and labour intensive industry. The world's major producers with high wages, such as the USA and Western Europe, show job losses in furniture manufacturing, while the world's major producers with low wages, such as EU 13 (Central Eastern Europe countries), including Poland and some Asian countries, show an increase in employment in furniture manufacturing (Scott 2006).

Corresponding job losses in the furniture industry can be seen in the United States. After the middle of the 1990s, absolute losses of jobs in the furniture industry started to occur in the United States. From the beginning of 2000, the USA-based furniture industry gradually weakened due to the growing dependency on imports from low labour-cost suppliers, especially in East Asia. This led to the closure of many furniture manufacturing plants, with substantial lay-offs (Scott 2006; Renda et al. 2014). The data on production occupations in the furniture industry in the USA from 2007 to 2016 reflect the job losses. Production occupations steadily decreased from 348.500 in 2007 to 221.200 in 2012. Although there was a slow increase from 225.810 in 2013 to 246.990 in 2016, the degree of the increase was not high (Table 2.14).

Table 2.14 Production employees in furniture industry in USA, 2007-2016 (Units: number of employees)

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
348.500	325.330	268.570	231.860	222.660	221.200	225.810	232.640	238.400	246.990

Source: US Bureau of Labor Statistics (2017)

Western European countries have been subject to a similar erosion of unskilled jobs in the furniture industry (Renda et al. 2014; Scott 2006). France, Germany, Italy and the UK, as major producers in Western European countries, show a decrease in unskilled jobs (Figure 2.5).

Figure 2.5 Employees of furniture manufacture of the world major producers in Western Europe countries, 2003-2011(Units: number of employees)
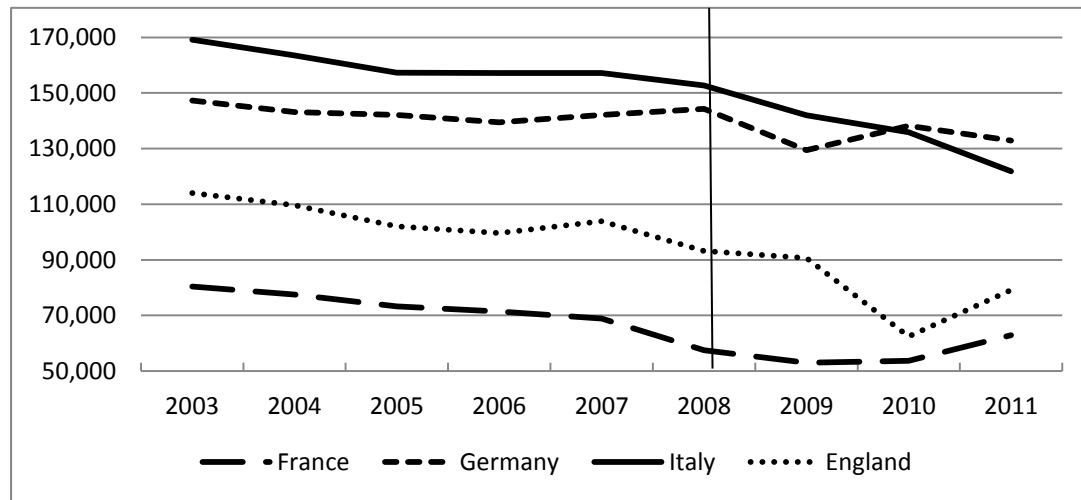
Source: CSIL processing of 2012 preliminary estimates based on data from Eurostat, National Statistical Offices, and National Furniture manufacturers associations in Renda et al. (2014)

Despite the unskilled job losses, around 67 per cent of the European workforce is maintained in Western European countries. This means that the number of skilled workers has risen. In Western European countries, the number of metal machinery workers and precision handcraft workers has declined. On the other hand, the number of managers, architects, engineers, designers and office personnel has increased somewhat (Renda et al. 2014).

Within the less developed group of countries, Eastern Europe and Asia are becoming major centres of employment (Scott 2006). Firms and employment attracted by countries in Central Eastern Europe have grown. Central Eastern European countries are generally characterized by an abundance of resources. They have a relatively cheap labour force and a developed sector for semi-finished wood products. Therefore, the globalization and liberalization of international trade has caused outsourcing processes (both at the manufacturing and retailing level) from Western to Eastern European economies. For this reason, furniture production in the

area has been driven mainly by exports (both furniture items and components) to Western Europe. In general, the importance of Central Eastern Europe has grown fast in terms of furniture production, trade and consumption. This is also driven by changes following the collapse of the centralized system and the EU integration process (Renda et al. 2014).

Poland is a major producer in Central Eastern Europe. It is the third largest furniture producer at the European level. The sector workforce ranks first at the EU level in terms of employment. It comprises around 140,000 employees employed in 14,421 companies since 2004 (Table 2.15). There are two drivers leading to Poland becoming a major producer with a large workforce. One is investments from foreign corporations (mainly, but not only, German ones); the other is the presence of the semi-finished wood panels industry. In Poland, most furniture made from particle board is RTA (Ready to Assemble) furniture, leading to increasing outsourcing from the most advanced economies (Renda et al. 2014).

Table 2.15 Employees of furniture manufacture in Poland, 2003-2011 (Units: number of employees)

2003	2004	2005	2006	2007	2008	2009	2010	2011
116.907	142.572	140.678	139.697	150.718	145.144	148.047	142.484	139.089

Source: CSIL processing of 2012 preliminary estimates based on data from Eurostat, National Statistical Offices, and National Furniture manufacturers associations in Renda et al. (2014)

In Asia in the early 1990s, China became the world's major locus for employment and production of low technology and labour intensive industries. However, this situation is changing. As has been illustrated in chapter 2.2, the number of furniture companies with investment from foreign countries is decreasing in China (Table 2.3). The export of furniture in China also started to fall after 2013 due to the increasing wages and shortage of labour. From a global perspective of the value chain, this shows that the Chinese furniture industry is facing a sharp price rise for raw materials,

labour, RMB (Renminbi, another name of Chinese currency 'yuan') appreciation and other issues (Scott 2006; Wang 2015; Xu 2013).

In contrast, employment in other major low-income countries in Asia has increased. For example, in India, the sector employed over 2,16 million employees in furniture manufacturing in 2013 and is projected to employ more than 5,95 million employees by 2022. This indicates the creation of 3,79 million jobs in the intervening nine-year period. Job creation for the period 2017–2022 is expected to be 2,56 million, which is higher than 1.24 million in the period 2013–2017 (Table 2.16).

Table 2.16 Increasing projections of furniture manufacturing employment in the period of 2013-2022 in India (Unit: million)

2013	Projection on 2017	Projections on 2022	Growth 2013-2017	Growth 2017-2022
2,16	3,39	5,95	1,24	2,56

Source: Primary Interactions, NSSO 68th Round of EU Survey in KPMG (2014)

In the furniture industry, demand for highly skilled labour is increasing and demand for low skilled labour is decreasing. This is for two reasons. Firstly, the industry faces important challenges in employment after significant changes and job losses over the last decade. Reliance on a skilled workforce and efficient production techniques has increased, meaning that there is a need for knowledgeable workers, especially in management positions, but also new skilled workers from existing educational programmes (Ren 2011; IPeuropAware 2009). Secondly, there is a high degree of mechanization and automation in furniture production. Most advanced countries achieved a high degree of mechanization and automation in furniture production in the 1970s, and so this mechanization and automation is already mature. The global furniture industry is using new technologies, equipment and widespread crafts, such as widely used CNC (Computer Numerical Control) machines and artificial intelligence robots. These cause furniture manufacturing technology levels to rise. The furniture industry is achieving further professional development and, in this way,

furniture is truly becoming a modern and industrialized product. A high degree of mechanization, automation and specialization generates an amazing scale economy (Ren 2011).

In Europe, in order to automate the production process, more than half of the total investments are for new machinery and equipment. Furniture firms are introducing CAM (Computer Assisted Manufacturing) solutions and CNC machines. Important investments are being made in this area to optimize production and achieve scale economies. In particular, German and Italian wood furniture manufacturers are at the forefront in terms of woodworking machinery technology. They are considered world leaders in this area (Renda et al. 2014).

The technology improvement in the furniture industry in the EU is reflected in the decreasing number of employees. The number of enterprises is stable, but the number of employees has sharply declined (Figure 2.6).

Figure 2.6 Number of companies and employees in EU in the furniture sector, 2003-2011 (Units: number)
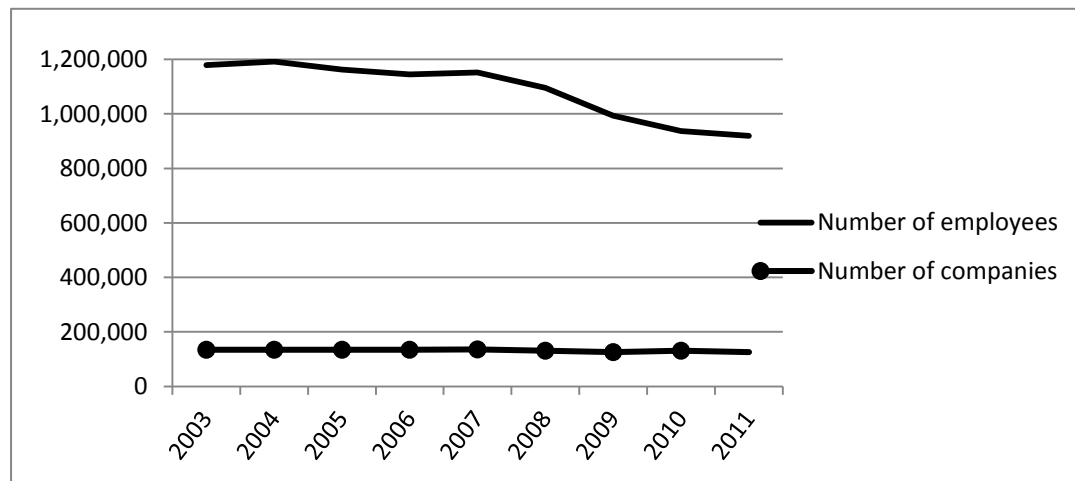
Source: CSIL Processing on Eurostat data in Renda et al. (2014)

2.5.4 Design and style of furniture

The factors affecting the design are the design process (planning for design, product specifications, concept design, product architecture, industrial design, production),

design evaluation and wooden furniture design dependent factors—i.e. art (art style; furniture history, form), functionality (the strength and durability, area place, using), material(appropriate to function, wood mechanical properties), cost, safety and social responsibility—resulting from direct experience gained through usage. The designer must design the wooden furniture systemically and effectively (Choodoung and Smutkupt 2012).

There are three trends in furniture design. Firstly, design and production are increasingly connected with the idea of sustainability, strongly characterized by a responsible use of resources and waste with effective energy saving. Eco-furniture meets the growing consumer demand for environmentally friendly items (natural materials in combination with innovative design). Companies are requested to follow smart development paths. They are doing a good job in this direction (Govonl paola 2013; World Furniture 2013).

Secondly, furniture can be designed according to the manufacturing strategy of mass producing furniture with the arrival of flat-pack or ready-to-assemble designed furniture. This product innovation allows firms to design, manufacture and ship products in large quantities. It also dramatically cuts the cost of shipping bulky products. Mass produced flat-pack furniture tends to satisfy the demand of low- to medium-price markets (Kaplinsky et al. 2003; Kaplinsky et al. 2009).

Thirdly, furniture design is shifting from mass production to mass customization. The design process in the furniture industry does not occur in isolation like mass production. The designer must engage manufacturers and the market. In a digital design process, the designer performs design and production activities through computer-assisted tools. During the 1990s, CAD-CAM (computer-aided design and manufacturing) streamlined the design process. The tools used are particularly CNC machines and laser cutters which allow designs to be provided by manufacturing firms anywhere in the world and offer significant improvements in quality and

productivity. This is a means of including the user as an active element in the design activity. This kind of production leads to mass customization. The concept of mass customization assumes an active attitude of consumers and includes them in the product design process. This may be considered an increase in the power of customers in the construction of their identity and lifestyle (Barros and Chaparro 2010; Kaplinsky et al. 2009).

Europe accounts for over 80 per cent of global sales of luxury furniture. European manufacturers now regard design as the best means of differentiating their products from mass production and accessing high-income market segments. This is mainly for three reasons. Firstly, there are new consumer needs and product trends which encourage manufacturers to innovate in the design. Secondly, the competition is becoming stronger because of the globalization of the furniture industry. Thirdly, there are the difficulties experienced by European firms in competing with the prices of Asian imports. Designs and new models are created in-house, or by external designers and experts. External consultants are more frequently employed by medium-sized and high brand enterprises. In addition, they are also normally hired by companies specializing in modern and contemporary styles, while companies making classic and traditional style products, or companies without a particular specialization, do not use external consultants. In general, design is most important during the first phases of the generation of a new product (Renda et al. 2014).

Distributors sometimes design furniture for themselves. Global retail chains invest significant resources in design. IKEA, for example, has designers living in the homes of final consumers in new markets. They may employ specialized design houses; they may also work with suppliers in design-for-manufacture activities. However, these suppliers have direct control over the design process. The only upgrading capability they encourage is the development of corner engineering in the automotive sector.

This is the development of modules of larger products. The final retailer controls its core design appearance (Kaplinsky et al. 2003).

Furniture design can be encouraged by some buyers. These buyers can be described as design intermediaries. Their competitive advantage arises from the separation of producer and retailer, which is partly achieved by finding new designs and passing the design on to the producers. However, buyers do not encourage the functional upgrading. As someone has said, "even if you get the design 95 per cent right, that small 5 per cent will lose you customers and retailers do not want to take the chance. Knowing your home market is very different from knowing another market." For this reason, Polish-designed furniture, for example, is blocked from most West European markets except Germany, where tastes are similar (Kaplinsky et al. 2003).

The major furniture design styles are from Europe, the United States, China and South East Asia. In Europe furniture, the design of the furniture will always be linked to luxury and elegance. European furniture, with the European tradition of art and culture, is represented by the Italian, French and Spanish furniture styles, extending the characteristics of royal furniture from the seventeenth to the nineteenth century (Wang 2012).

For example, Italian design, with its deep cultural heritage and cutting-edge design style, stands at the forefront of international design. It has influenced design in different countries in the world. Italian furniture design is deeply rooted in history and is highly related to the country's great art and handicrafts. Italian design was reflected and matured in the intense debate of various architectural styles and art studies from an industrial point of view in the twentieth century. Despite its richness and complexity, this design has an obvious industrial feature, known as its workability and normativeness. It is not formed quickly in the mind, but generated through a long work process (Chen and Zheng 2011; Bosoni 1997).

Human factors have always played an important role in Italian design. If other countries have a design theory, then Italy has a design philosophy, perhaps a design ideology. Italian ancient designers turned Greek mythology into a chair and table, or a lamp. Their impression of the city will be conveyed as a design for a sofa to increase life's dramatic colour and richness. Their attitude towards life will be made into a stool. They will integrate their emotions and longing for the future in a simple commodity. For them, design is a utopian way to symbolize a perfect life (Bosoni 1997; Liang 2004).

At the beginning of the twentieth century, the unique design of northern Europe was recognized by the world. The main feature of Nordic furniture is that it is simple, lively, plain, elegant and user-friendly with good function (Lei 2002). Their design respect traditional crafts and culture: they are good at creating, innovating and using local materials. The furniture's colour is natural and full of spirituality, with a fashionable feel. The design of the furniture is bright and vivid. The designers have an affinity with nature and society, which satisfies people's physical and psychological needs. North European design not only follows the principle of functionalism, but also has profound cultural characteristics. No matter if it is wood or plate, the design pays attention to the factors of economics, practicality and comfort. Nordic furniture is full of the human touch. Therefore, Nordic furniture is favoured by modern people, and in the 1950s, this kind of design became an international design standard (Hua 2005; Wang and Gao 2008; Tang and Shen 2005).

The United States design is evolving and tends to fall into a pattern based on the European furniture design system. At the same time, its development is affected by two aspects. Firstly, its well-developed scientific and technological strength provides technical support and new materials created by new technology. Secondly, the entering of foreign design thinking and the immigration of many foreign famous designers has injected new vitality and power into furniture design. After World War II,

the United States formed a furniture design idea of pragmatism and commercialism. Its furniture design is born out of European furniture design. However, it is beginning to show distinctive national characteristics with the artistic features of elegance and practicality. The design has a very high artistic and aesthetic value and is becoming an important pillar in the world's furniture (Hu 2009).

Chinese furniture has accumulated thousands of years of Chinese national characteristics. It is a combination of the latest technology, environmental protection and humanism. The development and design of modern Chinese furniture first established consumption awareness and the idea of a 'nationalization product'. Then it learned from the traditional style of Chinese and foreign elements. Finally, it formed symbolic characteristics of nationalization in the new era. The new era of design is improvement of the traditional structure. It is also a comprehensive design based on widely used modern materials and high-tech. Due to the large entry of Western and Eastern cultures, modern Chinese people have begun to diversify their furniture design. China has taken modernization as a goal. Therefore, diversification has become an inevitable choice. Faced with the current furniture market trends, all kinds of furniture styles are emerging constantly. The category of furniture design includes modern avant-garde, modern and simple, elegant doctrine, new Chinese, neo-classical, European classical, American country doctrine and Mediterranean-style (Sun 2014; Tang 2004; Cai 2007; Wang 2008).

Southeast Asian design's emphasis is on the natural, casual, healthy and recreational. It reflects a respect for nature and advocates handcrafted fabrication. The design abandons complex decorative lines and uses a simple and clean design to create a cool and comfortable feeling (Ye 2011; Luo 2012). Because of abundant plant resources, furniture mostly uses local materials, rattan and wood furniture being the most common. The colours used are mainly primary colours (Ye 2011; Cui et al. 2011; Wang 2012). It normally pursues an exaggerated and gorgeous visual effect in

home decoration. For this reason, the design forms a sharp contrast with the true nature of furniture. The whole atmosphere is flowery, brilliant and intoxicating (Ye 2011).

According to the analysis above, the world's major furniture design styles can be summarized in Table 2.17.

Table 2.17 The design style in the major countries or areas in the world

Europe	luxury, elegance	South Europe	cultural heritage, plentiful, cutting-edge, industrial feature, humanistic
		North Europe	brief, lively, plain, elegant, economical, practical and comfortable, humanistic functionalism
United States	on the basis of European furniture design system, practical		
China	national characteristics, environment protection, humanistic, high-tech, modernization, diversification, human factor		
Southeastern Asia	natural, casual, healthy, recreational, fresh, simple, clean		

Source: own elaborations

2.6 Summary

Production has relocated from the most advanced developed to less developed countries. Although there is technological improvement, the furniture industry is still a low-tech industry. Improvement in the technology refers to technology used in producing the basic components of furniture. The major parts of the furniture are handmade. Therefore, furniture can be produced in less developed countries to access the cheap wood raw materials, skilled labour, etc. The tendency towards this kind of production is increasing. Thus, there are two strategies leading to the change of production centre to less developed countries: the production location changing to Poland and Mexico, and the change to less developed countries in Asia, like China, Malaysia and Vietnam. The relevant data of the top two producers in the world, the USA and China, reflect this kind of relocation. The production of furniture is

decreasing in the USA but increasing in China. However, the number of furniture enterprises in China in which foreign companies are invested and companies from Hong Kong, Taiwan and Macau show a decline. There are two reasons leading to the fall in the number of foreign companies in China: tax is increasing, and the market is already mature and saturated. Therefore, production is going to the other less developed countries such as Vietnam.

The world's furniture industry developed rapidly from 2001 to 2013. Both furniture production and consumption increased constantly, especially in middle- and low-income countries. Production in high-income countries decreased. In Asia and North and South America, consumption shows an increasing trends The European Union's share of worldwide furniture consumption is falling, however.

From 1999 to 2008, both imports and exports were continually increasing. In 2009, imports and exports decreased significantly due to the world economic crisis in 2008. In 2010, they started to rise again. By 2011, both had recovered to the level before 2008; they subsequently increased year on year. The most advanced developed countries are the major importing countries such as the USA and Germany, which are ranked the first and second importers in the world. The top two exporters in the world are China and Germany. Italy, Poland and the USA are also strong exporters. Both imports and exports of less developed countries are growing fast.

Mature forests in the southern hemisphere can provide a plentiful raw material supply for the world's furniture industry. There are also sufficient raw materials in the USA and Europe. There are limited wood raw material supplies in some countries, such as Malaysia, China and Vietnam. The raw materials used in modern furniture are more and more diversified. Sometimes, wood is substituted by wood-based panel, plastic and metal. In China, Western Europe and North America, semi-finished and finished components are used as raw materials. Metals, boards and energy use contribute most to the environmental impact of the different products.

As the furniture industry is a labour intensive industry, unskilled labourers comprise the largest proportion in most countries' furniture job market. There is a trend in the job shifting from high-wage countries to low-wage countries. Much of the transformation surely will be the conversion of the unskilled worker. In Western Europe, despite the unskilled job losses, the number of skilled workers has risen.

Eastern Europe and Asia are becoming major centres of employment as less developed countries. Firms and employment attracted by the Central Eastern Europe countries have increased. Poland, as a Central Eastern Europe country, ranks first in the EU level in terms of employment. In Asia in the early 1990s, China became the world's major location for employment and the production of low technology and labour intensive industries. However, this situation is changing. The Chinese furniture industry is facing a sharp price rise in raw materials, labour costs, RMB appreciation and other issues. Therefore, employment in other major low-income countries in Asia is rising.

The demand for highly skilled labour in the furniture industry is increasing. However, the demand for low skilled labour is falling. This is caused by a high degree of mechanization and automation in furniture production.

There are common methods by which furniture companies acquire capital, such as FDI, government support and IPO. Furniture companies also use many other ways to access capital, such as outsourcing, crowdfunding, investment from partnerships between companies and agencies.

The factors affecting design are design process, design evaluation and wooden furniture design dependent factors—i.e. art, functionality, material, cost, safety and social responsibility. There are three global trends in furniture design: that design and production are gradually connected with the idea of sustainability; that furniture can be designed according to the manufacturing strategy of mass producing furniture; and that furniture design is shifting from mass production to mass customization.

Above 80 per cent of global sales of luxury furniture are from Europe. Design is the best way for European manufacturers to differentiate their products. Distributors can sometimes also design their own product. For example, global retail chains can be the design makers. However, small retailers are design takers.

The major furniture design styles are from Europe, the USA, Chinese and South East Asia. The general European furniture style is one of luxury and elegance. As a major European producer, the design characters of Italy are cultural heritage, industrial features and humanism. The style of North Europe is simple with a humanistic functionalism. The American design is based on the European design system, practicality being its main characteristic. Chinese design features include national characteristics, environmental protection, humanism, high-tech, modernization and diversification. The design style in South-eastern Asia is natural, casual, healthy, recreational, fresh, simple and clean. In general, human factors, including culture, are important for all the world's design styles.

Chapter 3. Four important factors affecting furniture industry

3.1 Introduction

The current literature on economic geography suggests that there are four most important factors affecting location strategies in the furniture industry. These four factors are agglomerations, clusters, linkage (including all kinds of networks and value chain) and production subcontract.

Agglomerations are important for the location analysis of the furniture industry. In the furniture industry, most firms are SMEs. Normally, these SMEs form an agglomeration because they do not have enough capacity (capital and labor) to develop long-distance production networks: they have to cooperate with other companies nearby to survive (Scott 2006). The main advantages they can gain from agglomerations are intensified networking and interactive processes, as well as cost reduction (Brusco 1990 in Maskell 1996; Heanue 2008; Malmberg et al. 2000; Maskell et al. 1998; Malmberg and Maskell 1997).

Clusters can improve firms' competitive advantages, mainly through promoting innovation. Innovation in the cluster generates more benefit for low-tech industries such as the furniture industry. Cooperation between firms and local organizations in high-tech clusters is less intensive than in low-tech clusters (Grzegorzewska et al. 2014). Innovations in the cluster have a high impact on the positive development of the furniture industry. This is a key factor for the survival, growth and development of SMEs, which represents most of the companies in the furniture industry. Clusters of SMEs have proved to be one of the most dynamic ways to promote the growth of regional economic systems. They can also spur innovation and economic development (Grzegorzewska et al. 2014; Scott 2006).

The distinctions between agglomerations and clusters are smaller than 30 years ago. An agglomeration is initially defined as the concentration of businesses and industrial plants in a specific region or location (Palacio 2005). Clusters may be defined as

non-random geographical agglomerations of firms. This means that a cluster is a special agglomeration (Richardson 1972, Ellison and Glaeser 1994 in Maskell and Kebir 2005). The difference between a cluster and an agglomeration is whether the firms located together randomly or non-randomly. However, in the past 20 years, agglomeration has been defined as a location phenomenon with some important features of clusters, such as cooperation and competition (Saxenian 1989 in Palacio 2005).

A further element is linkage which is highly associated with agglomerations and clusters. Agglomeration may be a necessary support for the development of many segments of the furniture industry; however, without the complementary mechanisms of distribution of the outputs to wider markets, its full powers cannot be exerted. This statement implies two main points, both of which involved the notion of the value chain: firstly, physical outflows of final products must occur, and secondly, appropriate institutional coordination to support these outflows must be built up (Scott 2006).

An additional factor is the production subcontract. This is a kind of relationship between the location of firms and linkages, which has received attention in the literature (Healey and Ilbery 1990). Where outsourcing is involved, the need to mediate arrangements of the linkages between the locations of firms is even higher. Firms must constantly engage in extensive scanning, monitoring and coordinating of their interrelationships. For this reason, the physical flows involved and the institutional frameworks that sustain them must be seriously considered. In this regard, the concept of the value chain is of key importance, since it emphasizes both movements of products between an origin and a destination, and social relationships and information communication technology used to manage these movements (Gereffi 1994 in Scott 2006).

The importance of linkages and production subcontracts foster the technological and skill capabilities in the furniture industry. This has been addressed in almost all studies (Berry et al. 2002 in Boon-Kwee and Thiruchelvam 2011). For instance, an investigation into Canadian furniture clusters shows that external linkages are important in stimulating internal innovation (Drayse 2011 in Boon-Kwee and Thiruchelvam 2011). Research about Denmark concludes that vertical and horizontal networks are the primary sources of innovation in furniture clusters (Asheim and Coenen 2005 in Boon-Kwee and Thiruchelvam 2011). In the analysis of Indonesian furniture clusters, it is found that subcontracting relationships with foreign investors and buyers are essential (Berry et al. 2002 in Boon-Kwee and Thiruchelvam 2011).

In the future, furniture manufacturers will outsource more work to professional entities. In this way, they can focus on other areas such as supply chain, assembly and distribution operations (Buehlmann and Schuler 2009 in Andreja and Richard 2010).

3.2 Agglomeration as a factor of clustering in the furniture industry

Agglomeration is initially defined as the concentration of businesses and industrial plants in a specific region or location (Palacio 2005). In this sense, firms or institutions in the region exploit a common resource pool. They utilize specialized facilities and infrastructure together (Isard 1960 in Palacio 2005).

However, new economic geography has redefined agglomeration. This new agglomeration theory has the following features: firms are linked with each other; they share some common values and knowledge; they learn from their customers, suppliers and competitors; and they cooperatively compete for the same end market. These features turn out to be important for today's industrial clusters (Saxenian 1989 in Palacio 2005; Brusco 1990).

The majority of firms in the world furniture industry are running as SMEs. These SMEs will normally form an agglomeration as they cannot develop long-distance

production networks due to capacity shortage. In contrast, the big firms in the industry are independent: they do not need to rely on the other companies (Scott 2006). They have some advantages compared to the SMEs. These advantages may include larger internal economies of scale and scope, operational efficiency, a higher degree of product standardization, being more streamlined and less variable external linkages. Therefore, they can develop the production networks themselves (Molotch 1996 in Drayse 2008; Scott 2006).

The causes of the formation of an industrial agglomeration can differ. For example, in manufacturing industries in India, more attractive policy concessions or reforms offered by smaller or remoter cities can attract more business. It can also offset the adverse effects of excessive regulation, which reduces the probability of a business locating in a city (Lall and Mengistae 2005). In China, the degree of industry agglomeration is closely related to foreign trade and foreign direct investment. Export-oriented and foreign-invested industries have a higher degree of agglomeration than other industries as these industries tend to locate in regions with easy access to foreign markets (Ge 2008).

Trust is an important feature of agglomeration. Two particular types of trust are associated with industrial agglomerations: ascribed trust and socially regulated trust. Ascribed trust is based on the family, ethnicity or other characteristics (e.g., membership of a social community, religion or profession) of the cooperation partners (Humphrey and Schmitz 1996 in Heanue 2008). It is relatively accessible and cost efficient. It performs an important role at the beginning of the cooperation and in the initial development of trust (Lorenzen 1998; Humphrey and Schmitz 1996 in Heanue 2008). Socially regulated trust is the expectation of honesty among economic agents, and is governed by generally accepted rules or conventions. For example, a trade association that provides financial help can restrict the behaviour of firms by threatening the removal of its assistance. In either of these two types of trust, any

ignorance of the local rules, cultures or norms of economic behaviour will have serious social and economic consequences. Many institutions involved in industrial agglomerations facilitate and strengthen these two types of trust. The expectation of honesty arising from them is an externality. It can be used to create knowledge (Maskell 1995; Heanue 2008).

Spatial agglomeration of related economic activities improves firms' competitiveness. This is also caused by the effects of a common culture, a specific language, and a set of informal but essential economic institutions in the agglomeration. It provides specific benefits to the firms in successful furniture agglomerations in some countries (for example, Denmark and Italy). The benefits are not available to those outside the geographic area of the agglomeration (Brusco 1990; Heanue 2008).

Firms in an agglomeration can improve their competitiveness through intensified networking and interactive processes (Storper and Scott 1995 in Stein 1999; Andadari et al. 2012). Proximity is advantageous. Furniture producers who locate proximally can communicate freely and exchange knowledge when they start to trust each other. The firms can also increase the economies of scale and scope through the network. With this kind of network, firms in this low-tech industry can survive. Sustained competitiveness and spatial proximity are thus closely interrelated (Maskell 1998 et al.; Malmberg and Maskell 1997; Strange and Rosenthal 2003).

Firms can also benefit from cost reduction. This is one of the most important advantages that companies can obtain by locating together with relevant institutions or firms. There are two ways to reduce costs in agglomeration. One is the reduction of production costs by sharing tangible physical resources or intangible social resources, including easy access to raw materials and intermediary products or machinery. They might also easily access a specialized supply of complementary products or services: auditing, finance, transport, repairs, logistics, market research, marketing, data

processing or design (Malmberg et al. 2000; Maskell 1996; Richardson 1972). Another is the reduction of transportation and transaction costs by cooperating with suppliers and customers located in the agglomeration. The proximity between the firms in the network and interactive processes are highly related to cost reduction. The shorter the distance between the participants in an interactive collaboration, the lower cost and the smoother the collaboration (Malmberg et al. 2000; Maskell 1996).

3.3 Cluster as an important business environment for the furniture industry

A cluster was initially defined as a concentration of large numbers of similar small businesses in the same locality (Marshall 1920 in Giuliani 2005, Bell 2005 and Folta et al. 2006). After around 50 years, a cluster was redefined as a non-random geographical agglomeration of firms (Richardson 1972, Ellison and Glaeser 1994 in Maskell and Kebir 2005).

The concept of a cluster most often used is defined by Porter:

"Clusters are geographic concentrations of highly specialized skills and knowledge, interconnected companies, rivals, specialized suppliers and service providers, sophisticated customers, firms in related industries, and associated institutions (for example universities, standards agencies, and trade associations) in particular fields and a particular nation or region that compete but also co-operate" (Porter 1998b, p. 199; Porter 2003, p. 253 in Ravn and Petersen 2005, p.13).

Clusters exist in nearly every type of business, whether manufacturing goods or providing services (Porter 2003 in Ravn and Petersen 2005). Cluster theory is beginning to be prominent in thinking about economic development. It reveals important insights into the productive potential of an economy and the constraints on its future development. Location factors and cluster theory have many important implications in different areas, such as strategic positioning, the configuration of

global strategies, supply chain management, the analysis of collaborating and alliances, and management of R&D (Porter 2000 b; Porter 2000 a).

Location is a crucial part of the cluster concept. Porter (1995) describes the cluster as a national industrial system. However, a number of clusters are based in just one part of a country but are not the whole country: they are rather local or regional. The region is often used as an expression of the geographical range of a cluster (Ravn and Petersen 2005).

A cluster can be observed as a phenomenon going through a lifecycle with four distinct stages: beginning, growth, maturity and decline. The cluster in the beginning stage starts to develop and grow; in the growth stage, it has developed but there is further room for growth. The cluster in the mature stage is stable but might not grow any more: it might start to decline. A cluster in the decline stage can possibly be reinvented and enter into a new lifecycle (Porter 1998b in Ravn and Petersen 2005).

There are several factors that lead to the formation and development of the cluster. For example, the formation of clusters in Ohio is highly related to tradition. The cluster in the region is mainly found in traditional manufacturing industries. The beneficial effects of clusters diminish, or even turn negative, in the mature phase of the product cycle. New firms are more likely to cluster in the region with traditional strength (Braunerhjelm and Carlsson 1999). Entrepreneurs are important actors in the development of clusters. Entrepreneurs who adapt to both constructive crises and new opportunities create certain factors and conditions. These factors and conditions promote their business interests, in turn contributing to the development of external resources (Feldman et al. 2005). Several external economies contribute to the clustering of firms, such as industries' collaboration economies, transfers of knowledge, local specialized labour pools and relationships with non-business institutions. Specific development policies can identify and use these external

economies to attract more companies to locate in the cluster (Doeringer and Terkla 1995).

In a cluster, information is 'in the air', forming an environment which can be accessed by all. There are mainly three externalities produced in the cluster: access to the skilled labour force pool, easy access to specialized suppliers and knowledge spillovers. These externalities attract more firms to enter into the cluster (Marshall 1920 in Giuliani 2005, Bell 2005 and Folta et al. 2006). However, OECD (2001) and Marshall (1923) in Pallares-Barbera et al. (2004) restated the three external economic factors as locally concentrated labour markets, exchange of information through personal contact and forms of subcontracting. Many authors have identified different positive effects of clusters in detail, as follows.

Access to a skilled labour force is one of the most important determinants for a cluster. The pooled labour indeed causes all workers and firms to end up in the same location (Hoen 2001).

Knowledge diffusion is a key feature of industrial clusters. In clusters of small enterprises, knowledge and skills are not inside the firms, but in the local labour force. The movement of the skilled and flexible workers becomes the channel for knowledge transfer between enterprises. Furthermore, knowledge can be transferred through communication forums and cooperation (Jakobsen et al. 2003 in Hansen and Clasen 2010; Beerepoot 2007).

There are intrinsic knowledge exchange processes in the cluster. It gives members economic advantages over outsiders. Both tacit and codified knowledge can be exchanged locally and globally. There are two ways to exchange knowledge: firstly, through the learning processes among actors inside a community, where the actors can absorb any information available in the processes; and secondly, by building channels of communication. These are called pipelines to selected providers outside the local environment. The co-existence of these two methods may afford firms in clusters

particular benefits (Bathelt et al. 2004; Bathelt et al. 2004 in Howells and Hedemann 2008).

Firms in clusters also benefit from network-based effects. The concept of clusters goes beyond geographical proximity to emphasize the relationships and social interactions of intra-firm and inter-firm, as well as extra-firm (the connection of firms with institutional organizations) in the cluster. Personal interaction, frequent communication and a sense of a common identity can arise from project cooperation among organizations and networking arrangements. These linkages foster the cluster dynamics. Some relationships are connected by contract; many are long-term trust relations between cluster actors (Yeung 1994 in Pallares-Barbera et al. 2004; Wijnolst, et al. 2003 in Hansen and Clasen 2010). For example, the furniture manufacturers can form a close partnership with their suppliers, customers, retailers or actors in support industries. In this way, they have more opportunities to get in touch with customers and grasp customers' new needs more clearly and quickly (Grzegorzewska et al. 2014; Boon-Kwee et al. 2012). These relationships can increase resource sharing through knowledge spillovers. These positive externalities will attract more economic actors to the cluster (Wijnolst et al. 2003 in Hansen and Clasen 2010).

Learning is the most important feature of a cluster. It can improve the competitive advantage of firms in the cluster in a developed country if the cluster is operating in internationally open markets, and will especially help to create, accumulate and apply codified knowledge a little faster (Maskell and Malmberg 1999 in Howells and Hedemann 2008).

Learning in a cluster is closely related to trust. In the wooden furniture industry in the Muar cluster of Malaysia, the furniture manufacturers form a close partnership with their suppliers, customers, retailers and other actors in the support industries. This enhances the process of interactive learning. The learning process in the cluster

is described as a socially constructed and embedded process. The process is strongly associated with the element of trust within the cluster (Boon-Kwee et al. 2012).

Firms in a cluster are more innovative. The cluster is a sharing environment. All the firms in a cluster can easily and efficiently exchange knowledge, skills and inputs, increasing the speed of innovation. The innovation environment in a cluster is more radical (Porter 1998b In Bullard and West 2002; Porter 2003 in Ravn and Petersen 2005). Furthermore, because of geographic proximity and comparisons between each other through direct observation of competitors, enterprises in clusters are under strong competitive pressure. This pressure drives innovation, as well as the spillover and diffusion of innovation. Therefore, specialization is an exceptional feature of companies in the cluster. On the other hand, firms can become more competitive by combining observations of the work of their competitors with their own efforts. Firms also benefit from nearby suppliers, such as attaining an efficient scale and high levels of social networking. In this way, they can create, accumulate and apply knowledge. The high innovation in clusters may also be because of the effects of location externalities on innovative performance. These location externalities are associated with the phenomenon of industrial clustering and will affect the innovative performance. Large firms are able to distribute more resources on innovation and will benefit from innovativeness in terms of market and financial positions. Nevertheless, innovativeness has a stronger influence on small firms. Innovation in a cluster of SMEs has proved to be one of the most dynamic ways to promote the growth of regional economic systems. This is also why innovation often occurs regionally (Grzegorzewska et al. 2014; Baptista and Swann 1998; Engelstoft et al. 2006; Beerepoot 2004).

There are also many problems in the world's furniture clusters. In Ireland, the companies in the clusters may be not the best. Location is becoming a less important driver of innovation processes in the furniture industry. There are some deep-rooted

firms in the cluster that have ceased to innovate and adjust to changing demand and supply, and government support may increase rather than lighten the problem. Support for the companies who are continuing to innovate, expanding product lines, output, exports, customer base and/or market share is appropriate, no matter whether they are deep-rooted or not (Heanue 2008). In Indonesia, about 95 per cent of the furniture industry is managed by SMEs, and these SMEs have formed natural clusters. These clusters are not efficiently distributed in terms of obtaining raw materials and marketing, and this inefficiency reduces the competitiveness of the SMEs. They then lose out to the Chinese and Vietnamese furniture industries (Andriani et al 2011).

3.4 Linkage in relation to the value chain

Network relationships refer to a firm's collaboration in innovation and interdependence with other organizations (Porter 1998b; Fagerberg 2006). Networks are used by organizations to pool or exchange resources and access specialized assets. They can learn from the related organizations and jointly develop new ideas and skills (Powell and Grodal 2005). The organizations linked with the firms may include suppliers, customers and competitors, or non-firm entities such as universities, schools and government ministries (Edquist 2005). The relationships between the firm and the organizations may be either formal or non-formal; they can also be local or international (Lazerson and Lorenzoni 1999 in Heanue 2008).

A network is considered a powerful tool for improving firms' competitiveness. A network involves a series of associative behaviours among firms, helping the firms to expand markets, increase value-added or productivity, and stimulate learning. Through network relationships, firms can focus on core activities. They can also access different competencies and opportunities in the network (Powell and Grodal 2005; Bosworth and Rosenfeld 1992 in Heanue 2008). Those firms with strong local linkages are more innovative, while firms with weak local linkages are less innovative

(Grzegorzewska et al. 2014). Participation in extended networks enables firms to develop innovation capabilities, primarily by accessing new ideas and resources, and facilitating the transfer of knowledge (Powell and Grodal 2005).

In many low-tech industries such as the furniture industry and some clothing industries, the nature of linkages is constantly changing. In these industries, the form of production is small-scale, unstandardized and labour intensive. Frequent face-to-face contact with suppliers and customers is usually necessary. Therefore, the factories and offices try to locate close to one another. By contrast, when the productive activities are large-scale, capital intensive and standardized outputs, linkages tend to be relatively stable and predictable. The need for face-to-face contact is minimized, and this allows dispersal of the factories and offices (Healey and Ilbery 1990).

There are also other situations. For example, for industries with restricted supply or market areas, such as some forest products, their locational choice is limited by low-value, bulky, standardized inputs and/or outputs. In this case, geographic distance is a big barrier because costs in time and money are high. The transportation cost may be higher than the value of the product. Conversely, some productive activities are characterized by small, unstandardized links, such as international consultancies. In this kind of situation, distance between the linkages is indifferent (Healey and Ilbery 1990).

From the perspective of the companies, the value network and supply network are key concepts in the field of strategic management. These concepts were initially theorization by Porter in 1985, and the process of their development has dominated in the field of strategic management. Based on these concepts, the start, growth and survival of a company are tied to something more than the company's internal strengths and weaknesses. The quality and quantity of information, suppliers, consumers, and united and non-united competitors form the company network or

system of communication. They will all affect the establishment, growth and maturity (or decline) of the company (Majid et al. 2015).

A value chain is defined as "the linked set of value-creating activities all the way from basic raw material sources for component suppliers through the ultimate end-use product delivered into the final customers' hands" (Shank 1989, p. 50 in Dekker 2003, p. 4).

The value chain displays the total value of the firm, which consists of value activities and margins. Value activities can be divided into primary activities and support activities. Primary activities involve the physical creation of the product, sales and after sales service. Primary activities of the firm include five generic activities: inbound logistics, operations, outbound logistics, marketing, and sales and service. Support activities support each other, and can also support the primary activities. Human resource management, technology development and procurement can support the primary activities and the entire chain. Firm infrastructure is not associated with the primary activities but supports the entire chain. The term 'margin' refers to the profit margin. The profit margin is the difference between the total value and the collective cost of performing the value activities (Figure 3.1) (Porter 1998a).

Figure 3.1 The Generic Value Chain
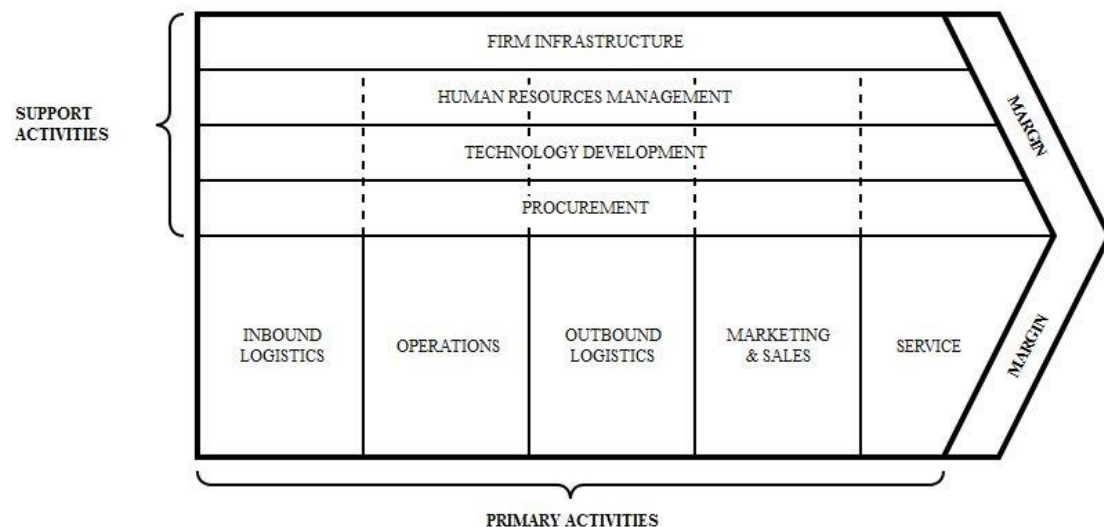
Source: Competitive Advantage-Creating and Sustaining Superior Performance (Porter, 1998a)

A value chain can be described as a major line of business. An organization may have one or several value chains. A value chain can be decomposed into around three to seven sub-business processes (e.g. a supply chain, a new product development process). Depending on the nature of the business, it can also include dozens of processes: it may contain business processes, processes, sub-processes, sub-sub-processes and even sub-sub-sub processes. Finally, practical activities are carried out after these processes: sometimes tasks are needed to simplify things (Wolf 2003).

Linkages in the value chain can lead to competitive advantages in two ways: optimization and coordination. Optimization of the linkages often reflects trade-offs among activities. For example, a more costly product design or better inspection of the process may reduce service costs. A firm must optimize such linkages in order to achieve competitive advantage. Linkage may also reflect the need to coordinate activities in operation—for example, coordination among operation, outbound logistics and service. The ability to coordinate linkages often reduces costs or enhances differentiation (Porter 1998a). The higher the interdependence between activities (i.e. the stronger their linkage), the more coordination will be required. For instance, the ordering of standard products from a supplier is a situation of sequential interdependence. The ordering of customized products reflects a situation of reciprocal interdependence, because the buyer's input is required in the supplier's processes (Thompson 1967 in Dekker 2003). The latter situation requires more coordination between the buyer and supplier by using more extensive and complex control mechanisms (Gulati and Singh 1998 in Dekker 2003).

Companies' response to globalization caused the spread of Global Production Networks (GPN). The phenomenon of GPN is defined as the global division of labour and encourages producers to establish international production networks. The network breaks up the vertical structure of the organization, such as increasing offshoring of

production activities. In order to seek advantages in lower cost countries, producers establish subsidiaries in these countries to extend the network, leading to the growth of international trade in intermediate goods. This also creates an infrastructure of cross-nation production (Feenstra 1998; Arndt and Kierzkowsi 2001; Gereffi et al. 2005; Walcott 2011). A GPN links multiple locations and involves both intra-firm and inter-firm linkages. It covers a variety of value chain stages, including higher end and more knowledge intensive ones. Normally, a GPN combines a lead firm, its subsidiaries, affiliates and joint ventures, its suppliers and subcontractors, its distribution channels and value-added resellers, as well as its R&D alliances and a variety of cooperative agreements (Ernst 1999).

The theory of GPN focuses on analysis of the organizational structure of the global economy and its dynamics. The connection between global and local mechanisms is the precondition for the analysis of economic globalization (Ernst and Kim 2002; Henderson et al. 2002; Coe et al. 2004). Localized clusters are now integrated across countries through GPN. Internationally dispersed activities under the effect of globalization are typically concentrated in a limited number of overseas clusters. In this way, GPN reshapes the spatial allocation of economic activities, especially for learning and knowledge creation (Ernst 1999).

Global commodity value chains theory can be distinguished into two types of value chain: producer-driven commodity chains and buyer-driven commodity chains. Producer-driven chains are found in high technology industries such as the car or aircraft industries, or large firm manufacturing sectors where suppliers have the resources to develop their own distribution and marketing networks. Buyer-driven chains are more commonly associated with the labour intensive industries such as garments and toys, or small firm sectors where producers lack the resources to undertake distribution and marketing functions themselves. This implies that intermediaries such as large retailers, branded merchandise and trading companies

play a central role in shaping decentralized production networks. These actors control the highest value-added activities within the chain, such as design, marketing and distribution. It is difficult for producers to access these areas. The furniture industry is allocated to the buyer-driven commodity chain by most authors (Murillo 2007; Gereffi 1994, 1999 in Scott 2006).

3.5 Production subcontract as the main trend of furniture industry

A production subcontract refers to a situation where the firm asks another legally independent firm to carry out the processing of part of its production. Processing could include a material, component, part or subassembly. The subcontractor has to process it according to the firm's specifications. A subcontract is thus an intermediate form of production between in-house production and the buying in and assembling of components. Through a subcontract, firms can concentrate on areas such as design, technology, branding, logistics, marketing and after-sales service. Therefore, the firms' capabilities in these areas can increase. If firms can select the best sources and develop long-lasting relationships with subcontractors, outsourcing can improve their competitive advantage in terms of cost, time, quality and flexibility. For this reason, outsourcing is dynamic in nature (Chinguwa et al. 2013; Healey and Ilbery 1990).

Outsourcing is a global trend. Basic manufacturing processes have been outsourced to developing countries; the more complex processes are maintained in advanced countries. Information and communication technologies (ICTs) have been extremely important for international outsourcing in the furniture industry. The global economy has been dematerialized significantly because of the extensive use of ICT, which allows furniture manufacturers to outsource an increasing number of raw materials, parts, labour and other inputs. Following this trend, some of the locational factors associated with furniture production have become less important. However, there are still some locational advantages that benefit furniture production, and furniture

manufacturing firms should therefore continue to locate in clusters (Campos et al. 2008; Bullard and West 2002).

There are two main reasons for highly developed countries to outsource. One is economical: the outsourcing is normally from high-wage countries to independent firms in low-wage countries. Firm can reduce costs by shifting production to low-cost sites. Another is technical: a subcontractor can innovate products and processes in a shorter time; alternatively, the firm does not possess the technological knowhow and developing this knowledge requires a large investment. Outsourcing of activities is increasing at a rapid rate as entrepreneurs in low-wage countries learn how to produce to global standards (Fogliatti et al. 2010; Gereffi & Korzeniewicz 1994, Kessler 1999 and Scott 2002a in Scott 2006).

Outsourcing decisions may also be affected by product type. Outsourcing labour intensive, slow moving and easy to transport items makes sense (Eksioglu, et al. 2010). Firms are increasingly outsourcing the production of standardized furniture components and hardware. In some cases, larger firms are outsourcing the production of finished furniture pieces (Drayse 2011).

In comparison with other labour intensive industries, such as apparel and footwear, furniture production has been less amenable to globalization. Furniture has one of the lowest value-to-bulk ratios of any manufactured commodity. At the same time, wood and upholstered furniture can easily be damaged in transit. Furniture's status as a cultural product has influenced industrial organization and further limited globalization. The furniture industry has a labour intensive character of production and relatively low barriers to entry. The industry is very competitive. In the industry, firms have great incentives to seek out low-wage labour, materials and the cultural characteristics of furniture (Molotch 1996 in Drayse 2008). These factors have reduced long-distance subcontracting, helping to create a labour intensive and batch production industry based on agglomerations of SMEs (Drayse 2008).

The Outsourcing Logistics Decision Support System (OLDSS) has been developed to help manufacturers make outsourcing decisions. The main objective of such a development is to acquire and share outsourced knowledge and data. A break-even analysis is used to make products or buy decisions. In most instances, outsourcing is preferred if the lead time for buying is substantially lower than the lead time for manufacturing (Fogliatti et al. 2010).

3.6 Summary

This chapter offers a comprehensive review of contemporary studies on agglomerations, clusters, linkage and production subcontracts. It helps to place the research against a solid background when searching for the questions posed at the beginning.

In the furniture industry, the main reason for the formation of agglomerations is that SMEs in the industry cannot develop long-distance production networks due to their limited capacity. Other factors leading to the formation of an agglomeration could be more attractive policy concessions or reforms, foreign trade and foreign direct investment.

Intensified networking and interactive processes in the agglomeration can benefit those companies within it. Cost reduction is also an advantage that can be accessed by the companies. There are two ways to reduce costs in an agglomeration: firstly, the reduction of production costs by sharing tangible physical resources or intangible social resource and, secondly, the reduction of transportation and transaction costs by cooperating with suppliers and customers in the agglomeration.

Clusters exist in almost all industries. Clusters can undergo a lifecycle with four distinct stages: beginning, growth, decline and decline. There are several factors leading to the formation of the cluster, such as tradition, entrepreneurs and external economies in the cluster.

Location is important when defining the geographical range of a cluster. Porter (1995) describes the cluster as a national industrial system. However, many clusters are local or regional rather than national: they are located in just one part of a country.

There are some characters in the cluster that can benefit the companies located within it. In 1920, three main externalities of the cluster were initially identified: access to the skilled labour force pool, easy access to specialized suppliers and knowledge spillovers. They attract more firms to enter into the cluster. In 2004, the three external economic factors were restated as locally concentrated labour markets, exchange of information through personal contact and forms of subcontracting. Many authors have identified different positive effects of clusters, such as knowledge diffusion, intrinsic knowledge exchange processes, network-based effect, access to skilled employees, etc. All these effects in the cluster can make companies learn and innovate faster. However, many problems were also found in furniture clusters. For example, in Ireland, the deep-rooted firms in the cluster have stopped innovation, and in Indonesia, the inefficiency of the clusters reduces the competitiveness of the SMEs.

Networks can highly increase firms' competitiveness. Through network relationships, firms can concentrate on their main activities. There are also different competencies and opportunities in the network. Joining an extended network enables a firm to develop innovation capabilities.

In many low-tech industries such as clothing and furniture, there is frequent face-to-face contact with suppliers and customers. In these industries, the form of production is small-scale, unstandardized and labour intensive. If the productive activities are large-scale, capital-intensive and standardized outputs, linkages tend to be relatively stable and predictable. There is almost no face-to-face contact.

From the angle of the companies, the value network and supply network are currently key concepts in the field of strategic management. The value chain demonstrates the value network in the firm: it shows the total value of the firm and

comprises value activities and margins. Linkages within the value chain can lead to competitive advantage in two ways: optimization and coordination. Optimization of linkages often reflects trade-offs among activities, while coordination will be more necessary when the relations between activities are stronger (i.e. the stronger their linkage).

The globalization process induces a company to extend GPN. GPN emphasizes analysis of the organizational structure of the international economy and its dynamics. GPN connects together different locations. It contains linkages both within and outside the firm, and involves different value chain phases. Localized clusters are now integrated through GPN across countries; internationally scattered activities under the process of globalization are normally concentrated in a few overseas clusters.

The global commodity value chains theory can be classified into two types of value chain: producer-driven and buyer-driven. The furniture industry is assigned to the buyer-driven commodity chain by most authors.

Outsourcing is a major trend in global furniture production. Simple manufacturing processes are outsourced to less developed countries, while the major processes are still produced in advanced countries. ICT has been remarkably important for the outsourcing of the furniture industry: these technologies make the outsourcing efficient. Meanwhile, some of the locational factors related to furniture production have been less influential; however, there are still some locational advantages in furniture production. Therefore, furniture-manufacturing firms should continue to locate in clusters.

There are two main factors causing outsourcing in developed countries: economical, where the outsourcing is normally from a high-wage country to independent firms in a low-wage country, and technical, where a subcontractor can innovate products and processes quicker.

Outsourced items are normally labour intensive, slow moving and easy to transport. Compared with other labour intensive industries, such as apparel and footwear, furniture production is not easy to control under the process of globalization. This is for three reasons. Firstly, furniture is normally bulky; secondly, wood and upholstered furniture can be easily damaged during the process of transportation; and thirdly, furniture is a product related to localized culture. These reduce the possibility of long distance outsourcing. Therefore, these situations stimulate the furniture industry to form agglomerations to cooperate in production.

Chapter 4. Methodology and Data collection

4.1 Introduction

The methodology of this dissertation is a combination of qualitative and quantitative research. The qualitative analysis examines the furniture industry in Spain and Denmark, including exploring four companies in Spain and five companies in Denmark by in-depth interview and questionnaire. The quantitative analysis is based on IIT analysis. In the analysis, the GL index is calculated and multiple linear regressions are conducted.

There are five significant differences between the extant literature and this dissertation. Firstly, there is no previous analysis comparing the furniture industry in Spain and Denmark: research talks about the furniture industry in either Spain or in Denmark, but not both countries at the same time (Santisteban 2006; Robertson and Jacobson 2011; Zayas 2008; Maskell 1998 et al.; Howells and Hedemann 2008; Hedemann and Nissen 2013; Lorenzen 1999). Secondly, there is no research on the furniture industry that combines qualitative and quantitative research. Previous researches are either qualitative research on the furniture industry and clusters, or quantitative research about IIT. However, this research combines the two. Thirdly, there is no previous research analysing the national cluster: in the qualitative research literature, the authors analyse only regional clusters, while this research includes analysis of the national cluster in Denmark (Santisteban 2006; Robertson and Jacobson 2011; Zayas 2008; Maskell 1998 et al.; Howells and Hedemann 2008; Hedemann and Nissen 2013; Lorenzen 1999). Fourthly, no one has used the GL index to identify the major trade partners of the countries: it has been used only as the dependent variable in the econometric model (Havrylyshyn and Civan 1983; Caves 1981; Lundberg 1982 in Balassa 1986; Blanes 2005; Ekanayake 2001; Loertscher and Wolter 1980 in Balassa 1986). This analysis uses the index to determine which are the five most competitive trade partners of the furniture industry in the two countries.

Finally, previous researches constructed econometric models for IIT for many related industries by using Ordinary Least Squares (OLS) (Havrylyshyn and Civan 1983; Caves 1981; Lundberg 1982 in Balassa 1986) and logit transformation of logistic function methods (Ekanayake 2001; Loertscher and Wolter 1980 in Balassa 1986). However, the econometric method of this analysis is the Generalized Least Squares (GLS). Only one industry (furniture industry) was selected as the case.

This chapter is constructed as follows. The first section is about the qualitative information and quantitative data used, and how they were collected. The second section details the methods used for the case studies, including semi-structured in-depth interviews and questionnaires. In the third section, the literature on IIT is reviewed; then the GL index and the multiple linear regression model applied in the IIT analysis are defined before the chapter is concluded.

4.2 Qualitative and quantitative data collection

For this qualitative research, both primary and secondary data were collected to study the furniture industry and companies in Spain and Denmark.

Primary data derive from the interviews and questionnaires conducted with four companies in Spain (Hurtado, Expormim, Latorre and Capdell), five companies in Denmark (Republic of Fritz Hansen, Reform, Magnus Olesen, Brdr. Peterson and Skoby), four institutions in Denmark (Cluster excellence Denmark, Life style and design cluster Denmark, Association of Danish wood and furniture industries, United Federation of Danish Workers) and two Danish universities (University of Copenhagen and Copenhagen Business School). The interviews and questionnaires were completed by the co-founder, CEOs, sales directors, area managers, export manager, sales manager, supply chain manager, store manager, internationalization manager, director, senior consultant, consultant and professors.

Secondary data were drawn from case studies of the furniture industry and

companies in the two countries. For the furniture industry analysis, the data used can be divided into four categories. The first category is academic articles, the main articles being Campos et al. (2008), Hedemann and Nissen (2013), ITTO and ITC (2004), Kristensen (2006), Maskell (1996), Renda et al. (2014) and Tracogna (2013). The second category is websites of furniture institutions: CSIL (Centre for Industrial Studies), ANIEME (National Association of Furniture Manufacturers and Exporters of Spain) and Mueble de Espana (Furniture of Spain). The third category is websites of statistics institutions: the National Institution of Statistics of Spain, Statistics Denmark and the Statistics Portal. The fourth category is websites of relevant institutions: the European Commission, Consumer Goods Division, Centre for Promotion of Imports from Developing Countries, Legislative Council Secretariat and the Ministry of Foreign Affairs of Denmark. For the case study of companies, the data used are can be classified into three groups: academic articles (Hedemann and Nissen 2013; Lorenzen 1999; Maskell 1996; Robertson and Jacobson 2011; Santisteban 2006; Zayas 2008); the Valencia community website (Generalitat Valenciana); and companies' homepages.

For the quantitative research, secondary data were collected from the GL index and multiple linear regression analysis of IIT in Spain and Denmark. To calculate the GL index, 36 trade partner countries of Spain and 26 trade partner countries of Denmark were selected as samples. These trade partners are very representative. The reasons are as follows: the imports of 36 trade partner countries of Spain represent 93 per cent of furniture import of Spain in 2015; the exports of these partner countries represent 89 per cent of the furniture export of Spain; the imports of 26 trade partner countries of Denmark represent 95 per cent of the furniture import of Denmark in 2015; and the exports of these trade partners represent 92 per cent of the furniture export of Denmark. The imports and exports of the trade partners of the two countries are based

on a four-digit Harmonized System (HS) in UN Comtrade[3] in US dollars (Appendix 1; Table 4.1).

The data used in the multiple linear regression model are panel data (Baltagi 2008). The time series of these data is ten years (2006 to 2015). The reason for choosing these ten years to make the analysis is that the data can reflect the most recent situation. The research initially used 20 years of data, from 1996 to 2015; however, the results showed that the pattern of trade from 1996 to 2005 was totally different from the pattern of trade from 2006 to 2015. This could be because of two reasons. One is that since 2004, the opening up speed of the furniture industry is very fast. For example, there is increasing trends of global sourcing. Meanwhile, most of the international furniture trade is conducted in the broad economic regions. Second is that due to the economic crisis in 2008, all the EU countries experienced a decline in the furniture consumption in 2009. For some of the countries, recovery is hard such as Italy, Spain, Portugal, Greece, Ireland, Romania and some of the other Central Eastern European countries. There are still strong contractions in these countries in 2012 (Renda et al. 2014; World Furniture 2015a; Walcott 2011). Therefore, the data from 1996 to 2005 were too old to be representative. The results from this period were removed. The dependent variable of the model is the GL index. The source of the four independent variables is as follows: GDP and income/capita (Balassa 1986; Ekanayake 2001; Sawyer et al. 2010) are from the International Monetary Fund (IMF)[4] in national currency at constant prices; the US dollar is calculated by using the yearly exchange rate from OANDA Solutions for Business[5]; geographic distance is from Google Map Developer[6], measured by the distance between the capital cities in kilometres (Clark and Stanley 1999; Balassa 1986; Sawyer et al. 2010); and

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[3] http://comtrade.un.org/db/dqQuickQuery.aspx
[4] http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/weoselgr.aspx
[5] https://www.oanda.com/lang/cns/currency/historical-rates/
[6] http://www.mapdevelopers.com/distance_from_to.php

common border is set as a dummy variable (Ekanayake 2001) (Appendix 2 and 3; Table 4.1).

Table 4.1 Data collection of quantitative research

	Spain	Denmark	Unit
Import	UN comtrade (HS)	UN comtrade (HS)	US dollar
Export	UN comtrade (HS)	UN comtrade (HS)	US dollar
GDP	International Monetary Fund	International Monetary Fund	US dollar
Income/capita	International Monetary Fund	International Monetary Fund	US dollar
Geographic distance	Google Map Developer	Google Map Developer	kilometers
Common border	Dummy variable	Dummy variable	0 or 1

Source: UN comtrade, International Monetary Fund, Google Map Developler, 2015

4.3 Methodology of qualitative research on furniture companies

Qualitative research methods—semi-structured in-depth interviews and questionnaire—were used to analyse companies' location strategies in the three clusters in Spain and Denmark.

There are three reasons why the semi-structured in-depth interview was used as a methodology. Firstly, it is detailed. It is a face-to-face conversation with the purpose of exploring issues or topics about individual companies (Tellis 1997). It can provide a description and understanding of a company's situation or behaviour (Catherine and Mays 1995).

Secondly, it is versatile. It allows the investigation of contextual realities, and the differences between what was planned and what actually occurred. It can answer questions about how and why things happen rather than how much and how many (Noor, 2008; Catherine and Mays 1995). It allows the interviewer to find the private, often contradictory and complex beliefs interviewees hold about their company (Catherine and Mays 1995).

Thirdly, the semi-structured in-depth interview has focused topics but is flexible. An unstructured interview risks not including the topics or themes most closely related to the research questions, while a structured interview has a rigidity that does

not allow the interviewees the space to deliver their own story. A semi-structured interview, however, is able to narrow down some areas or topics. It can provide participants with guidance on what to talk about, but at the same time is successful in enabling reciprocity between the interviewer and interviewees. Interviewers can improvise follow-up questions based on interviewees' responses. It also allows space for interviewees' individual verbal expressions (Rabionet 2011; Miles and Gilbert 2005).

Five interviews were conducted in the four companies in Spain, the interviewees being the export manager and area manager of Capdell, the sales manager of Hurtado, the area manager of Expormim and the sales director of Latorre. Three interviews were conducted in the two companies in Denmark, the interviewees being the store manager of the showroom of Republic of Fritz Hansen in Copenhagen, the supply chain manager of Republic of Fritz Hansen, and the CEO of Reform.

Twenty-three interview questions were designed for the companies to cover three elements: internal and external factors, and location decisions related to the four important factors (agglomeration, cluster, linkage and production subcontract) for the furniture industry (Appendix 5).

Thirteen questions were about the internal situation. Firstly, there were questions about the basic corporate profile, such as the development history and market share (questions 1–2); then there were questions about the input of the companies, such as design and raw materials (questions 3–9). Finally, there were questions about location factors, such as subcontracts, linkage and transportation (questions 10–13).

Seven questions were about the external situation. Firstly, there were questions about how the general external situation affects the company business, such as the political and demand situation (questions 1–4); then there were questions about how the four important factors affect company location, such as agglomeration and cluster (questions 5–7).

Three questions were about location decisions, mainly focused on the method and the goal of the location decision, as well as factors most affecting the location decision.

As it was difficult to get in touch with the companies since most of the companies were not willing to spend time on the interview, three Danish companies reluctantly accepted questionnaires. Therefore, questionnaires have been done as well. The questionnaire is also a useful tool for collecting information about informants' behaviour, experiences, social interaction, attitudes, opinions and awareness of events (Li 2013).

A questionnaire has some limitations compared with the depth and extent of qualitative data, but it can allow key concepts, values and meanings to be teased out and measured. The nature of the response is more structured and more explicit compared to a face-to-face interview (Ratislavova and Ratislav 2014; Li 2013). In addition, disturbing background noises are not recorded due to the asynchronous communication of place. The responders can answer the questions at their own convenience without noise disturbance due to independence of place and time. Furthermore, the responders have more time to reflect on the questions, especially sensitive questions (Opdenakker 2006; Ratislavova and Ratislav 2014; Li 2013). It permits a lengthy delay between communications. A questionnaire sent by email gives the interviewee time to construct a response to a particular question, which benefits the clarity of the question. The interviewer can also ask additional follow-up questions at any time to complete the data (Opdenakker 2006; Ratislavova and Ratislav 2014).

Two types of questionnaire (Appendix 6 and 7) were sent to the companies in Denmark, one with seven questions and one with fifteen questions. The questionnaire to use depended on how many questions the companies were willing to answer. The seven-question questionnaires were sent to the CEO of Skovby and co-founder of

Brdr. Peterson. The fifteen-question questionnaire was sent to the CEO of Magnus Olesen.

The seven-question questionnaire was about the firm's significant evolution, outsourcing, design, transportation, relations with suppliers and distributors, advantages of being located in the cluster and their location decision. The fifteen-question questionnaire was about the internal and external situation, and location decisions of the company. The initial nine questions were about the internal situation: the nine questions can be divided into two parts, the first focusing on the basic corporate profile, such as the development history (Questions 1-2), and the second on the input of the companies, such as design and raw materials (Questions 3-9). After that, there were two questions about the external situation related to demand and international business (Question 10-11). The remaining four questions were about the linkage, cluster and location decision (Question 12-15).

Even though there are two types of questionnaire with a different number of questions, this does not affect the analysis. The analysis of the companies is not based on a comparison: it is constructed in terms of the four important factors (agglomeration, cluster, linkage and subcontract) of the furniture industry. In talking about each factor, if there is information available from interviews and questionnaires from the companies contacted, then there is a comparison of the companies; if not, then there is only comparison of the companies with information available. For example, when we talk about outsourcing, there is information from the interviews and questionnaires of all the companies contacted, so there is a comparison of each company. However, in talking about raw material supply in the linkage, there is no detailed information from all the companies, and so the comparison is only between those companies that have data available. Normally, there is enough information from the important companies. For example, for Republic of Fritz Hansen, which is the largest company in relation to sales in Denmark (interview with the supply chain

manager of Fritz Hansen 2017; interview with Mark Lorenzen 2017), there is detailed information from two interviews. Meanwhile, the CEO of the largest company in the regional cluster in Denmark, Magnus Olesen (interview with Mark Lorenzen 2017), answered fifteen questions. Those companies that answered seven questions were less important than these two companies. At the same time, there is information on the internet, such as their homepages, where it is possible to find more information.

To be clear, the total number of interviews and questionnaires can be seen in the table below (Table 4.2).

Table 4.2 Amount of interviews and questionnaires of the two countries

	Spain	Denmark
Interview	5	3
Questionnaire	0	3

Source: Fieldwork of the companies (2017)

The interviews were recorded. The content of the interviews and questionnaires was interpreted and rephrased according to the case studies' needs.

There were many problems acquiring data from companies in both of the countries. Most of the companies refused to give interviews to a student because many students try to contact them to gather information. In addition, some companies refused to do it because they thought it involved many sensitive questions. Some companies thought it would take too much time to do an interview or answer the questionnaire. They did not have the resources for it. Some companies just disappeared without any reason although they promised to help. These are the reasons why, when the information request was sent to companies in Spain, no company took up the interview or questionnaire until the information request, in Spanish, was sent to all the companies again, and one company in Valencia (Capdell) answered. They invited me to participate in the furniture trade fair in Valencia and were willing to do an interview during the fair. In this way, other producers who also participated in the trade fair were interviewed.

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Similar things happened in Denmark. When the information request was sent to the companies, only one company, Reform, was willing to do an interview. Two companies answered the seven-question questionnaire after a lot of persuasion. The interview with Republic of Fritz Hansen was with their store manager in the Copenhagen showroom first; then the store manager introduced the supply chain manager in the headquarters to help provide information. The CEO of Magnus Olesen who answered the fifteen-question questionnaire was also introduced by a relevant person.

4.4 Methodology of quantitative research on IIT

Quantitative research on IIT is used as a complementary method to the qualitative research in this dissertation. The qualitative research can yield a deep result and the context of a few companies, while quantitative research can produce more generalized and exact results by using data from the whole industry. Qualitative research arrives at different conclusions depending on the personal characteristics of the researcher. However, quantitative research can reach more objective conclusions based on the results of the data calculation (Matveev 2002; Muijs 2004).

4.4.1 IIT as a determinant of the competitiveness of the furniture industry

IIT is countries' simultaneous export and import of commodities in the same industry group (Balassa 1979; Balassa 1986; Ekanayake 2001; Clark and Stanley 1999; Sawyer et al. 2010; Venables et al. 2003).

IIT can be divided into Horizontal Intra-Industry Trade (HIIT) and Vertical Intra-Industry Trade (VIIT). HIIT is generally defined as the exchange of commodities differentiated by features of similar quality. It is highly related to the trade among developed countries with high and similar per capita incomes (Aturupane et al.1997; Sotomayor 2012; Zhang et al. 2005; Caetano and Galego 2007; Blanes and Carmela

2000; Ekanayake et al. 2009). VIIT is the exchange of commodities differentiated by quality. It is likely to be driven by differences in factor endowments. It is considered particularly relevant to the trade among unequal trading partners with different income levels (Veeramani 2001; FuKao et al. 2003; Leitão et al. 2009; Ekanayake et al. 2009).

There are three types of IIT analysis: combined analysis of HIIT and VIIT, analysis of VIIT individually, and general IIT analysis (Aturupane et al. 1997; Sotomayor 2012; Zhang et al. 2005; Caetano and Galego 2007; Blanes and Carmela 2000; Ekanayake et al. 2009; Veeramani 2001; FuKao et al. 2003; Leitão et al. 2009; Ekanayake 2001; Sawyer et al. 2010; Balassa 1979; Balassa 1986; Clark and Stanley 1999; Kikuchi et al. 2006; Blane 2005; Clark 2010; Venables et al. 2003; Sørensen et al. 1991). The main research method used in the combination analysis of HIIT and VIIT or the analysis of VIIT individually is regression analysis (Aturupane et al. 1997; Sotomayor 2012; Zhang et al. 2005; Caetano and Galego 2007; Blanes and Carmela 2000; Veeramani 2001; Fukao et al. 2003; Leitão et al. 2009; Montaner and Ríos 2002).

However, most of the research on IIT is about IIT in general. Studies do not distinguish between HIIT and VIIT, and most focus on the estimation of econometric models (Ekanayake 2001; Sawyer et al. 2010; Balassa 1979; Balassa 1986; Clark and Stanley 1999; Kikuchi et al. 2006; Blane 2005; Clark 2010; Venables et al. 2003; Sørensen et al. 1991). The purpose of the econometric analysis is to test the theory of IIT with the data on a given country or group of countries. The most used econometric methods are OLS regression, logistics and logit (Ekanayake 2001; Loertscher and Wolter 1980 in Balassa 1986; Havrylyshyn and Civan 1983; Caves 1981; Lundberg 1982 in Balassa 1986). Previous studies have conducted analyses of many related industries but not any specific industry (Ekanayake 2001; Sawyer et al. 2010; Balassa 1979; Balassa 1986; Clark and Stanley 1999; Kikuchi et al. 2006; Blane 2005; Clark 2010; Venables et al. 2003; Sørensen et al. 1991). For example, Sawyer et al. (2010)

analysed 22 Asian countries and reported all ten categories of the Standard International Trade Classifications (SITC), including primary goods and manufactured goods.

The econometric model constructed in the previous researches uses the GL index as a dependent variable, since the index can measure the degree of IIT. Independent variables are all the macro factors related to IIT. The reason the previous researches focus on these macro factors is that the econometric analysis of IIT is used as a tool to discover the generalized macro situation. The factors used can be classified into three categories: industry-specific characteristics, country-specific characteristics and new factors (Ekanayake 2001; Sharma 1999; Clark and Stanley 1999; Senoglu 2003; Kikuchi et al. 2006; Clark 2010).

The industry-specific characteristics include five main characteristics. The first is product differentiation, including vertical differentiation in quality, horizontal differentiation and technological differentiation in each country. They all lead to the comparative advantage in IIT. The second is economy scales, causing a rise in specialization and a fall in production costs. A positive relationship between scale economies and horizontal IIT is expected. The third is R&D intensity, which has a positive effect on IIT. Specific technological knowhow and production processes are an important source of comparative advantage in international markets. The fourth is market-specific factors: for example, there is a positive relationship between IIT and advertising intensity, which supports the vertical product differentiation. The fifth is the number of firms, which is determined by the market structure. There is a positive relationship between market structure and IIT level: in oligopolistic market structures, IIT levels are higher.

The country-specific characteristics comprise primarily six characteristics. One is the similarity of income/capita: the smaller the difference in per capita GDP of two countries, the larger the share of IIT in these countries' bilateral trade. The second is the degree of development: the more developed a country is, the more important the

manufacturing industry in that country's economy, and consequently the larger the share of IIT. Income/capita is used to measure the level of development of a country in empirical studies. The third characteristic is market size. There is a positive relationship between countries' market size and IIT: the larger the size of a country's market, the larger the demand for differentiated products, therefore causing IIT levels to rise. GDP is used to measure market size in empirical studies. Fourth is the market size difference. IIT has a negative relationship with the market size difference between trade partners: a difference increase leads to the level of IIT decreasing. Fifth is the transportation cost. IIT has a negative relationship with transportation cost, since transportation cost can be a barrier to trade. The sixth characteristic is FDI. IIT has a positive relationship with FDI: increasing FDI between countries not only helps them to satisfy their different demands, but also helps scale economies to appear in production, and both effects cause IIT to increase. There are many other factors that could be considered as country-specific characteristics—for example, IIT has positive relationships with economic integration among countries, trade orientation, trade intensity, common borders, common language, and participation in regional integration schemes such as NAFTA (North American Free Trade Agreement). IIT has negative relationships with trade imbalances, trade barriers and distance.

New factors contain principally three characteristics. The first is the industry cluster. New manufacturing processes produce learning spillovers: for example, firms in certain knowledge-intensive clusters can learn from the experience of the other firms and thus develop new products. The positive effects of this knowledge spillover in these clusters are called externalities. The emergence of this kind of horizontal cluster has been observed in geographical areas including Silicon Valley in California, Costa Rica and Mexico. Vertical industrial clusters comprise groups of firms that are part of a single supply chain: the profitability of firms depends to a large extent on their capacity to supply the inputs and deliver the final goods on time. Given that

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transportation costs can help to determine the profitability of a firm, geography can thus play an important role in establishing these clusters.

The second characteristic is the logistic costs. The main determinants of logistic costs are the location of a country and the quality of the infrastructure. Developed countries have high values of all infrastructure measures and thus low logistic costs. Less developed countries have low values of all infrastructure measures and thus high logistic costs.

The third characteristic is Information Communication Technology (ICT) and knowledge. The evidence shows that new endowments such as knowledge, ICT, quality domestic institutions and volatility explain a large share of the world's trade patterns. Hence, natural resources are not necessarily the most important to affect trade patterns compared to these factors.

In this dissertation, the GL index was not only used as the dependent variable of the econometric model, but also to identify the five major trade partners of the two countries. The analysis chose four country-specific characters as the independent variables of the econometric model. Industry-specific characteristics and new factors are not used, as the quantitative method is only used as a complementary method for qualitative research, and the situation of industry-specific factors and new factors can be better measured by qualitative research studying the context and details of the industry and companies. Country-specific characteristics are about the more generalized situation of a country and can be better measured by quantitative research.

4.4.2 IIT analysis of the five major trade partners of Spain and Denmark according to the GL index

The GL index is a widely used indicator measuring the extent of IIT as opposed to that of inter-industry trade. It is considered to be the most appropriate measure for analysing IIT patterns in a single period of time. From a statistical point of view, the

GL index is a numerical variable which generally concentrates on an index of trade overlap (Ekanayake 2001).

The GL index was created by Grubel and Lloyd in 1975. The formation of the index is as follows. According to Grubel and Lloyd (1975) and Lloyd and Grubel (2003), IIT R_i is defined as the value of exports of an industry which is exactly matched by the imports of the same industry. That is:

$$R_i = (X_i + M_i) - |X_i - M_i|$$

X_i = Value of export

M_i = Value of import

$(X_i + M_i)$ = Value of total trade

$|X_i - M_i|$ = Net exports or imports of the industry

I = 1…..n, where n is the number of industries

The measure of IIT is:

$$B_i = \left[\frac{(X_i + M_i) - |X_i - M_i|}{(X_i + M_i)} \right] 100$$

This is the percentage of IIT (R_i) divided by total trade and multiplied by 100. It varies between 0 and 100.

This measure can be simplified as follows:

$$B_i = [\frac{(X_i + M_i)}{(X_i + M_i)} - \frac{|X_i - M_i|}{(X_i + M_i)}]100$$

$$= [1 - \frac{|X_i - M_i|}{X_i + M_i}]100$$

According to Ekanayake (2001), the GL index is written as:

$$IIT_{ij} = 1 - \frac{|X_{ij} - M_{ij}|}{X_{ij} + M_{ij}},$$

The GL index measures the share of IIT of industry i for a given country j. It is B_i without 100. Thus, the index of IIT takes values from 0 to 1 as the extent of IIT increases—that is, $0 \leqslant IIT_{ij} \leqslant 1$.

If all trade in industry i is intra-industry trade—that is, $X_{ij} = M_{ij}$—then $IIT_{ij} = 1$. Similarly, if all trade in industry i is inter-industry trade—that is, either $X_{ij} = 0$ or $M_{ij} = 0$—then $IIT_{ij} = 0$.

In this analysis, the GL model can be adjusted as follows:

$$GL_{ijkt} = 1 - \frac{\left| X_{ijkt} - M_{ijkt} \right|}{X_{ijkt} + M_{ijkt}} \quad (0 \leqslant GL_{ijkt} \leqslant 1)$$

Where GL_{ijkt} = the IIT pattern between country i and country j of industry k in the period of time t;

X_{ijkt} = the home country's exports from country i to country j of industry k in the period of time t;

M_{ijkt} = the home country's import from country j to country i of industry k in the period of time t;

$\left| X_{ijkt} - M_{ijkt} \right|$ = the net trade of industry k in country i in the period of time t;

$X_{ijkt} + M_{ijkt}$ = total trade of industry k in country i in the period of time t.

Excel 2010 was used to calculate the GL index. The five major trade partners of Spain and Denmark were chosen based on the GL index. Due to the GL index fluctuating from year to year, it is not possible to choose countries with an absolutely high GL index. Therefore, only those countries with a relatively high GL index were chosen. Most of them have had a GL index higher than 0,9 during the ten years (2006-2015). Alternatively, most of them have a relatively stable GL index or their GL index shows an increasing trend.

Furthermore, the GL index for the five major trade partners has been analysed. The analysis is to identify whether the IIT (GL index) of the five major trade partners is affected by the four country-specific determinants: GDP, income/capita, geographic distance and common border. These four determinants are also used in the multiple linear regression analysis as independent variables, as stated in the sub-chapter below. The method of GL index analysis is different from previous research. Only one GL index analysis was found, which examined IIT by the index for the pattern of time, country and product (Sørensen et al. 1991).

4.4.3 IIT analysis of Spain and Denmark by multiple linear regression

This dissertation aims to analyse whether the four country-specific characteristics—market size, degree of development, geographic distance and common border—are important factors affecting IIT, using multiple linear regression analysis.

The multiple linear regression model is a regression model involving more than one regressor variable. It is a model wherein response Y may be related to i regressors or predictor variables (Montgomery et al 2012).

The dependent variable (Y) is the GL index, which can measure the degree of IIT. Independent variables (Z_i) are market size, degree of development, geographic distance and common border. These four factors are country-specific characteristics. The market size is measured as GDP in constant price in US dollars. The degree of development is measured by income/capita in constant price in US dollars. The geographic distance between Spain and its trade partner countries, and between Denmark and it trade partner countries, is measured by the distance between capital cities in kilometres. A dummy variable is used for countries that share a common border with Spain and Denmark.

Based on dependent and independent variables, the regression model is constructed as follows:

$$Y = \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + \beta_4 Z_4 + \text{Cons}$$

The variables can be written as follows:

Y = IIT (GL index)

Z_1 = GDP (measures market size) in country j in time period t;

Z_2 = Income/capita (measures the degree of development)

in country j in time period t;

Z_3 = Geographic distance between country i and j

Z_4 = Common border between country i and j

Besides the dependent variable Y and independent variable Z_i, β is an unknown parameter or coefficient which is constant, to be determined from the data, and represents a vector. Cons is an error term.

The hypothesis for the regression model is as follows:

H_0 : IIT does not have significant relationships with the determinants.

$$\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$$

H_1 : IIT has significant relationships with the determinants.

$$\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$$

The hypothesis is to test whether there are relationships between IIT and each explanatory variable. If there are relationships between them, H_1 will be accepted. If there is no relationship between them, H_0 will be accepted.

Excel 2010 was used to construct the database of income/capita, GDP, geographic distance and common border. Stata/SE 12.1 was used to do the regression analysis.

The regression method was improved by using GLS of multiple linear regression instead of OLS regression and logit transformation of logistic function as in the literature.

Some of the previous research used OLS regression as the method to analyse IIT (Havrylyshyn and Civan 1983; Caves 1981; Lundberg 1982 in Balassa 1986). It is particularly powerful as it is relatively easy to check the model assumptions, such as linearity, constant variance and the effect of outliers, using simple graphical methods (Hutcheson and Sofroniou 1999 in Hutcheson 2011). Nevertheless, OLS procedures will not identify the most efficient estimates of a regression model's parameters when the distribution of the data is non-normal or the residual errors are not homoscedastic (homogeneity of variance). Moreover, an OLS procedure's estimates of the standard error of prediction and the estimated precision of the estimated parameters can be highly biased (Stedinger and Tasker 1985; Wu 2017).

In this analysis, GLS was used instead of OLS. The use of GLS estimators instead of the popular OLS can result in a remarkable improvement in precision. GLS can be used to perform linear regression when the distribution of the data is non-normal or the residual errors are heteroscedastic (heterogeneity of variance) and perhaps cross-correlated (Kuan 2004; Stedinger and Tasker 1985; Wu 2017).

Some research in the literature uses logit transformation of logistic function (Ekanayake 2001; Loertscher and Wolter 1980 in Balassa 1986), because the dependent variable can be equal to 0 or 1. In some situations, this leads to the predicted values possibly exceeding 1. They may also be negative if the regression equation is linear. With logit transformation of logistic function, the predicted values are always between 0 and 1. The adjustment for heteroscedasticity is justified, but questions arise about the appropriateness of the adjustment. In addition, while the logit transformation has the advantage of ensuring that predicted values are within the appropriate range, it has the disadvantage of excluding all observations where the index

of IIT takes values of 0 or 1. Therefore a Non-linear Least Squares (NLS) estimation of logistic function was used by Balassa (1986) and Sotomayor (2012), which gives predicted values from 0 to 1. Clark and Stanley (1999) used probit and Tobit models to avoid excluding all observations where the index of IIT takes values of 0 or 1. However, the maximum likelihood estimator of the Tobit model will still be inconsistent if heteroscedasticity occurs.

In this research, multiple linear GLS regression is the appropriate method compared to the above methods for the following reasons. Firstly, there is no dependent variable (GL index) equal to 0 or 1(Appendix 1). A GL index equal to 0 or 1 is very rare: it may happen when the analysis involves many industries. However, this research is only about one industry. In addition, when using a GLS procedure, there is no need to deal with the problem of heteroscedasticity or non-normal distribution of the data. Furthermore, linear regression and logistic function both have an ideal prediction effect. Linear regression is more precise compared to logistic function (Li et al. 2011).

4.5 Summary

The detailed description in this chapter outlines the multi-methods approach. The methods are complementary, combining qualitative and quantitative research. The qualitative research covers not only the macro environment analysis of the furniture industry, but also the micro situation analysis of the furniture companies. The quantitative research consists of GL index analysis and the multiple linear regression model.

There were many problems in accessing both primary and secondary data. For example, in the qualitative research, when collecting the primary data in Spain, the common spoken language is Spanish. This became a barrier to communication with the Spanish companies. In the quantitative research, when collecting the secondary data for the GL index, it took time to find the import and export data for the furniture

in the two countries. The original data included the import and export of furniture and its accessories. Therefore, the import and export of the furniture accessories needed to be found and extracted.

Chapter 5. Comparison of the furniture industry situation of Spain and Denmark (1999-2012)

5.1 Introduction to the EU market

The furniture industry is a dynamic sector. Most of the companies in the industry are SMEs and micro firms. As of 2017, the sector employed around 1 million workers in 130.000 companies generating an annual turnover of around EUR 96 billion. One quarter of the world's furniture is produced in the EU. The EU accounts for about 45 per cent of total world trade, for about 40–45 per cent of global furniture imports, and for around 30–35 per cent of global furniture exports. About 85 per cent of this quota is intra-EU trade. Because of its importance, the performance of the sector is a driving force for EU economic growth (European Commission 2017c; EFIC 2017).

EU furniture manufacturers set global trends. About 12 per cent of designs registered in the European Union Intellectual Property Office relate to this sector. The EU is a world leader in the high-end segment of the furniture market. Nearly two thirds of high-end furniture products sold in the world are produced in the EU. EU furniture manufacturers are known worldwide for their quality and design. This creates opportunities for the sector to further expand to other markets, in particular in high-end segments and emerging economies. At the same time, the EU furniture sector is continuing to make changes. These changes include restructuring, technological advances and business model innovations, making the sector more export-oriented and focusing on upgrading quality, design and innovation (European Commission 2017c; EFIC 2017).

The furniture sector is relatively more important in Italy, Denmark and Portugal, and in many Central Eastern European countries. On the one hand, the role of the sector is generally diminishing in Western Europe, even in countries with long-established manufacturing traditions such as Italy and Spain. The exceptions are Germany and Sweden, where the importance of the sector is growing. On the other

hand, the relative importance of the furniture sector has increased in some Central Eastern European economies such as Poland, Hungary and Lithuania. However, it has declined in others, even though production levels are still well above the European average (Renda et al. 2014).

5.2 Introduction to the Spanish and Danish furniture industry

The Spanish furniture sector comprised 12.647 companies in 2006. Nevertheless, the number has been gradually declining since 2004. The sector directly employs approximately 110.000 people and generates around 60.000 indirect positions. The sector is characterized by a small average company size (nine workers per company). Only 12 per cent of companies have more than 20 employees, and around 70 per cent of Spanish production is concentrated in these companies (Consumer Goods Division 2005; Campos et al. 2008).

Exporting was not frequent in Spain. From 1997 to 2001, it remained flat, which only increased 3% (Campos et al. 2008; ITTO and ITC 2004). However, this kind of situation has changed. The demand from foreign destination markets (mainly France and Germany) for Spanish furniture was weak, which encouraged domestic manufacturers to adopt a strategy to reinforce access to these markets. The European Union is the main international market for Spanish furniture as the EU has provided a framework of commercial stability. This situation was reinforced after the EU adopted the euro as a single currency. Therefore, the pattern of furniture exports of Spanish companies has been of a concentric nature in relation to the neighbouring countries (Campos et al. 2008).

In 2008, the Spanish furniture industry recorded a decline of 12,5 per cent, one of the highest declines among the various industries in Spain. Furniture manufacturers face major difficulties in a very weak domestic market. Imports have also fallen sharply, and production continued to slide in Spain in 2013, when the collapse of

Spain's wooden furniture sector continued (UEA 2009: Global wood 2014). A further 6 per cent decline in turnover is expected over the period to 2018. Only office and shop furniture shows a growth trend (Euromonitor international 2013).

The Danish furniture industry employs approximately 9.500 people in Denmark. There are about 225 companies in the industry. In 2011, these companies generated a total revenue of approximately DKK 12 billion. The furniture industry is known for its excellent design, where form and function are combined in a higher unity (Danish Business Authority 2017).

One quarter of the market is satisfied by extra-EU suppliers (neighbour Norway and China). Over the years, furniture has been one of Denmark's thriving exports, more than 90 per cent of the total revenue coming from exports. The export intensity (the percentage of production accounted for by Exports) since 1990 has permanently been above 70 per cent. Strong furniture clusters are the main driver of export. The transport infrastructure is good, even though Denmark is a country of three main islands. Rail/road access to Europe has contributed to the successful manufacturing and marketing of consumer goods (Hedemann and Nissen 2013; ITTO and ITC 2004; Renda et al. 2014).

5.3 How EU economic policies affect Spain and Denmark

5.3.1 General situation in the EU

The 28 EU member states delegate some of their decision-making powers to the shared institutions. In this way, decisions on specific matters of common interest can be made democratically at EU level. There are four institutions involved in making decisions at the EU level in matters of common interest: the European Parliament, the European Council, the Council, and the European Commission. The actions taken by the EU are based on treaties that have been approved voluntarily and democratically by all EU countries. The treaties are amended when new member states join the EU.

The things that the EU does involve 35 different policy areas, such as migration and asylum, borders and security, economy and finance, business and industry, single market, employment and social affairs, education and training, environment, transport, sport, etc (European Commission 2018a). As this dissertation is about the furniture industry, related to business, trade and economics, it is necessary to look at some facts about these three aspects in the EU.

The EU has delivered more than half a century of peace, stability and prosperity. It has helped raise living standards and launched a single European currency, the euro. More than 340 million EU citizens in 19 countries now use it as their currency and enjoy its benefits (European Union 2018a).

A single currency offers many advantages, such as eliminating fluctuating exchange rates and exchange costs. The independent European Central Bank (ECB) is in charge of monetary policy for the euro area. Its main objective is to maintain the stability of consumer prices and to safeguard the value of the euro by setting and adjusting interest rates for ECB lending. To achieve this, it aims to maintain inflation rates at less than 2 per cent in the medium term. This is a rate considered low enough for consumers to fully reap the benefits of price stability (European Union 2018b; European Commission 2014a). Thus, the economy is more stable and grows. Consumers have more choice because it is easier for companies to conduct cross-border trade. A common currency also encourages people to travel and shop in other countries. At the global level, the euro gives Europe a stronger voice, and more economic clout, as it is the second most important international currency after the US dollar (European Union 2018b; European Commission 2014a).

Due to the abolition of border controls between EU countries, it has become much easier to live, work and travel abroad in Europe. All EU citizens have the right and freedom to choose in which EU country they want to study, work or retire (European Union 2018a).

The EU is the largest trade block in the world. It is the world's biggest exporter of manufactured goods and services, and the biggest import market for over 100 countries. As a single market, there is free trade among its members. Beyond its borders, the EU is also committed to liberalizing world trade (European Union 2018a).

5.3.2 Forest policy in EU

The furniture industry is a forest-based industry, since wood is the main raw material used in the furniture. Therefore, it is important to know the forest situation in the EU.

Forests and other wooded land occupy over 44 per cent of the EU's surface and represent 5 per cent of the world's forests. In the last 50 years, both their area and the standing timber volume have continued to grow. Nowadays, they are gaining almost 700.000 ha annually. There are four major forest regions in the EU: Boreal, Central, Alpine and Mediterranean. Forests are more concentrated in mountainous areas and in northern EU countries. The ownership of these forests varies between countries. On average, they are 40 per cent publicly owned by state or local authorities and 60 per cent privately owned by individuals, companies or churches (European commission 2018b).

There are several forest policies that may affect the development of the furniture industry. The European Commission is exploring and promoting the use of wood more fully as a sustainable, renewable, climate and environmentally friendly raw material. At the same time, the EU does not want to damage the forests and their ecosystem services (European commission 2013).

The EU is a high-cost producer of wood-based and related products. So, in addition to providing technological advances, R&D and innovation are needed for resource-

and energy-efficient processes and new innovative products which will contribute to reducing production costs and increasing value added (European commission 2013).

Bilateral trade agreements are useful to facilitate access to non-EU primary wood supplies. The agreements also address import subsidies and export taxes for non-EU partners. Meanwhile, they examine a possible EU tariff reduction or elimination for imported secondary wood raw materials (European commission 2013).

5.3.3 The effect of EU policies in Spain

The Spanish economy has been strengthened immensely as a result of admission into the European Union on 1 January 1986. The country that began as a lower income member state has developed into a middle-income economy that continues to grow. Spain has successfully raised its GDP, lowered its public debt, reduced inflation and decreased its unemployment rate (Ryan 2006).

Three economic advantages are obtained through integration with the EU that may have a significant effect on the Spanish furniture industry. Firstly, the production system in Spain has become more globalized. Before joining the EU, the Spanish production system had difficulties adapting to the global market due to the inherent structural features associated with the traditional manufacturing industry. In addition, there was a predominance of small firms with low levels of technological intensity. The EU diverted Spain's focus from its traditional major industries to more advanced businesses focusing on global trade (Ryan 2006). Secondly, Spain has used the euro as its currency instead of the peseta since 1999, reducing the trade barrier and increasing economic stability. The cost and trouble of exchanging currency can be avoided between 18 euro area countries. This has also made cross-border shopping and price comparisons much easier and more transparent (include online purchase). At the same time, the ECB has consistently ensured price stability in euro area, thus better protecting citizens' purchase power (European Commission 2014a). Thirdly,

SMEs in Spain receive finance help from the European Investment Fund (EIF). There are 21 approved agreements with intermediary banks for SMEs financed by EIF. The total financing is €964 million. This will trigger approximately €7,4 billion in investments with 85.423 SMEs and mid-cap companies who expected to benefit from improved access to finance (European commission 2018b).

However, there have also been problems following the integration. Firstly, there was conflict between the EU and Spain during the integration process. Spain has been forced to comply with EU political, economic and social regulations, at times inconsistent with Spanish traditions (Ryan 2006). Secondly, communication between the EU and Spain is not efficient. The European Project lacks a clear roadmap. The general feeling in Spain is that nobody knows what to do (Llaudes and Molina 2016). Thirdly, the ECB is trying to make prices stable by controlling interest rates to lower inflation (European Commission 2014a). However, this does not work so well for Spain. In 2012, the unemployment rate was still fairly high at 24,3 per cent, and is expected to worsen (Govan 2012). The country must search for ways to solve this problem by providing more jobs for the unemployed and creating incentives for employment.

Nevertheless, the official Spanish position still favours further economic and political integration. They think it is the only way to overcome the crisis. Most of the population, and especially those in any position of leadership or power, consider that being a member of the EU has brought advantages (Ryan 2006; Etxezarreta et al. 2011; Llaudes and Molina 2016).

5.3.4 The effect of EU policies in Denmark

Denmark joined the EU in 1973. However, Denmark's situation is a little different from Spain. Denmark was worried that joining the EU would cause harm to the

Scandinavian democratic and social pattern (Sørensen 2018; Danish Parliament 2018a). In 1993, Denmark negotiated new terms in the Edinburgh Agreement. Denmark receives four opt-outs that include the Economic and Monetary Union (EMU), the Common Security and Defence Policy (CSDP), Justice and Home Affairs (JHA), and citizenship of the European Union. Through these opt-outs, Denmark has not participated in the third phase of the economic and monetary union, which would have required the Danish currency to switch from the Danish kroner to the euro (Danish Parliament 2018b).

At the same time, they also do not want to leave the EU as they can benefit from being a member. For example, Denmark joined the European Economic Community on 10 August 1961, wanting to secure agricultural exports to the United Kingdom (Danish Parliament 2018b). Agricultural SMEs in Denmark receive loans from the EIF (European commission 2016a).

Similar to Spain, SMEs and small mid-caps in Denmark also get loans from the EIF. The EU support for innovative Danish companies is expected to generate a portfolio of bank loans of DKK 1.250 million (EUR 167,5 million). With the wide network of Danish banks, export companies in Denmark receive financial support which helps them develop and grow (European commission 2016b).

The survey confirms that Danes are highly supportive of EU membership. Around 65 per cent of respondents wished to stay in the EU, and an absolute majority believed that the EU is good for the country's economy and approved of the EU's democratic standing (Sørensen 2018).

5.4 Comparison of demand and supply

The production trend in Spain shows a decrease. It increased from 7.157 million euros in 2003 to 8.494 million euros in 2007, but after 2007, it started to decline steadily. Denmark shows a similar pattern. Production rose from 2.633 million euros

in 2003 to 2.802 million euros in 2007, but after 2007, it started to fall. Nevertheless, it showed a slight upturn after 2010 (Table 5.1).

Table 5.1 Production in Spain and Denmark, 2003-2012 (Units: million euro)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Spain	7.157	7.275	7.511	8.073	8.494	7.396	5.693	5.348	5.043	4.610
Denmark	2.633	2.730	2.748	2.776	2.802	2.541	2.040	2.019	2.039	2.150

Source: European Commission (2014) in Renda et al (2014)

In Denmark, the sharp decline of production after 2007 is due to the increasing outsourcing and offshore production in Eastern Europe and Asia. In the mid-1990s, some of the first Danish furniture companies started to experiment with manufacturing facilities located in Eastern Europe. After that, the majority of the Danish furniture companies made use of this option. This happened via outsourcing to foreign sub-suppliers. In the latter part of the 1990s, the outsourcing of production to Eastern Europe boomed. Based on the national statistics, the importance of foreign production intensified in the late 1990s. In the early 2000s, this tendency started growing at a rapid pace. The countries explored in this process were primarily Poland, followed by Estonia, Lithuania and Latvia as sourcing markets, the reason behind this development being that the Danish furniture industry was characterized by very small producers. They did not have the financial power or the necessary international knowledge to establish their own operation sites in Poland or the Baltic states. A few Danish furniture companies established their own operation sites in Poland or the Baltic States in the latter part of the 1990s (Hedemann and Nissen 2013).

Four factors led to the production decline in Spain after 2007. Firstly, Spain had not yet recovered from the economic crisis (Govan 2012): the details can be seen in Chapter 5.6.3 about the economic crisis which caused the number of employees to decrease; secondly, the foreign outsourcing of the manufacturing industry rose greatly and consistently from 1993 (Vecina et al. 2003); thirdly, the market faced both structural difficulties and strong contractions on the demand side. Therefore, the

national share of Spain is one of the two most contracted countries within Western Europe (another country is Portugal). Fourthly, there has been a strong contraction in value added in Spain. This also happened in the UK and, to a lesser extent, in Italy. This has led to a negative performance of production (Renda et al. 2014).

The consumption trend in Spain shows a decline. It increased from 7.104 million euros in 2003 to 9.710 million euros in 2007. The increase rate of the consumption in these years is ranging from 5,79 to 10,5 percent. However, after 2007 it constantly fall to 5.074 million euros in 2012. Especially in 2009, the decrease rate reached 25,40 percent. The consumption trend in Denmark looks more stable than in Spain. It raised from 1.432 million euros in 2003 to 1.902 million euros in 2008. From 2003 to 2006, the increase rate of the consumption is constantly rising, which is from 1,75 percent to 11,09 percent. Nonetheless, the increase rate shows decrease in 2007 and 2008, which are 5,97 percent and 0,11 percent. In 2009, the consumption dropped to 1.507 million euros, which decreased 20,7 percent compare to 2008. In 2010, it raised again to 1.616 million euro, which increased 7,23 percent.   After that, there has been a little up and down fluctuation, but always around 1.600 million euro. Even though consumption has been steady since 2010, it has not recovered to the pre-2008 level (Table 5.2).

Table 5.2 Consumption in Spain and Denmark, 2003-2012 (Units: million euro)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Spain	7.104	7.618	8.059	8.785	9.710	8.540	6.371	6.353	5.766	5.074
%change		7,24	5,79	9,01	10,53	-12,05	-25,40	-0,28	-9,24	-12
Denmark	1.432	1.457	1.614	1.793	1.900	1.902	1.507	1.616	1.605	1.587
%Change		1,75	10,78	11,09	5,97	0,11	-20,7	7,23	-0,68	-1,12

Source: European Commission (2014) in Renda et al (2014)

One reason for the consumption decline in Spain but stability in Denmark is the unemployment rate. In 2012, the unemployment rate in Denmark was 7,5 per cent. However, in Spain, it was 24,8 per cent (Statistics Denmark 2014; The Statistics Portal 2018). The high unemployment rate in Spain had a negative effect on the

economic situation, leading to a GDP decrease. When GDP goes down, consumption will decline. Furthermore, the stable consumption in Denmark could also be due to the continued consumer interest in home decoration and renovation, which might cause further furniture sales growth (CBI 2006b).

5.5 Comparison of imports and exports

Spain is one of the largest furniture importers in the world. Its imports in 2013 amounted to 2.597,5 million US dollars, ranking 13th among the world's top import countries (Table 2.12). Imports in Spain are much higher than in Denmark. However, the import fluctuation pattern is the same in the two countries. In Spain, imports increased from 1.386 million euros in 2003 to 2.756 million euros in 2007. After 2007, they became unsteady, starting to fall from 2008, rising again in 2010, but decreasing after 2010. In Denmark, imports rose from 851 million euros in 2003 to 1.248 million euros in 2007, then started to decline from 2008, and increased again in 2010. However, they fell again after 2010. Even though there are fluctuations from year to year, imports in both countries have generally grown compared to 2003 (Table 5.3).

Table 5.3 Import of furniture in Spain and Denmark, 2003-2012 (Units: million euro)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Spain	1.386	1.736	1.967	2.099	2.756	2.636	1.909	2.271	2.042	1.771
Denmark	851	861	976	1.134	1.248	1.185	959	1.090	1.077	1.080

Source: European Commission (2014) in Renda et al. (2014)

The growth in imports in both countries is due to outsourcing. In Denmark, the value of furniture imports started to rise continuously after 1995, indicating that this is a result of increased outsourcing of production. More specifically, this is clear when looking at one of the most significant of Denmark's furniture imports, China. The Imports from China experienced constant uninterrupted growth from 2000, from

DKK 208,3 million in 2000 to DKK 2,1 billion in 2007 (Hedemann and Nissen 2013). In 2010, the imports of Danish furniture was DKK 8,2 billion, 13 per cent more than in 2009. This growth is almost exclusively related to imports from China, Poland, the Baltic States and other Eastern European low-cost countries. It accounts for more than half of furniture imports. Imports from these countries are predominantly made up of furniture and furniture parts which are subsequently resold by the Danish companies. This is a clear indication of outsourced production (Hedemann and Nissen 2013).

The same situation is seen in Spain. From 1990 to 2002, 33,6 per cent of furniture imports were from outsourcing the foreign countries (Farinas and Martin-Marcos 2007).

Although Spain has higher imports than Denmark, the import intensity (the percentage of consumption accounted for by imports) is higher in Denmark. The reasons are as follows. The import intensity of Spain fluctuated between 0,2 and 0,36 from 2003 to 2012. However, the import intensity of Denmark shifted between 0,6 and 0,68 from 2003 to 2012, around two to three times higher than Spain (Table 5.4). This means Denmark has more interactions with the other countries through importing products from other countries. This also means that importing is more important for Denmark than for Spain (Rice University 2014; Mankiw 2010).

Table 5.4 Import intensity of Spain and Denmark, 2003-2012 (Unit: percentile)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Spain	0,2	0,23	0,24	0,24	0,28	0,31	0,30	0,36	0,35	0,35
Denmark	0,6	0,6	0,6	0,63	0,66	0,62	0,64	0,67	0,67	0,68

Source: own calculation based the data of import and production of furniture from Renda et al. 2014

The main importers of both countries are from Europe. Ten countries on the European continent accounted for over 50 per cent of Spanish furniture imports during 2007. Asia provided 29,8 per cent of the total national imports during 2007, the

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Far East and Southeast Asia being the main sources of Asian furniture imports. The top Asian importers are China, Indonesia and Vietnam, which contributed a little under 26 per cent of the total imports (Campos et al. 2008). In Denmark, the five most significant nations in terms of Danish furniture imports are Italy, Poland, Germany, Sweden and China. Among them, only China is from Asia: the rest are European countries. Furthermore, Denmark is one of the countries, together with Germany, Sweden and Norway, with a high import penetration from Central Eastern Europe (CSIL 2014; Hedemann and Nissen 2013)..

Denmark is one of the largest export countries. Its exports in 2013 amounted to USD 2.175,5 million, ranking 15th among the world's top export countries (Table 2.13). Although there is a little fluctuation year to year, it seems Spanish exports are more stable than Danish exports. In Spain, the total fluctuated between around 1.200 to 1.540 million euros from 2003 to 2012. In Denmark, it steadily raised from 2.052 million euros in 2003 to 2.151 million euros in 2007, before starting to fall from 2008. Even though there was a little growth after 2010, it has not recovered to the pre-2007 level (Table 5.5).

Table 5.5 Export of Furniture in Spain and Denmark, 2003-2012 (Units: million euro)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Spain	1.439	1.394	1.419	1.388	1.540	1.492	1.232	1.267	1.318	1.308
Denmark	2.052	2.134	2.110	2.117	2.151	1.824	1.492	1.492	1.511	1.640

Source: European Commission (2014) in Renda et al. (2014)

Danish exports are consistently higher than Spanish exports. However, the difference between the two countries was much smaller in 2012 compared to 2003. In 2003, Spanish exports were at 1.439 million euros, and Danish exports were at 2.052 million euros. The difference between the two countries is around 600 million euros. In 2012, Spanish exports were at 1.308 million euros, while the Danish exports were

at 1.640 million euros. The difference is around 300 million euros, indicating that Spanish exports are growing stronger (Table 5.5).

There are three common reasons leading to the high exports in both countries. One is the differentiation of their products. In Denmark, the export boom was based on quality, design and functionality (Hedemann and Nissen 2013). In Spain, approximately 800 companies are genuine exporters. Spanish furniture has improved its international reputation. It makes furniture that is globally competitive (Consumer Goods Division 2005).

The second reason is that the countries can benefit from cost reductions through outsourcing and offshore production. Outsourcing shows an increase in both countries. Offshore production is growing in Denmark (Hedemann and Nissen 2013; Farinas and Martin-Marcos 2007). Outsourcing and offshore production in less developed countries is a way to access to cheap raw materials and labour.

The third reason is that they can obtain benefit from regional clusters. Danish furniture manufactures have not been affected by strong global competition, as was the case in other industries. The reasons can be found in the structure of the industry, which is located in regional clusters. In these years, the geographical proximity in the furniture cluster in the mid-Jutland region created some fundamental extra-firm intra-industry capabilities, such as high trust and localized learning. These enabled the manufacturing firms to maintain their competitiveness despite the high Danish factory costs (Hedemann and Nissen 2013). There are also highly reputable furniture clusters in Spain, such as the one in the region of Horta of Valencia, where many big producers are located. It represents 60 per cent of the total production of furniture in the Valencia Autonomous Region, 30 per cent of total Spanish production and 50 per cent of exports (Generalitat Valenciana 2007 in Robertson and Jacobson 2011).

There are also different factors underlying the high exports in the two countries. Danish furniture companies in the 1970s invested in efficient production facilities to

lower production costs (Hedemann and Nissen 2013). In addition, Denmark is an export-intensive industry with little dependence on the home market. Many of the Danish-controlled furniture imports are being re-exported—perhaps, but not necessarily, after some value-adding activity (Howells et al. 2009). In Spain, they adopted the euro as a single currency: this reduced the trade barrier of currency exchange, since the principle export market of Spain is European countries (Campos et al. 2008). Moreover, Spain is trying to encourage exports to emerging countries to increase sales. This is helping to diversify the sales markets and create new business opportunities for furniture from Spain (ANIEME 2013; ANIEME 2011a).

Even though the two countries' exports are similar, the export intensity (the percentage of production accounted for by exports) in Denmark is higher than in Spain. The export intensity in Spain generally shows an increasing trend. In 2003, it was 0,19, reaching 0,38 in 2012. In Denmark, the export intensity shows a similar tendency, but it is much higher than in Spain. In 2003, it was equal to 0,53; however, in 2012, it rose to 0,82. In 2008, 2010 and 2011, it is even higher than 1 (Table 5.6). Higher levels of export intensity indicate an increasing level of reliance on exporting in both Spain and Denmark (Hall and Lee 2008). Denmark has a much higher export intensity than Spain, signifying that Denmark depends more on exports than Spain. The high export intensity in Denmark also means the degree of globalization in Denmark is higher than in Spain (Rice University 2014; Mankiw 2010). Most of the furniture production in Denmark is exported to satisfy foreign demand (Hall and Lee 2008).

Table 5.6 Export intensity of Spain and Denmark, 2003-2012 (Unit: percentile)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Spain	0,19	0,24	0,26	0,26	0,32	0,36	0,34	0,42	0,40	0,38
Denmark	0,53	0,64	0,72	0,76	0,98	1,04	0,94	1,12	1,00	0,82

Source: own calculation based the data of export and production of furniture from Renda et al. 2014.

The two countries' main export market is Europe. For Denmark, Norway is their largest export market, followed by Germany, Sweden, France and the UK. The top ten Danish furniture export markets are all European countries, with the exception of the USA (Ministry of Foreign affairs of Denmark 2016; The Statistics Portal 2016c), while France, Portugal, Germany, Italy and the United Kingdom are the main consumers of Spanish furniture. The countries that have increased their imports from Spain most are Germany, Italy, Morocco, the USA and Mexico (ANIEME 2011b).

5.6 Comparison of inputs for furniture production

Raw materials, capital, labour and design are four important inputs which can measure the competitiveness of the furniture industry. The following four subchapters analysed each of them one by one.

5.6.1 Raw materials used in furniture production

The raw materials used are little different in the two countries. In Spain, there is significant use of overlaid panels, pre-varnished, melamine-faced and PVC-faced (polyvinyl chloride). Some Spanish companies are specialists in veneer facings for real wood. These materials compete with synthetic overlays in furniture panels. Mixed materials (steel, glass, textiles, wood) is the major design style (ITTO and ITC 2004). In Denmark, there is widespread use of sheet board with painted, veneer and laminated surfaces, as well as glass and perspex fronts. The production for export tends to be in solid pine, beech and oak, often as RTA (Ready-to-assemble)   boxed sets. The key technological trend is customization of the final product. The tendency towards light board reduces the raw material consumed. The development of nesting, machining centres insert fittings, mirror holes and finishes with an innovative hot coating process, is a stable polyurethane reactive against UV radiation. It allows significant savings in material (Calvo 2012; ITTO and ITC 2004).

Both countries use wood, particularly softwood, as their raw material in the production of furniture. According to the percentage usage of wood raw materials by Spain's top 50 largest furniture manufacturers, the most used wood is softwood, which represents 91 per cent (ITTO and ITC 2004). In Denmark, wood is the dominant material in the furniture sector. About 80 per cent of the total production of furniture is wooden furniture in terms of production volume and value of the finished products (Environment and Energy Ministry-Forest and Nature Agency 2000). Although there are no exact figures available, the bulk of Danish furniture is made from softwoods. Any change away from softwood is not easy because the machinery is difficult to readjust to hardwood. However, the development of different raw materials has resulted in increased use of lightwood free from knots. The demand for hardwood floors (either solid or laminated with a hardwood overlay) is rising. The most popular hardwood species is white oak, while demand for cherry is decreasing (Kristensen 2006).

Both countries must import wood from overseas to supply furniture production. Spain is not traditionally a significant producer of solid woods. The production of solid wood accounts for only around 4 per cent of EU-27 productions. The northern region of Spain is the primary zone for tree production. Around 65 per cent of the woods used are imported, especially pine, oak, beech, sapele and teca (Medina and Page 2007; Barrero 1998). Softwood imports are mainly from the USA, Germany, France, Sweden and Austria. However, Brazil and Chile are gaining an increased market share. The Spanish use Portuguese softwood in the packaging sector. In the hardwood log sector, Spain mainly imports from the USA, France, Portugal, Germany and Argentina (Medina and Page 2007). In Denmark, the Nordic countries combined account for about 45 per cent of Danish wood imports. Other major suppliers are Germany, Poland and the Baltic countries (Kristensen and Perkins 2002, ILO 2003 in Gazo and Quesada 2005).

The most used wood-based panels and boards are different in the two countries. The Spanish producers of wood panels are large and powerful. They offer abundant cheap material to the local furniture factories. Chipboard is therefore by far the main raw material, but the demand for MDF is growing. According to the percentage usage of wood raw materials by Spain's top 50 largest furniture manufacturers, besides the most used softwood (91%), the second most used is chipboard (72%), and then MDF (61%). The rest are European hardwood (44%), veneer (44%), edge-glued panels (36%), moulding (25%), tropical hardwood (21%), American hardwood (19%) and plywood (19%). In the overall usage of wood raw materials in wood products in 2002, chipboard represents 62 per cent, which is the most used wood raw material. The rest are sawn softwood (13%), sawn hardwood (12%), MDF (10%) and plywood (3%) (ITTO and ITC 2004). In Denmark, OSB generally competes with softwood plywood. It appeared in the past that OSB demand would grow at the expense of plywood: in fact, the demand for both products has grown. Imports of softwood plywood and OSB were forecast to rise by 15 per cent in 2006. Softwood plywood is supplied mainly from Finland and Russia, with China, Chile and Brazil gaining larger market shares (Kristensen 2006).

Outsourcing in both countries is a method to access raw materials. Traditionally, Spanish furniture producers have preferred to produce all their parts and components within their own factories. However, around 15 years ago, they made use of the advantages of outsourcing their parts and components. This rapidly created a good network of subcontractors, especially in the Valencia area, but also around Barcelona and Madrid. Several companies are now producing cabinet doors, tops, legs and drawers. They also produce items such as edge-joined veneer, marquetry veneered parts, upholstered furniture frames and overlaid mouldings. While, at this stage, outsourcing provides only a small share of the industry's parts and components, the share is expected to grow steadily (ITTO and ITC 2004). According to the survey,

there is an increasing trend of outsourcing parts and components in Spain (CBI 2006a). In Denmark, resource-driven factors lead to a focus on outsourcing. It can compensate for a lack of expertise (e.g. technical know-how), including the ability to follow legal requirements and to match the changes in technology. It may also be a way to access raw materials and other resources (Arlbjørn et al. 2011). Danish manufacturers are beginning to outsource more of their materials and production to Eastern Europe, where production costs are lower (Kristensen 2004 in Gazo and Quesada 2005; Kristensen 2006).

5.6.2 Methods of accessing capital

Both Spain and Denmark can access capital through attracting international investment. In Spain, for example, on 1 August 2011, Ergon (a pan-European investment company backed by the Belgian Group, Groupe Bruxelles Lambert) invested in Benito. Benito is the leading Spanish company in the design, manufacturing and commercialization of urban furniture. Ergon will consolidate Benito's market share in Spain and accelerate its international expansion (Press release of Ergon 2011). In Denmark, a well-known Danish solid wood furniture manufacturer and distributor, Zenia House, received an investment from a New Zealand company, Fletcher Challenge Forests. The company and Zenia House actively promote use of the high quality radiata pine clear wood in the European solid wood furniture market. The company will supply all of Zenia House's future requirements (Press release of Fletcher Challenge Forests 2004).

Both countries can obtain capital through investment from subcontractors. Modern subcontracting relationships are increasingly arranged through cooperative relationships in comparison to traditional arm's length, market-based transactions (Lehtinen 2001 in EIM and Ikei in 2009; Gereffi et al. 2005 in EIM and Ikei in 2009).. This kind of cooperation often results in risk-sharing approaches between partners in a

number of fields, such as product development and process innovations (Ministère de l'Économie, des Finances et de l'Emploi 2007 in EIM and Ikei 2009). It sometimes also leads to the temporary exchange of personnel, loan of machinery or expertise, or coordinated investments in production equipment (Maskell 1996). Spain is one of the largest manufacturing subcontractor countries from the 15 old EU Member States (the largest manufacturing subcontractor countries are Germany, France, Italy, Spain and the United Kingdom respectively). Therefore, outsourcing is one of the ways for Spanish companies to access capital (Lehtinen 2001 in EIM and Ikei 2009). In Denmark, many of these subcontractor relationships are very deep-rooted and long lasting. Their relationships with their main customer and main supplier are amazingly stable. They had known their business partners for 13 years on average. Around 82 per cent of firms further interact with their customers in developing new products (Maskell 1996). For this reason, they should have cooperation from their outsourcing partners to access capital.

Both countries gain capital through mergers or acquisitions. For example, in Spain in 2002, Diana Capital acquired 40 per cent of furniture company Granfort. Diana Capital is a private equity fund registered with the National Stock Market Commission (Comisión Nacional del Mercado de Valores). It focuses on unquoted companies with high growth potential located in Spain and Portugal (Center for industrial studies 2008). In Denmark, several mergers and acquisitions have taken place, increasing the average size of Danish furniture companies. Skandinavisk, Europe's largest producer of office furniture, is one such company. Scandinavisk's production facilities are operated by affiliated companies in several other European countries (ITTO and ITC 2004). The European Furniture Group (EFG) AB has acquired 100 per cent of the shares in Bondo in Denmark, one of the largest office furniture companies in the Danish market. Bondo and EFG's Danish sales organization will be merged to create a leading player in the Danish market with an

approximately 20 per cent market share. The name of the newly merged entity will be EFG Bondo (Herkules 2007).

Both countries obtain capital through government support, but in different ways. In Spain, the furniture companies get direct financial aid from the government. Spanish governments carry out budget appropriations to ensure the performance of private furniture companies (Campos et al. 2008). According to the theory of macroeconomics, if the government gives direct financial aid to companies, it will increase supply of the company. In this way, production across the whole market can be increased (Rice University 2014). The Spanish government used this strategy because furniture production showed a decline, mainly because Spain is still striving to recover from the economic crisis, in addition to the structural difficulties and large contractions on the demand side in the furniture market and the fact that the value added in Spain sharply declined (Govan 2012; Renda et al. 2014). Therefore, the Spanish government needed to give a subsidy to encourage production.

In Denmark, furniture companies do not receive direct financial aid. This could be because they do not have a production problem. However, the companies can get indirect support from the government. To maintain Denmark as an international creative hub, the Danish government has collaborated with the private sector to further enhance the competitiveness in sectors such as architecture, fashion and design, which includes the furniture industry. Measures implemented include forming partnerships between Denmark's leading companies and creative design agencies and attracting international companies to invest in the country (Legislative Council Secretariat 2014). The creative industries (include the furniture industry) in Denmark are characterized by the dominance of small companies. It is difficult for them to formulate a sound business plan themselves and raise capital for growth. To encourage the development of these small creative companies, the Danish government has introduced three support measures: firstly, improving access to finance through

avenues such as bringing together investors and companies in need of venture capital for growth via so-called crowdfunding; secondly, coaching the creative entrepreneurs to acquire the necessary skills for business development; and thirdly, offering overseas market intelligence to help creative businesses expand into international markets (Legislative Council Secretariat 2013).

5.6.3 Employment situation in the furniture industry

The number of employees decreased steadily in both countries between 2003 and 2012. In Spain, it only increased from120.458 in 2003 to 121.665 to 2004. In the rest of the years, the number fell from 121.665 in 2004 to 67.190 in 2011. The decreasing rate shows increase trend. In 2005 and 2006, there is just 1 percent decrease. In 2007 and 2008, the decrease rate raised to 7 percent. In 2009, 2010 and 2011, the decreasing rates are 21 percent, 3 percent and 15 percent respectively. In Denmark, it went down from 18.973 in 2003 to 9.250 in 2010. The decreasing rate shows increase as well. From 2005 to 2007, the decreasing rate is ranging from 1 to 5 percent. However, from 2008 to 2010, it is ranging from 14 to24 percent (Table 5.7).

Table 5.7 Number of employees in furniture industry in Spain and Denmark, 2003-2012

	Spain	% change	Denmark	% change
2003	120.458		18.973	
2004	121.665	1	17.966	-5
2005	120.860	-1	17.582	-2
2006	119.100	-1	17.412	-1
2007	111.274	-7	16.925	-3
2008	103.875	-7	14.168	-16
2009	81.586	-21	10.707	-24
2010	78.998	-3	9.250	-14
2011	67.190	-15	n.a.	n.a.
2012	n.a.	n.a.	n.a.	n.a.

Source: European Commission (2013) in Renda et al. (2014)

There are three reasons leading to the decline of the number of employees in the two countries. One is the deceasing number of enterprises. Some of the enterprises exit the market due to the strong competition, mainly from developing countries with low costs, such as China. China penetrated the EU market rapidly and is now the largest furniture exporter to the EU. Over half of total furniture exports to the EU are from China (European Commission 2017c).

The second reason is that both countries are trying to improve the production process through technology improvement. There is less demand for employees when the production process is improved. In Spain, the companies need to carry out R&D research constantly to improve and renew the production process; otherwise it will be difficult for them to survive in the long term, since the furniture industry is characterized as traditional and labour intensive. During 2007 and 2009, the observatory sector of the industrial wood has made the latest technology available to companies in the wood and furniture sectors. Companies can adapt and incorporate the technology into their production processes (Calvo 2012). Danish furniture manufacturers in the mass market have tried to meet the challenge through targeted investment in automation. For example, the furniture company Tvilum-Scanbirk has managed to maintain all production activities at its factories in Denmark through focused production automation (Wæhrens et al. 2009).

The third reason for the decline in the number of employees is that outsourcing or offshore production in less developed countries shows an increasing trend in both countries. Wages are high in both Spain and Denmark, especially in Denmark, which is around two times higher than in Spain. For example, in 2010, the average wage per employee in Denmark was 46.529,73 euros, while in Spain it was 20.510,65 euros (Renda et al. 2014). Therefore, both countries, especially Denmark, have to try to lower their labour costs. This can be done by making use of employees accepting a lower wage in less developed countries.

In Denmark, both outsourcing and offshore production show growth. Some companies started to outsource in the late 1990s, but in the early 2000s this tendency started developing at a rapid pace. This is closely related to the number of people employed decreasing in the furniture industry. The number of people employed in furniture production declined from its peak of 22.140 in 2000 to 16.500 in 2007. It is estimated that approximately 4.000 jobs have vanished since 2008 (Hedemann and Nissen 2013). The high labour cost in Denmark has also led to offshore production in less developed countries. The manufacturing is kept in control of the company via ownership of the production facilities (Hedemann and Nissen 2013). For example, the profit of several Danish production companies based in Lithuania is growing by between 10 and 15 per cent each year. The reason for this success is high technology combined with continued low wages (Invest Lithuania 2014).

In Spain, outsourcing is increasing, but offshore production is diminishing. Outsourcing of manufacturing to foreign countries has risen significantly and steadily since 1993 (Vecina et al. 2003). The use of offshore production in less developed countries among Spanish furniture companies has fallen sharply since 2005. This is due to the increase in the price of energy and raw materials in less developed countries, as well as the lack of profitability of offshoring projects (Campos et al. 2008). Therefore, the labour cost reduction of the furniture industry in Spain is from outsourcing, not offshore production.

Furthermore, Spain has not recovered from the economic crisis which caused the number of employees decrease. Spain was forecast to be the only country among the 17 nations of the eurozone to remain in recession in 2013. Unemployment, already at 24,3 per cent, was expected to worsen (Govan 2012). For example, in 2012, employment took a negative turn in the timber industry with a fall of nearly of 5,8 per cent. Employment in the wood furniture industry went down from 145.600 workers in the third quarter to 137.200 workers in the fourth quarter. The president of the

confederation said that the government needed to take some action: it needed to support both the wood and the furniture industry, as well as the other sectors linked to construction. Support is through plans of rehabilitation and reform, or tax incentives (Spanish Confederation of Timber Companies 2013).

In the future, the unemployment situation may be improved following the turn of Spanish economics. The ECB predicted that Spain would be one of the economic drivers of Europe in 2015. Powered by a cheap euro and low interest, economic growth was predicted to rise by 2,3 per cent in 2015. The Spanish government was expecting one million additional jobs for 2014 and 2015. Along with Portugal and Ireland, Spain represents an example of how an economic crisis can be turned into an opportunity. These countries' experiences show that a nation can recover its economic competitiveness through painful reform, even in a monetary union (Pauly 2015).

5.6.4 Design in the furniture industry

The furniture design styles in Spain and Denmark have some common characteristics. Human factors affect the furniture design in the two countries. Spanish furniture design is deeply influenced by the architecture, culture and art of centuries of well-known artists such as Picasso, Miro and Gaudi (Wang 1999). Danish furniture design also respects human factors: its furniture design combines the traditional and modern culture (Zhou 2016).

The functional design of the furniture in the two countries seems similar. Spanish designers keep users in mind in a practical subtle way. The Spanish design industry strives to provide people with furniture that enhances lives, not only by looking great but also by being amazingly useful and versatile. This is why Spanish-designed furniture has become the main choice for a number of projects, including stylish, uber-cool houses, yachts, hotels, spas and restaurants. It sets an immediate fresh, playful tone and increases the elegance and sophistication of the space. Some of the

brands have achieved exciting results, such as Vondom, Punt, Kettal, Gandia Blasco and Ondarreta (Mueble de Espana 2015). The character of Danish furniture is to focus on the user, respect the materials and pay attention to details. It was natural for the industrial designers to find inspiration in functionalism. Danish Functionalism was organic, which was very different from the often strict and dogmatic idiom (Ministry of foreign affairs of Denmark 2008; Lu and Bai 2015).

Both Spanish and Danish designers are putting an increasing emphasis on the environment and sustainable solutions. For example, the Spanish furniture company AF Steelcase is particularly innovative in the field of material sustainability. The new headquarters of another Spanish furniture company, Actiu Group—Actiu Technological Park—opened at the end of 2008. The park is an extensive industrial complex where architecture, technology and industrial processes integrate with the environment and sustainability (Center for Industry Studies 2008). In Denmark, it has become a fundamental principle for Danish designers to emphasize the use of design-driven green products (Tracogna 2013). An example is the chair imprint designed by Johannes Foersom and Peter Hiort-Lorenzen in an environmentally friendly wood fibre material: it has set new standards for sustainability within Danish furniture design (Ministry of foreign affairs of Denmark 2008).

Besides the common characteristics above, Danish and Spanish furniture have differences in their design. Spanish furniture design pays attention to decoration. The furniture production shows the curvature of the curve shape, with detailed design and with emphasis on the use of soft lines (Wang 1999). The Mediterranean style is a furniture style that reflects the characteristics of Roman and Moorish art. It formed in Spain and the Mediterranean region. The surface commonly uses the ancient Spanish knight as a symbol. Fine silversmith work with cross-cutting decorative surfaces and geometric patterns are also widely used (Rodríguez et al. 2014).

Nevertheless, Danish furniture design focuses on simplicity and nature. In Denmark, the wood used to produce furniture will not normally be painted, only polished and waxed. Danish designers pursue the use of purely simple wood, keeping its natural texture (Jiang and Gong 2014; Lu and Bai 2015). According to a survey of trends conducted by the association of Danish furniture industry in 2001/02, simplicity was the key trend for lifestyle products linked to the need for relaxation (ITTO and ITC 2004). 'Less is more' became a slogan, away from lions' feet and curlicues, away from superfluous decoration. The real purpose of furniture was to be bright, light and simple furniture, as well as white walls and airy curtains (Hansen and Petersen 2007).

Friendly and warm are the major characteristics of Spanish furniture design, though it is not the main character of Danish furniture (Wang 1999). University in Spain today is not just a place to study: it is a place for multicultural contact, socialization, creation, imagination and discovery. The most iconic furniture collections of Andreu World have boosted all these functions. This kind of design style has been applied in many main areas, such as auditoria, conference centres, canteens, libraries, lecture rooms, offices and lounges. It sets a joyful and stylish mood. It makes studying great fun (Mueble de Espana 2015).

The colours used in the furniture design in the two countries are a little different. In Spain, the major design style mixes materials (steel, glass, textile, wood) and colours (cold and warm colors) freely. Light colours still dominate, but there is a definite tendency towards the inclusion of dark tones (brown and black). In Denmark, the current preference is bright colours for small items. At the same time, sandy urban neutral shades are used as background to offset the steel/silver effects of many kitchen surfaces. Blond birch, beech and light oaks are the preferred woods for furniture (ITTO and ITC 2004).

Denmark puts much more effort into new design than does Spain. In 2010, the number of employees in R&D in the furniture industry in Denmark was 2,2 per cent

of the total, while in Spain it was 0,80 per cent. Denmark has the largest share of R&D personnel of total number of employees in Europe (Renda et al. 2014).

In Denmark, design has been a key factor in the development of the Danish furniture industry. In this respect, it has a network of research institutions, educational institutions and industry organizations. It fosters both independent design companies and in-house designers. According to sector experts, most Danish design is done by independent design firms (Tracogna 2013). The furniture industry is one of the most successful industries in Denmark. The success of Danish furniture is due to the cooperation among a group of academic graduates, furniture designers and several professors in furniture design. It was this cooperation that made the Danish furniture industry a big success (Hansen and Petersen 2007).

Even though Spain does not put as much effort as Denmark into design, R&D in design will remain very strong in the future. The market is saturated, but the desire to create is not. As a result, further research into new fields allows reinterpreting things in new contexts. The technology applied to home and work environments has led to a new approach to the use of furniture. Research and development have to be at the heart of their companies' strategy. In this way, they can beat competition and keep up with trends and market needs. Globalization has made competition very strong. It is increasingly difficult to find huge differences in societies' products. It seems that only strongly marked cultural features can add nuances to the design style (Mueble de Espana 2015).

5.7 Comparison of companies' spatial distribution

The number of enterprises shows decline in both countries between 2003 and 2011. In 2003, there were 18.557 companies in Spain and 657 companies in Denmark. However, in 2011, there were 14.758 companies in Spain and 437 companies in Denmark (Table 5.8).

Table 5.8 Number of enterprises in furniture industry in Spain and Denmark, 2003-2011(Units: number of enterprises)

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Spain	18.557	18.392	18.135	17.916	17.091	17.091	15.155	15.577	14.758
Denmark	657	655	637	609	598	403	412	429	437

Source: European Commission (2014)

There are three factors leading to the drop in the number of companies in the two countries. Firstly, the industry was severely hit by the economic crisis in 2008. Secondly, the sector's competitiveness decreased because operational costs in the EU were higher due to high environmental, sustainability, and technical standards, while protectionist measures on international markets created market distortions. EU furniture producers face both duties on imports of raw materials and tariffs on exports of finished products; therefore, they face strong competition from low-cost countries such as China. Thirdly, the industry relies heavily on innovation and design combined with an increase in global trade and digitalization. This makes the sector more vulnerable to weak protection of intellectual property rights. Boosting research and innovation also requires finance that is often inaccessible to SMEs (European Commission 2017c).

Furniture companies in Spain are mainly distributed in Andalusia, Catalonia, Valencia and Madrid. In 2009, there were 3.377 companies in Andalusia, which ranked highest. Catalonia had 2.781 companies, Valencia 2.463 companies and Madrid 2.070 companies. In Castilla-La Mancha, Galicia, Castilla and Leon, Murcia and the Basque County, the number of companies ranges from 970 to 1.287. In other places, the number of the companies is below 600 (Appendix 4: Table 5.9, Figure 5.1).

Figure 5.1 Map of Spain by autonomous communities

Source: map of Spain is made by the author, map of Europe is from geology.com 2018

The number of companies in Andalusia grew very fast from 2.747 in 1999 to 3,646 in 2006. However, it showed a decrease after 2006, especially in 2009, when it fell from 3.620 to 3.377. In Catalonia, it declined almost constantly from 3.623 in 1999 to 2.781 in 2009, being surpassed by Andalusia from 2003. The same decline trends can be seen in Valencia and Madrid (Appendix 4: Table 5.9, Figure 5.2).

Figure 5.2 Number of furniture companies in the major locations in Spain, 1999-2009
(Units: number of the companies)
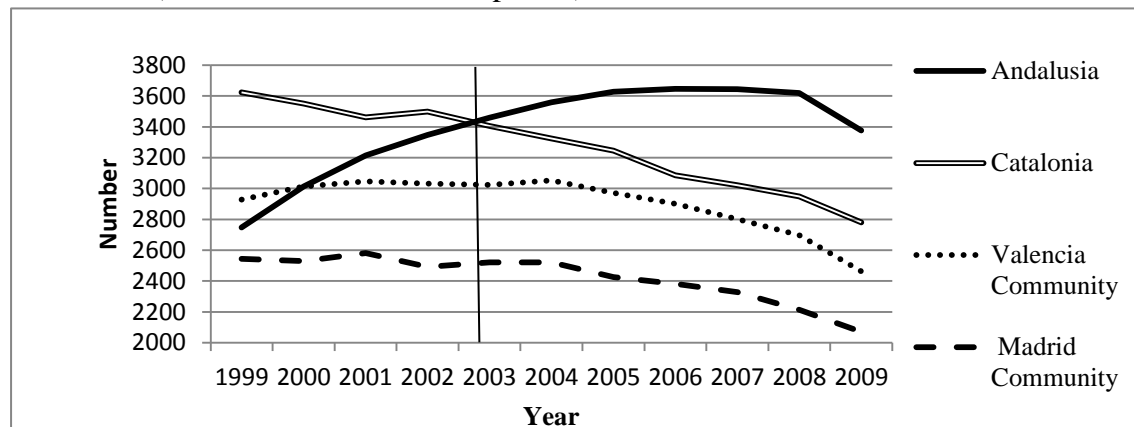
Source：National Institution of Statistics of Spain (2015)

In Denmark, before 2007, counties were used to classify different regions. Therefore, from 2002 to 2006, the number of workplaces was classified by county (Table 5.10). The county was abolished on 1 January 2007; consequently, the number of workplaces was classified by province from 2006 to 2012 (Table 5.11).

In 2006, companies were mostly located in Aarhus county (located in East Jutland), with 230 workplaces. There were around 140 to 150 workplaces in Funen county, North Jutland county, Viborg county (located in North Jutland) and Copenhagen county. In Ringkøbing county (located in West Jutland), Vejle county (located in East Jutland) and Frederiksborg county (located in Copenhagen surroundings), there were around 120 to 130 workplaces (Table 5.10, Figure 5.3).

Table 5.10 Workplaces by industry and region in Denmark, 2002-2006 (Units: number of the workplaces)

County \ Year	2002	2003	2004	2005	2006
Copenhagen County	134	134	141	137	138
Frederiksborg County	130	115	119	127	119
Roskilde County	60	52	54	57	57
West Zealand County	84	80	82	81	82
Storstrøm County	82	70	72	79	81
Bornholm (excl. Christiansø)	6	8	12	11	9
Funen County	161	163	158	157	150
South Jutland County	61	55	53	55	52
Ribe County	102	97	87	87	90
Vejle County	137	130	135	132	130
Ringkøbing County	141	128	123	120	124
Aarhus County	268	251	257	250	230
Viborg County	150	147	152	139	142
North Jutland County	159	153	152	149	141

Source: Statistics Denmark (2008)

Figure 5.3 Map of Denmark
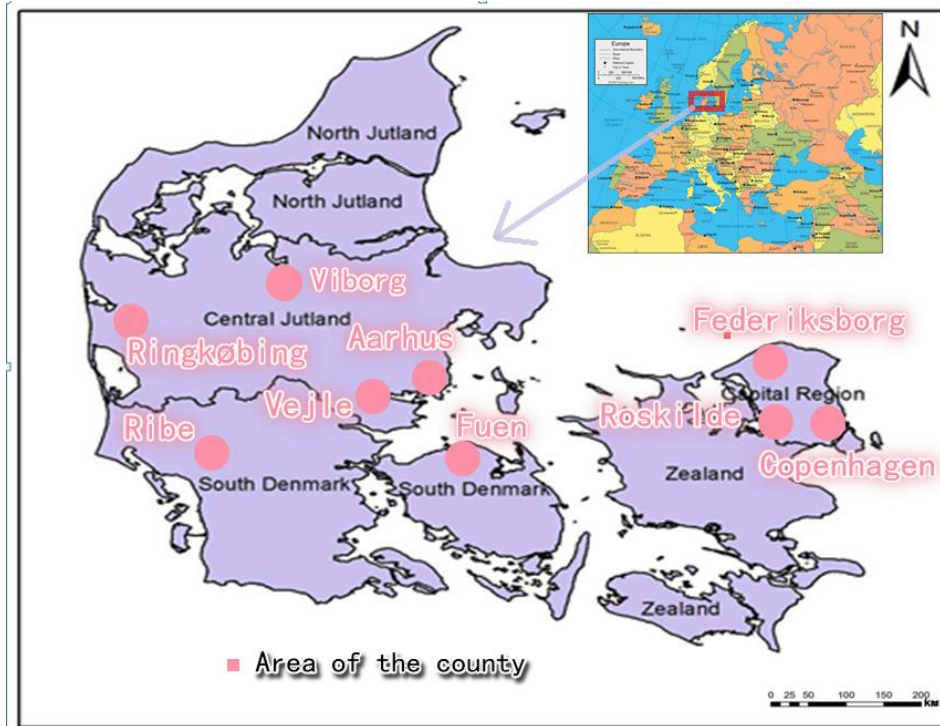
Source: map of Denmark is made by the author, map of Europe is from geology.com 2018

In 2012, most of the companies were located in East Jutland, South Jutland and North Jutland, which had around 500 to 600 workplaces in each region. In Funen, West Zealand and South Zealand, there were around 400 workplaces in each of the regions. In Copenhagen city and West Jutland, there were around 300 workplaces (Table 5.11, Figure 5.3).

Table 5.11 Workplaces of furniture industry in Denmark by region, 2006-2012

(Units: number of the workplaces)

Province \ Year	2006	2007	2008	2009	2010	2011	2012
Province Copenhagen city	314	330	297	286	292	308	325
Province Copenhagen surroundings	247	256	232	233	224	241	235
Province North Zealand	284	264	253	249	246	262	249
Province East Zealand	141	146	135	141	141	139	145
Province West- and South Zealand	445	459	446	420	413	400	408
Province Funen	410	435	407	400	371	390	383
Province South Jutland	564	594	595	563	552	562	557
Province East Jutland	647	635	625	610	593	619	610
Province West Jutland	382	379	345	307	311	328	323
Province North Jutland	465	497	476	430	445	466	477

Source: Statistics Denmark (2014)

The number of workplaces in the major areas in general shows a decreasing trend. Although there were fluctuations from 2006 to 2012, South Jutland was always the area where the most workplaces were located, followed East Jutland. Others were North Jutland, West Zealand, South Zealand and Fuen (Figure 5.4).

Figure 5.4 Workplaces of the furniture industry in major areas in Denmark, 2006-2012 (Units: number of the workplaces)
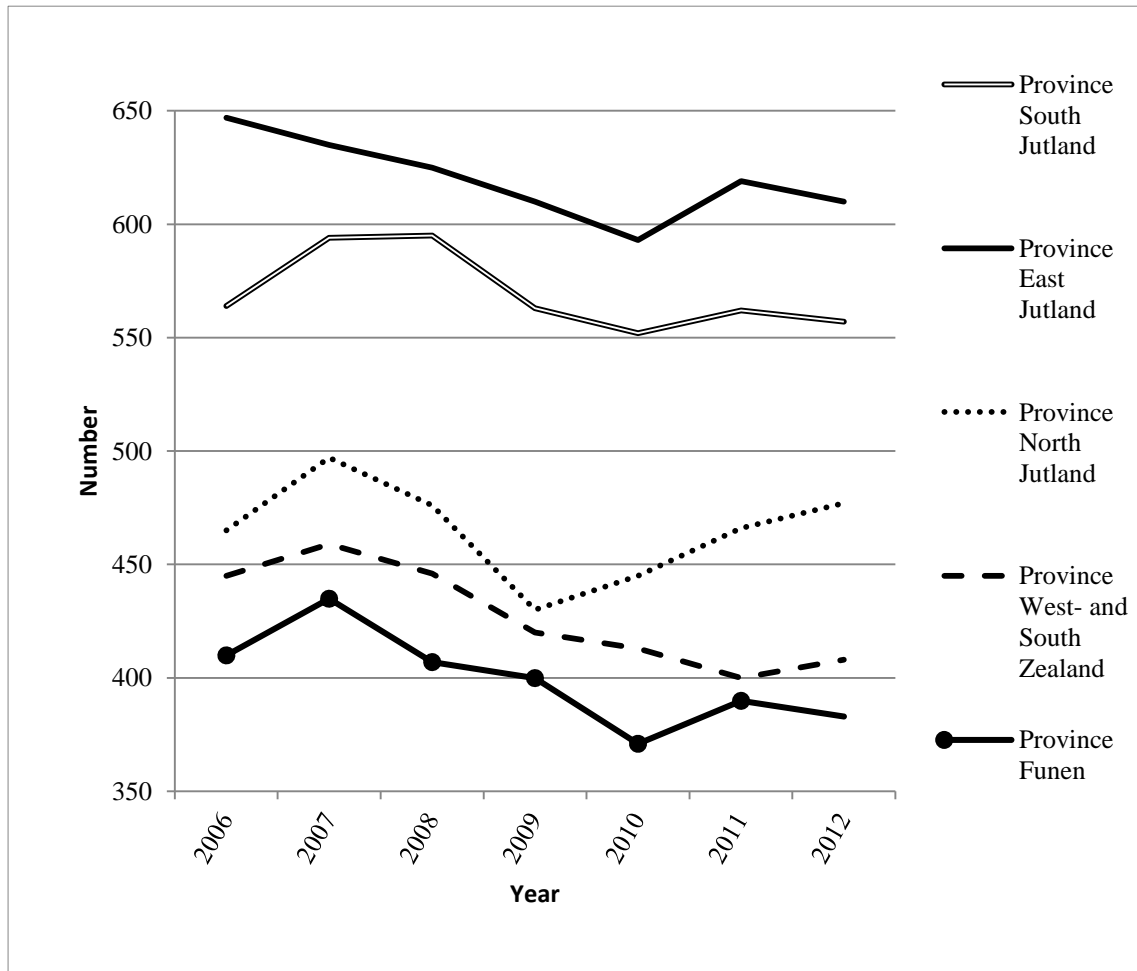
Source: Statistics Denmark (2014)

5.8 Summary

The production trend in the two countries shows a decrease. Reasons for the production fall in Denmark are the growth of outsourcing and offshore production. However, there are four reasons leading to the production decrease in Spain: Spain is still striving for the economic crisis; some of its production was outsourced to foreign countries; there have been structural difficulties and large contractions on the demand side in the furniture market; and the value added in Spain sharply declined.

The consumption trend in Spain shows a decrease, but in Denmark it seems more stable. The fall in consumption in Spain could be because of the high unemployment rate, while in Denmark the unemployment rate is low. At the same time, continued consumer interest in home decoration and renovation might cause a further furniture sales rise.

Spain is one of the largest import countries, ranking 13th among the world's top import countries in 2013. Denmark has much fewer imports than Spain. Nevertheless, imports in both countries show an increasing trend because of the increasing foreign outsourcing. Although the import of furniture into Spain is higher, Denmark has larger import intensity than Spain, meaning that importing is more important for Denmark. They have more interactions with other countries. The main importers of both countries are from Europe.

Denmark is one of the largest export countries, ranking 15th among the world's top export countries in 2013. Spanish furniture export is becoming similar to Denmark. In 2003, the difference of the furniture export between the two countries is around 600 million euros. In 2012, the difference is around 300 million euros, indicating that Spanish exports are growing stronger. There are three common factors leading to the high export in both countries: differentiation of the product; benefiting from the cost reduction through outsourcing or offshore production; and they can obtain benefit from regional clusters. There are also different reasons for the high exports in the two countries: Danish furniture companies made an early investment in efficient production facilities to lower the production cost while, in Spain, they use the euro as their currency. This has reduced the trade barrier of currency exchange in Europe. Even though exports seem similar in the two countries, the export intensity is much higher in Denmark. This means that Denmark relies more on exports and that the degree of globalization is higher in Denmark. The main export market for the two countries is Europe.

The raw materials used in the two countries are different, but wood, especially softwood, is the principle raw material used. Both countries must import wood from abroad to supply furniture production. In Spain, softwood import is mainly from the USA, Germany, France, Sweden and Austria. In Denmark, 45 per cent of Danish wood imports are from the Nordic countries. Other major suppliers are Germany, Poland and the Baltic countries. In Spain, the most used wood panel is chipboard. In Denmark, it is OSB. Both countries can access raw materials through outsourcing.

Both countries can access capital through investment from subcontractors, attracting international investment, and mergers or acquisitions. Both countries obtain capital through government support but in different ways. In Spain, the furniture companies receive direct financial aid from the government, because the Spanish government wants to use direct financial aid to encourage the declining production. In Denmark, they do not need to do so since they do not have a production problem. However, the furniture companies can get indirect support.

The number of employees fell steadily in both countries from 2003 to 2012. There are three reasons for this: firstly, the deceasing number of enterprises due to the competition from the low-cost countries; secondly, the production technology improvement in the two countries leading to less demand for employees; and thirdly, both of the countries are seeking low-cost labour in the less developed countries by outsourcing or offshore production. There is an increasing trend for both outsourcing and offshore production in Denmark, while in Spain, only outsourcing has increased.

There are some common characters of the furniture design styles in the two countries. For example, the functional design of the furniture in the two countries is similar. The two countries also have some different features of design: for example, Spanish furniture design pays attention to the decoration, while Danish furniture design focuses on simplicity and nature.

Denmark focuses more on design than Spain. In Denmark, design is the most important factor in the development of the Danish furniture industry. Even though Spain does not put as much effort as Denmark into design, R&D in design will still be very strong in the future.

The number of enterprises is decreasing in both countries. There are three reasons for this: the economic crisis in 2008; low competitiveness in the industry because of high operation costs in the EU; and most of the SMEs do not have access to enough finance to carry out innovation in production and design.

The major locations of furniture companies in Spain are in Andalusia, Catalonia, Valencia and Madrid. The number of the companies in Andalusia is rising very fast, but is falling in Catalonia. Therefore, Andalusia overtook Catalonia after 2003. The same decreasing tendency can be seen in Valencia and Madrid.

In Denmark in 2012, most of the companies were located in South Jutland, East Jutland and North Jutland. The number of workplaces in these three major areas was gradually decreasing.

Chapter 6. General furniture cluster situation in Spain and Denmark

This chapter includes two parts. The first part is about the regional furniture cluster in Valencia in Spain; the second is about the national furniture cluster and regional furniture cluster in Skive and the Salling Peninsula in Denmark.

In the literature on the clusters, there is a focus on the important features of clusters (Ravn and Petersen 2005; Porter 1995; Braunerhjelm and Carlsson 1999; Feldman et al. 2005; Doeringer and Terkla 1995; Marshall 1920 in Giuliani 2005; Bell 2005 and Folta et al. 2006; Hoen 2001; Beerepoot 2007; Bathelt et al. 2004; Howells and Hedemann 2008; Maskell and Malmberg 1999; Boon-Kwee et al. 2012; Grzegorzewska et al. 2014; Baptista and Swann 1998; Engelstoft et al. 2006; Beerepoot 2004). This dissertation will not only talk about the cluster in general, but will identify some benefits that companies can obtain and some problems for the companies as a result of locating in the cluster. Linkage analysis will also be used to determine the relations in the cluster, referring to the networks between companies or between companies and the other actors (institutions, universities, organization etc.) inside and outside the cluster. These relations include those in the value chain. There are two kinds of value chain according to the literature. One is Porter's (1998) value chain (Figure 3.1); another is the value chain linked to GPN. This analysis will use Porter's value chain to identify the competitive advantages of the companies in the cluster. The value chain linked to GPN will not be mentioned. This is because the analysis is about the regional and national clusters in Spain and Denmark. However, the value chain linked to GPN is about the value created by the production network among the different regional clusters in different countries in the world (Interview with Niels Fold 2017). Outsourcing will be analysed to illustrate how it affects companies' production and the relations between companies.

6.1 Regional cluster in Valencia in Spain

The main furniture cluster in Spain is located in the Valencia region (Santisteban 2006). In the Valencian community, there are two furniture districts, the first district in the region of Horta of Valencia and a second in the region of Baix Maestrat (Figure 6.1). In total, the two districts have more than 4.000 companies and 44.000 workers. They have maintained a constant performance. In fact, from 2000 to 2004, turnover increased from 3.797 to 3.887 million euros, while the number of companies increased from 4.004 to 4.030. However, the number of employees went down from 50.712 to 44.350. This situation is because of the introduction of new production technologies. Since sales and the number of companies are increasing when the number of employees are decreasing (Generalitat Valenciana 2007 in Robertson and Jacobson 2011; Zayas 2008). The region of Horta of Valencia is more important to the industry than the region of Baix Maestrat. Horta of Valencia includes all activities related to the production of furniture and is the most important regional cluster. It represents 60 per cent of the total production of furniture in the Valencia Autonomous Region, 30 per cent of total Spanish production and 50 per cent of Spanish exports. There are around 1.200 firms in the cluster which directly employ around 30.000 workers (Generalitat Valenciana 2007 in Robertson and Jacobson 2011). The average firm size is 25 employees. The most active and dynamic institution is AIDIMA (R&D Technology Institutes Network in Valencia Autonomous Government), which belongs to the Valencian autonomous government as part of the R&D technology institutes' network and facilitates the collection of research funds from national, regional and European programmes. Moreover, it provides arrangements for training, information dissemination and lobbying, as well as consultation activities (Robertson and Jacobson 2011; Zayas 2008).

Figure 6.1 Two districts of the furniture in Valencia community

Source: map of Spain is made by the author, map of Europe is from geology.com 2018

The Valencia furniture cluster in Spain has three main deficiencies. Firstly, cooperation among firms is rare. Less than 10 per cent of firms cooperate on innovation: it is limited to cooperation with suppliers and AIDIMA. However, AIDIMA is used by only 25 per cent of local firms despite the wide range of services offered and the high levels of skill of its employees. There is a lack of cooperation among competitors. Sometimes cooperation between the companies ceases due to competition and cannot be solved by the associations (Robertson and Jacobson 2011; Generalitat Valenciana 2017a). Secondly, the degree of learning in the cluster is low. Due to a predominance of SMEs and micro-enterprises, there is a need to evolve towards an economy with a higher degree of productivity and specialization. Nevertheless, around 70 per cent of innovation is based only on a slightly improved product. Process innovation is even lower than product innovation. Advanced management and strategic initiatives are rare. The few firms that are exceptions

confine themselves to production, outsourcing design, promotion, distribution and general marketing. Thirdly, the infrastructures are not good enough to support development of the companies. According to various European studies, cluster associations in Valencia at the regional level have certain limitations derived from their own structure. The cluster especially lacks a local or foreign machinery sector: only five representatives of world-class furniture machinery firms (from Italy and German) were identified in the local area and they were mostly distributors. There is also a lack of integration of the different R & D institutions. There is no connection between the research world and the business world (Robertson and Jacobson 2011; Generalitat Valenciana 2017a; Generalitat Valenciana 2017b).

The IVACE (Valencian Institute of Business Competitiveness) is devising various strategies to improve the situation of the clusters in Valencia. In order to encourage innovation among the companies, IVACE and CEEI (European Centers for Companies Innovation) jointly give an award to companies to recognize the efforts of innovative companies in this province. There are 22 per cent more projects in IVACE since 2016 aimed at supporting the research and technological development services, research staff expenses and for the purchase of capital goods (Generalitat Valenciana 2017c; Generalitat Valenciana 2017d).

The community of Valencia has made significant progress in strengthening the infrastructures and agents that make up its regional R&D system. The system of research and technological development is structured around the network of public and private Valencian universities and the research system (technological institutes, research centers and foundations). The Valencia community is trying to strengthen the joint work related to the business and to maximize the transfer results in line with the RIS3 (Intelligent Specialization Strategies). RIS3 promotes territorial economic development and drives the clusters. Bridges and connections between these clusters are essential to seek complementarities by maximizing competitiveness. The aim is to

create a favourable environment for innovation and to promote the circulation of knowledge among companies, universities and research organizations (Generalitat Valenciana 2017b).

In the furniture cluster in Valencia, the national networks are mainly among the territorial industry associations. Its network organization is Technology Institutes (TI), which started in the mid-1980s and is the first regional government of Valencia. They gradually opened offices and centres in other smaller industrial districts. In 2003, there was still a positive consideration of the TI-based policy and the role of the IMPIVA (Institute of Small and Medium Industry of Valencia Government), which controls the TI (Santisteban 2006). Meanwhile, there are several ways to extend the international networks through government and industry associations in the cluster. For example, the IMPIVA favours inter-cooperation between the different clusters in the Mediterranean region (France, Italy, Greece, Croatia and Spain) (Generalitat Valenciana 2017e). IVACE creates collaboration networks to encourage promotion to strategic markets through the trade fair in Habitat Valencia in 2017 in close collaboration with ANIEME. The agency IVACE International has allocated a total of 70,000 euros to invite 41 buyers from 15 strategically selected countries: Azerbaijan, China, Colombia, Georgia, Indonesia, Iran, Ireland, Israel, Mexico, Peru, the United Kingdom, Dominican Republic, Sweden, the USA and Vietnam (Generalitat Valenciana 2017f).

In the studies about the regional cluster in Valencia, there are four firms are interviewed—Capdell, Expormim, Hurtado and Latorre. The location of them can be seen in the figure below (Figure 6.2).

Figure 6.2 Four companies interviewed in the area of in Valencia
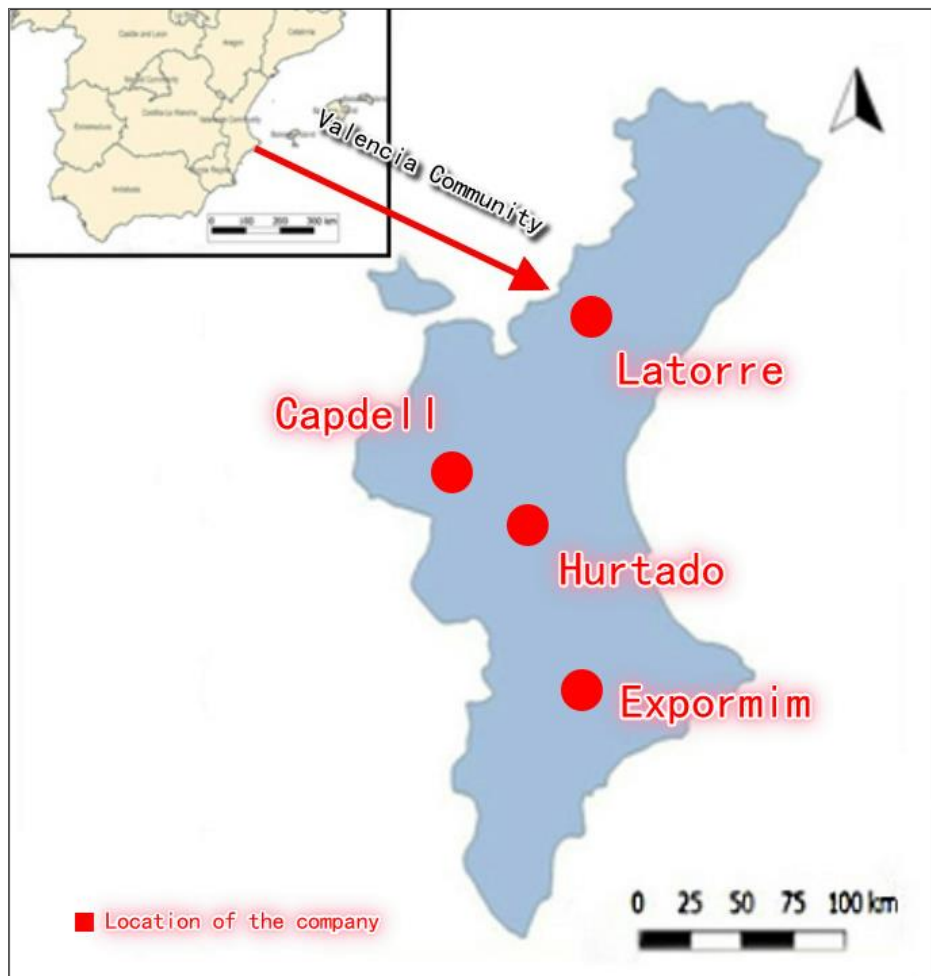
Source: made by the author

The general information about these four firms is introduced in the table below (Table 6.1).

Table 6. 1 General situation of the firms interviewed in Valencia

Name	Location	Starting Year	Products	Design style
Capdell	Valencia	1967	table, chair and sofa	contemporary
Expormim	Valencia	1960	table, chair and sofa	Mediterranean character
Hurtado	Valencia	1940	furniture for dining room, living room, bedroom and executive office as well as occasional furniture	a freedom of expression with different culture and time periods
Latorre	Valencia	1959	sofa, chair, table, bed, screen, light and carpet	classic and contemporary

Source: homepage of Capdell[7], Expormim[8], Hurtado[9] and Latorre[10]

6.1.1 The significant evolution of the furniture companies in Valencia caused by the economic crisis

As these four companies interviewed are strong furniture brands in Spain, they did not have significant financial problems during the period of economic crisis in 2008. For example, Capdell, as an SME, can get direct financial support from the government as a famous brand (Interview with the area manager of Capdell 2017), while a large producer such as Expormim is very self-sufficient. It does not consider cost so much, but instead focuses on quality (Interview with the area manager of Expormim 2017). However, all these firms share a similar evolution, changing from a local to an international company by increasing product categories. Due to the crisis in Spain starting in 2004, their old strategy did not work as the market was volatile. They were forced to be more international so that they could be competitive. For example, Capdell only produced classic chairs before, and one Spanish designer was

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[7] https://capdell.com

[8] http://www.expormim.com

[9] https://www.hurtado.eu

[10] http://www.ascensionlatorre.com

in charge of the design of all the chairs. Around seven years ago, they started to produce tables. At the same time, they used more international designers. In this way, they could upgrade the level and quality of their products with a contemporary design (Interview with the area manager of Capdell 2017). In 1960, Expormim started to work with rattan in doors. After the economic crisis in Spain, they faced stronger competition and had to create a new brand, designs and products to compete. Meanwhile, they had to be able to establish sales networks all over the world (Interview with the area manager of Expormim 2017).

The other two companies are also expanding their business and product categories. Hurtado started in 1940. It was a small company doing small projects at that time. Latterly, they extended and became globalized (Interview with the sales manager of Hurtado 2017). In 1975, Latorre began to manufacture furniture and soon became established as a top manufacturer of high-end chairs. In 1981, the company began to export; then, in 1984, the company expanded its facilities to support the strong demand. In 1998, in its current location, the company began to develop and design luxury sofas and furniture. Today, it has increased its product categories from classic furniture to all the products of home decoration (Interview with the sales director of Latorre 2017; Homepage of Latorre[11] 2017)

6.1.2 Companies in the regional cluster in Valencia

Some characters of companies in the cluster described in the literature are also found in the companies interviewed. The formation of the cluster is due to the furniture tradition in Valencia. For example, the founders of Hurtado and Capdell chose their location in Valencia because of the furniture tradition in the region. Many

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[11] http://www.ascensionlatorre.com/

furniture companies located in Valencia a long time ago (Interviews with the area manager of Capdell and sales manager of Hurtado 2017).

Most of the time, companies cooperate with institutions and universities in Valencia. All the four companies interviewed cooperate with the furniture export association ANIEME. Thus, they can access new technology and distributors, as well as getting help with exports. They also get money and export support from IVACE and ICEX (Institution of Spanish Exports and Investments). Furthermore, some of them cooperate with the universities. For example, Capdell has cooperates on design with polytechnic universities of Valencia; it also has an internship agreement with students from this university (Interview with the area manager of Capdell; Interview with the area manager of Expormim; Interview with the sales manager of Hurtado; Interview with the sales director of Latorre 2017).

One of the four companies cooperates with the other producers in Valencia. In order to attract more customers, Latorre cooperates in design and technology innovation with the other companies in Valencia. They learn from each other and create innovations (Interview with the sales director of Latorre 2017).

The companies have good cooperation with the actors (suppliers, distributors, subcontractors, government and institutions) in the region because there of the common culture and language in the cluster. There are three types of close cooperation in the cluster. Firstly, there is good cooperation with suppliers and distributors. For example, major suppliers and distributors for Capdell are from Valencia. They have long-term relationships with them of up to 50 years, as old as the company. They have relatively short-term relationships with their suppliers and distributors outside Valencia. For example, their relationship with their fabric suppliers from Denmark is only around seven years old. Their relationship with their distributor in Hong Kong is only five years old (Interview with the area manager of

Capdell, Interview with the area manager of Expormim, Interview with the sales manager of Hurtado, Interview with the sales director of Latorre 2017).

Secondly, there is good cooperation with the subcontractors in Valencia. All the four companies have subcontractors from Valencia, especially Expormim. Expormim has subcontractors only from the Valencia area. Thirdly, as mentioned above, they all get support from the government and institutions in Valencia, such as IVACE.

They share the same location advantages. The location brings mainly two advantages: the fact that they can all share the port of Valencia, and the reputation. Many producers have been located in the region for a long time, which affords the area a very good reputation (Interview with the area manager of Capdell, Interview with the sales manager of Hurtado 2017).

However, some features of the companies in the literature on clusters are not found in this analysis. Cooperation with competitors is unusual. Three of the four producers interviewed do not cooperate with their competitors in the cluster. They maybe observe their competitors, but they do not communicate. Among the four producers, only Latorre cooperates with companies inside the cluster. This may be because their main competitor is from Italy, outside Valencia (Interview with the area manager of Capdell, Interview with the area manager of Expormim, Interview with the sales manager of Hurtado, Interview with the sales director of Latorre 2017). This kind of situation leads to many problems. It means that the intensified network and interactive processes between companies are not frequent, and it also means knowledge diffusion and learning are limited in the cluster. There are few personal relations involved. This may lead to weak innovation in the cluster.

As the firms do not cooperate that much with other producers in the cluster, there is almost no cost reduction. However, they sometimes cooperate in transportation with producers who produce complementary products from other cities in Spain to reduce costs. For example, Capdell shares the same customer with a company that produces a

complementary product in Madrid. As there is no port in Madrid, the producers in Madrid will transport the goods to Capdell's warehouse in Valencia. After that, they ship it together with Capdell's goods through the port of Valencia to their customer in Mexico (Interview with the area manager of Capdell 2017). This kind of consolidation of transport can produce mutual benefits.

Innovation is not necessary to have a strong impact on small and medium producers. Large companies such as Hurtado also focus on innovation in their production. In order to increase sales, they constantly have to design new products based on new trends in the market. Therefore, their technology has to be changed according to the new design of the product (Interview with the sales manager of Hurtado; Homepage of Hurtado[12] 2017).

Companies in the cluster are not necessarily SMEs. Most of the companies interviewed are among the largest producers in Spain, such as Hurtado and Expormim. They also take advantage of the cluster, such as in cooperating with the government. However, they do not cooperate with the other producers. This means they are not totally independent, as stated in the literature, but relatively independent. Some SMEs, such as Capdell, do not rely on the other producers to survive, which is not found in the literature. Capdell does not cooperate with its competitors in any way (Interview with the sales manager of Hurtado, Interview with area manager of Expormim, Interview with the area manager of Capdell 2017).

6.1.3 Linkage analysis of the companies in relation to the value chain

According to the analysis of the four companies interviewed above, the linkages in the cluster include the companies' relationships with the suppliers, distributors, subcontractors, institutions, government and universities. Any relationship between

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[12] http://www.hurtado.eu/en/

companies is rare, since only one of the companies interviewed cooperates with other producers in the cluster.

There are two features of the linkages in the cluster in Valencia are the same as described in the literature. Firstly, face-to-face contact is maximized. As stated in the literature, in a labour intensive industry like the furniture industry, face-to-face contact with suppliers and customers is important (Healey and Ilbery 1990). For example, Capdell, Latorre and Expormim prefer face-to-face contact with their suppliers and distributors. They think it is important (Interview with the area manager and export manager of Capdell, Interview with the sales director of Latorre, Interview with the area manager of Expormim 2017). Secondly, their production and sales are customer-driven. As stated in the literature, in the furniture industry, the type of value chain is a buyer-driven commodity chain (Murillo 2007; Gereffi 1994, 1999 in Scott 2006). Production and sales at Capdell and Expormim are customer-driven (Interview with the area manager and export manager of Capdell, Interview with the area manager of Expormim 2017).

In relation to the primary activities of the value chain (Figure 3.1), inbound logistics, operations, outbound logistics, and marketing and sales are the most affected activities among the companies interviewed in Valencia.

The companies create values in inbound and outbound logistics through long-term relationships with suppliers and distributors, as well as efficient transportation. Long-term relationships are one of their advantages. All four companies have very close and long-term relationships with their suppliers and distributors. For example, Capdell has good relationships with its suppliers and distributors of up to 50 years' duration. Once relationship with a company or agency is started, it is for the long term. A similar situation was found in the other three companies. Hurtado has excellent relationships with its suppliers, cooperation having lasted for more than ten years. Latorre has relationships of around 20 years with its suppliers in Europe and

distributors all over the world. Expormim has long-term relationships with its suppliers in the area around Valencia and distributors all over the world (Interview with the area manager of Capdell, Interview with the area manager of Expormim, Interview with the sales manager of Hurtado, Interview with the sales director of Latorre 2017).

These four companies have five advantages in transportation. One such advantage is through just-in-time management. For example, at Capdell and Expormim, their production is mainly customer-driven: the product is produced under demand. They try to promote and sell: there is no stock. Secondly, they manage transportation through the relevant department. Expormim has its own logistics department. Short lead time is one advantage. Capdell has an operations department: a manager supervises the four operators who are in charge of the transportation process. A third advantage is obtained through using specialized transportation agencies. For example, Hurtado and Capdell sometime use agencies to make the transport efficient. Fourthly, if the distance is very great, they use EXW (EX (Point of origin)-Works), where the customer pays for the transportation. For example, Capdell will transport by truck and will pay for it in Europe, but outside Europe, such as the USA, Mexico, China and Japan, the customer will pay. Finally, the firms can consolidate transport with the other producers in Spain. In this way, they can reduce transportation costs (Interview with the area manager of Capdell, Interview with the area manager of Expormim, Interview with the sales manager of Hurtado 2017).

The companies can produce benefits in operations in the value chain through production. The four companies' production is highly integrated, since the major parts of their products are produced in Valencia. Only unimportant parts are outsourced. At the same time, they try to differentiate their products by handmade crafts. They only use robots to do basic things: the major parts are handmade (Interview with the area manager of Capdell, Interview with the area manager of Expormim, Interview with

the sales director of Latorre, Interview with the sales manager of Hurtado 2017).

At the same time the inflexible production also affects the operation. Flexible production means cooperation in production with other producers and short distance outsourcing in the cluster. Cooperation in production in the cluster could lead to cost reduction and innovation. Short distance outsourcing can offer the companies three advantages. Firstly, it does not cost much to search for information about the subcontractors; secondly, there is no need to adapt to the situation in faraway places; and thirdly, transportation costs are low (Interview with Mark Lorenzen 2017). Among the four companies, only Latorre has flexible production, but the degree of flexibility is not high. Latorre has production cooperation with only one company to improve its production technology, this company being the Italian company Faema in the cluster. It has little short distance outsourcing in Valencia: most of its subcontractors are from Italy and France (Interview with the sales director of Latorre 2017). The other three companies are all inflexible in production. Although they all have short distance outsourcing in Valencia, they do not cooperate in production with the other producers in the cluster. Hurtado brands itself as 100 per cent made in Spain, doing its own production by constantly updating the technology (Interview with the sales manager of Hurtado, Homage of Hurtado 2017). Capdell also does not cooperate in production with the other producers in the cluster because these producers are seen as competitors (Interview with the area manager and export manager of Capdell 2017). At Expormim, everything is produced in Moixent in Valencia. Even though the firm currently outsources to the area around Valencia, it does not want to outsource more in the future: it prefers to do everything itself in the same place to improve the quality (Interview with the area manager of Expormim 2017).

The companies can also gain competitive advantages in operation in the value chain through differentiation and customization of design. The design at Expormim is differentiated rather than customized. Trends go in and out of style: its consumer

tastes evolve and the designs are endlessly renewed. However, the spirit of the design has remained over three generations, which is purity, simplicity and the ethics and culture associated with the Mediterranean region (Homepage of Expormim[13] 2017). Expormim's design process also tries to retain its own style. It has a design department and all its designers are Spanish. It does not want to work with designers merely because they are well known: it is important that the designers are interested in the brand and they can interpret the values of the company. The design of products should reflect the ideals of the company (natural, eco-friendly and comfortable etc.) (Interview with the area manager of Expormim 2017). Capdell also controls its process of design. It will tell its designers what it wants and the designer will draw it. These drawings are then sent to the engineer to produce. However, the design at Capdell is more customized and diversified: it has changed its design style from classic to contemporary because contemporary design reflects the needs of its customers. The company works with designers all over the world and it normally has long-term relationships with the designers to keep its style consistent (Interview with the area manager and export manager of Capdell 2017).

The other two companies have a similar design style, which is a combination of classic and contemporary. They try to differentiate and customize their design at the same time. For example, Hurtado will design its products following the major global trends. It discusses the trends with internal and external designers to design a new product. In this way, the design can be differentiated. In addition, the firm customizes everything according to the customer's individual design and requests. Latorre, too, works with internal and external designers; meanwhile, it tries to improve its design by cooperating with other companies in Valencia. In this way, it can differentiate its designs. The design can also be customized and diversified, since it has increased its product categories from classic furniture to all home decoration products (Interview

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[13] http://www.expormim.com/

with sales director of Latorre 2017; Homepage of Latorre 2017; Interview with the sales manager of Hurtado 2017; Homepage of Hurtado 2018).

Finally, the four companies can create value for marketing and sales in the value chain by strong promotion. All four companies focus on marketing and sales. At Capdell, around 80 per cent of its capital is used to buy materials, pay workers, building expenses, etc. Around 20 per cent is spent on design, R&D research, employee training, updating equipment and marketing. Of this 20 per cent, most is directed at marketing. A similar situation was found in the other three companies. Hurtado has a sales network all over the world and has joined trade fairs in the USA, Russia and Spain. Expormim also has a sales network all over the world. Latorre participates in many international fairs (Interview with the export manager of Capdell; Homepages of Hurtado, Expormim and Latorre 2017).

In general, through the primary activities analysis of the value chain, it is found that all four companies are strong producers who focus on production, design and promotion at the same time.

In relation to the support activities of the value chain (Figure 3.1), the companies have advantages in technology development and procurement.

Technology development is important for some of the companies, such as Hurtado, which continually updates its production technology in order to maintain and improve the highest level and quality products. Every three or four years, it changes its software. The automation has changed recently. Innovation of the technology also depends on sales. The firm always investigates new products, editions and assumptions in the market. Its production methods will be changed based on new product trends. Latorre also pays attention to technology improvements. It innovates its technology by cooperating with other producers from Italy. However, technology development may not be important for all the producers. For example, for Capdell, it is not so important: once there are sales opportunities, the production department will

research whether it is possible to produce an item themselves. If it is too expensive to buy the machine, they will outsource to Spain or other European countries. This may be because it is only a medium producer: sometimes it wants to reduce costs by outsourcing instead of investing money to buy machines (Interview with the sales manager of Hurtado 2017; Homage of Hurtado 2017; Interview with sales director of Latorre 2017; Interview with export manager of Capdell 2017).

Procurement is also important. As top producers in Spain, each producer has strict criteria to select its raw materials. For example, Expormim twice selects its raw materials. Rattan is its main material, which is from Indonesia. First, the best rattan is selected from Indonesia; then, when it comes to the warehouse in Spain, only the highest quality material among that rattan is selected. Hurtado produces high-end furniture. Therefore, it is very careful in choosing raw materials. Based on the design, it specifies the raw materials for each product and then goes to the relevant companies to see the best choice. It adopts standards to control the quality of raw materials. Capdell also has control of the quality of the product. For example, if it is outsourced polypropylene, Capdell will check what kind of material has been put in the machine. All the final products are subject to quality control. Latorre sets up different raw materials control criteria for different parts (Interview with sales director of Latorre 2017; Interview with the sales manager of Hurtado 2017; Interview with export manager of Capdell 2017; Interview with the area manager of Expormim 2017).

6.1.4 Companies' outsourcing

Outsource is a strategy used by all the four companies. Their outsource strategies have four major characters. Two of them were the same as the literature, and two were different.

The two same features are as follows. Firstly, the four producers' outsourced parts are unimportant components. As described in the literature, outsourcing the labour

intensive, standardized and easy to transport items makes sense (Eksioglu et al. 2010). For example, three of the four companies interviewed mainly produce wood products. Therefore, they produce the wooden parts themselves and outsource the other components. Hurtado and Latorre outsource glass, metal and marble parts, and Capdell outsources the metal, fabric and polypropylene parts. Expormim is a different company which mainly produces rattan products. It produces the rattan parts itself and outsources the remaining components (Interview with the area manager of Capdell, Interview with the area manager of Expormim, Interview with sales director of Latorre, Interview with the sales manager of Hurtado 2017). Secondly, they will outsource if it is too expensive to buy the machine to do it themselves (Fogliatti et al. 2010; Gereffi and Korzeniewicz 1994, Kessler 1999 and Scott 2002a in Scott 2006). At Capdell, the polypropylene part is outsourced to Italy for this reason (Interview with the area manager of Capdell 2017).

However, there are two characteristics not like the features stated in the literature. Firstly, as an advanced country, the firms do not outsource to low wage countries. In the literature, it is said that outsourcing is normally from high wage countries to low wage countries (Campos et al. 2008). However, the four companies only outsource to developed countries in Europe. For example, the subcontractors of Latorre are from Italy and France; Capdell outsources to Valencia, Italy and Nordic countries; Hurtado outsources to Europe (mainly Spain); and Expormim outsources to the area close to Valencia. There are two reasons for this. One is that they consider the quality. For example, Capdell's fabric subcontractors are from Sweden and Denmark: this is because there are no suppliers of fabric in Spain and the quality is high in the two Nordic countries. For Hurtado, quality is the criterion to choose subcontractors: its subcontractors have to be very specialized and professional. Secondly, they consider the distance and cost. If the firms outsource to outside Europe, the transportation costs are high. In relation to distance, adapting to the economic, cultural and political

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situation outside Europe will also lead to high costs. These factors are the main barriers to international business considered by the four companies. For example, the sales director at Latorre thinks the exchange rate could be a problem. If it is inside Europe, the firm does not need to exchange currency when it does business with France and Italy, since they all use the euro. If it is outside Europe, it has to exchange money and faces the risk of losing money caused by fluctuation in the exchange rate (Interview with the area manager of Capdell, Interview with the area manager of Expormim, Interview with sales director of Latorre, Interview with the sales manager of Hurtado 2017).

Furthermore, there are companies that do not want to outsource more in the future, such as Expormim. This is different from the literature (Buehlmann and Schuler 2009 in Andreja and Richard 2010). Expormim is trying to integrate production in the same place to improve quality and strengthen the corporate value (Interview with the area manager of Expormim 2017).

6.2 National cluster and regional cluster in Skive and Salling Peninsular in Denmark

From the value chain point of view, Hedemann and Nissen (2013) think that the cluster has already moved from West Jutland to big cities in Copenhagen and Aarhus. In Denmark in the 1990s, wooden furniture clusters were in West Jutland. However, in 2008, the Danish furniture companies instead started clustering around Denmark's principal cities, Copenhagen and Aarhus. The main reason is that, though location is not something that can directly make companies more profitable, attracting employees can put them in a more advantageous position. The companies have faced a challenge in recruiting new employees from the small towns in West Jutland. For this reason, they need to be located in big cities. To prove this point, Hedemann and Nissen (2013) cite words from the CEO at BoConcept, whose headquarters is in Herning in West

Jutland: "*No, this location is not something we benefit from, as a matter of fact in terms of the people (employees) we need to attract we would be better off located in Aarhus*".

From the value chain perspective, it is maybe true that the cluster is changing from West Jutland to big cities in Copenhagen and Aarhus: there is an increasing number of showrooms of larger companies and design and trading companies in these two big cities (Questionnaire from the director of the Lifestyle and design cluster Denmark, Interview with the senior consultant in Association of Danish wood and furniture industries 2017). However, the increasing number of companies in the big cities is not caused by the changing location of the furniture producers from small cities. In all the manufacturing industries in Denmark, there are always old companies leaving and new companies entering the market. The companies have not changed their location from city to city (Interview with Peter Maskell, Interview with the senior consultant in Association of Danish wood and furniture industries, Questionnaire from the occupational safety and health consultant of United Federation of Danish Workers 2017). For example, the headquarters of BoConcept is still in Herning in West Jutland; it just has showrooms in Copenhagen and Aarhus (Homepage of BoConcept[14] 2017).

Furthermore, the companies do not need to change their location in order to access employees. Human resources are traditionally available in the small cities. Access to human resources is not a big problem. Most of the companies have designers, sales and management staff from the location of their production factory (Questionnaire from the occupational safety and health consultant of United Federation of Danish Workers 2017). If they want access to employees such as designers in the big cities, they can do it through the internet. Alternatively, they can travel to the big cities, since it is not a big distance. It is not necessary for specialized personal to be physically located at the production plant (Questionnaire from the occupational safety and health

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[14] https://www.boconcept.com

consultant of United Federation of Danish Workers, Questionnaire from the director of the Lifestyle and design cluster Denmark 2017).

It is true that the some of the larger companies can increase profits by attracting employees in Copenhagen and Aarhus. However, these employees are those with the skills of export, design, sales or administration in their showrooms (Questionnaire from the occupational safety and health consultant of United Federation of Danish Workers, Questionnaire from the director of the Lifestyle and design cluster Denmark 2017).

Therefore, it can be concluded that the headquarters and production of the furniture companies in West Jutland has not changed to Copenhagen and Aarhus. The regional clusters are still in West Jutland. The area around the provincial towns of Herning and Ikast, as well as the area around Skive and the Salling Peninsula in West Jutland, represent the major furniture clusters (Lorenzen 1999)(Figure 6.3).

Figure 6.3 Regional clusters and two big cities in Denmark
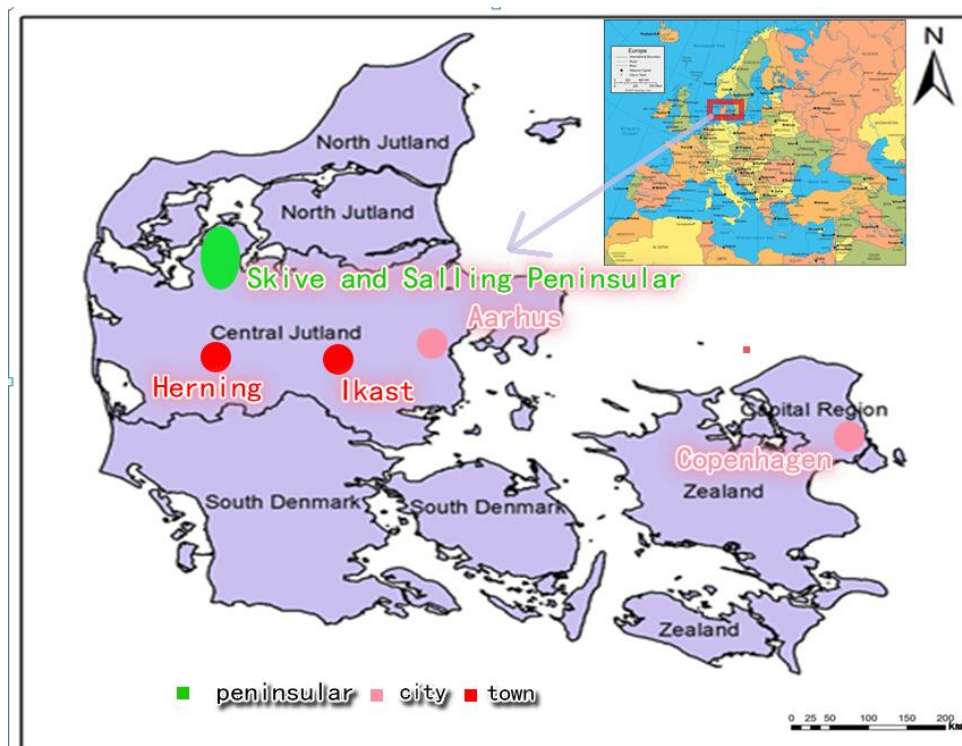
Source: map of Denmark is made by the author, map of Europe is from geology.com 2018

In other parts of Denmark there are some large, well-established high-end firms localized in provincial towns in Zealand (e.g. Fritz Hansen) and, in a few cases, in Jutland. As many of these firms are still design-based and perform most production tasks in-house, they are less dependent on interactions with other furniture producers and their few suppliers are not predominantly local (Lorenzen 1999).

There are both positive and negative opinions about the clusters in West Jutland. Howells and Hedemann (2008) think the decline of the West Jutland furniture manufacturers in Denmark is evidence of the limited value of learning within clusters. The compensating economic activity comes from the rise of large international firms. They are not geographically clustered and are without any apparent important relationship between them.

However, this may not be true. The competitiveness of the regional clusters has not reduced. They are under strong competition pressure, and this makes them innovate constantly to survive (Interview with Mark Lorenzen 2017).

Hedemann and Nissen (2013) think that Danish furniture manufactures have not been affected by strong global competition as in other industries, the reason being that they are located in regional clusters. In the years examined, geographical proximity created some fundamental extra-firm intra-industry capabilities, such as high trust and localized learning. This was especially common in the mid-Jutland region. In this way, it was possible for the manufacturing firms to maintain their competitiveness despite the high Danish factory costs.

This is true. If you compare one of the companies in the regional clusters individually to one of the large international firms outside the regional clusters, they are not as competitive as the large international firm. However, if you compare the regional clusters in total to a large international firm, then the regional clusters are more competitive, contributing more to the furniture industry in Denmark (Interview with Mark Lorenzen 2017).

Generally speaking, the whole of Denmark is a national cluster, as the country is very small. It cooperates not only in production, but also in promotion and sales. Production is mainly outside Copenhagen. Design and promotion are inside Copenhagen. In the national cluster, some companies still have production in Denmark; some have invested in production overseas; some only act as design and sales companies and do not have any production themselves (Questionnaire from the director of the lifestyle and design cluster Denmark 2017).

The national furniture cluster is promoted by the lifestyle and design cluster in Copenhagen and Herning, establishing networks for the furniture industry in Denmark. The lifestyle and design cluster is a member of the European cluster collaboration, meaning that Denmark is connected with other cluster associations in Europe. The main objective of the association is to bridge activities and networks between companies and knowledge, research and educational institutions. In this way, the cluster can promote the companies' competitiveness through innovation. The association in Denmark has a gold label from the cluster assessment institution, indicating cluster excellence (European cluster collaboration platform 2017). The total number of members in the lifestyle and design cluster in Denmark is 441. Among them, the number of SME members is 277, the number of large company members 41, the number of research institutions 12, and the number of other ecosystem actors 111 (European cluster collaboration platform 2017). The main international countries cooperating with the lifestyle and design cluster in Denmark are Asia countries—China, Hong Kong, Japan, South Korea and Vietnam (European cluster collaboration platform 2017). The transnational cooperation countries are all from Europe, being Austria, Finland, Latvia, Poland and Sweden (European cluster collaboration platform 2017).

The five firms from the national and regional clusters were analysed, the location of these firms can be seen from the figure below (Figure 6.4)

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Figure 6.4 Companies contacted by interviews and questionnaires in the national and regional clusters in Denmark
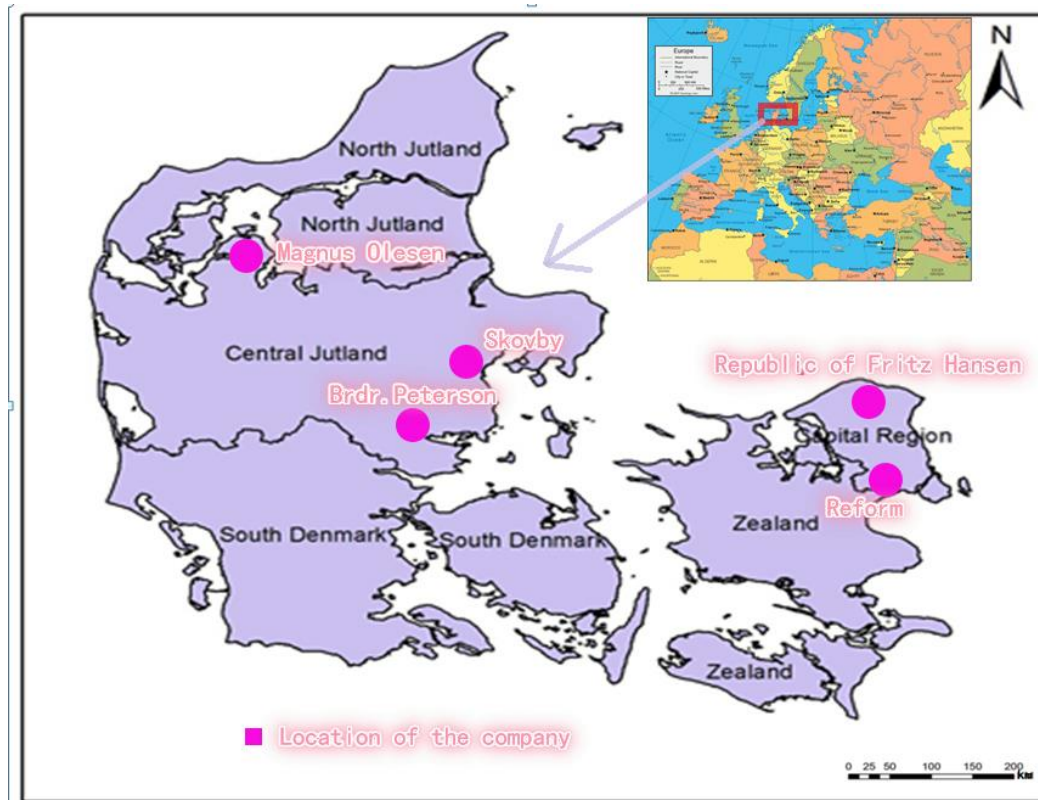
Source: map of Denmark is made by the author, map of Europe is from geology.com 2018

The general situation about the firms analysed are introduced in the following table (Table 6.2)

Table 6. 2 General introduction about the firms analyzed in Denmark

Name	Location	Starting Year	Products	Design style
Republic of Fritz Hansen	Copenhagen	1872	table, chair, sofa, shelving, lighting, accessories and spare parts	classic and contemporary
Reform	Copenhagen	2014	kitchen furniture	classic design of Ikea
Magnus Olesen	Skive	1937	furniture for public spaces, hotel, restaurant and care market	functional, aesthetic and unique
Brdr. Peterson	Copenhagen	1973	chair and sofa	classic
Skovby	Aarhus and Silkeborg	1933	dining room furniture	aesthetic expression with innovative function

Source: homepage of Republic of Fritz Hansen[15], Reform[16], Magnus Olesen[17], Brdr.Peterson[18] and Skovby[19]

6.2.1 Companies in the national cluster

Some features of the national cluster in the literature are also found in this analysis. For some of the producers, Denmark is a national cluster. The Danish furniture companies can cooperate with national partners better than with foreign partners since they speak the same language and share the same culture. For example, for the largest producer, Fritz Hansen, located independently in Allerod in Zealand (Figure 6.4), Denmark is a national cluster. One of its leather suppliers, Sorensen Laeder, is from Denmark, and they have already cooperated for over ten years. Similarly, a customer,

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[15] https://fritzhansen.com

[16] https://www.reformcph.com

[17] https://magnusolesen.dk/

[18] http://www.brdrpetersen.com

[19] https://www.skovby.com

Radisson Blu Royal Hotel in Denmark, has worked with Fritz Hansen for almost 60 years: its furniture has all been designed by Arne Jacobsen (1902-1971) (the designer of Fritz Hansen) since 1958. In room 606 in the hotel, everything is in its original setting, like a museum. Fritz Hansen designs new rooms for the hotel as well. In addition, it cooperates with many Danish designers such as Cecilie Manz in Copenhagen, and with the Technical University of Denmark, because it takes engineering students from the university as interns (Interview with store manager and supplier chain manager of Fritz Hansen 2017).

The same situation can be found in the other producers. For example, almost all the Skovby's suppliers are from Denmark, and Brdr. Peterson only uses local suppliers with whom it has a long-term relationship (Questionnaires from Skovby and Brdr. Peterson 2017) (Figure 6.4).

All of the companies who provided interviews and questionnaires have outsourced to Denmark. Around 20 per cent of Fritz Hansen's outsourcing is to Denmark. Skovby outsources primarily to Danish subcontractors. Brdr. Peterson outsources only to Denmark. Reform has a subcontractor in Jutland in Denmark (Interview with store manager and supply chain manager of Fritz Hansen; Interview with CEO of Reform; Questionnaires from the CEO of Skovby and the co-founder of Brdr. Peterson 2017) (Figure 6.4).

The companies can reduce costs such as transportation by locating in the national cluster. Logistics company LGT in Horsens in Jutland transports the furniture from many big producers in Denmark such as Carl Hansen, Frit Hansen, Fredericia and Muuto, delivering it to the Danish retailer Illum Bolighus to sell. This is a major factor underlying the furniture's competitive pricing (Interview with supply chain manager of Fritz Hansen 2017). Cooperation means that the companies benefit from intensified networking and interactive processes as well as economies of scale, etc.

There are also some features of the companies different from the literature on clusters. The producers are relatively independent in the national cluster. For example, Fritz Hansen, Skovby, Reform and Brdr. Peterson are not located close to the other producers (Figure 6.4). Therefore they do not communicate much with the other producers in Denmark. If they have relations, it is more like formal contact: fewer personal relationships are involved. For example, Brdr. Peterson seldom visits its suppliers but normally contacts them by telephone or email. Fritz Hansen and Reform prefer face-to-face contact with suppliers, distributors and customers. However, there are few informal personal relationships involved. For example, at Reform, they go to Lithuania once a year just to supervise the production of the subcontractor. Furthermore, none of the firms get any support from any institutions or government in Denmark (Interview with Mark Lorenzen, Interviews with the supply chain manager and store manager of Fritz Hansen, Interview with CEO of Reform, Questionnaires from the CEO of Skovby and the co-founder of Brdr. Peterson 2017). For this reason, there is little knowledge diffusion and spillover or learning in the cluster since there few informal personal relationships is involved.

Innovation is not necessary to have a strong impact on small and medium producers. The companies innovate in different ways depending on which aspect they are focusing on. Fritz Hansen is a design company: therefore it pays attention to the innovation of design. It launches five to seven new design products a year, both internally and externally. However, it does not think frequent innovation of the technology is necessary. Function is the driving force of Skovby in Jutland, and innovation drives function: these are the main reasons why it is successful (Interview with the supply chain manager of Fritz Hansen, Homepage of Skovby[20] 2017).

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[20] https://www.skovby.com/

6.2.2 Companies in the regional cluster in Skive and Salling Peninsular

Regional clusters in Denmark are located in the area around the provincial towns Herning and Ikast, as well as the area around Skive and the Salling Peninsula in West Jutland. The producers in the clusters cooperate closely with the actors in the area. Magnus Olesen from Skive and the Salling Peninsula, as one of the largest producers, is a good example to illustrate this situation (Figure 6.5).

Figure 6.5 Location of Magnus Olesen in Denmark
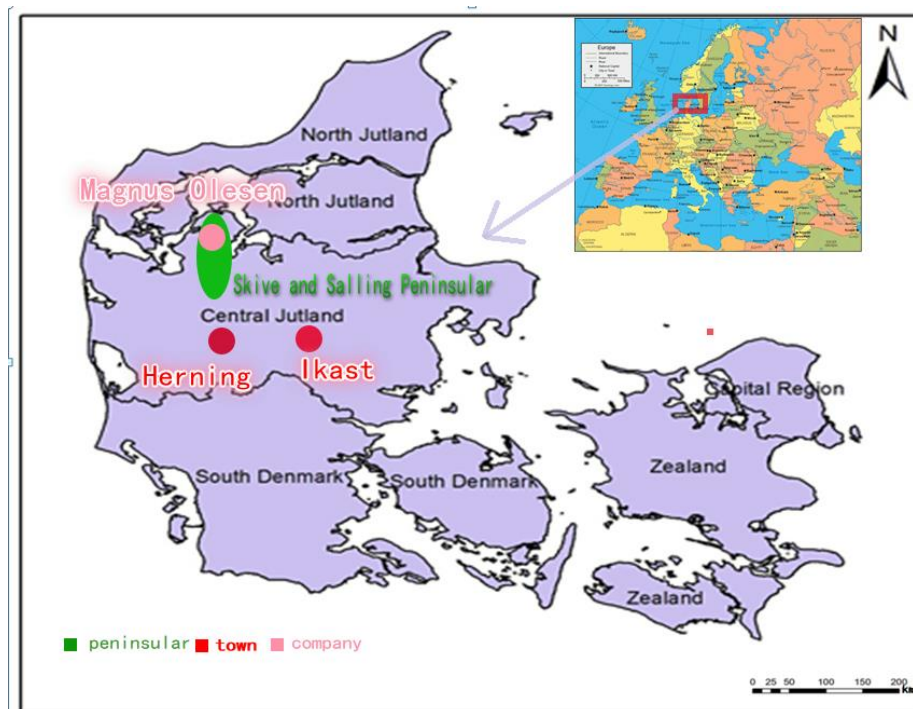
Source: map of Denmark is made by the author, map of Europe is from Geology.com 2018

There are different opinions on the formation of regional clusters in Denmark. Maskell (1998) thinks that intensified exposure to international competition is one of the main factors leading to spatial agglomeration within the furniture industry, while Lorenzen (1999) thinks the initial small agglomerations of furniture producers made it possible for other furniture producers (or construction firms) to start up and become part of the emerging local production systems. This means that the positive externalities in a cluster attract more companies to locate within it. This is in line with

the literature.

The companies can obtain many profits from the cluster in Skive and the Salling Peninsula. Companies can get support from the government. Magnus Olesen can access the support from different levels of government—not financial support but support in the form of information, mainly about product development knowhow. For example, the Skive Cabinetmakers' Guild is the association in the cluster (represents the national Danish association for furniture producers, Associations of Danish Woodworking Industries [TA] and Organization Confederation of Danish Industries [DI]). Regular meetings of the Guild are about issues of technology, market developments, or labour education, and present external speakers from, for example, the directorate of labour inspection (Questionnaire from the CEO of Magnus Olesen 2017, Lorenzen 1999).

Members of the cluster can access skilled employees. For Magnus Olesen, hiring skilled employees is easier in the cluster. Skilled employees refers mainly to craftsmen. Access to this kind of low cost and high quality labour is the main advantage for Magnus Olesen of being located in the cluster (Questionnaire from the CEO of Magnus Olesen 2017). There are four ways for the companies to access employees. The first is through technical school: the Skive technical school trains its students so that they can work in the industry and private companies, or start their own company. The companies can also use students from the school as apprentices (Homepage of Skive technical School[21] 2017). Then there are the trained employees from the big company. For example, Magnus Olesen is considered the 'Rolls Royce of Salling'. Many entrepreneurs in Salling can use the employees trained by Magnus Olesen. A generation of people descending from or educated in Magnus Olesen today run furniture firms in the Salling district (Lorenzen 1999). Thirdly, companies can access employees through the exchange of employees with other companies in the

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[21] http://www.skivets.dk/

cluster (Interview of the senior consultant in Association of Danish wood and furniture industries 2017). Finally, there are local unions and the Skive job centre in the cluster that can provide human resources (Lorenzen 1999, Homepage of Jobcenter Skive[22] 2017).

The companies can cooperate with suppliers and subcontractors in the cluster. Magnus Olesen mainly does its own manufacturing. Most of its productions come from inside the company. It outsources only small components and has a mixture of suppliers and subcontractors. Some are from Skive and others are from China, the Baltic States and Poland. Where the firm outsources to depends on knowhow and price. Outsourcing in Skive is largely within a radius of 50 km (Questionnaire from the CEO of Magnus Olesen 2017).

There are trust relations between the companies. Companies have personal relationships with one another. As mentioned, Magnus Olesen has trained many employees for the other companies, and some of its former employees have started their own furniture companies in the cluster. In addition, there is the exchange of employees among companies (Questionnaire from the CEO in Magnus Olesen, Interview with the senior consultant in Association of Danish wood and furniture industries 2017). The trust relations in the cluster form tacit knowledge. The companies can help each other: for example, one company helps another company without payment, and the assisted company will reciprocate (Interview with Mark Lorenzen 2017; Lorenzen 1999).

There is knowledge diffusion in the cluster. Knowledge diffusion can exist during the process of exchange of employees, receiving information from the government and communicating with cooperation partners. This kind of knowledge diffusion can lead to learning and innovation. For example, the government provides product development knowhow to Magnus Olesen, which can lead the company to innovate

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[22] http://jobcenterskive.dk/

its products. Knowledge diffusion can also exist through the network of the furniture cluster institutions. The institutions are mainly under the categories of craft labour organizations and knowledge and educational institutions, such as the Skive Technical School furniture knowledge institution (1970s) and National Guild of Cabinet-Makers network organization. They integrate and stimulate the creation of collective competition goods for the clusters (Santisteban 2006).

Companies in the cluster can consolidate their transport: they can transport furniture, or even one piece of the furniture, at any time by train. There are trains going to different countries every day to transport furniture for all the furniture producers located in Skive. If it is a large amount of furniture, they can reach an agreement with the freight company. Carriers will come three to ten times a day to pick up, according to the agreement. The freight company may also call the companies a day in advance to plan the transportation to make the coordination efficient (Interview with Mark Lorenzen 2017; Lorenzen 1999).

Almost all the features of the cluster in Skive and the Salling Peninsula are the same as the literature on clusters, except for two. Firstly, innovation does not only have a strong impact on SMEs. Magnus Olesen, as a large producer, updates its production and technology constantly. It invests in the factory in order to maintain a high automation level (Questionnaire from the CEO of Magnus Olesen 2017). Secondly, companies in the cluster do not include only SMEs: there are also large companies such as Magnus Olesen. Magnus Olesen is not independent. It cooperates closely with the producers and institutions in the cluster.

6.2.3 Linkage analysis of the companies in relation to the value chain

Different linkages were found in the national and regional clusters in Denmark based on the analyses in the two previous subchapters. Linkages in the national cluster refer to the relationships between suppliers, distributors, subcontractors and

universities and the companies. There are no networks between producers since there is no cooperation between them. In the regional cluster, there are all kinds of linkages. The companies have relationships with suppliers, distributors, subcontractors, institutions, the government, the technique school and the job centre. Cooperation between the producers is especially strong.

Three features of linkage in the cluster in Denmark are the same as described in the literature. Firstly, face-to-face contact is maximized. In a labour intensive industry like the furniture industry, face-to-face contact with suppliers and customers is normally important (Healey and Ilbery 1990). For example, Fritz Hansen, Reform and Magnus Olesen prefer face-to-face contact with their suppliers and distributors. Secondly, production is customer-driven. As stated in the literature, in the furniture industry, the type of value chain is normally a buyer-driven commodity chain (Murillo 2007; Gereffi 1994, 1999 in Scott 2006). For example, production at Fritz Hansen is customer-driven. Thirdly, large producers such as Fritz Hansen have a global production network, which is offshore production in Poland. This is as stated in the literature, that large producers tend to establish factories in low-wage countries to lower the cost of production (Feenstra 1998; Arndt and Kierzkowsi 2001; Gereffi et al. 2005; Walcott 2011).

In relation to the primary activities of the value chain (Figure 3.1), inbound logistics, operations, outbound logistics, and marketing and sales are significantly affected. The companies can create values in inbound logistics and outbound logistics, through long-term and flexible relationships with suppliers and distributors, and through efficient transportation.

Long-term and flexible relationships are a competitive advantage for the Danish producers. For example, the most important advantage for Brdr. Peterson is locating close to other producers. It wants to know who specializes in the field of production, machine carpentry, fine carpentry, iron work, etc., so that they can cooperate. For

Fritz Hansen, it depends on the technique involved. It will make a segmentation of the suppliers based on importance, size, service, capacity, etc. and use different strategies for different suppliers. It holds monthly meetings with some important suppliers, meeting other suppliers perhaps yearly. It has relationships of more than 20 years with its suppliers of upholstery, marble and wood. It also has relationships of more than 40 years with its distributor and around 60 years with Radisson Blu Royal Hotel (Questionnaire from Brdr. Petersen, Interview with the supply chain manage of Fritz Hansen 2017).

Fritz Hansen can gain five important advantages from transportation. Firstly, there is flexible change of transporter. Transportation is just a question of cost, since it does not involve any special techniques. Therefore, a firm can change transporter any time it wants. Secondly, there is the just-in-time system. Everything is made to order. There is only a little stock in the headquarters and showrooms, and most needs to be produced based on the order. Normal products represent 80 per cent of Fritz Hansen's total production and take one to three weeks to produce. Special products represent 20 per cent of the firm's total production and take six to eight weeks to produce. Thirdly, if an order is for a customer in the Nordic countries, the more they transport the cheaper the price, because the firm can negotiate with the logistics company. Products are shipped to the warehouse of logistics company LGT in Horsens in Denmark. There is a harbour there from which the product is shipped to the customer. Delivery time is around one to two weeks. Fourthly, if an order is for a customer from another European country, the goods are consolidated in the warehouse in Poland then delivered by rail. Finally, if an order is for another continent, the company uses EXW. Goods are put in containers in Poland. The customer will come to pick up in Poland and will pay the costs (Interview with the supply chain manager of Fritz Hansen 2017). EXW is also used by Brdr. Peterson (Questionnaire from Co-founder of Brdr. Peterson 2017).

Sometimes there is a delivery problem. For example, if transporting to Japan, China or Latvia, the delivery time is longer. It takes around 10 to 13 weeks. If an item is missed, express delivery is used at extra cost. When stock is too low, it takes time to order again. The company will do everything possible to avoid delay (Interview with the supply chain manager of Fritz Hansen 2017). However, not all companies can do as well as Fritz Hansen since they do not have a lot of experience. For example, Hay, Muuto and Gubi are new companies which have an immature supply chain. They have the challenge of managing it, since everything is outsourced. Sometimes there are problems, like delay of the product (Interview with the supply chain manager of Fritz Hansen 2017).

There are also other ways to manage transport efficiently. For example, Skovby uses lean manufacturing which includes just-in-time delivery to control the transportation process; if it is far, it will transport by ship. At Reform, the transport price is fixed (Questionnaire from CEO of Skovby, Interview with CEO of reform 2017).

The large companies have enough capacity to focus on production, design and promotion at the same time. These three aspects can have a strong influence on the operation as well as on marketing and sales as primary activities in the value chain. Production can have both positive and negative effects on the operation. Design will have a positive effect. Promotion will produce benefits in marketing and sales. These companies can be classified into three types according to their way of production.

The first type is companies with inflexible offshore production and long distance outsourcing, such as Fritz Hansen. The firm started to produce furniture more than 100 years ago, and at that time it produced all the furniture at the headquarters. At the beginning of 2000, the situation changed: they only produce the plastic shell of a chair designed by Arne Jacobsen at the headquarters (the base of the chair is outsourced to Poland). Upholstery products and wooden chairs are produced in the factory in Poland.

The benefit of this kind of offshore production is to lower the costs of production and labour. The disadvantage is that it is far from the headquarters; therefore, it is difficult to control and adjust the situation. Meanwhile, the rest of its products are outsourced. Around 50 per cent of Fritz Hansen's outsourcing is to Poland, 20 per cent to Denmark, 10 per cent to Latvia, and 20 per cent to other overseas markets such as China. All of them are long distance outsourcing. Outsourcing to Denmark is not to places around the headquarters: it is to the other provinces of Denmark. For example, the firm is located in Zealand, but a handmade chair[23] is outsourced to Endelave in Fuen and tables are outsourced to Kivst in Aavre in Jutland (Interview with the supply chain manager and store manager of Fritz Hansen 2017).

Fritz Hansen focuses on sales and branding at their headquarters in Denmark, since almost all its production is offshore or outsourced. This is not because the production cost is high in Denmark: it is just a matter of focusing. Most of the firm's money is spent on promotion, besides production: it has 20 showrooms (Concept stores) and 24 franchisees all over the world. At the same time, it is design-focused since it lives by design. It still uses the designs of Arne Jacobsen (1902–1971) and Poul Kjærholm (1929–1980), and is innovating its design constantly by cooperating with designers from Denmark, Sweden, Germany, Spain, etc. The firm has control of the process and quality of the design. For example, when it needs a new chair, the designer is asked to design it. After that, the design department, sales branch and CEO together make a decision about the design. When a new product is launched, it is tested several times to keep the high standard of design and quality. The design is not always pushed: it has to be a good product. The design style is simple, useful, modern and classic. Craftsmanship is important to make it authentic. The firm's showroom in Copenhagen also has a classic feeling to serve as a foil to its furniture. It is not on the main street.

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[23] Designed by Poul Kjærholm (1929–1980) and produced by themselves since 1965. In 2002, the female craftsman Lene Iversen operated in a company Endelave Flet in Endelave.

The building has a lot of history and is part of the old post office (Interview with the supply chain manager and store manager of Fritz Hansen 2017).

The second type is the company with inflexible production in Denmark, such as the old furniture company Carl Hansen, the main competitor of Fritz Hansen. Carl Hansen wants to position itself as 100 per cent made in Denmark; therefore it still produces everything in Denmark. Even if it does not have the orders, it has large stocks and the workforce stands by. This leads to high costs. The firm has to adjust in order to compensate for stock going up and down: when there is a lot of stock, it lowers the price; when stock is low, it raises the price (Interview with the supply chain manager of Fritz Hansen 2017).

The third type is the company with flexible production, like Magnus Olesen in the regional cluster in Skive. This firm mainly manufactures for itself. Sometimes there is cooperation in production with other producers in the cluster. For example, for a product with a short lifecycle, the firm will choose producers nearby to produce for them instead of investing in production itself. Its outsourcing in the cluster is to a large extent within a radius of 50 km. which is short distance. The cost of transportation is low. It does not cost much to search for information about subcontractors. Communication between the firm and subcontractors should be smooth, since there is tacit knowledge within the cluster. The firm can also switch its subcontractors freely, since there are many furniture producers in the cluster. Most of Magnus Olesen's money is spent on R&D and design: it updates its production and technology constantly. It invests in the factory to maintain a high automation level. Meanwhile, it believes that good design is one of its most important competitive advantages. It uses famous designers who can interpret its style better. The firm also focuses on promotion. It has sales in around 30 developed countries, and a showroom

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in Copenhagen (Questionnaire from the CEO of Magnus Olesen 2017, Interview with Mark Lorenzen 2017, Homepage of Magnus Olesen[24] 2017)

Some of the small companies have the potential to focus on production, design and promotion at the same time, such as Brdr. Peterson. From 1995 to 2005, it was 100 per cent subcontractor. However, from 2005 to date, it is 50 per cent subcontractor and 50 per cent producer. It does not produce newly drawn designs: almost 100 per cent of Brdr. Peterson's design is from the middle of the last century (Questionnaire from co-founder of Brdr. Peterson 2017). It is possible that it will become 100 per cent producer if sales of its own brand rise significantly in the future.

Some of the new companies are only focused on design and promotion. For example, Reform started its business three years ago. It does not produce, having outsourced all its production. It considers quality and price when selecting subcontractors. The firm outsources doors to Lithuania because there is cheaper labour there. Production can take a long time. Reform outsources worktops and counters to Jutland in Denmark because the quality there is good. There are many other similar new furniture companies who focus only on design and promotion, such as Hay, Muuto and Gubi (Interview with the CEO of Reform, Interview with supply chain manager of Republic of Fritz Hansen 2017).

Furthermore, diversification of the product category can affect operations. It is one of the competitive advantages of Fritz Hansen. Firstly, it acquires or cooperates with companies who produce complementary products. For example, it bought a lighting company, Lightyears, in Aarhus in Jutland because it needed lights as decoration in its showroom. If it is only furniture, it looks cold. It wanted to make the showroom like a real home. In addition, when a customer comes to ask for the light, if it is not on sale, it is not good. For the same reasons, it cooperates with craftsmen in other countries such as Japan to make accessories. It also works with fashion companies to make its

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[24] https://magnusolesen.dk/

products fashionable (Interview with the store manager of Republic of Fritz Hansen 2017). Secondly, Fritz Hansen launches some low price products to gain competitive advantage due to price competition from competitors like IKEA, Muuto and Gubi. Thirdly, it starts to design more products for cultures other than just the Danish, because it sees a big market potential in other countries (Interview with the supply chain manager of Republic Fritz Hansen 2017).

High reputation can create value in marketing and sales. Reputation is one of the most important advantages of Fritz Hansen. Its reputation derives from a combination of its long history and famous designers. It has existed for more than 100 years. There are many fans of the designer Arne Jacobsen. The firm is famous by word of mouth: around nine out of ten families have Fritz Hansen furniture at home. Its furniture is integrated into Danish life. Customers come to the showroom in Copenhagen to talk because they are fans: they just come to see and try (Interview with the supply chain manager and store manager of Republic of Fritz Hansen 2017).

In relation to the support activities of the value chain (Figure 3.1), they produce benefit in the activities of technology development, human resources and procurement. These are especially important for companies in the regional cluster in Skive and the Salling Peninsula. As mentioned, Magnus Olesen in the cluster pays attention to upgrading automation production, which is a kind of technology development. Access to skilled employees is the main advantage it can gain from the cluster. Therefore to be located in the cluster can add value to human resources. Magnus Olesen only uses high level (A/B level) raw materials, mainly from Nordic countries and the Baltic countries. This improves the value of procurement (Questionnaire from CEO of Magnus Olesen 2017).

Technology development could also be important for other producers outside the regional cluster. It depends on which aspects they are focusing on. For example, Skovby thinks function and innovation are important: technology development is

therefore important for them. However, Fritz Hansen does not often innovate technology. Two years ago, it updated its technology; however, it did not update the technology of all its products. It still produces the same product in the same way that it did 50 years ago. Reform has a similar situation. It mainly uses craftsmen. The technology it uses is CNC and robots, which is similar to others. It does not think it will change its technology in the next five years (Homepage of Skovby, Interview with CEO of Reform, Interview with supplier chain manager of Republic Fritz Hansen2017).

Procurement should be important for Danish producers: for example, Fritz Hansen tries to maintain long-term relationships with its suppliers to make the quality of raw materials high. If a product is requested by a customer, the firm will test whether the raw material is durable. If not, it refuses to produce it (Interview with store manager and supplier chain manager of Republic of Fritz Hansen 2017).

6.2.4 Companies' outsourcing

All the five companies analysed have outsource activity. There are six major features of outsource in these companies. Among them, four are also found in the literature. The other two are different.

Four characters are the same as the literature are as follows. Firstly, most of the firms outsource to Eastern Europe (Baltic States and Poland) and China besides Denmark to lower the cost (Questionnaires from the CEO of Skovby and Co-founder of Brdr. Petersen, Interview with the CEO of Reform, Interview with the supply chain manage of Republic of Fritz Hansen 2017). This is the same as the literature, since outsourcing is normally from more advanced to less developed countries (Campos et al. 2008). Secondly, some of the big producers such as Skovby and Magnus Olesen outsource small components, which are non-wooden parts (Questionnaires from the CEO of Skovby and Magnus Olesen, Interview with the supply chain manage of

Republic of Fritz Hansen 2017). This is the same as the literature, since outsourcing labour intensive, standardized and easy to transport items makes sense (Eksioglu, et al. 2010). Thirdly, big producers such as Fritz Hansen outsource all the furniture production. The literature says that larger firms may outsource finished furniture pieces (Drayse 2011). Finally, some of the small producers such as Brdr. Peterson outsource wooden parts since they are professional in producing non-wooden parts themselves (Questionnaire from the Co-founder of Brdr. Petersen 2017). It is just like described in the literature that one of the reasons for outsourcing is to find professional subcontractors (Fogliatti et al. 2010; Gereffi and Korzeniewicz 1994, Kessler 1999 and Scott 2002a in Scott 2006).

Two features were not found in the literature. Firstly, some of the companies outsourced all their production, such as Reform (Interview with the CEO of Reform 2017). This kind of situation was not found in the literature. Secondly, big producers such as Fritz Hansen may not outsource more in the future. This is different from the literature, which says that outsourcing shows an increasing trend in the furniture industry (Buehlmann and Schuler 2009 in Andreja and Richard 2010). Fritz Hansen wants to start to produce some upholstery parts itself in the future, not because of a quality problem but because of a price problem, since the subcontractor in Poland has put too large a margin on the price (Interview with the supply chain manager of Republic of Fritz Hansen 2017).

6.3 Comparison of clusters in Spain and Denmark

6.3.1 Comparison of the clusters

The reasons for the formation of regional clusters in the two countries are similar. In Valencia, companies locate together because the furniture traditions are there. Most of the producers did not choose their location on purpose: it is simply because their owners were born in Valencia (Interview with the sales manager of Hurtado, Interview

with the area manager of Capdell, Interview with the sales director of Latorre, Interview with the area manager of Expormim 2017). This means two things. Firstly, there is positive performance in the cluster. Therefore, the positive externalities attract producers to start their businesses there. Secondly, the persons born there have seen the furniture companies in the region. Therefore, they have some knowhow about how to run a furniture company successfully. For this reason, they opened their business. In the regional cluster in Denmark, the reason seems the same. At the beginning, a small number of companies formed an agglomeration in the region. Afterwards, more companies located there. In the national cluster in Denmark, companies are located individually. However, the reasons that the companies choose their location are the same as in the regional clusters in the two countries: their owners were born there (Interview with the store manager of the showroom in Copenhagen in Republic of Fritz Hansen; Interview with the CEO of Reform; Questionnaire from the co-founder of Brdr. Peterson; Questionnaire from the CEO of Skovby 2017). They choose the location independently and casually, meaning that they consider cooperation relatively unimportant. Therefore, they do not need to locate together with other producers. On the other hand, the independent location forces them to be able to manage everything themselves. In general, almost all the producers in the two countries chose their location in the place where they were born. This could be because there is inertia for the owners to stay in the same place. They can make better use of resources nearby since they are familiar with the situation.

A further similar feature in the clusters in the two countries is that they have better cooperation with national partners than foreign partners, since they speak the same language and share the same culture. However, there are many differences between the clusters in the two countries.

All the interviewed companies in Valencia in Spain can get direct or indirect support from institutions and the government. As mentioned in Chapter 5, this is

because the Spanish government needs to give subsidies to the companies to encourage the declining production. In Denmark, there is no financial aid from the government. This is because furniture production in Denmark is not facing the same problem as Spain. Direct financial aid is not needed to address a problem with production. Meanwhile, the government wants to make competition in the market healthier. Strong producers can survive by themselves and weak producers leave the market automatically when they cannot compete in the industry (Interview with Mark Lorenzen 2017).

Indirect support from institutions and the government of Spain is good for development. Companies can access information and get training or other help from them. This can lead to knowledge diffusion and spillover, as well as learning and innovation. However, most of the producers in Denmark do not get any indirect support or information from their government. Only the producers in the regional cluster are willing to access relevant information through government support. Nevertheless, it depends on the companies' strategies. For large producers outside the regional clusters in Denmark, such as Fritz Hansen, it is maybe not necessary to access information from the government. Support from the government is not relevant to them. Alternatively, the information in the government is public information available to everybody. Although they get information, it cannot help them to differentiate their product. Furthermore, the large companies have enough capacity to train their employees in their own way or develop their own network of exports, etc. They do not need to make use of government resources.

The promotion strategy used in the regional cluster in Valencia is better than the regional cluster in Skive and the Salling Peninsula in Denmark. The Valencia community is responsible for promotion of the cluster. The lifestyle and design cluster in Denmark is responsible for promotion of the national cluster, but mainly for the region of Copenhagen and Herning. There is no institution or association promoting

the cluster in Skive and the Salling Peninsula in Denmark. When interviews were conducted with the director of the lifestyle and design cluster in Copenhagen and Herning, the director said that the cluster in the region of Skive and Salling has already disappeared. They are only responsible for promotion of the cluster in Copenhagen and Herning, not for Skive and Salling (Questionnaire from the director of the Lifestyle and design cluster Denmark 2017). That is the reason why it was initially very difficult to identify the cluster in the Skive and Salling region. Only when interviewing Professor Mark Lorenzen of the Copenhagen Business School was it found that the cluster in Skive and Salling was a very important cluster in Denmark (Interview with Mark Lorenzen 2017). It is a serious problem if a typical cluster is known only by one academic researcher. Reputation is very important for the development of a cluster, since it can bring many benefits to the cluster. For example, the furniture trade fair in Valencia is organized by the Valencia community. This activity attracts many businesses from all over the world. Therefore, if an institution can promote the cluster in Skive and the Salling Peninsula, the competitiveness of the cluster will be higher.

Consolidation of transportation in the national and regional clusters in Denmark has reduced costs more than consolidation of transportation in Spain. In the national cluster in Denmark, many producers consolidate the transport through the logistic company LGT in Horsens. In their regional cluster, there is consolidation of transportation through commonly used transportation tools such as trains and transportation agencies. However, in Valencia in Spain, companies are independent. They do not cooperate with each other in transportation: they only consolidate the transportation together with other producers in other cities in Spain occasionally.

In relation to the literature on clusters, some places were found to be different from previous research in the two countries. In the furniture cluster in Valencia, cooperation with competitors is not frequent. A similar situation was found in the national cluster

in Denmark. The producers are relatively independent in the national cluster. This may lead to weak innovativeness in the cluster, since most of the firms do not make use of the sharing environment. It also gives rise to low cost reduction in the cluster. On the other hand, cost advantage and differentiation are contradictory. Cooperation means cost reduction; however, cost reduction also means less differentiation. For example, two companies cooperate in innovating design or technology and so the new design or technology is available to both of them. It does not make one of them more special than the other. Therefore, for strong producers who have enough capacity to do everything themselves and want to be distinguished, cooperation is not so important. However, cost reduction in activities with low techniques or without techniques is good, such as cooperation in producing low-tech products and transportation.

In the clusters in the two countries, it is found that innovation does not only have a strong influence on SMEs, but it also has a high impact on the large producers in the cluster. It depends on which aspect they focus on. Some companies pay attention to design innovation; some pay attention to production innovation.

In the literature, it says that in the furniture industry, SMEs form clusters as they do not have enough capacity to develop their own production line, but large companies are independent. This is not applicable to the cluster in Valencia. Large producers are also locating inside the cluster. They are making use of some of the advantages in the cluster, although they do not cooperate with other producers. Some of the SMEs are also relatively self-sufficient. Companies in the regional cluster in Denmark also comprise both large producers and SMEs. However, cooperation between producers is very closed. They are dependent on one another.

These three aspects are not like the characters stated in the literature, perhaps because this analysis is about specific furniture companies and clusters in the two

countries. It does not represent the general situation of the entire global furniture industry.

6.3.2 Comparison of the linkage

The linkage in the two countries has two common features: face-to-face contact is maximized, and the type of value chain is a buyer-driven commodity chain. Both characters are also found in the literature (Healey and Ilbery 1990; Murillo 2007; Gereffi 1994, 1999 in Scott 2006).

When looking at the linkage in relation to the value chain, there is one common advantage in the clusters in the two countries: they have long-term cooperation with suppliers and distributors in the cluster (Interview with the area manager of Expormim 2017). However, there are a number of differences.

Both countries use just-in-time to make their transportation efficient. There is a little difference between the just-in-time in the two countries, however. There is no stock in the Spanish companies, which makes them a little inflexible. For example, in Expormim, if a customer needs the furniture very fast, it is not possible (Interview with the area manager of Expormim 2017). However, in Denmark, Fritz Hansen, for example, has some stock in their headquarters and showrooms. It makes them more flexible.

Three of the four Spanish companies interviewed have inflexible production. Only one has flexible production, but the degree of flexibility is not high. It is the same as some of the big producers in the national cluster in Denmark. For example, Fritz Hansen has long distance offshore production in Poland. Magnus Olesen in the regional cluster in Skive and the Salling Peninsula in Denmark have flexible production. As flexible production needs cooperation between companies, the problem is the same as whether the companies should cooperate or not. It depends on how differentiated the company wants to be and whether it has enough money to

invest in production. It has to make a decision to focus on cost reduction or differentiation. If it wants to lower production costs or produce products with less differentiation, it is good to use flexible production by cooperating with producers and subcontractors close by. On the other hand, if the companies want to be as differentiated as possible or the product involves high differentiation, it should not do so. A good example is Magnus Olesen. It cooperates in producing low-tech products to lower costs; meanwhile, it produces high-tech products itself.

However, the situation at Magnus Olesen in the regional cluster in Denmark is different from the situation in the cluster in Valencia. Magnus Olesen has established networks with the companies in the cluster. In Valencia, there are no such relations. If the companies in Valencia use the same strategy, it does not seem possible within a short period, as it takes time to establish personal relationships with other producers. Alternatively, the companies interviewed in Valencia are strong producers. They have enough capacity to do the production in their own way. They do not care whether they can save money or not. Corporate quality is more important for them such as Expormim. A similar thing is seen in the national cluster in Denmark. The location of the companies is normally a casual decision. Most of the companies choose their location simply because their founders were born there. This means they do not consider cooperation with the other producers close by to be important. On the other hand, location is like a destiny that can decide some of the company's strategies. If there are no companies located close by, it is not possible to have flexible production, such as Fritz Hansen and Skovby in the national cluster in Denmark. Therefore, they have to be strong enough to develop a long distance production network; otherwise, they cannot survive.

In the Danish national cluster, a strong brand is represented by Fritz Hansen. Its furniture designed by Arne Jacobsen is especially famous and attracts many Danish

customers. The strong brand has been built through more than 100 years of history, good quality, good promotion, etc. In Spain, there is no such company.

Diversification of the product category is also an important advantage for Fritz Hansen, as it does not only sell furniture but also the accessories to go with it. It cooperates with a fashion design company to make its products fashionable. It produces cheap products to compete with the low-cost producers. It has started to design products to fit into more cultures than just the Danish one. In Spain, only Latorre produces furniture accessories: no other diversifications of production were found. Of course, it depends on whether the companies want to diversify or not: sometimes less diversification means a more specialized image.

Human resources are not important for the Spanish producers. They do not think they have any problem accessing employees (Interview with export manager of Capdell 2017). It is also not a big problem for the large producers in Denmark. Nevertheless, Magnus Olesen in the regional cluster pays attention to it. It thinks access to skilled employees, especially craftsmen, is a big advantage it can obtain in the cluster. In this case, sharing employees should lead to more specialized production and higher innovation. However, whether there is enough access to human resources may depend on the employment situation in the country or the region. It may also depend on the company's employee requirements. For example, the unemployment rate is high in Spain, and the companies interviewed are strong furniture companies. Thus, the bargaining power of the companies should be high. Human resources should not be a big problem for them.

6.3.3 Comparison of outsourcing

There are two features of outsourcing that are similar in the two countries and the same as the literature: large companies outsource unimportant components and some of the SMEs outsource the professional parts that require specific techniques.

There are three differences in outsourcing in the two countries. One difference is the places where they outsource. All the companies in Spain outsource to developed countries in Europe as well as Spain, because they think the quality of the production in the countries is high. They also want to avoid the risks of outsourcing to outside Europe, such as geographic distance, economics, culture and political problems. All the companies in Denmark outsource to the Baltic states, Poland and China besides Denmark. These countries are low wage countries, some of them at a long distance, such as China. The reason they outsource to these countries is that costs are lower. Another factor causing the difference between the two countries could be the different currencies used. Spain use the euro, but Denmark uses the Danish krone. There is no problem of currency exchange for Spain if they only do business with some of the European countries, such as France and Italy. However, for Denmark, even though they do business with European countries, they still need to exchange currency.

Also, some producers in Denmark outsource the entire furniture production. This phenomenon is not found in Spain. However, this depends on the strategies of the company: companies that have outsourced the whole furniture production are focused on design and sales, while the companies interviewed in Spain are focused on production, design and sales at the same time. Therefore, they do not outsource all of their production. Alternatively, costs in Denmark are higher than in Spain, so Danish producers need to reduce costs more than Spanish producers.

Thirdly, the reasons that some of the companies in the two countries do not want to outsource more in the future are different. One of the companies in Spain, Expormim, wants to produce everything itself to improve the quality, while in Denmark, Fritz Hansen does not want to outsource more in the future because the subcontractors are putting too great a margin on the price. The firm thinks it is cheaper if it produces the furniture itself. It is difficult to say which strategy is more competitive. It depends on

the strategies the companies considered and on the quality of the chosen subcontractors.

There are some characteristics of outsourcing in the two countries that are not like the features stated in the literature. All four Spanish producers interviewed did not outsource to low wage countries for reasons of quality consideration and avoiding risk. In Denmark, there are companies that outsource all their production. This could be because the companies want to focus on design and sales only; it may also be because the companies are new companies and they do not have enough capacity to explore their own production lines. In both of the countries, there are companies that do not want to outsource more in the future.

6.4 Summary

The four factors of agglomeration, cluster, linkage and production subcontract are important for the companies in the clusters in the two countries.

In the literature around 30 years ago, agglomeration was initially defined as the concentration of businesses and industrial plants in a specific region or location (Palacio 2005). Clusters may be defined as non-random geographical agglomerations of firms (Richardson 1972, Ellison and Glaeser 1994 in Maskell and Kebir 2005). The difference between agglomerations and clusters is whether the firms located randomly or not. However, the most influential new agglomeration theory in the past 20 years defined the characteristics of agglomerations as having some features of the cluster (Saxenian 1989 in Palacio 2005; Brusco 1990). Therefore, based on the old and new theories about agglomeration, the national cluster in Denmark can be considered as an agglomeration as the companies located randomly. The main benefit they can obtain from the agglomeration is cost reduction through the consolidation of transportation. However, the national cluster also has some features of the cluster. For example, they share some common values and knowledge in the cluster and can better cooperate

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with national partners. The regional cluster in Valencia in Spain can be regarded as an agglomeration as well. The firms seem to have located randomly since there is little cooperation between the producers. At the same time, they have some features of clusters, such as close cooperation with institutions and the government, better cooperation with native partners, etc. The regional cluster in Denmark is a typical cluster since almost all its features are the same as the literature on clusters.

Clusters are important for both Denmark and Spain. Companies in a cluster can access resources to obtain profits. For example, although there are many problems in the regional cluster in Valencia in Spain, companies can still get information or other support from the government or institutions.

Linkages are also important, since companies in the cluster have relationships with suppliers, distributors, institutions, universities, etc. This is an important way to gather relevant information or cooperate, which leads to the knowledge diffusion, learning and innovation. The value chain can help to determine in what ways the companies can gain competitive advantages.

Outsourcing is important, since every company in the clusters in the two countries has outsourced activities. In this way, they can reduce costs, access more professional suppliers, etc.

Production, design and promotion are important for the clusters in the two countries. Based on the analysis, the competitiveness of the cluster can be improved through developing better strategies, mainly in these three aspects. For example, most of the strong producers are focused on production, design and promotion, such as Hurtado in Valencia in Spain, Fritz Hansen in the national cluster and Magnus Olesen in the regional cluster in Denmark. Among these three factors, production and design are like the hardware: they can differentiate the furniture from others. Promotion is the soft power. It is a way to communicate the furniture to the customers. The three factors are mutually compatible and are indispensable. Transportation somehow

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affects the competitiveness of companies in the cluster. Some of the companies that have experience in transportation, such as Fritz Hansen, can avoid delivery delays. However, transportation is not as important as production, design and promotion. Since transportation does not contain any special techniques, companies can easily switch transporters or choose transportation agencies instead of doing it themselves. Nevertheless, from the macro perspective of the cluster, it is important because efficient transportation can save costs. For example, the consolidation of transport in Denmark can save costs more than the transportation in Spain.

Chapter 7. Intra-Industry Trade analysis of the furniture industry in Spain and Denmark

International trade includes inter- and intra-industry trade. Inter-industry trade is the exchange of goods from different industries. However, IIT is two-way trade within the same industry (Dudovskiy 2012).

It is widely documented that the process of worldwide trade liberalization has led to a dramatic expansion in the volume of IIT (i.e. two-way trade within the same industry (Dudovskiy 2012)), especially in the past few decades (Todashi and Toshihiro 2012).

Under the conditions of globalization, IIT has achieved a dominant role in international trade. By 1970, IIT was already an important part of world trade. For developed countries, it accounted for 35 per cent of international trade. By 2000, this had become 62 per cent. This indicates that the percentage of IIT in total international trade is rising, and substantially. This is a clear indication that IIT is growing faster than inter-industry trade (Zeljko 2011; Sawyer and Sprinkle 2012).

Increasing IIT between a country and its trade partners implies higher economic structural convergence between a country and its trade partners. The higher the IIT between a country and its trade partners, the more similar and developed the country and its trading partners are. That is why IIT is important for developed countries with similar economic structures (in regard of relative capital and labor force endowments, the technological availability, national income per capita, consumer preferences, among others) (Zeljko 2011; European Commission 2009; Lloyd and Grubel 2003; Venables et al. 2003).

Therefore, since around 2011, there have been two main global trends in IIT: the amount of IIT between developed countries has been constantly increasing, and IIT between developed countries has had a higher share than inter-industry trade (Zeljko 2011). In that sense, IIT level is a useful indicator to show the development and

competitiveness of a certain economy (especially developed economies) toward the rest of the world (Zeljko 2011).

Moreover, IIT is a dominant form of exchange in the European Union. There was a trend of increasing IIT for all the major OECD economies between 1970 and 1990 (Molendowski and Polan 2010; OECD 2002). In addition, IIT is very important for the furniture industry. The comparatively high level of IIT in manufactured products such as the furniture industry is a well-documented and theoretically established fact. IIT is generally higher in manufacturing industries than in non-manufacturing sectors (Brulhart and Hine 1999). Therefore, the intra-industry share of the manufacturing trade has increased significantly since the late 1980s across many OECD countries (OECD 2002).

For these reasons, IIT has been chosen to analyse development and competitiveness in the furniture industries in the two countries in relation to the rest of the world.

7.1 IIT analysis of the furniture industry in Spain

IIT analysis of the furniture industry in Spain can be divided into two parts. The first part is the GL index analysis of the five major trade partners of Spain. The index analysis is to determine some focal points of IIT. The second is the analysis of IIT in the whole industry by multiple linear regression.

7.1.1 IIT analysis of the five major trade partners of Spain by GL index

The key points of Spain's IIT for the furniture industry can be seen through characterizing Spain's five major trade partners based on the GL index. The GL index analysis of the five major trade partners is based on four independent variables of the multiple linear regression analysis: GDP, income/capita, geographic distance and common border.

According to the GL index, Spain's five major trade partners are Portugal, Morocco, the Netherlands, Austria and Israel (Table 7.1 and Appendix 1). The GL index for Portugal was the highest in 2006 (0,96) and looks stable compared to the other four countries. From 2007 to 2015, it fluctuated between 0,75 and 0,85. The GL index for Morocco was the second highest in 2006 (0,77): it has a little fluctuation compared to Portugal. In 2007, it rose to 0,93, and fell to 0,73 in 2008. It started to go up from 0,76 in 2009 to 0,94 in 2012; then it started to go down from 0,94 in 2012 to 0,82 in 2015. The GL index for the Netherlands was the third highest in 2006 (0,77). It is not stable compared to the two countries above. It rose constantly from 0,77 in 2006 to 0,97 in 2010 before starting to fall from 0,97 in 2010 to 0,48 in 2013, and increasing again to 0,74 in 2015. The GL index for Austria was the fourth highest in 2006 (0,41), decreasing to 0,32 in 2007. Then it showed a growth trend, constantly rising from 0,32 in 2007 to 0,95 in 2014. In 2015, it went down to 0,70. The GL index for Israel was the lowest in 2006 (0,36). It fell to 0,30 in 2007. Then it showed an increasing trend, constantly growing from 0,30 in 2007 to 0,93 in 2012. It fluctuated between 0,87 and 0,99 from 2012 to 2015 (Table 7.1).

Table 7.1 GL index of five major trade partners of Spain, 2006-2015 (Unit: percentile)

Country / Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Portugal	0,96	0,81	0,85	0,84	0,78	0,76	0,78	0,82	0,82	0,74
Morocco	0,77	0,93	0,73	0,76	0,81	0,84	0,94	0,92	0,84	0,82
Netherlands	0,77	0,76	0,81	0,88	0,97	0,91	0,8	0,48	0,67	0,74
Austria	0,41	0,32	0,38	0,48	0,44	0,50	0,88	0,97	0,95	0,70
Israel	0,36	0,30	0,50	0,57	0,86	0,83	0,93	0,87	0,99	0,87

Source: UN comtrade, 2016 (own calculation by using the data of import and export)

When look at pattern of the GL index of these five countries, Portugal and Morocco looks stable compare to the other three countries. In the other three countries, there are three major changes. Firstly, from 2007 to 2010, the GL index of Austria rose rapidly. Secondly, from 2010 to 2013, the GL index of Israel is quickly increasing.

However, the GL index of Netherlands shows obvious decline in this period. Finally, from 2013 to 2015, the GL index of Austria starts to decrease, while Netherlands exhibits fast increase (Figure 7.1).

Figure 7.1 GL index of five major trade partners of Spain, 2006-2015
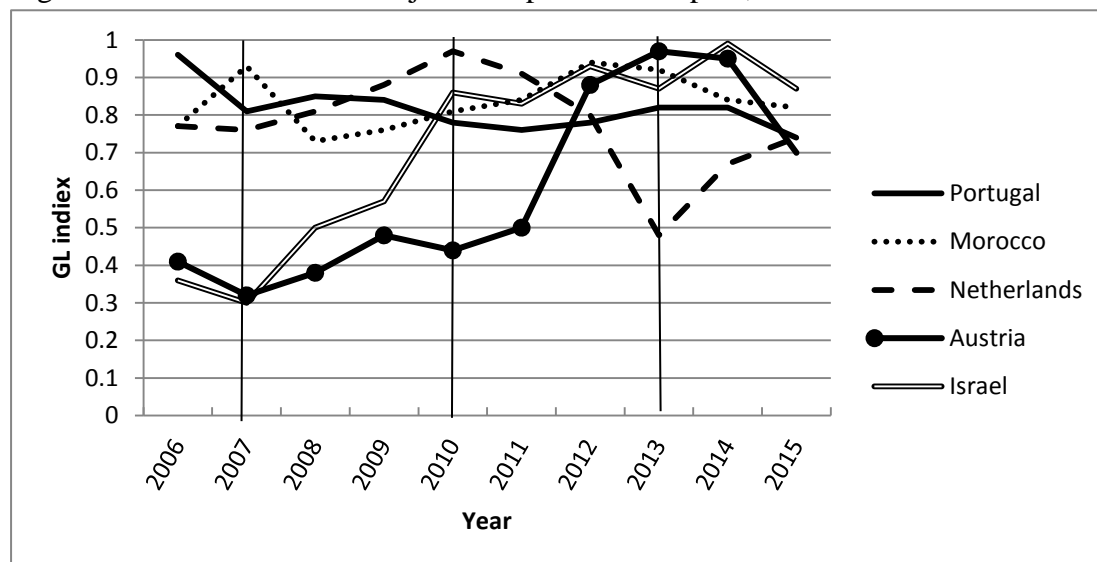
Source: UN comtrade, 2016 (own calculation based on the data of import and export)

The country with the most stable GL index curve is Portugal. This could be because Portugal is the neighbouring country to Spain. They can obtain many profits from the common border. For example, there is business between the two countries due to the convenient transportation. The fundamental areas of cross-border economic interaction over the centuries have included legal commercial traffic (local border commerce) and illegal traffic (smuggling). There has been an obvious growth in commercial flows across the Portuguese-Spanish border. Portuguese-Spanish imports/exports have doubled (Medeiros 2009 in Vázquez 2014). These flourishing initiatives of Portuguese-Spanish cross-border cooperation have been supported by generous financing from structural community funds (EAGGF (European Agricultural Guidance and Guarantee Fund)), such as the Cohesion Fund (Vázquez 2014).

There are prior researches that think that the relationship between the two countries is even deeper than sharing a common border (Fernández and Barrios 2002; Dieguez and Caremelo 2001). The border effect between Spain and Portugal has fallen substantially. The two countries experienced a strong integration process during the last quarter of the twentieth century. The greater coordination of the economies resulted in a greater cyclical correlation between the regions of the two countries. This trend should be strengthened in the future. The factors behind this process of increasing correlation are diverse, but trade and investment are the most visible elements of integration (Fernández and Barrios 2002). There is consolidation of two democratic systems in both countries and the process of adhesion to the European community, contributing to a situation in which, progressively, a system of mutual understanding has been established. This enhanced the expectations and reinforced the aspirations of the border regions (Dieguez and Caremelo 2001).

The GL index for Morocco is also relatively stable, although not as stable as Portugal. This might be because Morocco has a maritime border with Spain. There is close cooperation between Morocco and Spain. A joint declaration was signed in Rabat on 21 December 1990 on economic and financial cooperation between Spain and Morocco (United Nations 1993). Meanwhile, the Euro-Mediterranean Association Agreement was signed in 1996 by Morocco. The key objective of the Euro-Mediterranean trade partnership is the creation of a deep euro-Mediterranean free trade area. It aims at removing barriers to trade and investment between the EU and southern Mediterranean countries, and between the southern Mediterranean countries themselves (European commission 2016b).

The Short Sea Shipping (SSS)[25] between Spain and Morocco also benefits business between the two countries. It is often claimed that developing SSS is crucial in the issue of enhancing land-sea intermodality. It thus pursues two benefits: one is environmental benefits, in that it reduces pollution and road transport accidents; the other is economic benefits. It reduces congestion on transport networks and investments in transport infrastructure. It improves the competitiveness of port hinterlands in international markets (Transport research & Innovation portal 2016).

The Motorways of the Sea (MoS)[26] project further stimulated business between Morocco and Spain. MoS are considered the maritime pillars of the Trans-European Transport Network. They consist of short sea routes, ports, associated maritime infrastructure and equipment, facilities and simplified administrative formalities, enabling SSS or sea-river services between at least two maritime ports, including hinterland connections. They contribute to the achievement of a European maritime transport space without barriers. They also connect core network corridors by integrating the maritime leg, and facilitate maritime freight transport with neighbouring countries (European commission 2017b).

The GL index for Austria generally shows a growth trend, perhaps because both Spain and Austria are members of the European Free Trade Association (ETFA). Austria is one of the countries that founded EFTA in 1960 (EFTA 2016). Spain joined

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[25] Short Sea Shipping is abbreviated as SSS, is the maritime transport of goods over relatively short distances, as opposed to the intercontinental cross-ocean deep sea shipping. In the context of European Union (EU) transport statistics it is defined as maritime transport of goods between ports in the EU-27 (sometimes also including candidate countries and EFTA countries) on one hand,and ports situated in geographical Europe, on the Mediterranean and Black Seas on the other hand (European Commission 2, 2014).

[26] The concept of MoS was introduced with the 2001 Transport White Paper (European Commission 1, 2017). It is a horizontal priority of the Connecting Europe Facility (CEF), aims to promote green, viable, attractive and efficient sea-based transport links, which is the new inter-modal maritime-based logistics chains to bring about a structural change to transport organization: door-to-door entire integrated transport chains. Their implementation should help to rebalance the EU transport system (European Commission 2, 2017).

the association in 1979. This means there is closer economic cooperation and free trade between the two countries.

The GL index for Israel also shows an increasing trend. The curve for Israel looks steeper than that for Austria (Figure 7.1). This means that the growth speed of Israel's IIT is faster than Austria's, perhaps because Israel is an important trading partner of the EU in the Mediterranean area. The EU is the first trading partner for Israel, with total trade amounting to approximately 30 billion euros in 2014. It signed the Euro-Mediterranean Association Agreement in 1995, which is the legal basis for EU trade relations with Israel. This came into force in June 2000. The aim of this agreement is to provide an appropriate framework for political dialogue and economic cooperation between the EU and Israel. This agreement is the same as that signed by Morocco, which creates free trade between the countries in the area (European commission 2016c). In addition, Israel also benefit from SSS and MoS projects like Morocco due to the location advantage by bordering the Mediterranean Sea area.

The GL index for the Netherlands is not as stable as the other four countries, perhaps because the Netherlands is still struggling after the economic crisis in 2008. Its GDP growth decreased after 2008, becoming negative in 2009, but started to rise in 2010. However, it became negative again in 2012. In 2014, the Dutch economy was slowly recovering from the economic crisis, and GDP grew by 1,0 per cent (Figure 7.2). The cautious recovery of 2014 was mainly export driven, with growth of 4,0 per cent. Exports were expected to rise by 3,7 per cent and 5,1 per cent in 2015 and 2016 respectively (The Netherlands national market reports 2015).

Figure 7.2 Volume growth of GDP in Netherland, 2006-2015 (Units: percentage of
        volume growth)
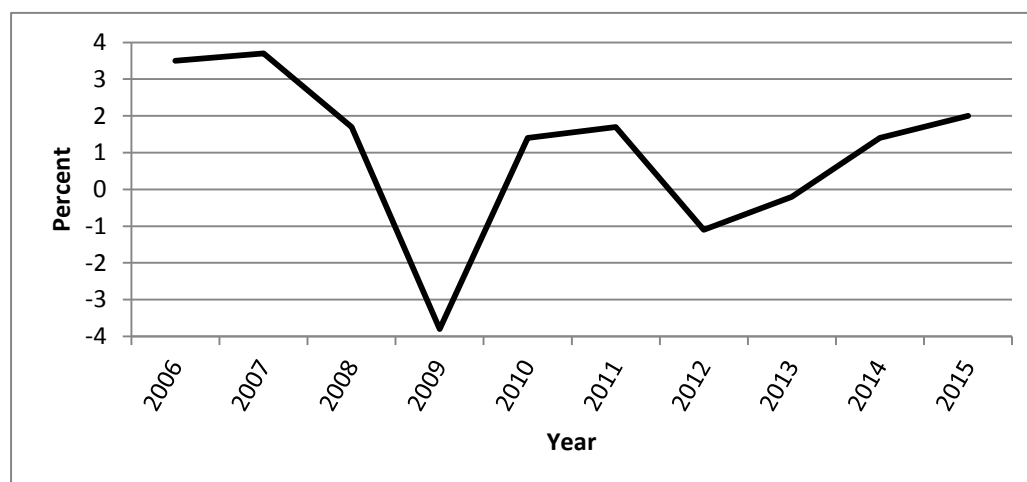
The GDP of these five countries is not the important factor affecting their IIT, because its order is not the same as the order of the GL index. The GDP of the Netherlands is the highest among the five countries, fluctuating between 700 and 1.000 billion dollars from 2006 to 2015. It is much higher than the other four countries. However, the GL index for the Netherlands was not the highest during these years. The GDP of Austria is the second highest, fluctuating around 400 billion dollars during the ten years. However, the GL index for Austria is not the second highest. The GDPs of Portugal and Morocco are similar and a little bit lower than Austria, which fluctuated between 100 and 300 billion dollars. Nevertheless, the GL index for Portugal and Morocco was quite high most of the time from 2006 to 2015. The GDP of Israel is the lowest, being below 100 billion dollars. Nevertheless, the GL index for Israel shows a growing trend and was the highest in 2014 and 2015. When look at the patterns of the GDP of these five countries, all the five countries follows similar trends. From 2006 to 2008, GDP of these five countries shows increase. However, from 2008 to 2014, there is a little fluctuation. After 2014, the GDP of these five

countries shows slight decrease. These trends are also different from the one described in the GL index of these five countries (Table 7.1 and Figure7.1, Figure 7.3).

Figure 7.3 GDP in constant price of five major trade partners of Spain, 2006-2015
(Units: US dollar in billion)
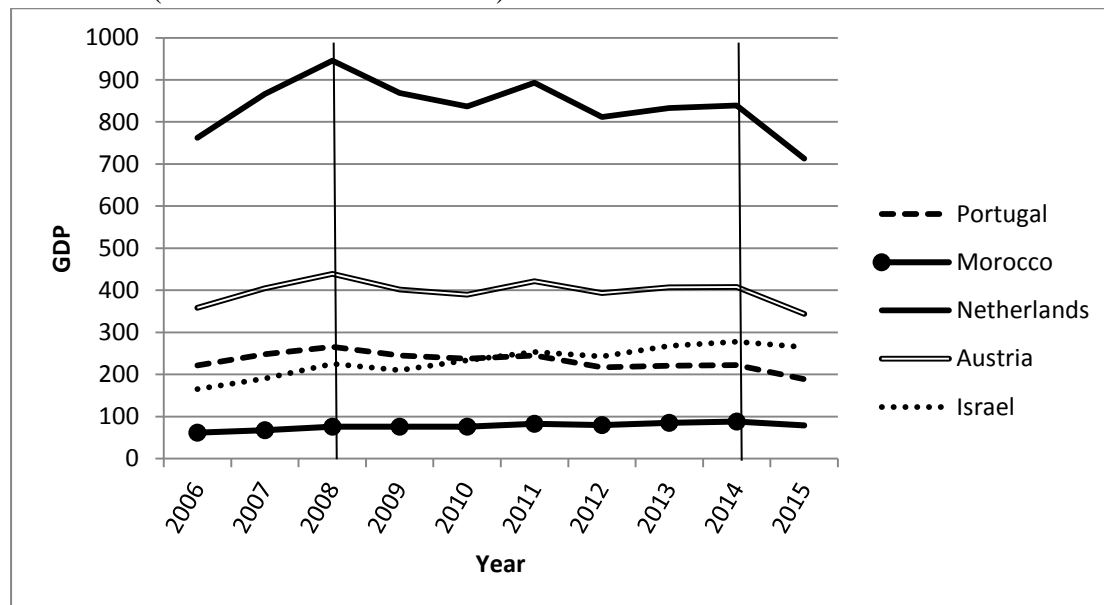
Source: IMF, 2016 (own calculation from national currency to US dollars)

The income/capita of these five countries is not the important factor affecting their IIT. Its order is different from the order of the GL index. The income/capita of the Netherlands is the highest, fluctuating between 40.000 and 60.000 dollars from 2006 to 2015. The GL index for Netherlands was the highest from 2009 to 2011, but not after 2011. The income/capita of Austria is the second highest and a little bit lower than the Netherlands, fluctuating between 40.000 and 50.000 dollars. However, the GL index for Austria is not the second highest. The income/capita of Israel is the third highest, fluctuating between 20.000 and 40.000 dollars. However, the GL index for Israel shows an increasing trend and was the highest in 2014 and 2015. The income/capita of Portugal is the fourth highest and a little bit lower than Israel's, fluctuating between 20.000 and 30.000 dollars. Nevertheless, the GL index for Portugal is relatively stable and is the highest sometimes. The income/capita of Morocco is the lowest, being below 10.000 dollars, while the GL index for Morocco

is relatively stable and has been quite high since 2008. In addition, when look at the development of the income/capita of these five countries, they all follow the same trends except Morocco. The income/capita of Morocco is always like a straight line without obvious changes. However, the other four countries always changes in the same rhythm. For example, from 2006 to 2008, they all shows increase. From 2008 to 2009, they all exhibit decrease. The same situation happens in the rest of the years. This situation is different from the development trend of the GL index of these five countries (Table 7.1 and Figure 7.1 and 7.4).

Figure 7.4 Income/capita in constant price of five major trade partners for Spain, 2006-2015 (Units: US dollar)

Source: IMF, 2016 (own calculation from national currency to US dollars)

Geographic distance and common border are important factors affecting IIT. All these five countries are just a short distance from Spain. Portugal shares a common border with Spain. Austria and the Netherlands are both European countries. Morocco and Israel are not European countries, but geographically face the Iberian Peninsula across the Strait of Gibraltar that connects the Atlantic Ocean and Mediterranean Sea (Figure 7.5).

Figure 7.5 Map of the five major trade partners of Spain
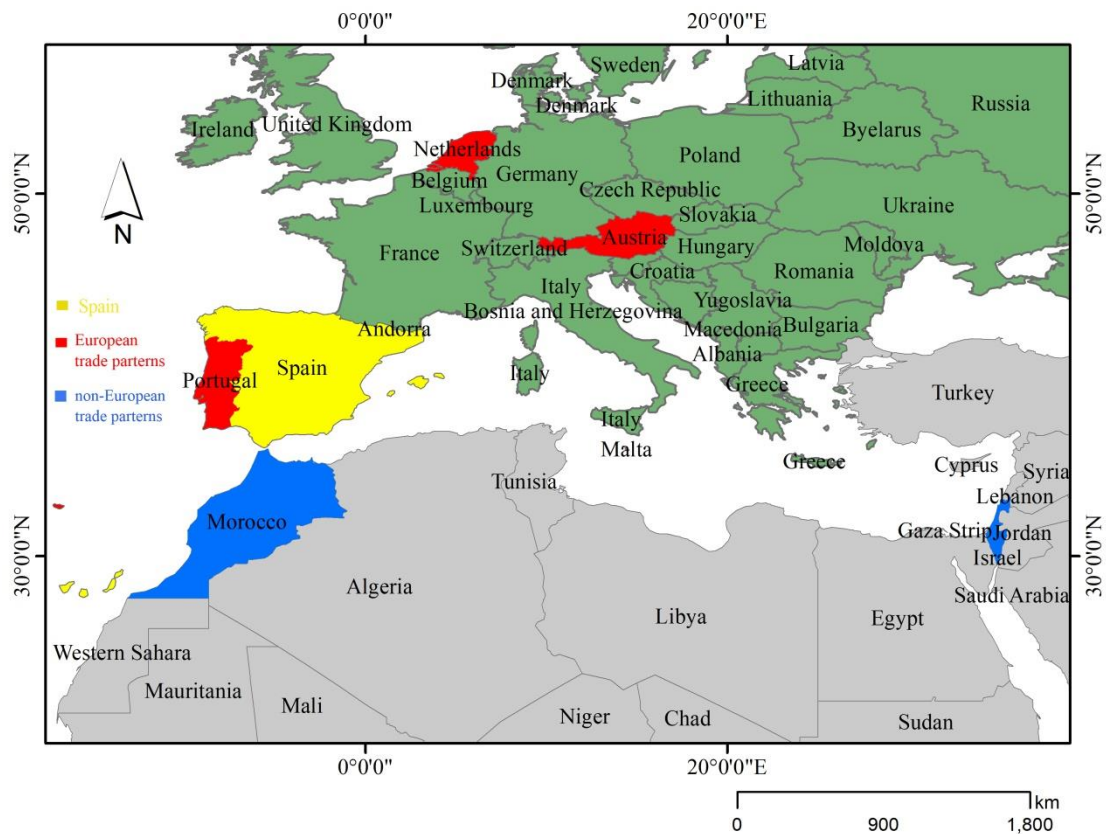
Source: made by the author

According to the literature, GDP, income/capita and common border should have a positive effect on IIT. Geographic distance should have a negative effect on IIT (Ekanayake 2001; Balassa 1986; Clark and Stanley 1999, Sawyer et al. 2010). The results of the five major trade partners showed that only common border and geographic distance are consistent with the literature. Common border affects IIT positively; geographic distance affects IIT negatively. These two factors are important, perhaps because Europe is the main market for the import and export of Spanish furniture. Ten countries on the European continent account for over 50 per cent of Spanish imports. The pattern of Spanish furniture exports is concentrated in neighbouring countries with common legislation. For example, during 2007, 72,05 per cent of total exports went to the European Union (Campos et al. 2008; ANIEME

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2011a). GDP and income/capita are not consistent with prior research: they do not obviously affect IIT. This could be because this is only the specific situation of these five major trade partners: even though it may reflect most of the IIT situation, it does not represent the overall situation.

7.1.2 IIT analysis of Spain by multiple linear regression

In order to see the overall and precise situation of IIT in Spain, the multiple linear regression analysis has been done.

Table 7.2 Multiple linear regression of Spain with GL index as dependent variable, 2006-2015

Independent variable	Coefficient	Standard error	Z	P>|z|
GDP	0,000026	0,0000125	2,08	0,038
Income/capita	-7,43e-07	1,41e-06	-0,53	0,598
Geographic distance	-0,0000247	8,48e-06	-2,92	0,004
Common border	0,3002275	0,1230676	2,44	0,015
_cons	0,4444783	0,0693469	6,41	0,000
R-square=0,2944 (95% confidence interval)				
Number of obs = 360 Number of groups = 36				
Wald chi2(4) = 23,45 Prob > chi2 = 0,0001				

Source: result from Stata/SE 12.1

The result of the regression is considered significant to explain IIT. If the degree of freedom (Number of obs－number of variables) is 300, R-squared equal to 0,176 is acceptable. In the same way, if the degree of freedom is 400, R-squared equal to 0,153 is acceptable (Arkin and Colton 1963). The degree of freedom of this analysis is 355, which is between 300 and 400. This means that the acceptable value of the analysis should be any value between 0,153 and 0,176. R-squared in my analysis is 0,2944, which is higher than the acceptable value; therefore the result is significant. This means the model explained 29,44 per cent of IIT. Furthermore, Wald chi2(4) equals 23,45. It is not large, since Prob > Chi2 equals 0.0001, which is lower than 0,05. This

means that some of the independent variables should be significant (Table 7.2).

GDP, geographic distance and common border are significant for IIT, their P-values being 0,038, 0,004 and 0,015 respectively, which are less than 0,05. Income/capita is not significant, since its P-value is 0.598, which is higher than 0,05 (Table 7.2). Therefore, the regression model can be constructed as follows based on the coefficients of GDP, geographic distance and common border (Table 7.2):

$$Y = 0{,}000026Z_1 - 0{,}0000247Z_2 + 0{,}3002275Z_3 + 0{,}4444783$$

In the model above, GDP and common border have a positive sign, meaning that they have a positive effect on IIT. Geographic distance has a negative sign, meaning that it has a negative effect on IIT.

According to the literature, GDP, income/capita and common border should have a positive effect on IIT (Ekanayake 2001; Balassa 1986; Clark and Stanley 1999, Sawyer et al. 2010). Geographic distance should have a negative effect on IIT. In this analysis, among the four variables, the results for GDP, geographic distance and common border are significant and consistent with the literature. Income/capita is not significant and is inconsistent with the literature. In some of the literature, there are variables that are not significant. For example, in Ekanayake (2001), common border and NAFTA are not significant. However, this author has not discussed why the variables are not significant. The situation in this analysis is different; therefore the important variables should be different. In the literature, researchers write about many industries in one country, which represents a more generalized situation. For example, Ekanayake (2001) analysed thousands of products of Mexico's trade partners, and Balassa (1986) wrote about 167 industries in the USA. This regression analysis is about one industry (the furniture industry) in one country (Spain), which means the situation is more specific. The reasons why geographic distance and common border are important factors affecting IIT can be seen from the analysis of the five major trade partners.

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GDP (measures market size) is an important factor affecting IIT because Spain has both high imports and high exports with BRIC countries (Brazil, Russia, India and China) (These countries are four largest emerging and developing economies by either nominal or ppp-adjusted GDP (Iran-US Rapproachement 2014). China is one of the top importers from Spain as one of the BRIC countries. Meanwhile, BRIC countries are major exporters of Spain. A positive evolution is seen in Spanish furniture purchased by these countries, leading to a positive outlook for 2013, where exports were expected to grow by 5 per cent with respect to 2012 (Campos et al. 2008; ANIEME 2013).

Income/capita (measures stage of development) is not an important factor affecting IIT because Spain has both high exports and high imports with countries without high income/capita. The last paragraph shows that Spain has many two-way businesses with BRIC countries. These countries are developing economies without high income/capita. Moreover, the import of outsourced parts or products into Spain from less developed countries shows growth (CBI 2006a). At the same time, the rise of exports from Spain is to non-EU countries with relatively low income/capita, such as Saudi Arabia, Equatorial Guinea and Mexico. ANIEME President Juan Carlos Muñoz underscored "the huge effort that Spanish manufacturers are making to counteract weak internal demand", resulting in "increased furniture sales to emerging countries including Morocco, Saudi Arabia, Equatorial Guinea and Angola, which is helping to diversify our sales markets and create new business opportunities for furniture from Spain" (ANIEME 2013).

7.2 IIT analysis of the furniture industry in Denmark

The analysis about the Danish IIT also includes two sections. The first section analyses the IIT between the five major trade partners and Denmark according to the GL index, the aim being to identify some key points of IIT. The second section

analyses the IIT of the entire industry by multiple linear regression

7.2.1 IIT analysis of the five major trade partners of Denmark by GL index

The five major trade partners are identified according to the GL index. The GL index analysis is based on the four independent variables of the multiple linear regression analysis: GDP, income/capita, geographic distance and common border.

Based on the GL index, the five major trade partners for Denmark are Sweden, the Czech Republic, Italy, Austria and Germany (Table 7.3 and Appendix 1). The GL index for Sweden was the highest in 2006 (0,93) and looks stable compared to the other countries over the ten years. It fluctuated between 0,88 and 0,98 from 2006 to 2015, which was the highest GL index among the five countries except for 2008 (in 2008, Israel is the highest). The GL index for the Czech Republic was the second highest in 2006 (0,80). It looks less stable in the following three years, decreasing to 0,69 in 2007, rising to 0,96 in 2008 and falling again to 0,80 in 2009. From 2010 to 2015 it became stable compared to previous years, fluctuating between 0,47 and 0,59. The GL index for Italy was the third highest in 2006 (0,61), fluctuating between 0,57 and 0,65 from 2006 to 2012. After that, it steadily went down to 0,49 in 2015. The GL index for Austria was the fourth highest in 2006 (0,61), increasing to 0,91 in 2008. In the remaining years it became stable, fluctuating between 0,81 and 0,91. It was the second highest GL index among the five countries after 2009. The GL index for Germany was the lowest in 2006 (0,40), constantly rising to 0,58 in 2011. In the remaining years, it fluctuated between 0,54 and 0,63. It looks stable compared to the Czech Republic and Austria, and shows a slow growth trend (Table 7.3).

Table 7.3 GL index of five major trade partners of Denmark 2006-2015 (Unit: percentile)

Year Country	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Sweden	0,93	0,98	0,92	0,95	0,95	0,91	0,88	0,90	0,90	0,96
Czech Republic	0,80	0,69	0,96	0,80	0,58	0,59	0,52	0,47	0,53	0,58
Italy	0,61	0,58	0,6	0,59	0,65	0,65	0,57	0,52	0,52	0,49
Austria	0,61	0,7	0,91	0,81	0,83	0,79	0,82	0,84	0,86	0,91
Germany	0,40	0,47	0,51	0,53	0,57	0,58	0,54	0,63	0,59	0,62

Source: UN comtrade, 2016 (own calculation by using data of import and export)

When look at the pattern of the GL index of these five countries, the curves of GL index of Sweden, Italy and Germany do not have obvious changes. However, the curve of GL index of the other two countries shows some fluctuations in 2008. The GL index of Austria exhibits decrease from 2008 to 2009, after that it becomes stable. The GL index of Czech Republic dropped rapidly from 2008 to 2010, after that it becomes stable (Figure 7.6).

Figure 7.6 GL index of five major trade partners of Denmark, 2006-2015
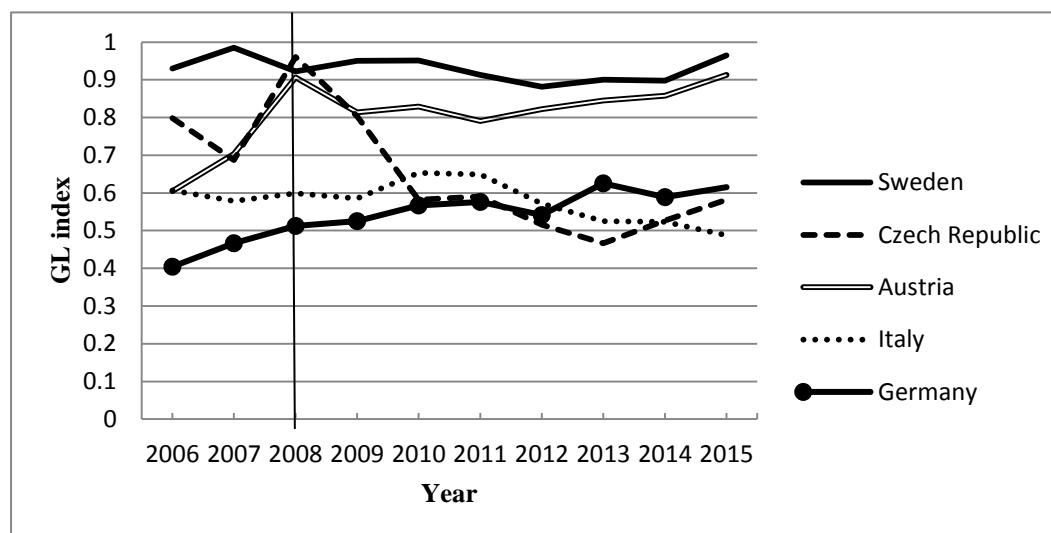
Source: UN comtrade, 2016 (own calculation by using data of import and export)

The primary reason that the GL index for Sweden is stable and high is that

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Denmark and Sweden share a common border. In Scandinavia, cross-border cooperation has been promoted since the 1950s, when the Nordic Council was founded. The Treaty of Co-Operation between Denmark, Finland, Iceland, Norway and Sweden (Treaty of Helsingfors) in 1962 provided a basis for cooperation in legal, cultural, social, economic, transport and environmental matters (Malchus 1986 in Perkmann 2003). The Øresund region is a border region divided by the Danish and Swedish sea border. It is one of the many European border regions created by the fine-meshed web of European borders (Yndigegn 2011). The region is recognized as a European innovation leader, capturing 43 per cent of private R&D funds invested across Denmark and Sweden. Notable achievements of cross-border cooperation in enterprise include the Medicon Valley Alliance, a cluster of life sciences academics and the biotech industry, as well as innovation networks and clusters in ICT and low carbon technology. The international competitiveness and connectedness of the region is enhanced by Kastrup airport, which is the largest in the Nordic countries. It serves both Zealand in Denmark and southern Sweden with excellent transport links in both directions (McEwen and Petersohn 2015).

The GL index for the Czech Republic was the highest in 2008, perhaps because the global financial crisis in 2008 did not significantly affect the Czech banking sector. Due to its massive deposit base, the Czech banking sector did not suffer from a lack of liquidity during the crisis. In contrast to most other European countries, the Czech government did not have to provide any subsidies to the banking sector (Babicky 2010). From 2010, it became lower and stable compared to previous years: it might be that as other European countries recovered from the economic crisis, Denmark started to do more business with the other countries.

The GL index for Italy shows a slight decrease trend after 2011, probably because Italy's production levels are now lower than a decade ago (Austrian Foreign Ministry 2016). Nevertheless, its production is still among the top ten countries in the world.

Its yearly furniture consumption is more than 100 billion dollars, making it one of the eight major furniture consumption countries in the world (Renda et al. 2014).

The GL index for Austria is the second highest and has been stable since 2009 because relations between Austria and Denmark are excellent. The two countries support each other and cooperate at the multilateral and bilateral level (Europe integration foreign affairs 2016). Both countries are full members of the Council of Europe, the Organisation for Economic Co-operation and Development, and the European Union (Council of Europe 2016).

The GL index for Germany is stable and shows a slowly increasing trend for two reasons. Firstly, it shares a common border with Denmark. Cross-border cooperation brings together the communities on both sides of the border. It helps to transform the border into a possibility for development (Jarvio 2011). Interreg (inter-regional cooperation) cross-border cooperation programmes will promote cross-border cooperation, fostering the growth of the region in the areas of economics, employment, education, tourism and culture by funding cross-border innovative projects. These projects seek to create positive change for the German-Danish cooperation. During the 2014–2020 funding period, 90 million euros of EU funding will be invested in cross-border innovation (50 companies or institutions supported for the development of new or improved products), sustainable development, employment (15 companies developing new green products) and training (10.000 participants in cross-border activities, 1.000 participants in youth training programs) (European Commission 2014c; Interreg Deutschland-Denmark 2016).

Secondly, furniture production and consumption in Germany shows a growth trend. Germany is the best performer, with a value of furniture output higher than a decade ago. According to Eurostat data, there are over 9.000 furniture manufacturing companies operating in the German furniture manufacture sector. Italy used to be the first producer in Europe with 20.000 companies, mainly SMEs; it was surpassed by

Germany after 2012 (Tracogna 2013). The yearly furniture consumption in Germany is more than 100 billion dollars, making it one of the eight major furniture consumption countries in the world (Renda et al. 2014).

The GDP of these five countries is not the important factor affecting their IIT. The GDP curve does not show the same pattern as the curve of the GL index. The GDP of Germany is the highest, fluctuating between 3.000 and 4.000 billion dollars from 2006 to 2015. This is much higher than the other countries. However, the GL index for Germany is not the highest during these years. The GDP of Italy is the second highest, fluctuating between 1.500 and 2.500 billion dollars during the ten years. However, the GL index for Italy is not the second highest. The order of the GDP of the remaining three countries is Sweden, Austria and the Czech Republic respectively, each within 500 billion dollars. The order of the GL index for these three countries is different from their GDP: Sweden was the highest after 2009; Austria was the second highest after 2010; the Czech Republic was the highest in 2008, but became the lowest in 2015. In addition, when look at the development trends of the income/capita of these five countries, all the five countries shows increase from 2006 to 2008. After that they all start a little fluctuation until 2015. This kind of trends is also different from the trends of the GL index of these five countries (Table 7.3, Figure 7.6 and 7.7).

Figure 7.7 GDP in constant price of five major trade partners of Denmark, 2006-2015
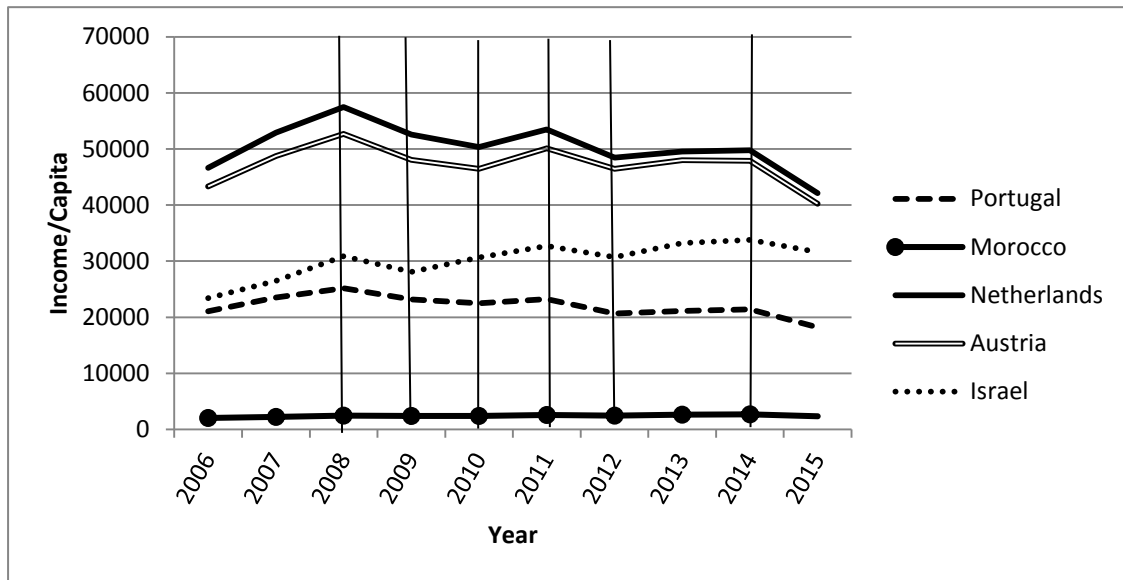(Units: US dollar in billion)
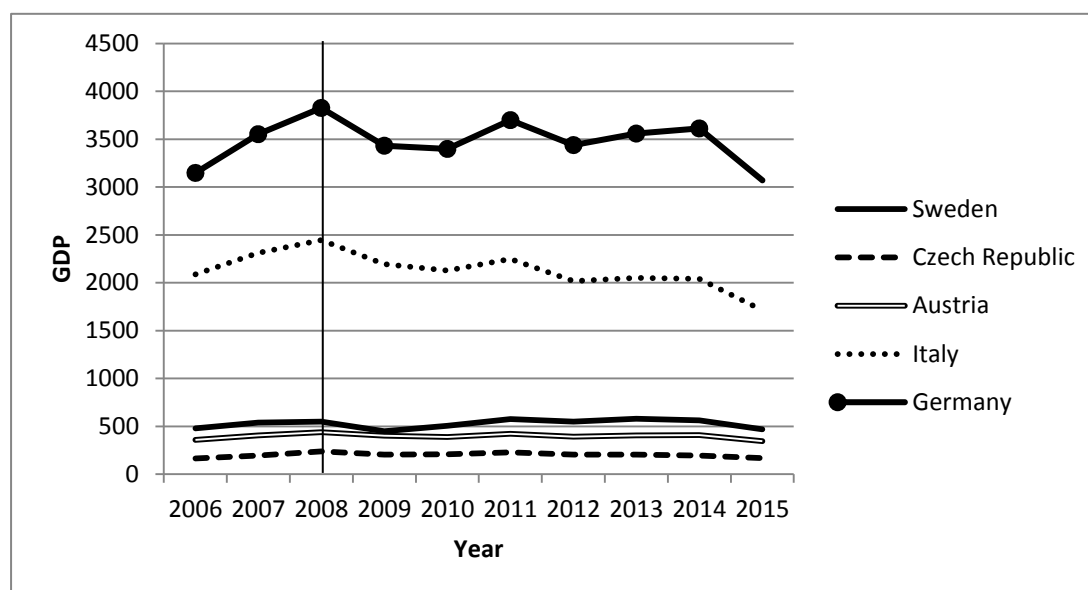
Source: IMF, 2016 (own calculation from national currency to US dollars)

The income/capita of these five countries is not the important factor affecting their IIT: the order of income/capita is not the same as the order of the GL index. The income/capita of Sweden is the highest, fluctuating between 5.000 and 6.000 dollars from 2006 to 2015, but the GL index for Sweden becomes the highest after 2009. The countries with the second and third highest income/capita are Austria and Germany respectively, fluctuating between 4.000 and 5.000 dollars during the ten years. While the GL index for Austria is the second highest since 2010, the GL index for Germany is not the third highest. The country with fourth highest income/capita is Italy, which fluctuated between 3.000 and 4.000 dollars. The last is the Czech Republic, which fluctuated around 2.000 dollars. However, the GL index for these two countries does not follow exactly the same pattern as their income/capita. Furthermore, the developments of the income/capita of all the five countries are in general stable and similar. For example, from 2006 to 2008, they all increased. From 2008 to 2009 they all decreased. In the rest of years, it also exhibits similar trends. Therefore, the pattern

of the income/capita of these five countries is also different from their pattern of the GL index (Table 7.3, Figure 7.6 and 7.8).

Figure 7.8 Income/capita in constant price of five major trade partners of Denmark, 2006-2015(Units: US dollar)
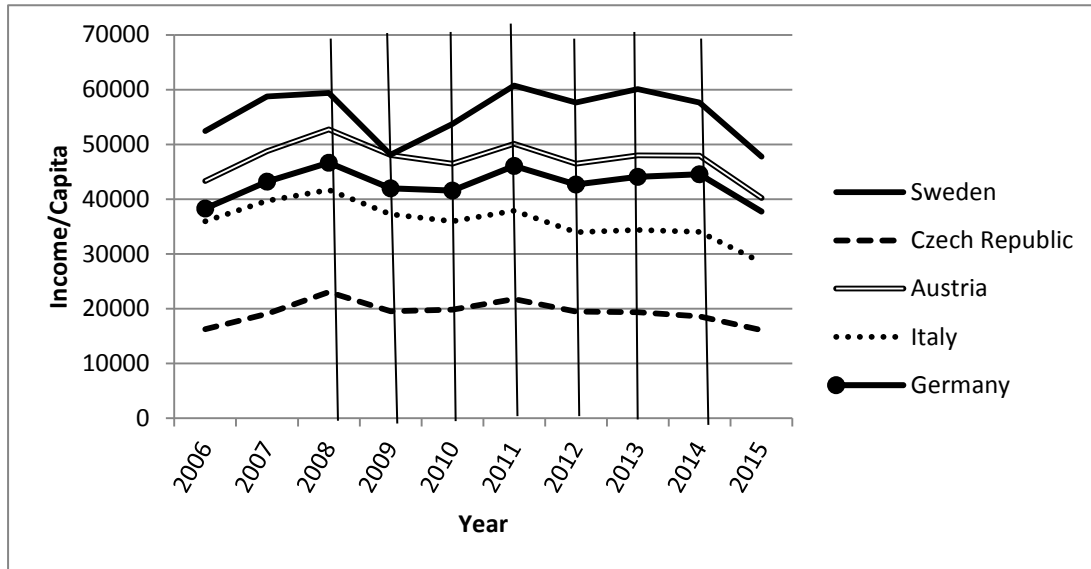
Source: IMF, 2016 (own calculation from national currency to US dollars)

Both geographic distance and common borders of these five countries are important factors affecting their IIT: all five countries are inside Europe, and Sweden shares a common border with Denmark (Figure 7.9).

Figure 7.9 Map of the five major trade partners of Denmark
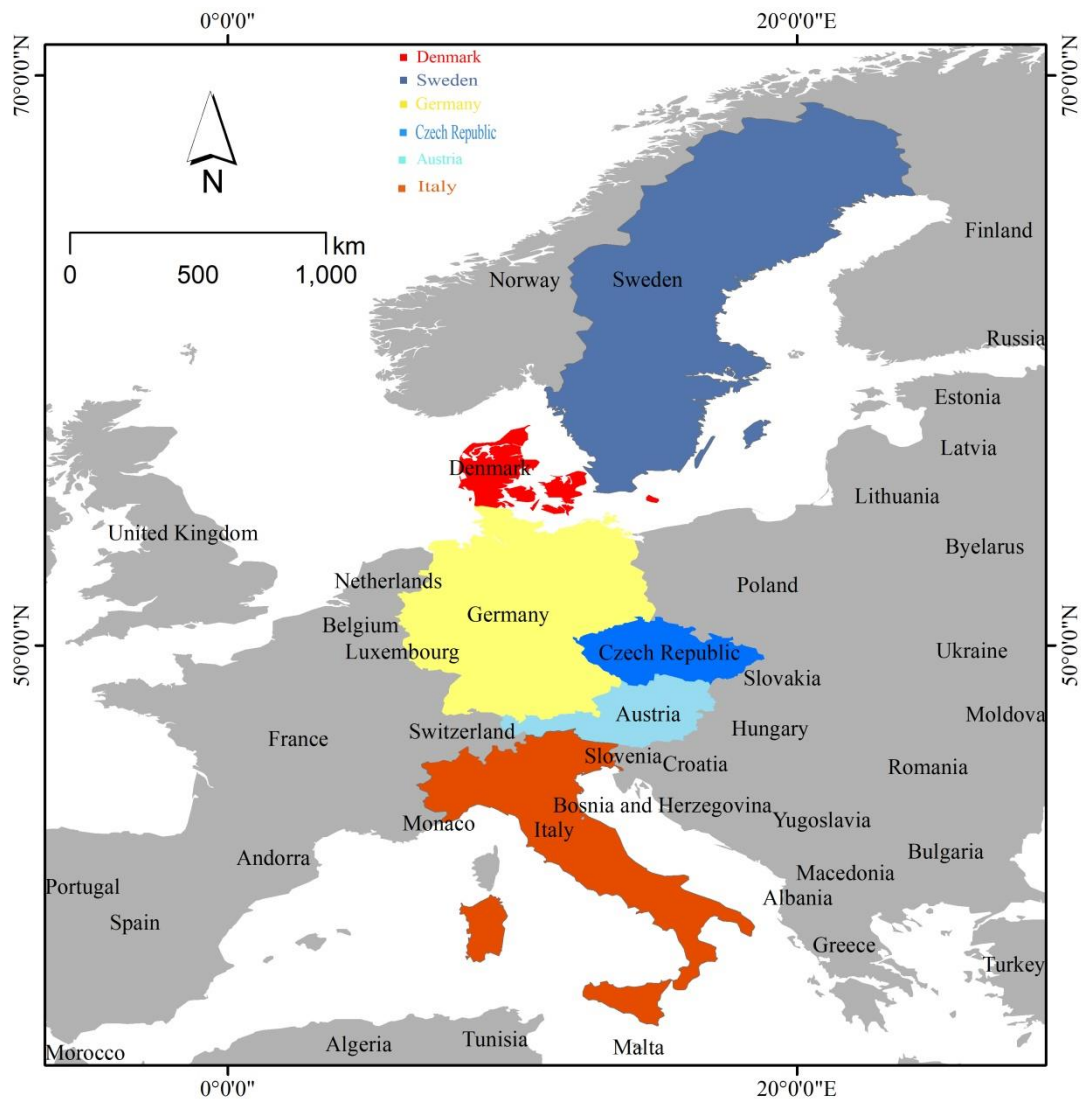
Source: made by the author.

According to the literature, GDP, income/capita and common border should have a positive effect on IIT. Geographic distance should have a negative effect on IIT (Ekanayake 2001; Balassa 1986; Clark and Stanley 1999, Sawyer et al. 2010). The results of the five major trade partners show that only common border and geographic distance are consistent with the literature. Common border affects IIT positively; geographic distance affects IIT negatively. This could be because Denmark's main import and export market is Europe. The five most significant nations in terms of

Danish furniture imports are Italy, Poland, Germany, Sweden and China. Among them, only China is Asian: the rest are European countries. Furthermore, Denmark is one of the countries, together with Germany, Sweden and Norway, with a high import penetration from Central Eastern Europe (CSIL 2014; Hedemann and Nissen 2013). The top ten Danish furniture exports are all to European countries, except the USA. Norway is Denmark's largest export market, followed by Germany, Sweden, France and the UK (Ministry of Foreign Affairs of Denmark 2016). GDP and income/capita are not consistent with the literature: it could be that this result only shows the particular situation of the five major trade partners. It does not represent the complete situation in the industry.

7.2.2 IIT analysis of Denmark by multiple linear regression analysis

To look at the overall situation of IIT in Denmark, multiple linear regression analysis has been carried out.

Table 7.4 Multiple linear regression of Denmark with GL index as dependent variable, 2006-2015

Independent variable	Coefficient	Standard error	Z	P>|z|
GDP	-8,87e-06	0,000012	-0,74	0,458
Income/capita	-2,50e-07	1,19e-06	-0,21	0,834
Geographic distance	-0,0000302	9,61e-06	-3,15	0,002
Common border	0,3615681	0,1448959	2,50	0,013
_cons	0,4176072	0,0667076	5,83	0,000
R-square=0,4540 (95% confidence interval)				
Number of obs = 260 Number of groups = 26				
Wald chi2(4) = 22,97 Prob > chi2 = 0,0001				

Source: result from Stata/SE 12.1

The result of the regression is considered significant to explain IIT. If the degree of freedom is 200, R-squared equal to 0,215 is acceptable, and if the degree of freedom is 300, R-squared equal to 0,176 is acceptable (Arkin and Colton 1963). The degree of

freedom of my analysis is 255 (260-5), which is between 200 and 300. This means the acceptable value of R-squared should be between 0,176 and 0,215. R-squared in my analysis is 0,4540, which is higher than the acceptable value. Therefore, the result is significant. It means this model explained 45,4 per cent of IIT. Furthermore, Wald chi2(4) is equal to 22,97. This is not large, since Prob > Chi2 is equal to 0,0001, which is lower than 0,05. This means that some of the independent variables should be significant (Table 7.4).

Geographic distance and common border are significant factors affecting IIT, because their P-values are 0,013 and 0,020, which are less than 0,05. GDP and income/capita are not significant, since their P-values are 0,389 and 0,890, which are higher than 0,05 (Table 7.4). Therefore, the regression model can be constructed as follows based on the coefficients of geographic distance and common border (Table 7.4):

$$Y = -0,0000302Z_1 + 0,3615681Z_2 + 0,4176072$$

In the model above, geographic distance has a negative sign, which means it has a negative effect on IIT; common border has a positive sign, which means it has a positive effect on IIT.

According to the literature, GDP, income/capita and common border should have a positive effect on IIT (Ekanayake 2001; Balassa 1986; Clark and Stanley 1999, Sawyer et al. 2010). Geographic distance should have a negative effect on IIT. Therefore, the results for geographic distance and common border are consistent with the literature, but GDP and income/capita are not. The reasons why some of the variables are not consistent with the literature are exactly the same as have been discussed in the regression analysis of IIT in Spain. Therefore, they will not be repeated. The reasons why geographic distance and common border are important factors affecting IIT have been discussed in the analysis of the five major trade partners of Denmark.

GDP (measures market size) is not the important factor affecting IIT. Denmark does not have both high imports and high exports with countries with a large market size: European exports are increasingly aimed at emerging markets outside Europe, while intra-European trade is growing (CBI ministry of foreign affairs 2015). However, these emerging markets are not countries with a large market size. Among the 26 trade partner countries of Denmark included in this regression analysis, only India and China are from the BRIC countries with a large market size as emerging markets (Appendix 1). Though China was the top import country of Denmark in 2015 (The Statistics Portal 2016d), its exports to Denmark were not that high, being around 10 to 40 times lower than its imports (appendix 1). This leads to its GL index being no more than 0,1 from 2006 to 2015 (appendix 1). Therefore, the IIT between China and Denmark is low.

Income/capita (measure stage of development) is also not an important factor affecting IIT, as Denmark has a lot of two-way trade with less developed countries. As mentioned above, European exports are increasingly aimed at emerging markets outside Europe, which are less developed countries without high income/capita. Furthermore, Denmark shows a growth trend in imports as a result of its outsourcing to less developed countries in the eastern European region. This led furniture imports to rise continuously after 1995. In 2010, Danish furniture imports had a value of DKK 8,2 billion, being 13 per cent more than 2009. This growth was almost exclusively related to imports from China, Poland, the Baltic States and other eastern European low-cost countries, accounting for more than half of furniture imports (Hedemann and Nissen 2013).

7.3 Comparison of IIT in Spain and Denmark

The five major trade partners of Spain are Portugal, Morocco, the Netherlands, Austria and Israel. Among them, Portugal, the Netherlands and Austria are European

countries, while Morocco is an African country and Israel is in the Middle East. The five major trade partners of Denmark are Sweden, the Czech Republic, Italy, Austria and Germany. All five are European countries. The difference between the two countries is that Spain's major trade partners include non-European countries. Spain is making use of the advantage of the Mediterranean Sea, since Morocco and Israel are two countries in the Mediterranean area. Spain has signed Euro-Mediterranean Association Agreements with the two countries. SSS and MoS projects further stimulate business between Spain and these two countries. Therefore, the IIT in Spain is more diversified than in Denmark.

Geographic distance and common border are important factors affecting the two countries' IIT in both analysis of the five major trade partners and multiple linear regression for the whole industry. This could be because Europe is the main market for Spanish and Danish furniture.

GDP is not an important factor affecting the two countries' IIT in the analysis of the five major trade partners. This may be because the analysis only shows the key points of the five major trade partners and does not reflect the general situation of the whole industry. In the multiple linear regression analysis of IIT in the whole industry, the result is different. It is not important for Denmark, but it is important for Spain. This could be because Denmark does not have much two-way trade (import and export) with countries with high GDP, but Spain does. This is also a reflection of Spain's trade diversification.

Income/capita is not the important factor affecting the two countries' IIT in either analysis of the five major trade partners or multiple linear regression for the whole industry. The reasons are the same for the two countries: they conduct a lot of two-way trade with emerging countries that do not have high income/capita. In addition, their outsourcing to less developed countries shows an increasing trend. This trend further increases imports from low-cost countries.

7.4 Summary

Based on the above analysis, it can be concluded that IIT does affect the location strategies in the furniture industry in the two countries. Geographic distance and common border are important for both countries, leading to them both having frequent imports and exports with European countries. Therefore, they are competing for the European market. The production, design and transportation situation in the EU is at the forefront of the world's furniture industry: there are opportunities for the two countries to access this good environment to improve competitive advantages in these respects.

Furniture production is flexible and production technology is advanced in the EU. Furniture manufacturers can benefit from these aspects, as process innovation is an important competitive edge for them. Product customization and differentiation can be increased through flexible production and advanced technology. The overall level of furniture quality may be enhanced. The furniture manufacturers will invest in upgrading and automating their production processes through new engineering solutions (Renda et al. 2014; EESC 2011in Vasile and Radu 2013). Furthermore, western European firms have been restructuring their production processes, investing in new plants in low-wage countries or outsourcing part of their activities to those areas to gain price competitiveness (Renda et al. 2014). Both Spain and Denmark have done this: they share a trend of outsourcing to less developed countries.

Leading design and research centres are located in the EU. EU furniture manufacturers are trendsetters at a global level (Renda et al. 2014; EESC 2011 in Vasile and Radu 2013; IPeuropAware 2009).

Transportation should be very efficient in the EU, because the cooperation among European suppliers, producers and distributors is very closed and smooth. An important asset of the European furniture industry is that it works closely with suppliers of new materials and new technologies. All sections of the furniture

production value chain are presented in the EU. As a result, EU furniture manufacturers can count on a variety of inputs and on a wide network of companies and qualified staff (Renda et al. 2014). Integration of pre- and after-sales services and quick distribution with minimal stock-keeping are among the competitive advantages in the furniture industry in the EU (EESC 2011 in Vasile and Radu 2013).

However, this kind of situation is also a threat for the two countries' furniture industries in because it leads to very strong competition.

Chapter 8. Concluding remarks

8.1 Summary of the findings

The main objective of the thesis is to analyse the most important factors in the furniture industry's location strategies in Spain and Denmark from 2006 to 2015. The research question examines how the furniture industries in Denmark and Spain each compete for the global market through location strategies of production, design and transportation. The research was conducted from the perspective of economic geography, while the research methodology combined both qualitative and quantitative methods. There are two objectives for qualitative research: One is to identify the important factors affecting the macro location strategies of the furniture industry; the second is to determine the micro location strategies of the companies in the clusters. The objective of the quantitative research is to ascertain the important macro geographic economic factors affecting both countries furniture industries using the IIT by GL index and multiple linear regression analysis.

In this conclusion, the results of the analysis and whether they were consistent with the three hypotheses of this dissertation were discussed.

8.1.1 Conclusions in relation to the first hypothesis

The first hypothesis is that production, design and transportation are important elements affecting the competitive location strategies in the furniture industries in Spain and Denmark; the analysis is done by companies in the clusters.

The macro analysis of the furniture industry shows that production and design are important factors affecting the competitiveness of the furniture industry in the two countries due to the following reasons. In Spain, furniture production is in decline. Therefore, Spain is trying to encourage furniture production through direct financial aid to the company. However, in Denmark, production is stronger caused by

increasing demand. The two countries are competing for exports to gain competitive advantages in international business. In this way, they can increase their production. They are also trying to seek cost advantages in the input of production: raw material, capital and labour. Meanwhile, design is one of the key factors which they consider will improve their competitiveness. The detailed conclusion can be seen as follows.

Both production and consumption are weaker in Spain than in Denmark. Production in Spain has steadily declined since 2007; this is not simply caused by outsourcing. It is also caused by structural difficulties, a declining demand in the furniture market and a strong contraction in value added. Consumption in Spain also declined after 2007; this is because they are still struggling as a result of the economic crisis in 2008. Their unemployment is high (24,8% in 2012) which has a negative effect on the economy and thus leads to a fall in consumption. However, in Denmark the production decrease is only caused by outsourcing to less developed countries. The consumption in Denmark is stable, fluctuating between 1.500 and 1.600 million euros since 2009; this is due to their low rate of unemployment (7,5% in 2012). In addition, continued consumer interest in home decoration and renovation might cause a further furniture sales rise.

An analysis of the amount of imports and exports shows that international business is more important for Denmark. Both countries mainly import from Europe. Spain imports more furniture than Denmark, and is one of the top furniture importers in the world. In 2013, their import was 2.597,5 million US dollars, ranking them 13th globally. However, Denmark has a larger import intensity than Spain; for example, in 2012, their import intensity was 0,68, but in Spain it was 0,35. This means that Denmark is more focused on imports than Spain; they have more interactions with other countries. Meanwhile, it was found that the two countries compete for exports. The main export markets of the two countries are the same: the European market. Denmark is one of the largest exporters; its export in 2013 was 2.175,5 million US

dollars, which ranks 15th in the world. The export intensity is much higher in Denmark; for example, in 2012 their export intensity was 0,82, but in Spain it was 0,38. This means that Denmark relies more on exports. It also means that the degree of globalisation is higher in Denmark. However, the difference between the two countries is becoming smaller. In 2003, the export difference between the two countries was around 600 million euros. In 2012, the difference was only around 300 million euros. This means the exports of Spain are becoming stronger. At the same time, Spain is trying to advertise their export market to emerging countries to increase their sales. This helps to diversify their sales markets and create new business opportunities for furniture from Spain.

Raw material, methods of accessing capital, employment situations and design were analysed as the main inputs of furniture production in the two countries. The results of the raw material analysis show that both countries used similar strategies to access the raw materials. They both use wood, particularly softwood, as the main raw material. Simultaneously, both countries must import wood from other countries to supply furniture production. Outsourcing is a method both countries use to access low cost raw materials. In the analysis of the methods of accessing capital, both countries can access capital through investment from subcontractors, attracting international investment, and mergers and acquisitions. There is one difference between the two countries: The Spanish furniture companies receive direct financial aid from the government. In Denmark, the furniture companies can only get indirect support. This is because furniture production in Spain is in decline; they need to use direct financial aid to encourage companies to produce goods. An analysis of the employment situation shows that the number of employees consistently decreased in both countries from 2003 to 2012. This is because both countries seek low cost labour in less developed countries by outsourcing labour or offshore employees. There are also other reasons for the decreasing number of employees. One is that the strong

competition from low cost countries led to the decreasing number of enterprises. Another is that the improvement in production technologies in the two countries caused less demand for employees.

The result of the design analysis demonstrates that there are some common characteristics of the furniture design styles in the two countries. For example, the designs of both countries are affected by human factors such as architecture, culture and art. However, the two countries also have some different design features. For example, Spanish furniture design pays attention to decorations, whereas Denmark's furniture design focuses on the natural qualities of the furniture and its minimalist features; additionally, Denmark focuses more on the design than Spain. Denmark has the largest share of R&D personnel in Europe (Renda et al. 2014). Although the R&D in Spanish designs is not as high as Denmark, it is constantly increasing.

In the analysis of the companies in the clusters, the first hypothesis is not completely confirmed for the following reasons. The result of company research shows that production, design and promotion are important. However, transportation is not as important. The reason is that the companies interviewed in Spain simultaneously focus on production, design and promotion. Large companies in Denmark focus on these three aspects as well. Transportation is less important than these three factors since it does not involve the use of special techniques. Companies can change their transporter at any time or simply use agencies instead. However, from the macro point of view of the cluster, transportation is important since producers' efficient consolidation of transport can lower the cost of the whole cluster.

8.1.2 Conclusions in relation to the second hypothesis

The second hypothesis is that agglomeration, cluster, linkage and subcontracting are important factors affecting the location of competitive strategies in furniture

companies in the two countries. The objective of this hypothesis is to test whether agglomeration, cluster, linkage and subcontracting are important for the companies in the clusters. The methods used in this analysis have been semi-structured interviews and questionnaires completed by companies in Spain and Denmark.

The result confirms this hypothesis: The four factors (agglomeration, cluster, linkage and production subcontracting) are important for companies in the clusters in the two countries. The regional clusters in Valencia, Spain and the national cluster in Denmark can be taken as an agglomeration, although they have some features of the cluster because the companies in the two clusters rarely cooperate; this means they locate randomly. The regional cluster in the Skive and Salling peninsulas in Denmark has almost all the features of a cluster; consequently, it is a standardised regional cluster. Agglomeration and clusters are vital because all the companies in them can generally be profitable. For example, although there are many problems in the regional cluster in Valencia, Spain, the companies can still receive information and other support from the government and relevant institutions. Linkage is important since the companies have to have some relationship with the other actors in the cluster. Value chains can help to identify competitive advantages obtained through the linkages. The detailed conclusions about this hypothesis are as follows.

In both countries, the most competitive regional clusters are not the areas where most companies are located. The major locations of furniture companies in Spain are Andalusia, Catalonia, Valencia and Madrid. Even though the regional cluster in Horta, Valencia is not home to the most companies, its contributions to the furniture industry in Spain are the highest. It represents 60 percent of the total production of furniture in the Valencian Autonomous Region, 30 percent of Spain's total production and 50 percent of Spanish exports. Denmark is similar; most of the companies are located in South Jutland, East Jutland and North Jutland. The regional clusters in West Jutland are not among the regions in which most companies are located. However, there are

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some fundamental extra-firm intra-industry capabilities, such as high trust and localised learning in the regional clusters in West Jutland. These are the main reasons that Danish furniture manufactures are not as affected by strong global competition as other industries (Hedemann and Nissen 2013).

The positive performance in the regional clusters in Spain and Denmark produced positive externalities. These externalities attract furniture companies to locate in them. However, companies establish their location in the clusters simply because the owners were born there. Therefore, the positive externalities mainly refer to the successful knowledge existing in the cluster. People born there can observe the situation in the cluster and be affected by its environment; finally, these lead them to run their own business in the cluster. In the national cluster in Denmark, the companies normally locate independently; the owners also choose their location based on where they were born. This is due to two factors: The idea that owners consider locating close to other producers is irrelevant since cooperation with the producers nearby is not an important strategy they consider; the other is that they have enough capacity to develop a long distance production network themselves. Alternatively, on the other hand, the independent location causes them to be self-sufficient. In short, all the owners of the companies in the two countries chose their location in the place they were born. This means that the location decision is in general based on whether the owners are familiar with the environment.

There are some similar advantages in the clusters in the two countries such as long-term relations and better cooperation with a national partner due to the common culture and language. However, the two countries also have comparative advantages as follows.

There is one comparative advantage in the regional cluster in Spain and national cluster in Denmark: Their promotion strategy is better than the regional clusters in the Skive and Salling peninsulas in Denmark. The reason is that there are not any

institutions responsible for the promotion of the regional cluster in the Skive and Salling peninsulas.

Three comparative advantages were found in the national and regional clusters in Denmark. One is the consolidation of transport; in the national and regional clusters in Denmark, all the producers consolidated their transportation. However, in the regional clusters in Spain, none of the companies consolidate their transportation. Therefore, consolidated transport in Denmark reduced costs more than Spanish transport. The second is that little stock in Denmark causes sales to be more flexible. Both of the countries used Just in Time to control the process of sales and delivery. Nevertheless, in Spain there is no stock. In cases where customers need the product in a hurry, they cannot deliver it at once. The third is the strong brand and reputation in the Danish national cluster; there are strong brands with more than one hundred years of history represented by Fritz Hansen. However, there is no such brand in Spain.

Three factors found in the clusters of both countries have simultaneous positive and negative effects on the companies: indirect support from the government, cooperation between producers and flexible production (including cooperation in production and short distance outsourcing). Generally speaking, by using these advantages, the companies can lower costs and increase innovation. However, on the other hand, all the companies in the cluster can make use of them; this does not make the company exclusively different from others. Therefore, the companies have to make a trade-off between cost reduction and product differentiation. They have to consider whether they should apply these strategies based on their capacity and the differentiation level of the product. If the companies have enough capacity or they want their product to be as differentiated as possible, they can produce independently without cooperating with the other producers or getting support from the government.

There are three factors that can be advantageous or disadvantageous based on the situation. These factors are direct financial aid, diversification of the product and

access to human resources. Direct financial aid is a strategy used by the Spanish government but not by the Danish government. Spain is facing a decline in furniture production. They need to directly subsidise the company to encourage production levels. Denmark does not have such a production problem, therefore, it is not necessary for Denmark to do the same. At the same time, Denmark must let the market develop independently to keep competition in the market healthy. Diversification of products is a characteristic of firms interviewed in the national cluster in Denmark. It is not a characteristic of the companies in the regional clusters in Spain. On one hand, companies can diversify their products and satisfy more customers. On the other hand, this can decrease the specialised image of the companies. Access to human resources is important for the regional cluster in the Skive and Salling peninsulas in Denmark. Nonetheless, the large producers in the national cluster in Denmark and the regional cluster in Valencia do not focus on this strategy. This is because the employment situation is different from country to country and from region to region. It also depends on the company's requirements of the employees. For example, in Spain, the unemployment rate is high; at the same time, the companies interviewed are strong producers. The job position of these strong producers should be very competitive. Therefore, the bargaining power of the companies should be high, and access to sufficient human resources should not be a problem.

There are different strategies to outsourcing in Spain and Denmark. Spain outsources to high wage countries beside Spain. Denmark outsources to low wage countries beside Denmark. Nevertheless, it is difficult to say which strategy is more competitive since the purposes of the two countries are different. Spain outsources to developed countries in Europe because they consider the quality of the product to be of utmost importance and they want to avoid the risk of outsourcing outside Europe.

However, in Denmark, they want to lower the cost by outsourcing to less developed countries.

There are four features in the following that were found to be different from the literature review about agglomerations and clustering. The first is that companies in the regional cluster in Valencia rarely cooperate. The reason is that the regional cluster in Valencia is called a cluster but instead has the characteristics of an agglomeration. Companies in the agglomeration locate randomly without cooperation. Therefore, it is not necessary for the Spanish companies to cooperate. The second is that innovation has a strong impact not only on SMEs, but also on large producers. The third is that it is not only SMEs that form the regional clusters in Spain and Denmark; many large producers are also located inside the clusters. These large producers are not totally independent; they have connections with the government, suppliers and distributors, among others. Some SMEs are also relatively self-sufficient since they do not cooperate with other producers to produce goods. Fourth, Spanish companies outsource to the most advanced countries with the highest costs. The reasons why these three features are not the same as the literature review (Grzegorzewska et al. 2014; Baptista and Swann 1998; Engelstoft et al. 2006; Beerepoot 2004; Marshall 1920 in Giuliani 2005, Bell 2005 and Folta et al. 2006; Scott 2006; Molotch 1996 in Drayse 2008; Campos et al. 2008; Fogliatti et al. 2010; Gereffi & Korzeniewicz 1994, Kessler 1999 and Scott 2002a in Scott 2006) may be that this research only investigated certain furniture companies and clusters in the two countries. It does not show the overall situation of the global furniture industry.

8.1.3 Conclusions in relation to the third hypothesis

The third hypothesis is that geographical distance, common borders, GDP and income/capita are important determinants of IIT in the two countries. The objective of

this hypothesis is to test which of these four factors are important macro geographic economic factors affecting IIT in the two countries. GL index and multiple regression analysis have been performed.

Concerning this hypothesis, the findings identify some differences. Geographical distances and common borders are critical variables for the IIT in the two countries in both the GL index and multiple linear regression analysis. For both countries, GDP is not important in the GL index analysis. In the regression analysis, it is important for the IIT in Spain, but not Denmark. Income/capita is not important for either of them in the GL index or the regression analysis.

In Spain, the IIT is more diversified than in Denmark for the following two reasons. First, all the five major trade partners of Denmark are European countries. However, in the five major trade partners of Spain, only three of them are European countries, whilst two are non-European countries. Spain has much two way trade with these two non-European countries because they can use the transportation advantage of the Mediterranean Sea. Second, the result of the regression analysis demonstrates that Spain undertakes frequent two way trade with high GDP countries. This phenomenon is not found in Denmark.

Income/capita is not important for either country due to their high incidence of two-way trade with emerging countries that do not have high income/capita. In addition, outsourcing to less developed countries is an increasing trend. This trend further raises import levels from low cost countries.

The two countries compete for the European market due to geographical distances; additionally, common borders are important to both, and the main import and export markets for both countries are Europe. In Europe, production, design and transportation are very advanced. This is both an opportunity and a threat for the two countries. Whilst both countries can access this advanced environment in the European Union, the competition in such an area is strong.

8.1.4 Overall conclusions

In general, the analysis of the macro situation of the furniture industries of the two countries shows that Denmark has advantages in production and design. This is due to their economic situation being more stable than Spain. Their increasing levels of consumption and export will lead to higher production levels. At the same time, Denmark focuses more on the design than Spain due to their heavy investment in R&D. To compete with Denmark, Spain is trying to remedy their production decline by providing direct financial aid to these companies and encouraging furniture exports to emerging countries. Furthermore, Spain is putting more effort into its design-phase R&D. The analysis of the micro situation of the furniture companies in the clusters in the two countries shows that Denmark has advantages in transportation due to high consolidation levels. In this way, they reduce more costs than Spain. However, the companies in the two countries do not have comparative advantages in production and design due to the companies' differing situations. Therefore, their strategies of production and design will be different. It is not possible to say which strategy is better. In addition, it was found that promotion is also an important factor that affects the competitiveness of the furniture companies in the two countries.

8.2 Contributions of this dissertation

This dissertation is a detailed location strategy analysis of the furniture industry in the two countries from the viewpoint of the macro situation of the industry, a microanalysis of the companies in the clusters and a macro analysis of the IIT from 2006 to 2015. The analysis contributes to the literature in both the research method and its content.

8.2.1 Contributions in the method

The method used in this thesis is different from the literature review of the geographic economics. For the qualitative research, there are mainly three differences. First, there is no previous analysis comparing the furniture industries in Spain and Denmark. They have only investigated the furniture industries in either Spain or Denmark, but not the two countries at the same time (Santisteban 2006; Robertson and Jacobson 2011; Zayas 2008; Maskell 1998 et al.; Howells and Hedemann 2008; Hedemann and Nissen 2013; Lorenzen 1999). Second, previous research has only conducted qualitative research of the furniture clusters or quantitative research of the IIT (Santisteban 2006; Robertson and Jacobson 2011; Maskell 1998 et al.; Hedemann and Nissen 2013; Lorenzen 1999; Havrylyshyn and Civan 1983; Caves 1981; Ekanayake 2001; Loertscher and Wolter 1980 in Balassa 1986); this analysis combined both of them. Third, previous research about clusters focused only on the regional clusters (Santisteban 2006; Robertson and Jacobson 2011; Zayas 2008; Maskell 1998 et al.; Howells and Hedemann 2008; Hedemann and Nissen 2013; Lorenzen 1999). However, this research also analysed Denmark as a national cluster. In the quantitative research of the IIT, no studies used the GL index to identify the major trade partners of the countries; its only use has been the dependent variable of the econometric model (Havrylyshyn and Civan 1983; Caves 1981; Lundberg 1982 in Balassa 1986; Blanes 2005; Ekanayake 2001; Loertscher and Wolter 1980 in Balassa 1986). Nevertheless, this analysis figured out the five most competitive trade partners of the furniture industries in the two countries by using the index. In addition, the GLS regression method was used, which is different from the regression method used in other research (Havrylyshyn and Civan 1983; Caves 1981; Lundberg 1982 in Balassa 1986; Ekanayake 2001; Loertscher and Wolter 1980 in Balassa 1986).

8.2.2 Contributions in the content

From the point of view of the content, it compared the furniture industries in the two countries thus allowing the two countries to learn from each other. The contribution of the analysis is mainly in the following three points.

First, it identified that the strategies used in the clusters in the two countries are different. The strategies of Spanish companies focus on the quality; this strategy is mainly reflected in outsourcing and production. They outsource to high cost countries in Europe beside Spain, including Sweden, Denmark, France and Italy, among others. This way, they can keep their quality high. However, saving costs by cooperating with other producers is not the strategy used by the companies interviewed in Valencia in Spain. The companies are trying to be as differentiated as possible by producing independently. They also use other ways to strengthen their furniture quality such as quality control of the raw material and constant technology innovation. Denmark emphasises the cost advantage and quality at the same time. The reason is that Denmark is a country with high cost. They have to make their cost as low as possible to compete with products from other countries. There are three cost reduction strategies in Denmark. One is the outsourcing and offshore strategy; their outsourcing to foreign countries is to less developed countries with low costs such as the Baltic States, Poland and China. In addition, some of the producers offshored their production in Poland. Second, all the producers save costs by consolidating transportation through one logistics company (LGT). Third, some of the producers in the regional cluster in the Skive and Salling peninsular cooperate in production to lower costs. At the same time, they also attempt to improve their quality by controlling the quality of raw materials, using famous furniture designers and researching furniture functions, etc.

Second, this dissertation discovered the characteristics of the national cluster of Denmark. There is a unified organisation of the furniture industry in the country; they

have one promotion institution to promote the image of Denmark as a whole. There are logistics companies who are responsible for the transportation of the entire country. The promotion is concentrated in larger cities, and production is centralised in small towns. These make the furniture industry in Denmark very efficient, thus improving the competitiveness of the industry.

   Third, this analysis also talked about factors that are not mentioned in other analyses. This research analysed location decisions, which has not been done in other research (Santisteban 2006; Robertson and Jacobson 2011; Zayas 2008; Maskell 1998 et al.; Howells and Hedemann 2008; Hedemann and Nissen 2013; Lorenzen 1999). All of the companies involved chose their locations because their owners were born there. This could be because they have had successful experiences in the region. The locally born owners can learn from these experiences and establish their own companies afterwards. In the long run, these successful experiences become positive externalities which attract more and more producers. At the same time, it could simply be because there is inertia for the owners to stay in the same place. They can better use the resources nearby since they are familiar with the location. This analysis also mentioned two new trends of outsourcing that are not mentioned in other research (Chinguwa et al. 2013; Healey and Ilbery 1990; Campos et al. 2008; Bullard and West 2002; Fogliatti et al. 2010; Gereffi & Korzeniewicz 1994, Kessler 1999 and Scott 2002a in Scott 2006). One is that outsourcing does not always go to low cost countries. This is due to Spanish producers only outsourcing to high cost countries in Europe to maintain their high quality. Another is that there are producers in both countries who do not want to outsource more in the future due to considerations of cost and quality. In the IIT analysis, the five major trade partners of the two countries were identified. It also figured out the differences of the IIT characters between the two countries. It was found that the IIT in Spain is more diversified than Denmark; these have not been identified in the previous analysis of the IIT (Havrylyshyn and Civan 1983; Caves

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1981; Lundberg 1982 in Balassa 1986; Blanes 2005; Ekanayake 2001; Loertscher and Wolter 1980 in Balassa 1986).

8.3 Policy suggestions

The analysis shows that the Spanish government has more control of the companies than the Danish government; this is reflected in several aspects. The Spanish government gives direct financial aid to the companies, but the Danish government does not. In addition, the Spanish government in Valencia tries to solve cooperation problems between producers. However, the Danish government may provide training or other useful information to the company, but they do not solve problems between the companies. The behaviours of the companies are also different in the two countries; all the Spanish companies interviewed in Valencia receive training or access to information from the government. However, in Denmark, although the government does the same, most of the companies do not have any connections with the government, preferring to remain independent. Only the companies in the regional cluster in the Skive and Salling peninsula accept the support from the local government.

8.3.1 Policy suggestions to Spain

The centralised management of the Spanish government about the companies leads to a contradiction between the goals of the government and the companies in Valencia in Spain. The view of the governments is from the macro perspective, they want the whole cluster to have as much cost reduction as possible. Meanwhile, they also hope the companies can cooperate to improve the process and the production technology of the cluster as a whole. However, the view of the companies is from the micro perspective; the companies want to be as differentiated as possible to maximise their

profit. This causes them to resist cooperation since this would reduce their level of distinction.

Neither the government nor the companies are wrong. If they can consider from the viewpoint of the other side, the contradiction between the government and the companies will be smaller. Therefore, the government should identify the needs of the companies first. Some of Spain's large companies do not need this cooperation at all; this is the same as large companies in Denmark since they have enough capacity to develop their own production line. However, a few large companies like to cooperate because they can reduce costs this way. Cooperation should be a proper strategy used by SMEs since most of them cannot survive due to the lack of capital, facility and human resources, etc. Nevertheless, a few SMEs can be self-sufficient because they have strong competences in aspects like branding and design. Therefore, the companies in the cluster can be classified into four categories: independent large companies, cooperative large companies, independent SMEs and cooperative SMEs. For this reason, the government should use different strategies for different kinds of situations. The government can help cooperative companies to improve their level of cooperation or cooperate with companies who have cooperative potential. It is not good to push every company in the cluster to cooperate. Meanwhile, the situation of the cluster is highly related to culture and geographical characteristics, etc. These factors are deep rooted and cannot be changed all at once. Therefore, it is possible that the government could try to control any problems, but not totally solve every problem at once. Furthermore, the companies should have more of a collective consciousness within the cluster. Perhaps the government could attempt to communicate the importance of the cluster concept to the producers. This way, the producers may realise that they can gain some common benefits by taking use of the advantages in the cluster. The common benefits can also improve the economic situation in the entire cluster.

Alternatively, the government can view the cluster in Valencia as an agglomeration; this means that companies do not necessary need to cooperate. They randomly locate in the agglomeration to gain cost advantages in production, transportation and transactions. Therefore, cooperation in transportation should be a good strategy to consider as transportation does not affect the differentiation degree of the companies. This strategy is used in the national cluster in Denmark; they use LGT as the common logistics company of the whole country so that transportation costs are as low as possible. For this reason, the Spanish government could also consider establishing or encouraging one company similar to LGT so that they can consolidate the transportation of the whole cluster to lower costs.

8.3.2 Policy suggestions to Denmark

In Denmark, governments do not have much control over the companies. Most of the companies do not want to rely on information and training from the government, which is available to all companies since it does not make them better off. However, the government can still provide other support that does not affect the degree of differentiation of these independent companies. The support could be establishing networks between experts who are researching the furniture industry and the companies. For example, if the companies communicate with experts doing qualitative research about the furniture industry, the companies can have a clear view of their position in the industry. After that, they can compose strategies that are more applicable to the company. If the companies cooperate with researchers doing R&D research about furniture technology and design, they can improve their products. At the same time, similarly to Spain, the government should communicate the concept of a national cluster to Danish companies. Thus, the companies can understand the

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importance of the cluster. They can consider designing company strategies to benefit the cluster and the company at the same time.

In addition, there is no close connection between the promotion institution and the furniture companies in Denmark. Lifestyle & Design Cluster is the institution responsible for the promotion of the furniture companies in the region of Copenhagen and Herning. However, the connection between the institution and companies is not so deep. For example, Skovby is a member of the Lifestyle & Design Cluster but has only participated in one activity on one day at the institution; this was to support a student who is talented in design, and was only because the CEO of the company was interested in supporting the student (Questionnaire of the CEO of Skovby 2017). Therefore, it is better that the institution and companies have a deeper level of communication. In this way, they can establish a solid and close relationship with each other.

8.4 Research agenda for the next stage

Qualitative research about the furniture industry can be extended either horizontally or vertically. Horizontally, the analysis about the macro situation of the furniture industry and the microanalysis of the companies in the agglomerations could include more countries from South Europe and North Europe in future research. In this way, more generalised characters of the two parts of Europe and differences between them can be identified. For example, Italy could be included as one of the Southern European countries beside Spain. This is due to Italy also being one of the representative European furniture producers (Wang 2012). Sweden may be added as one of the Northern European countries beside Denmark; this is because its furniture industry is one of the two Western European countries (another is Germany) experiencing growth (Renda et al. 2014). Vertically, research about the companies in the agglomerations could be conducted from one specific point of view of the

agglomeration such as culture and trust issues in the cluster. The culture differences may affect the trust situation, for example. This might be one of the reasons influencing cooperation and learning within the cluster. The methods used for these researches could again be interviews and questionnaires.

The quantitative analysis of IIT can be changed into further research about HIIT and VIIT. The index of HIIT and VIIT can be calculated to determine whether the IIT in both of the countries is dominated by HIIT or VIIT. In addition, it could also be possible to identify which macro geographic factors affect the HIIT and VIIT in the two countries using regression analysis.

The research can also be conducted in Spain and Denmark separately without comparison. For Spain, the qualitative research of the companies in the agglomerations can be increased from one regional agglomeration analysis in Valencia to more regional agglomeration analyses in Spain as a whole. This is because the situation in Spain is different from region to region. Therefore, it would be meaningful to identify the different characteristics among the agglomerations. Similar things can be done in Denmark as well. There are two regional agglomerations in Jutland in Denmark; this research only analysed one of them. It would be possible to study another regional agglomeration next time and compare the two of them. The methods used in these studies can be interviews and questionnaires as well.

The quantitative research of IIT can also be done individually for each country. In this way, there are more country-specific characteristics related to geographical economics that can be included as independent variables in the regression model. There is no need to consider whether the country-specific characteristics selected are common characteristics of the two countries. For example, if analysing the IIT in Spain, trade agreements with their trade partners and common languages can be used as determinants of the model.

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Appendix

1. Export and Import in US dollar as well as GL index of Spain and Denmark (2006-2015)

	Spain(36 countries)				Denmark(26 countries)			
Year	Country	Export	Import	GLindex	Country	Export	Import	GLindex
2006	France	514506857	238723783	0,633866	China	6815974	301734476	0,044181
2007	France	705302323	282399946	0,571832	China	10878274	401224530	0,052794
2008	France	718075529	285203831	0,568543	China	12117350	440368708	0,053559
2009	France	645237598	186810443	0,449038	China	7531876	321118834	0,045835
2010	France	515544370	189801873	0,538181	China	10023125	435599072	0,044985
2011	France	505522159	221763903	0,60984	China	12149644	401007009	0,058814
2012	France	494877126	187186713	0,548883	China	15745566	370282628	0,081577
2013	France	588132320	183065423	0,474756	China	11755449	353846735	0,064307
2014	France	559302284	215228401	0,555765	China	20068240	394853395	0,096733
2015	France	505466807	199165020	0,565302	China	17343960	380803898	0,087123
2006	Germany	92131836	388538602	0,383347	Sweden	308181716	267819642	0,929927
2007	Germany	103812542	569213728	0,308495	Sweden	350324322	339883225	0,984873
2008	Germany	101293156	514711709	0,328871	Sweden	323305764	378039643	0,921959
2009	Germany	91008778	352017169	0,410851	Sweden	260067706	287114861	0,95057
2010	Germany	114760843	407719558	0,439292	Sweden	254354567	280261070	0,951542
2011	Germany	136680002	381317860	0,527724	Sweden	276429830	329044038	0,913102
2012	Germany	125249759	305810382	0,581124	Sweden	243021447	308314374	0,881573
2013	Germany	139532550	332253333	0,591508	Sweden	257114356	313997629	0,900399
2014	Germany	182888179	360522999	0,673112	Sweden	250873445	308083334	0,897649
2015	Germany	186506158	336258923	0,713537	Sweden	246521263	264720379	0,964402
2006	Portugal	283870220	309556989	0,956715	Poland	36851765	88446665	0,588224
2007	Portugal	305510441	445027837	0,81411	Poland	47537997	102035468	0,635647
2008	Portugal	317919914	428940277	0,851351	Poland	57384672	128489796	0,617456
2009	Portugal	268843027	371641927	0,839498	Poland	43569155	111299906	0,562658
2010	Portugal	274523930	428228751	0,781282	Poland	40510650	135962020	0,459115
2011	Portugal	284344395	459221901	0,764812	Poland	42950699	166392734	0,410337
2012	Portugal	211783527	333920363	0,776185	Poland	38470619	119750113	0,48629

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2013	Portugal	244516340	349918380	0,822685	Poland	55525610	202380592	0,430588
2014	Portugal	279114976	399450605	0,822662	Poland	58245140	231929128	0,401449
2015	Portugal	230544527	390698244	0,742204	Poland	49415336	206698767	0,385885
2006	UK	113656005	38834042	0,509332	Germany	594141473	150479067	0,404177
2007	UK	133683180	47876937	0,527395	Germany	548140318	166786415	0,466583
2008	UK	130579132	48846294	0,544475	Germany	495929326	170927240	0,512636
2009	UK	81333869	27162921	0,500714	Germany	446078382	158875347	0,525248
2010	UK	80660580	31576713	0,562678	Germany	384087625	151857597	0,566691
2011	UK	88696804	38919538	0,609946	Germany	408306527	165170853	0,576033
2012	UK	74473749	31879590	0,599503	Germany	390037355	144730502	0,541283
2013	UK	102107297	30697149	0,462291	Germany	374012206	170037790	0,625081
2014	UK	126503830	33772089	0,421424	Germany	414697662	173014411	0,588773
2015	UK	111536514	37999452	0,508232	Germany	347130322	154290707	0,615414
2006	Italy	110706320	469903103	0,381345	Italy	37833778	86938177	0,606447
2007	Italy	133526930	582388455	0,373024	Italy	45901128	112862244	0,578233
2008	Italy	113638751	679628422	0,286508	Italy	44666479	104570083	0,5986
2009	Italy	82054599	350317239	0,379556	Italy	32896672	79470071	0,585523
2010	Italy	84315941	362076960	0,377766	Italy	29602189	61074466	0,652918
2011	Italy	94501522	320720020	0,455186	Italy	30507022	63542771	0,648742
2012	Italy	76387195	258540453	0,456141	Italy	25704680	64197439	0,571837
2013	Italy	65744955	252054888	0,413751	Italy	25870497	72752517	0,524634
2014	Italy	72979988	287387081	0,405031	Italy	26230492	73939413	0,52372
2015	Italy	77135157	260368450	0,457092	Italy	20758843	64375279	0,487674
2006	USA	70316731	50684820	0,837755	Lithuania	6811246	48056880	0,248277
2007	USA	67680708	36507361	0,700797	Lithuania	11184255	71992277	0,268928
2008	USA	62136603	30682771	0,661129	Lithuania	10582558	71506508	0,257831
2009	USA	43978560	15629840	0,524417	Lithuania	5572834	60259215	0,169305
2010	USA	43808661	19463184	0,615224	Lithuania	4295439	68448856	0,118097
2011	USA	58061501	21241488	0,535705	Lithuania	7678242	80563516	0,174027
2012	USA	52344297	21625943	0,58472	Lithuania	6788692	88918235	0,141864
2013	USA	69947235	22927492	0,493729	Lithuania	4334423	96868817	0,085658
2014	USA	71384302	32265154	0,622582	Lithuania	4484045	96868720	0,088484
2015	USA	92550663	48001915	0,683046	Lithuania	5757420	77343218	0,138565
2006	Netherlands	63999061	39694433	0,765611	Estonia	6007171	46044666	0,230815
2007	Netherlands	70229010	43300821	0,76281	Estonia	9299193	46604980	0,332683
2008	Netherlands	58775041	39677417	0,806022	Estonia	8217785	46681319	0,299378
2009	Netherlands	38562090	30109683	0,876916	Estonia	17940408	27714600	0,785912
2010	Netherlands	41587896	44467362	0,966539	Estonia	5094893	36323841	0,246019

2011	Netherlands	40567748	34031500	0,912382	Estonia	3550449	48509731	0,136398
2012	Netherlands	42906974	28589357	0,799743	Estonia	4065358	35258959	0,206761
2013	Netherlands	85740773	26887812	0,47746	Estonia	4067553	39720496	0,185784
2014	Netherlands	78940107	39845992	0,670886	Estonia	5828597	53738075	0,1957
2015	Netherlands	76908143	45110865	0,739407	Estonia	4363425	54485268	0,148293
2006	Mexico	41830481	7665892	0,309756	Norway	389278536	66411383	0,291476
2007	Mexico	60538055	7568609	0,222258	Norway	466722283	80728073	0,294924
2008	Mexico	41472639	5303693	0,226768	Norway	504553840	92519827	0,309911
2009	Mexico	21966592	2913658	0,234215	Norway	392550026	61297436	0,270124
2010	Mexico	24154305	4459380	0,311696	Norway	397571914	58491931	0,256508
2011	Mexico	38981312	4732405	0,216518	Norway	450642579	54206772	0,214744
2012	Mexico	38198768	2743727	0,134028	Norway	465988932	42736443	0,168014
2013	Mexico	45137916	1829656	0,077911	Norway	486895936	38266102	0,145731
2014	Mexico	63568262	2288948	0,069512	Norway	501891437	48385095	0,175857
2015	Mexico	56876061	4142076	0,135765	Norway	419748041	44392664	0,19129
2006	Morocco	26951718	42934760	0,7713	Vietnam	348858	27645096	0,024924
2007	Morocco	52640293	45510532	0,927359	Vietnam	487039	35062388	0,027401
2008	Morocco	56013146	32044357	0,727805	Vietnam	181304	38262422	0,009432
2009	Morocco	50194031	30681028	0,758727	Vietnam	266157	36000148	0,014678
2010	Morocco	55043471	37182943	0,80634	Vietnam	135138	29528222	0,009111
2011	Morocco	63606396	45759723	0,836817	Vietnam	121162	28837771	0,008368
2012	Morocco	59399664	52796585	0,941147	Vietnam	126686	25794871	0,009775
2013	Morocco	62910288	73491117	0,922429	Vietnam	299561	27960533	0,0212
2014	Morocco	67823938	93404469	0,84134	Vietnam	294350	37838650	0,015438
2015	Morocco	67207696	96229385	0,822429	Vietnam	849620	43141767	0,038627
2006	Saudi Arab	22509873	124637	0,011013	Netherlands	115883712	42234553	0,534215
2007	Saudi Arab	25056400	363	0,000029	Netherlands	131803438	51916377	0,565169
2008	Saudi Arab	44413319	8724	0,000393	Netherlands	127680187	50269720	0,564987
2009	Saudi Arab	29606937	1882	0,000127	Netherlands	122935745	37275924	0,465333
2010	Saudi Arab	40489195	16592	0,000819	Netherlands	123462127	26219966	0,350342
2011	Saudi Arab	33291484	8037	0,000483	Netherlands	138971742	30235199	0,357375
2012	Saudi Arab	40089586	49909	0,002487	Netherlands	114577946	28153964	0,394501
2013	Saudi Arab	50284708	2222	0,0000884	Netherlands	118006312	27842176	0,381796
2014	Saudi Arab	53945418	186279	0,006882	Netherlands	127648669	30922114	0,39001
2015	Saudi Arab	61331321	81806	0,002664	Netherlands	123973820	26606182	0,353383
2006	United Arab Emirates	14831540	191489	0,025493	United kingdom	317418865	21096012	0,124639
2007	United Arab	17722651	168589	0,018846	United	332966124	25609153	0,142838

	Emirates				kingdom		
2008	United Arab Emirates	23799295	225519	0,018774	United kingdom	238845034	19842411	0,153408
2009	United Arab Emirates	22788765	83381	0,007291	United kingdom	149124534	15083068	0,183707
2010	United Arab Emirates	18141533	322871	0,034972	United kingdom	145321340	15411690	0,191768
2011	United Arab Emirates	20258800	176737	0,017297	United kingdom	148159434	17564200	0,21197
2012	United Arab Emirates	21755699	154185	0,014074	United kingdom	151913833	17514246	0,206745
2013	United Arab Emirates	25380684	185799	0,014535	United kingdom	150305758	15648415	0,188587
2014	United Arab Emirates	26911631	190151	0,014032	United kingdom	189273813	18382998	0,177052
2015	United Arab Emirates	34587730	419578	0,023971	United kingdom	182416879	17267206	0,172945
2006	Switzerland	15318058	7146038	0,636219	Slovakia	2338739	5616758	0,587955
2007	Switzerland	17759302	7204649	0,577204	Slovakia	5301126	9294499	0,726399
2008	Switzerland	18232044	8961871	0,659109	Slovakia	5542837	14756426	0,546112
2009	Switzerland	14245396	6740555	0,642387	Slovakia	4973293	10754889	0,632405
2010	Switzerland	14977405	5830290	0,560397	Slovakia	8462915	13074511	0,78588
2011	Switzerland	19631802	3792225	0,323789	Slovakia	11511632	12331732	0,965605
2012	Switzerland	21739308	2847937	0,23166	Slovakia	11870531	14842743	0,888737
2013	Switzerland	28233904	2489493	0,162058	Slovakia	2308952	19889158	0,208031
2014	Switzerland	30791050	2414452	0,145425	Slovakia	2391360	22568235	0,191618
2015	Switzerland	29213504	3992958	0,240493	Slovakia	2306447	22069875	0,189237
2006	Russian	59322630	476324	0,015931	Austria	45270946	19641121	0,605161
2007	Russian	83734819	6247279	0,138856	Austria	48586061	26370766	0,703625

2008	Russian	100208928	7160674	0,133384	Austria	40883103	33856803	0,90599
2009	Russian	45520747	6519787	0,250566	Austria	37006368	25359414	0,813248
2010	Russian	44920590	5918120	0,232819	Austria	33760881	23910855	0,829205
2011	Russian	45514934	5312658	0,209046	Austria	34479126	22554144	0,790912
2012	Russian	58310884	3717542	0,119866	Austria	30467159	21271300	0,822263
2013	Russian	82714899	3231407	0,075196	Austria	28872163	21116149	0,844843
2014	Russian	53144341	2854559	0,101951	Austria	28596426	21488887	0,858091
2015	Russian	27264359	2872457	0,190628	Austria	24205374	20325294	0,912867
2006	Poland	21233581	101636539	0,345626	Latvia	8252671	34658804	0,384637
2007	Poland	26874141	259478140	0,1877	Latvia	11619628	24478004	0,643789
2008	Poland	38704141	284081512	0,239813	Latvia	10028134	21107535	0,644157
2009	Poland	22060998	186719499	0,211332	Latvia	4647779	14580310	0,483436
2010	Poland	19818428	248954754	0,147473	Latvia	4176462	12947082	0,487803
2011	Poland	30389177	206557788	0,256506	Latvia	3655191	19060828	0,321816
2012	Poland	25595902	150327444	0,290989	Latvia	5601209	15973105	0,519248
2013	Poland	23756108	171869680	0,242873	Latvia	5043221	21609587	0,378438
2014	Poland	22077778	213132691	0,187728	Latvia	5198817	26000471	0,333265
2015	Poland	20740142	271058086	0,142154	Latvia	5188317	25952871	0,333213
2006	Turkey	12216681	34572076	0,522206	Spain	68492278	9779564	0,249887
2007	Turkey	19096338	58617496	0,491453	Spain	83954911	12309140	0,255737
2008	Turkey	14148654	63181948	0,365926	Spain	73326854	9949982	0,238962
2009	Turkey	14398520	47854546	0,46258	Spain	43414098	5368248	0,22009
2010	Turkey	14403153	26335181	0,707106	Spain	41064244	5482145	0,235556
2011	Turkey	21468568	27830229	0,870957	Spain	41297344	6170260	0,259978
2012	Turkey	16255850	37625400	0,603395	Spain	32588829	6622100	0,337768
2013	Turkey	28203453	43693046	0,784557	Spain	37239788	9019552	0,389956
2014	Turkey	20031673	30910088	0,786454	Spain	41668082	8800714	0,348759
2015	Turkey	10494743	27119867	0,558014	Spain	30213101	8874152	0,454069
2006	Chile	4060688	1231267	0,465335	India	1904800	9510012	0,333742
2007	Chile	3390859	393644	0,208029	India	1262593	9804601	0,228169
2008	Chile	6367006	299055	0,089725	India	797208	11453813	0,130146
2009	Chile	3169692	925347	0,451936	India	1774451	7830465	0,369488
2010	Chile	4405538	744536	0,289136	India	3944674	10562095	0,543839
2011	Chile	6488129	465013	0,133756	India	3567338	10816642	0,496015
2012	Chile	8467055	69876	0,01637	India	2004697	9875943	0,337473
2013	Chile	12656037	27886	0,004397	India	2938084	11290197	0,412992
2014	Chile	8601736	47658	0,01102	India	1100989	14430595	0,141774
2015	Chile	9338015	41809	0,008915	India	1593679	13250758	0,214717

2006	Austria	6679070	25996214	0,408815	Czech Republic	8612398	12972884	0,797988
2007	Austria	6575860	34385997	0,321072	Czech Republic	8207098	15665586	0,687572
2008	Austria	6382602	27220467	0,379882	Czech Republic	12278035	13281949	0,960723
2009	Austria	6667244	20946431	0,482894	Czech Republic	7800584	11607085	0,803866
2010	Austria	6475900	22948924	0,440166	Czech Republic	7119514	17365918	0,581531
2011	Austria	7422074	22240869	0,500427	Czech Republic	6493578	15502749	0,590424
2012	Austria	9309058	11867856	0,87917	Czech Republic	6173159	17758629	0,515896
2013	Austria	8926637	9456971	0,971152	Czech Republic	5553156	18274521	0,46611
2014	Austria	12125298	13402364	0,949973	Czech Republic	7716687	21587134	0,526668
2015	Austria	11064489	5962136	0,700331	Czech Republic	8064555	19641172	0,582158
2006	Colombia	2242856	1746020	0,875445	Indonesia	356597	29817775	0,023636
2007	Colombia	3671045	664677	0,306605	Indonesia	373192	32809128	0,022493
2008	Colombia	3463713	350238	0,183662	Indonesia	543414	29910186	0,035688
2009	Colombia	3366676	246808	0,136604	Indonesia	1007326	17985099	0,106077
2010	Colombia	5295265	224045	0,081186	Indonesia	2408122	19078003	0,224156
2011	Colombia	2888667	7695	0,005314	Indonesia	2551515	14075856	0,306905
2012	Colombia	9336784	82840	0,017589	Indonesia	2515372	14127757	0,302272
2013	Colombia	11540311	21533	0,003725	Indonesia	3541008	15263653	0,37661
2014	Colombia	9776951	38168	0,007777	Indonesia	3287701	17090862	0,322663
2015	Colombia	11827883	62341	0,010486	Indonesia	1550260	20493415	0,140653
2006	Sweden	14169687	25863987	0,707888	Finland	48789081	10500939	0,354223
2007	Sweden	11972831	71171430	0,288001	Finland	54703515	10225959	0,314987
2008	Sweden	12174471	74376521	0,281325	Finland	48884493	13730534	0,43857
2009	Sweden	8764749	62280273	0,246738	Finland	36058867	11153568	0,472484
2010	Sweden	11928236	58087384	0,340731	Finland	32507871	13599461	0,589904
2011	Sweden	9233947	53048195	0,29652	Finland	42912922	13374600	0,475224
2012	Sweden	10735191	37321939	0,446768	Finland	39576860	15662903	0,567088
2013	Sweden	12906560	34338045	0,546372	Finland	44762229	10106631	0,368392
2014	Sweden	14174090	35266737	0,573376	Finland	41074136	9660359	0,38082

2015	Sweden	13560836	34661080	0,562435	Finland	37277009	5964763	0,27588
2006	Israel	5387860	24540609	0,360049	Japan	58456154	397421	0,013505
2007	Israel	5337422	30201752	0,300368	Japan	54173897	566743	0,020706
2008	Israel	8394751	25189494	0,499922	Japan	50597859	411315	0,016127
2009	Israel	6392441	16194776	0,566023	Japan	38920808	400361	0,020364
2010	Israel	5272547	6933817	0,863901	Japan	38470662	499338	0,025627
2011	Israel	7902037	5628724	0,831989	Japan	42536585	689299	0,031893
2012	Israel	6637009	7573043	0,934129	Japan	48754753	678202	0,027439
2013	Israel	10649948	8246902	0,872834	Japan	43941386	823252	0,036781
2014	Israel	9154627	9073101	0,995527	Japan	43777001	691002	0,031079
2015	Israel	11198345	8709304	0,874971	Japan	61413413	704906	0,022696
2006	China	8701597	647777458	0,02651	Switzerland	68205023	3425061	0,095632
2007	China	18946394	904782804	0,041022	Switzerland	69397455	6386761	0,168551
2008	China	20724349	921957722	0,043969	Switzerland	66896741	4263314	0,119823
2009	China	14517919	669477708	0,04245	Switzerland	52869988	1758690	0,064387
2010	China	9859866	823771592	0,023655	Switzerland	48979555	2658333	0,102961
2011	China	12366954	756767525	0,032158	Switzerland	52660291	2510163	0,090997
2012	China	9737451	590911669	0,032423	Switzerland	51852305	1932114	0,071847
2013	China	8803337	554340124	0,031265	Switzerland	55347450	2166683	0,075344
2014	China	9534644	687163993	0,027371	Switzerland	56050473	1820426	0,062913
2015	China	8275229	672685969	0,024305	Switzerland	50100279	1136259	0,044353
2006	Peru	1453808	267347	0,31066	Australia	11380696	162594	0,028171
2007	Peru	1201370	244901	0,338665	Australia	13278720	151101	0,022502
2008	Peru	1816703	350382	0,323367	Australia	14364939	240181	0,03289
2009	Peru	1537041	274790	0,303329	Australia	11928788	90793	0,015108
2010	Peru	2764251	189699	0,128438	Australia	15592571	285014	0,035901
2011	Peru	5209326	168636	0,062714	Australia	19011442	91865	0,009618
2012	Peru	7314704	57550	0,015613	Australia	22208763	132314	0,011845
2013	Peru	9480271	424567	0,085729	Australia	27484082	83386	0,00605
2014	Peru	8354019	2951	0,000706	Australia	30070195	83522	0,00554
2015	Peru	9418768	19537	0,00414	Australia	31133847	290012	0,018458
2006	Czech Republic	7839973	31127125	0,402389	Korea	2850511	437197	0,265959
2007	Czech Republic	5648614	94990750	0,112255	Korea	3813229	243107	0,119865
2008	Czech Republic	5588895	100318630	0,105543	Korea	4115157	379738	0,168964
2009	Czech Republic	2567067	72178027	0,068689	Korea	4332394	78973	0,035804

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2010	Czech Republic	3953200	92687367	0,081812	Korea	6414814	230753	0,069446
2011	Czech Republic	5260120	81337523	0,121484	Korea	8360449	169998	0,039857
2012	Czech Republic	6621969	59051716	0,201663	Korea	8924661	34287	0,007654
2013	Czech Republic	12962188	92973858	0,244717	Korea	13221001	592695	0,085813
2014	Czech Republic	10681184	69151442	0,267589	Korea	21809150	142873	0,013017
2015	Czech Republic	9962541	42909296	0,376856	Korea	24455014	236095	0,019124
2006	Romania	4793025	16208135	0,456453	Canada	19553481	623971	0,061848
2007	Romania	7155170	28404130	0,402436	Canada	14414908	286923	0,039032
2008	Romania	13698562	70051742	0,327129	Canada	13017201	429448	0,063874
2009	Romania	6115778	57816288	0,191321	Canada	10393215	445516	0,082208
2010	Romania	4482146	59708996	0,13965	Canada	7689915	659911	0,158066
2011	Romania	7036388	74741523	0,172085	Canada	9436758	511507	0,102833
2012	Romania	5788898	59191949	0,178172	Canada	11446125	1061808	0,169782
2013	Romania	7018151	84225260	0,153834	Canada	14531607	968683	0,124989
2014	Romania	8414201	92629868	0,166545	Canada	13595469	445331	0,063434
2015	Romania	10033389	83017233	0,215654	Canada	9421324	518335	0,104296
2006	Greece	26769978	728946	0,053016	France	189997101	8879410	0,089296
2007	Greece	28680366	1010928	0,068096	France	233110055	10068475	0,082807
2008	Greece	31348254	517048	0,032452	France	221325557	8970251	0,077902
2009	Greece	20774673	1111395	0,101562	France	178202687	9489741	0,10112
2010	Greece	17303606	530954	0,059542	France	172785148	7906086	0,087509
2011	Greece	12962996	1032030	0,147485	France	182470815	6188716	0,065607
2012	Greece	5488216	1315876	0,38679	France	167812612	6034335	0,069421
2013	Greece	6044183	741461	0,218538	France	179281950	6580926	0,070815
2014	Greece	7023755	589457	0,154851	France	183266225	7211590	0,075721
2015	Greece	10748106	481999	0,085841	France	147692436	7552085	0,097293
2006	Ireland	20104798	1741633	0,159443	USA	173200492	6019142	0,067171
2007	Ireland	21782169	3163406	0,253625	USA	138973970	5132587	0,071233
2008	Ireland	18153125	2901282	0,275599	USA	114338682	5508255	0,091921
2009	Ireland	10620870	3818867	0,528939	USA	70402759	5099042	0,135071
2010	Ireland	7371081	5098173	0,817719	USA	82922534	6883877	0,153305
2011	Ireland	6101924	2608137	0,598879	USA	87646738	13789793	0,27189
2012	Ireland	6939604	2356753	0,507027	USA	101828941	4795608	0,089953

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2013	Ireland	5979180	2507645	0,59095	USA	116126926	4614246	0,076432
2014	Ireland	10252109	3085988	0,462733	USA	122910791	5559688	0,086552
2015	Ireland	11411167	2964588	0,412443	USA	132409678	5786344	0,083741
2006	Denmark	10074126	47639969	0,349105				
2007	Denmark	11270132	58193919	0,324488				
2008	Denmark	9973837	58887137	0,28968				
2009	Denmark	5199436	41314389	0,223565				
2010	Denmark	4167872	31241231	0,235412				
2011	Denmark	5527876	30963177	0,302972				
2012	Denmark	8992887	26165986	0,511557				
2013	Denmark	8445473	27101751	0,475169				
2014	Denmark	5741755	36031967	0,274898				
2015	Denmark	6573121	23660554	0,434821				
2006	Australia	4665881	412830	0,162573				
2007	Australia	5075398	584001	0,206383				
2008	Australia	8405844	337945	0,077299				
2009	Australia	2381148	184579	0,14388				
2010	Australia	4088429	93985	0,044943				
2011	Australia	11784754	270500	0,044877				
2012	Australia	9453296	162035	0,033703				
2013	Australia	11212095	284526	0,049497				
2014	Australia	11509114	232145	0,039543				
2015	Australia	9664725	436779	0,086478				
2006	Japan	8230239	2295964	0,436238				
2007	Japan	4536401	2119600	0,636899				
2008	Japan	6337966	1828758	0,447856				
2009	Japan	5996110	3384467	0,72159				
2010	Japan	5398667	18748426	0,447148				
2011	Japan	6134171	13406356	0,627841				
2012	Japan	7353309	4178021	0,724638				
2013	Japan	7879208	1518939	0,323242				
2014	Japan	7237145	1392890	0,322801				
2015	Japan	7620402	1429973	0,316003				
2006	Hungary	4957209	8532585	0,734957				
2007	Hungary	5574118	13498412	0,584518				
2008	Hungary	5848540	12249086	0,646332				
2009	Hungary	2171222	8621629	0,402344				
2010	Hungary	1466501	14562551	0,18298				

2011	Hungary	2041022	18722806	0,196594				
2012	Hungary	2654052	13444501	0,329726				
2013	Hungary	4252216	14659430	0,449693				
2014	Hungary	4779755	20317342	0,380901				
2015	Hungary	4161225	26251938	0,273646				
2006	Vietnam	111739	56441591	0,003952				
2007	Vietnam	57284	73320646	0,001561				
2008	Vietnam	1441424	69645333	0,040554				
2009	Vietnam	789971	40927524	0,037872				
2010	Vietnam	92354	38990114	0,004726				
2011	Vietnam	310346	38613550	0,015946				
2012	Vietnam	322327	30437936	0,020957				
2013	Vietnam	238125	27095789	0,017423				
2014	Vietnam	2132684	31741706	0,125917				
2015	Vietnam	956275	35256436	0,052814				
2006	Lithuania	2993998	2957098	0,993799				
2007	Lithuania	4218194	25530255	0,283591				
2008	Lithuania	5935103	31638572	0,315918				
2009	Lithuania	2183905	26663113	0,151413				
2010	Lithuania	1510918	51744342	0,056742				
2011	Lithuania	1576586	44991514	0,067711				
2012	Lithuania	888517	42891517	0,04059				
2013	Lithuania	1397355	41760143	0,064756				
2014	Lithuania	1379471	44426605	0,060231				
2015	Lithuania	2007215	34025582	0,11141				
2006	Indonesia	3291517	108944698	0,058653				
2007	Indonesia	1427554	120898739	0,02334				
2008	Indonesia	1385150	89014633	0,030645				
2009	Indonesia	199500	47801849	0,008312				
2010	Indonesia	1346674	52739688	0,049797				
2011	Indonesia	781420	39178346	0,03911				
2012	Indonesia	2316280	33728048	0,128524				
2013	Indonesia	3223317	23754715	0,238959				
2014	Indonesia	1761819	29642500	0,112202				
2015	Indonesia	1444078	25792847	0,106038				
2006	India	2860743	40381582	0,132312				
2007	India	2807279	39845223	0,131635				
2008	India	2270902	30172585	0,139991				

2009	India	2431878	21637848	0,202069				
2010	India	6432652	20704481	0,474085				
2011	India	9711364	21143508	0,629487				
2012	India	5961573	16215641	0,53763				
2013	India	9685189	16246809	0,746968				
2014	India	7592203	16024929	0,64294				
2015	India	5932250	17831116	0,499277				
2006	Korea	2929950	3113666	0,969602				
2007	Korea	2772561	3342213	0,90684				
2008	Korea	4328695	2291827	0,69234				
2009	Korea	3576956	1157938	0,489108				
2010	Korea	3562656	1207026	0,506124				
2011	Korea	2501390	1723930	0,816				
2012	Korea	1983703	993854	0,667563				
2013	Korea	1928872	1253243	0,787679				
2014	Korea	1625447	7001912	0,376812				
2015	Korea	1831651	15426064	0,21227				
2006	Bulgaria	2656675	5912951	0,620021				
2007	Bulgaria	6735005	15353535	0,609819				
2008	Bulgaria	10593069	16112360	0,793327				
2009	Bulgaria	5908498	15329131	0,556418				
2010	Bulgaria	3273169	14945203	0,359326				
2011	Bulgaria	3634071	16351518	0,363669				
2012	Bulgaria	2786312	13332859	0,345714				
2013	Bulgaria	3278187	16585320	0,330071				
2014	Bulgaria	2544159	15534340	0,281457				
2015	Bulgaria	2185271	13705358	0,275039				

Source: Uncomtrade 2015

2. Geographic distance, common border, GDP and income/capita (in constant price in national currency and dollars) as well as exchange rate of 36 trader partner countries for Spain (2006-2015)

Year	Country	Geographic distance (kilometers)	Common border (0/1)	GDP in constant price in national Currency (billion)	Income/capita in constant price in national Currency (unit)	Exchange rate (national currency/1 dollar)	GDP in constant price in dollars (billion)	Income/capita in constant price in dollars (unit)
2006	France	1054,08	1	1969	32067,22	0,796545	2472	40257,89
2007	France	1054,08	1	2015	32614,41	0,730395	2759	44653,11
2008	France	1054,08	1	2019	32499,48	0,683301	2955	47562,47
2009	France	1054,08	1	1960	31376,5	0,718908	2726	43644,66
2010	France	1054,08	1	1998	31840,57	0,75479	2648	42184,68
2011	France	1054,08	1	2040	32345,38	0,718819	2838	44997,94
2012	France	1054,08	1	2047	32297,02	0,778019	2631	41511,87
2013	France	1054,08	1	2053	32248,65	0,753071	2726	42822,85
2014	France	1054,08	1	2060	32229,39	0,753814	2733	42755,09
2015	France	1054,08	1	2084	32454,68	0,901158	2313	36014,42
2006	Germany	1871,24	0	2508	30472,73	0,796545	3149	38256,13
2007	Germany	1871,24	0	2593	31543,52	0,730395	3551	43186,93
2008	Germany	1871,24	0	2613	31870,91	0,683301	3825	46642,57
2009	Germany	1871,24	0	2468	30166,28	0,718908	3433	41961,26
2010	Germany	1871,24	0	2565	31373,58	0,75479	3398	41565,97
2011	Germany	1871,24	0	2659	33098,34	0,718819	3699	46045,44
2012	Germany	1871,24	0	2674	33210,33	0,778019	3437	42685,75
2013	Germany	1871,24	0	2680	33180,81	0,753071	3559	44060,67
2014	Germany	1871,24	0	2723	33575,83	0,753814	3612	44541,27
2015	Germany	1871,24	0	2767	34010,68	0,901158	3071	37741,09
2006	Portugal	503,01	1	177	16796,85	0,796545	222	21087,13
2007	Portugal	503,01	1	181	17181,66	0,730395	248	23523,8
2008	Portugal	503,01	1	182	17191,08	0,683301	266	25158,87
2009	Portugal	503,01	1	176	16663,23	0,718908	245	23178,53
2010	Portugal	503,01	1	179	16971,82	0,75479	238	22485,48
2011	Portugal	503,01	1	176	16686,29	0,718819	245	23213,48
2012	Portugal	503,01	1	169	16079,19	0,778019	217	20666,83

2013	Portugal	503,01	1	166	15908,22	0,753071	221	21124,46
2014	Portugal	503,01	1	168	16150,44	0,753814	223	21424,97
2015	Portugal	503,01	1	171	16393,63	0,901158	189	18191,74
2006	UK	1264,83	0	1597	26353,96	0,543199	2939	48516,21
2007	UK	1264,83	0	1637	26849,31	0,499715	3277	53729,25
2008	UK	1264,83	0	1632	26580,59	0,545232	2993	48750,97
2009	UK	1264,83	0	1562	25272,62	0,640727	2437	39443,67
2010	UK	1264,83	0	1591	25561,24	0,647385	2458	39483,83
2011	UK	1264,83	0	1618	25561,78	0,623529	2594	40995,33
2012	UK	1264,83	0	1628	25560,6	0,630936	2581	40512,19
2013	UK	1264,83	0	1655	25831,2	0,639493	2589	40393,24
2014	UK	1264,83	0	1698	26316,59	0,607305	2795	43333,41
2015	UK	1264,83	0	1744	26854,17	0,654247	2665	41045,93
2006	Italy	1365,7	0	1663	28648,3	0,796545	2088	35965,7
2007	Italy	1365,7	0	1688	28990,97	0,730395	2311	39692,18
2008	Italy	1365,7	0	1670	28476,73	0,683301	2444	41675,23
2009	Italy	1365,7	0	1579	26757,19	0,718908	2196	37219,22
2010	Italy	1365,7	0	1606	27127,73	0,75479	2127	35940,76
2011	Italy	1365,7	0	1615	27206,7	0,718819	2247	37849,16
2012	Italy	1365,7	0	1570	26439,82	0,778019	2018	33983,51
2013	Italy	1365,7	0	1544	25864,06	0,753071	2050	34344,78
2014	Italy	1365,7	0	1537	25638,16	0,753814	2039	34011,25
2015	Italy	1365,7	0	1545	25645,17	0,901158	1714	28458,02
2006	USA	6094,95	0	14614	48887,04	1	14614	48887,04
2007	USA	6094,95	0	14874	49266,63	1	14874	49266,63
2008	USA	6094,95	0	14830	48669,18	1	14830	48669,18
2009	USA	6094,95	0	14419	46909,5	1	14419	46909,5
2010	USA	6094,95	0	14784	47726,42	1	14784	47726,42
2011	USA	6094,95	0	15021	48131,31	1	15021	48131,31
2012	USA	6094,95	0	15369	48883,78	1	15369	48883,78
2013	USA	6094,95	0	15710	49599,56	1	15710	49599,56
2014	USA	6094,95	0	16086	50417,57	1	16086	50417,57
2015	USA	6094,95	0	16590	51643,52	1	16590	51643,52
2006	Netherlands	1482,99	0	607	37163,16	0,796545	763	46655,44
2007	Netherlands	1482,99	0	633	38637,71	0,730395	867	52899,75
2008	Netherlands	1482,99	0	646	39290,77	0,683301	946	57501,41
2009	Netherlands	1482,99	0	625	37799,94	0,718908	869	52579,66
2010	Netherlands	1482,99	0	632	38008,55	0,75479	837	50356,45

2011	Netherlands	1482,99	0	642	38460,31	0,718819	893	53504,86
2012	Netherlands	1482,99	0	632	37710,3	0,778019	812	48469,63
2013	Netherlands	1482,99	0	627	37328,14	0,753071	833	49567,88
2014	Netherlands	1482,99	0	633	37520,75	0,753814	839	49774,55
2015	Netherlands	1482,99	0	643	37946,06	0,901158	713	42108,1
2006	Mexico	9072,81	0	11719	108089,3	108,919	1076	9,923,826
2007	Mexico	9072,81	0	12088	110091,8	10,919	1107	10082,59
2008	Mexico	9072,81	0	12257	110120,2	111,411	1100	9,884,141
2009	Mexico	9072,81	0	11681	103507,6	13,483	866	7,676,895
2010	Mexico	9072,81	0	12278	107423,9	126,232	973	8,510,041
2011	Mexico	9072,81	0	12774	110422,8	124,225	1028	8,888,933
2012	Mexico	9072,81	0	13286	113503,5	131,448	1011	8,634,859
2013	Mexico	9072,81	0	13471	113777,9	127,546	1056	8,920,536
2014	Mexico	9072,81	0	13757	114916	13,303	1034	8,638,355
2015	Mexico	9072,81	0	14169	117018,4	158,671	893	7374,91
2006	Morocco	769,65	1	539	17680,62	868,232	62	2,036,393
2007	Morocco	769,65	1	554	17961,78	813,129	68	2208,97
2008	Morocco	769,65	1	585	18760,91	769,243	76	2,438,879
2009	Morocco	769,65	1	613	19443,46	803,039	76	2,421,235
2010	Morocco	769,65	1	635	19938,57	835,151	76	2,387,421
2011	Morocco	769,65	1	667	20714,1	803,251	83	2,578,782
2012	Morocco	769,65	1	685	21047,94	85,508	80	2,461,517
2013	Morocco	769,65	1	715	21748,79	832,796	86	2,611,539
2014	Morocco	769,65	1	735	22164,43	83,367	88	2,658,658
2015	Morocco	769,65	1	767	22908,19	968,385	79	2,365,607
2006	Saudi Arab	4964,11	0	1611	66801,59	374,973	430	17815,04
2007	Saudi Arab	4964,11	0	1708	68478,34	374,476	456	18286,44
2008	Saudi Arab	4964,11	0	1852	71814,07	374,619	494	19169,89
2009	Saudi Arab	4964,11	0	1886	70730,86	374,666	503	18878,38
2010	Saudi Arab	4964,11	0	1976	71672,59	374,443	528	19141,12
2011	Saudi Arab	4964,11	0	2172	76552,69	374,884	579	20420,37
2012	Saudi Arab	4964,11	0	2289	78410,05	374,893	611	20915,31
2013	Saudi Arab	4964,11	0	2350	78360,73	374,923	627	20900,48
2014	Saudi Arab	4964,11	0	2435	79129,43	375,024	649	21099,83
2015	Saudi Arab	4964,11	0	2507	79883,56	374,936	669	21305,92
2006	United Arab Emirates	5668,62	0	918	183139,6	367,199	250	49874,76
2007	United Arab	5668,62	0	947	152307	367,125	258	41486,41

	Emirates						
2008	United Arab Emirates	5668,62	0	977	121065	36,717	266	32972,45
2009	United Arab Emirates	5668,62	0	926	112949,4	367,183	252	30761,07
2010	United Arab Emirates	5668,62	0	941	113901,1	367,212	256	31017,79
2011	United Arab Emirates	5668,62	0	987	115985,9	367,238	269	31583,29
2012	United Arab Emirates	5668,62	0	1034	117875,3	367,219	281	32099,45
2013	United Arab Emirates	5668,62	0	1087	120393	367,222	296	32784,8
2014	United Arab Emirates	5668,62	0	1126	121100,7	367,227	307	32977,07
2015	United Arab Emirates	5668,62	0	1162	121281,6	367,226	316	33026,41
2006	Switzerland	1153,27	0	565	75747,04	125,288	451	60458,34
2007	Switzerland	1153,27	0	588	78353,38	119,966	490	65312,99
2008	Switzerland	1153,27	0	601	79207,9	10,824	556	73178,03
2009	Switzerland	1153,27	0	589	76436,33	108,516	543	70437,84
2010	Switzerland	1153,27	0	606	77782,03	104,259	581	74604,62
2011	Switzerland	1153,27	0	617	78412,61	0,886556	696	88446,31
2012	Switzerland	1153,27	0	624	78429,2	0,9376	665	83648,89
2013	Switzerland	1153,27	0	636	79118,03	0,926679	686	85378,03
2014	Switzerland	1153,27	0	649	79693,26	0,91524	709	87073,62
2015	Switzerland	1153,27	0	654	79866,38	0,961973	680	83023,52
2006	Russian	3444,2	0	36135	253043,4	271,746	1330	9,311,762
2007	Russian	3444,2	0	39219	274640,8	255,679	1534	10741,62
2008	Russian	3444,2	0	41277	289255,8	248,633	1660	11633,85
2009	Russian	3444,2	0	38057	266507,1	316,269	1203	8,426,595
2010	Russian	3444,2	0	39770	278305	303,099	1312	9,181,983
2011	Russian	3444,2	0	41480	290069,1	293,344	1414	9,888,361
2012	Russian	3444,2	0	42890	299303,6	30,982	1384	9,660,563
2013	Russian	3444,2	0	43448	302350,5	318,255	1365	9,500,261
2014	Russian	3444,2	0	43718	304231	385,633	1134	7,889,133
2015	Russian	3444,2	0	42042	292570,5	611,306	688	4785,99
2006	Poland	2292,41	0	1212	31770,29	309,855	391	10253,28
2007	Poland	2292,41	0	1300	34086,49	276,137	471	12344,05

2008	Poland	2292,41	0	1351	35431,95	240,452	562	14735,56
2009	Poland	2292,41	0	1386	36346,01	311,089	446	11683,48
2010	Poland	2292,41	0	1437	37802,42	3,011	477	12554,77
2011	Poland	2292,41	0	1506	39561,04	295,972	509	13366,48
2012	Poland	2292,41	0	1532	40256,61	324,817	472	12393,63
2013	Poland	2292,41	0	1558	40929,49	315,557	494	12970,55
2014	Poland	2292,41	0	1609	42330,54	315,223	511	13428,76
2015	Poland	2292,41	0	1665	43803,68	376,729	442	11627,37
2006	Turkey	3087,97	0	97	1,396,036	143,047	68	9,759,282
2007	Turkey	3087,97	0	101	1,443,237	130,078	78	1,109,517
2008	Turkey	3087,97	0	102	1,434,467	130,292	78	1,100,963
2009	Turkey	3087,97	0	97	1,346,536	155,118	63	868,072
2010	Turkey	3087,97	0	106	1,447,672	15,055	70	9,615,888
2011	Turkey	3087,97	0	115	1,551,718	167,834	69	9,245,552
2012	Turkey	3087,97	0	118	1,564,662	179,927	65	8,696,093
2013	Turkey	3087,97	0	122	1,610,362	190,479	64	8,454,276
2014	Turkey	3087,97	0	126	1,638,763	218,695	58	7,493,372
2015	Turkey	3087,97	0	130	1,672,195	272,318	48	6,140,597
2006	Chile	10714,05	0	86401	5290232	521,274	166	10148,66
2007	Chile	10714,05	0	90899	5507433	521,932	174	10552,01
2008	Chile	10714,05	0	93838	5623452	521,499	180	10783,25
2009	Chile	10714,05	0	92871	5502875	549,433	169	10015,55
2010	Chile	10714,05	0	98203	5754241	501,039	196	11484,62
2011	Chile	10714,05	0	103852	6018499	481,733	216	12493,43
2012	Chile	10714,05	0	109591	6282147	486,281	225	12918,76
2013	Chile	10714,05	0	114321	6483886	495,173	231	13094,18
2014	Chile	10714,05	0	116420	6533477	570,208	204	11458,06
2015	Chile	10714,05	0	119576	6640772	653,765	183	10157,74
2006	Austria	1811,59	0	285	34504,03	0,796545	358	43317,11
2007	Austria	1811,59	0	296	35611,44	0,730395	405	48756,41
2008	Austria	1811,59	0	300	36008,03	0,683301	439	52697,17
2009	Austria	1811,59	0	289	34530,33	0,718908	402	48031,63
2010	Austria	1811,59	0	294	35075,94	0,75479	390	46471,12
2011	Austria	1811,59	0	303	36010,9	0,718819	422	50097,31
2012	Austria	1811,59	0	306	36136,65	0,778019	393	46447,01
2013	Austria	1811,59	0	307	36139,9	0,753071	407	47990,02
2014	Austria	1811,59	0	308	36111,79	0,753814	408	47905,44
2015	Austria	1811,59	0	310	36264,61	0,901158	344	40242,24

2006	Colombia	8020,64	0	362938	8361471	2295,98	158	3,641,787
2007	Colombia	8020,64	0	387983	8832449	2032,83	191	4,344,903
2008	Colombia	8020,64	0	401744	9037907	1939,68	207	4,659,483
2009	Colombia	8020,64	0	408379	9079326	2129,03	192	4,264,536
2010	Colombia	8020,64	0	424599	9329796	1876,98	226	4,970,642
2011	Colombia	8020,64	0	452578	9829037	1827,54	248	5,378,288
2012	Colombia	8020,64	0	470880	10108626	1786,46	264	5,658,467
2013	Colombia	8020,64	0	494124	10486280	1869,04	264	5,610,517
2014	Colombia	8020,64	0	516619	10839222	1988,65	260	5,450,543
2015	Colombia	8020,64	0	534164	11080114	2719,06	196	4074,98
2006	Sweden	2595,94	0	3523	386618,3	736,962	478	52461,09
2007	Sweden	2595,94	0	3643	396749,3	675,289	540	58752,52
2008	Sweden	2595,94	0	3623	391409,8	659,036	550	59391,26
2009	Sweden	2595,94	0	3435	367765,9	764,084	450	48131,6
2010	Sweden	2595,94	0	3641	386690,8	719,866	506	53717,05
2011	Sweden	2595,94	0	3738	394177	648,773	576	60757,3
2012	Sweden	2595,94	0	3727	390044,1	676,958	551	57617,18
2013	Sweden	2595,94	0	3775	391401,7	651,252	580	60099,88
2014	Sweden	2595,94	0	3856	395558,4	68,623	562	57642,25
2015	Sweden	2595,94	0	3958	402667	842,911	470	47771
2006	Israel	3599,16	0	735	104191,4	444,796	165	23424,53
2007	Israel	3599,16	0	781	108799,8	410,416	190	26509,63
2008	Israel	3599,16	0	808	110599,8	358,183	226	30878,01
2009	Israel	3599,16	0	823	110061,9	392,325	210	28053,77
2010	Israel	3599,16	0	871	114271,7	373,066	233	30630,44
2011	Israel	3599,16	0	907	116879,2	357,361	254	32706,2
2012	Israel	3599,16	0	935	118186	384,952	243	30701,48
2013	Israel	3599,16	0	965	119770,7	360,542	268	33219,63
2014	Israel	3599,16	0	991	120731,4	357,267	278	33793,04
2015	Israel	3599,16	0	1026	122611,2	387,818	265	31615,64
2006	China	9232,81	0	9363	7,123,081	796,385	1176	8,944,268
2007	China	9232,81	0	10693	8,092,633	759,581	1408	1,065,408
2008	China	9232,81	0	11723	8,827,369	693,903	1689	1,272,133
2009	China	9232,81	0	12803	9,593,927	682,123	1877	1,406,481
2010	China	9232,81	0	14136	10542,06	675,989	2091	1,559,501
2011	China	9232,81	0	15451	11467,39	645,368	2394	1,776,877
2012	China	9232,81	0	16650	12296,52	63,033	2641	1,950,807
2013	China	9232,81	0	17941	13184,56	618,994	2898	2,129,998

2014	China	9232,81	0	19262	14081,93	614,326	3135	2,292,257
2015	China	9232,81	0	20564	14956,16	621,754	3307	2,405,478
2006	Peru	9519,69	0	295	10658,36	31,846	93	3,346,845
2007	Peru	9519,69	0	320	11328,29	305,844	105	3,703,944
2008	Peru	9519,69	0	349	12175,73	287,916	121	4,228,917
2009	Peru	9519,69	0	353	12115,77	296,973	119	4,079,756
2010	Peru	9519,69	0	382	12939,5	278,678	137	4,643,174
2011	Peru	9519,69	0	407	13564,14	272,125	150	4,984,524
2012	Peru	9519,69	0	431	14152,38	259,734	166	5,448,798
2013	Peru	9519,69	0	456	14741,07	265,897	172	5,543,902
2014	Peru	9519,69	0	467	14857,73	27,964	167	5,313,163
2015	Peru	9519,69	0	485	15188,31	31,391	154	4,838,429
2006	Czech Republic	1774,77	0	3747	366525,9	225,401	166	16261,06
2007	Czech Republic	1774,77	0	3954	385635,8	202,527	195	19041,2
2008	Czech Republic	1774,77	0	4062	392674,8	170,361	238	23049,57
2009	Czech Republic	1774,77	0	3865	370710,5	189,942	203	19517,04
2010	Czech Republic	1774,77	0	3954	377902,7	190,681	207	19818,58
2011	Czech Republic	1774,77	0	4031	384418,4	176,595	228	21768,36
2012	Czech Republic	1774,77	0	3999	380631,5	195,441	205	19475,52
2013	Czech Republic	1774,77	0	3971	377576,9	19,535	203	19328,23
2014	Czech Republic	1774,77	0	4051	385354	207,469	195	18574,05
2015	Czech Republic	1774,77	0	4152	394342,3	245,704	169	16049,49
2006	Romania	2475,45	0	500	23158,19	279,874	179	8,274,506
2007	Romania	2475,45	0	534	24775,1	242,683	220	10208,83
2008	Romania	2475,45	0	579	26914,35	250,857	231	10728,96
2009	Romania	2475,45	0	538	25049,87	30,374	177	8,247,141
2010	Romania	2475,45	0	534	24893,33	317,018	168	7,852,341
2011	Romania	2475,45	0	540	25229,98	30,449	177	8285,98
2012	Romania	2475,45	0	543	25448,8	346,681	157	7,340,695

2013	Romania	2475,45	0	561	26373,24	332,415	169	7,933,831
2014	Romania	2475,45	0	578	28990,56	334,708	173	8,661,449
2015	Romania	2475,45	0	593	29922,93	400,386	148	7473,52
2006	Greece	2372,38	0	243	21847,47	0,796545	305	27427,79
2007	Greece	2372,38	0	251	22556,07	0,730395	344	30882,02
2008	Greece	2372,38	0	250	22378,65	0,683301	366	32750,8
2009	Greece	2372,38	0	239	21379,04	0,718908	333	29738,21
2010	Greece	2372,38	0	226	20227,05	0,75479	300	26798,25
2011	Greece	2372,38	0	206	18533,8	0,718819	287	25783,69
2012	Greece	2372,38	0	193	17316,31	0,778019	248	22256,93
2013	Greece	2372,38	0	185	16732,87	0,753071	246	22219,51
2014	Greece	2372,38	0	187	16969,67	0,753814	247	22511,74
2015	Greece	2372,38	0	191	17415,05	0,901158	212	19325,18
2006	Ireland	1452,53	0	177	41748,19	0,796545	222	52411,59
2007	Ireland	1452,53	0	185	42376,66	0,730395	254	58018,83
2008	Ireland	1452,53	0	181	40265,03	0,683301	264	58927,23
2009	Ireland	1452,53	0	169	37298,21	0,718908	235	51881,76
2010	Ireland	1452,53	0	169	37020,7	0,75479	223	49047,69
2011	Ireland	1452,53	0	173	37880,02	0,718819	241	52697,58
2012	Ireland	1452,53	0	173	37674,95	0,778019	222	48424,2
2013	Ireland	1452,53	0	173	37677,1	0,753071	230	50031,28
2014	Ireland	1452,53	0	181	39337,51	0,753814	241	52184,64
2015	Ireland	1452,53	0	188	40515,99	0,901158	209	44959,91
2006	Denmark	2074,96	0	1863	343236,1	594,076	314	57776,47
2007	Denmark	2074,96	0	1878	344808,3	544,144	345	63367,11
2008	Denmark	2074,96	0	1865	340553,5	5,094	366	66853,86
2009	Denmark	2074,96	0	1770	321131,4	535,366	331	59983,53
2010	Denmark	2074,96	0	1799	324965,7	562,174	320	57805,18
2011	Denmark	2074,96	0	1819	327193,3	53,556	340	61093,67
2012	Denmark	2074,96	0	1808	323894,8	579,106	312	55930,14
2013	Denmark	2074,96	0	1799	321045,8	561,613	320	57164,95
2014	Denmark	2074,96	0	1817	322805,1	561,925	323	57446,29
2015	Denmark	2074,96	0	1846	327960	672,226	275	48787,16
2006	Australia	17704,21	0	1269	61537,42	132,748	956	46356,57
2007	Australia	17704,21	0	1327	63129,68	119,439	1111	52855,16
2008	Australia	17704,21	0	1362	63431,4	119,698	1138	52992,87
2009	Australia	17704,21	0	1384	63275,26	127,954	1081	49451,57
2010	Australia	17704,21	0	1415	63809,4	10,896	1298	58562,23

2011	Australia	17704,21	0	1453	64533,21	0,96869	1500	66619,05
2012	Australia	17704,21	0	1506	65688,03	0,96577	1559	68016,22
2013	Australia	17704,21	0	1537	65917,67	103,665	1482	63587,2
2014	Australia	17704,21	0	1578	66900,86	110,968	1422	60288,42
2015	Australia	17704,21	0	1623	67988,5	133,119	1219	51073,47
2006	Japan	10774,18	0	512452	4008193	116,297	4406	34465,15
2007	Japan	10774,18	0	523686	4091823	117,752	4447	34749,5
2008	Japan	10774,18	0	518231	4046628	103,36	5014	39150,81
2009	Japan	10774,18	0	489588	3823371	935,815	5232	40856,06
2010	Japan	10774,18	0	512364	4001357	877,541	5839	45597,37
2011	Japan	10774,18	0	510045	3987973	796,907	6400	50043,14
2012	Japan	10774,18	0	518989	4066979	798,128	6503	50956,47
2013	Japan	10774,18	0	527362	4141334	976,298	5402	42418,75
2014	Japan	10774,18	0	527050	4148016	105,874	4978	39178,8
2015	Japan	10774,18	0	532554	4202308	121,027	4400	34722,07
2006	Hungary	1976,36	0	23216	2303888	209,997	111	10971,05
2007	Hungary	1976,36	0	23335	2318198	183,216	127	12652,81
2008	Hungary	1976,36	0	23540	2343454	171,945	137	13629,09
2009	Hungary	1976,36	0	21998	2192990	201,616	109	10877,06
2010	Hungary	1976,36	0	22171	2214047	207,764	107	10656,55
2011	Hungary	1976,36	0	22572	2260367	200,756	112	11259,27
2012	Hungary	1976,36	0	22238	2239068	224,788	99	9,960,797
2013	Hungary	1976,36	0	22578	2278494	223,394	101	10199,44
2014	Hungary	1976,36	0	23398	2368977	232,547	101	10187,09
2015	Hungary	1976,36	0	24030	2437815	279,057	86	8,735,905
2006	Vietnam	10050,8	0	1699501	20399433	15540,9	109	1,312,629
2007	Vietnam	10050,8	0	1820667	21618375	15739,3	116	1,373,528
2008	Vietnam	10050,8	0	1923749	22600784	16183	119	1,396,576
2009	Vietnam	10050,8	0	2027591	23569787	17493,1	116	1,347,376
2010	Vietnam	10050,8	0	2157828	24821885	18924,2	114	1,311,648
2011	Vietnam	10050,8	0	2292483	26098399	20457,8	112	1,275,719
2012	Vietnam	10050,8	0	2412778	27182618	20691,8	117	1313,69
2013	Vietnam	10050,8	0	2543584	28359460	20879,4	122	1,358,251
2014	Vietnam	10050,8	0	2695690	29744035	20995,5	128	1,416,686
2015	Vietnam	10050,8	0	2857432	31202095	21684,7	132	1,438,899
2006	Lithuania	2664,12	0	28	8,677,026	274,611	10	3,159,752
2007	Lithuania	2664,12	0	32	9,754,219	251,521	13	3,878,093
2008	Lithuania	2664,12	0	32	10114,01	234,251	14	4,317,597

2009	Lithuania	2664,12	0	28	8,711,863	24,722	11	3,523,931
2010	Lithuania	2664,12	0	28	9,041,425	260,066	11	3,476,589
2011	Lithuania	2664,12	0	30	9,813,565	247,739	12	3,961,252
2012	Lithuania	2664,12	0	31	10326,84	267,955	12	3,853,946
2013	Lithuania	2664,12	0	32	10771,53	259,198	12	4,155,715
2014	Lithuania	2664,12	0	33	11140,51	259,219	13	4,297,722
2015	Lithuania	2664,12	0	34	11515,53	293,214	12	3,927,346
2006	Indonesia	12202,95	0	5393753	24019723	9155,07	589	2,623,653
2007	Indonesia	12202,95	0	5735988	25184622	9126,31	629	2,759,562
2008	Indonesia	12202,95	0	6162847	26678344	9666,29	638	2,759,936
2009	Indonesia	12202,95	0	6452610	27539951	10382,4	621	2,652,561
2010	Indonesia	12202,95	0	6864133	28884425	9055,33	758	3,189,771
2011	Indonesia	12202,95	0	7287635	30235346	8724,59	835	3,465,532
2012	Indonesia	12202,95	0	7727083	31607793	9330,68	828	3,387,512
2013	Indonesia	12202,95	0	8158194	32902043	10401,7	784	3,163,141
2014	Indonesia	12202,95	0	8568116	34069396	11836,5	724	2,878,334
2015	Indonesia	12202,95	0	9013589	35336794	13337,6	676	2,649,412
2006	India	7281,88	0	60701	53717,48	451,743	1344	1,189,116
2007	India	7281,88	0	66650	58159,05	413,281	1613	1,407,252
2008	India	7281,88	0	69244	59589,99	436,459	1586	1,365,306
2009	India	7281,88	0	75115	63758,03	484,167	1551	1316,86
2010	India	7281,88	0	82822	69329,12	457,113	1812	1,516,674
2011	India	7281,88	0	88320	72932,72	468,704	1884	1,556,051
2012	India	7281,88	0	92808	75626,27	534,658	1736	1,414,479
2013	India	7281,88	0	99211	79794,19	584,599	1697	1,364,939
2014	India	7281,88	0	106323	84403,58	608,963	1746	1,386,021
2015	India	7281,88	0	114255	89522,56	640,387	1784	1,397,945
2006	Korea	10006,63	0	1087876	22489819	940,097	1157	23922,87
2007	Korea	10006,63	0	1147311	23608371	922,841	1243	25582,27
2008	Korea	10006,63	0	1179771	24102200	1097,62	1075	21958,6
2009	Korea	10006,63	0	1188118	24157567	1272,41	934	18985,68
2010	Korea	10006,63	0	1265308	25608147	1153,18	1097	22206,55
2011	Korea	10006,63	0	1311893	26354109	1105,87	1186	23831,11
2012	Korea	10006,63	0	1341966	26836944	1122,74	1195	23903,08
2013	Korea	10006,63	0	1381838	27515866	1090,4	1267	25234,65
2014	Korea	10006,63	0	1427656	28313053	1050,73	1359	26946,08
2015	Korea	10006,63	0	1474494	29116606	1130,22	1305	25761,89
2006	Bulgaria	2255,77	0	67	8,661,973	155,063	43	5,586,099

Year	Country	Geographic distance (kilometers)	Common border (0/1)	GDP in constant price in national Currency (billion)	Income/capita in constant price in national currency (unit)	Exchange rate (national currency/ 1 dollar)	GDP in constant price in dollars (billion)	Income/capita in constant price in dollars (unit)
2007	Bulgaria	2255,77	0	71	9,307,621	142,511	50	6531,16
2008	Bulgaria	2255,77	0	75	9886,84	133,485	56	7,406,705
2009	Bulgaria	2255,77	0	71	9444,51	140,496	51	6,722,263
2010	Bulgaria	2255,77	0	72	9,580,937	147,536	49	6,493,966
2011	Bulgaria	2255,77	0	73	10007,72	140,514	52	7,122,222
2012	Bulgaria	2255,77	0	74	10119,38	151,976	48	6,658,536
2013	Bulgaria	2255,77	0	74	10288,97	147,107	51	6,994,208
2014	Bulgaria	2255,77	0	76	10517,03	147,217	51	7,143,896
2015	Bulgaria	2255,77	0	77	10696,72	175,951	44	6,079,373

Source: International Monetary Fund and Google Map Developer, 2015

3. **Geographic distance, common border, GDP and income/capita (in constant price in national currency and dollars) as well as exchange rate of 26 trader partner countries for Denmark (2006-2015)**

Year	Country	Geographic distance (kilometers)	Common border (0/1)	GDP in constant price in national Currency (billion)	Income/capita in constant price in national currency (unit)	Exchange rate (national currency/ 1 dollar)	GDP in constant price in dollars (billion)	Income/capita in constant price in dollars (unit)
2006	China	7209,61	0	9363	7,123,081	796,385	1176	8,944,268
2007	China	7209,61	0	10693	8,092,633	759,581	1408	1,065,408
2008	China	7209,61	0	11723	8,827,369	693,903	1689	1,272,133
2009	China	7209,61	0	12803	9,593,927	682,123	1877	1,406,481
2010	China	7209,61	0	14136	10,542,056	675,989	2091	1,559,501
2011	China	7209,61	0	15451	11,467,393	645,368	2394	1,776,877
2012	China	7209,61	0	16650	12,296,524	63,033	2641	1,950,807
2013	China	7209,61	0	17941	13184,56	618,994	2898	2,129,998
2014	China	7209,61	0	19262	14,081,929	614,326	3135	2,292,257
2015	China	7209,61	0	20564	14,956,155	621,754	3307	2,405,478
2006	Sweden	522,71	1	3523	386618,31	736,962	478	52461,09
2007	Sweden	522,71	1	3643	396749,32	675,289	540	58752,52
2008	Sweden	522,71	1	3623	391409,81	659,036	550	59391,26
2009	Sweden	522,71	1	3435	367765,87	764,084	450	48131,6
2010	Sweden	522,71	1	3641	386690,77	719,866	506	53717,05
2011	Sweden	522,71	1	3738	394176,97	648,773	576	60757,3

2012	Sweden	522,71	1	3727	390044,13	676,958	551	57617,18
2013	Sweden	522,71	1	3775	391401,68	651,252	580	60099,88
2014	Sweden	522,71	1	3856	395558,39	68,623	562	57642,25
2015	Sweden	522,71	1	3958	402667,01	842,911	470	47771
2006	Poland	672,43	0	1212	31,770,293	309,855	391	10253,28
2007	Poland	672,43	0	1300	34,086,494	276,137	471	12344,05
2008	Poland	672,43	0	1351	35,431,954	240,452	562	14735,56
2009	Poland	672,43	0	1386	36,346,009	311,089	446	11683,48
2010	Poland	672,43	0	1437	37,802,421	3,011	477	12554,77
2011	Poland	672,43	0	1506	39,561,035	295,972	509	13366,48
2012	Poland	672,43	0	1532	40,256,607	324,817	472	12393,63
2013	Poland	672,43	0	1558	40,929,493	315,557	494	12970,55
2014	Poland	672,43	0	1609	42,330,537	315,223	511	13428,76
2015	Poland	672,43	0	1665	43,803,684	376,729	442	11627,37
2006	Germany	355,55	1	2508	30,472,731	0,796545	3149	38256,13
2007	Germany	355,55	1	2593	31543,52	0,730395	3551	43186,93
2008	Germany	355,55	1	2613	31,870,914	0,683301	3825	46642,57
2009	Germany	355,55	1	2468	30,166,283	0,718908	3433	41961,26
2010	Germany	355,55	1	2565	31,373,575	0,75479	3398	41565,97
2011	Germany	355,55	1	2659	33,098,338	0,718819	3699	46045,44
2012	Germany	355,55	1	2674	33,210,328	0,778019	3437	42685,75
2013	Germany	355,55	1	2680	33,180,812	0,753071	3559	44060,67
2014	Germany	355,55	1	2723	33,575,832	0,753814	3612	44541,27
2015	Germany	355,55	1	2767	34,010,681	0,901158	3071	37741,09
2006	Italy	1533,25	0	1663	28648,3	0,796545	2088	35965,7
2007	Italy	1533,25	0	1688	28,990,973	0,730395	2311	39692,18
2008	Italy	1533,25	0	1670	28,476,729	0,683301	2444	41675,23
2009	Italy	1533,25	0	1579	26,757,192	0,718908	2196	37219,22
2010	Italy	1533,25	0	1606	27,127,726	0,75479	2127	35940,76
2011	Italy	1533,25	0	1615	27,206,695	0,718819	2247	37849,16
2012	Italy	1533,25	0	1570	26,439,818	0,778019	2018	33983,51
2013	Italy	1533,25	0	1544	25,864,055	0,753071	2050	34344,78
2014	Italy	1533,25	0	1537	25,638,158	0,753814	2039	34011,25
2015	Italy	1533,25	0	1545	25,645,173	0,901158	1714	28458,02
2006	Lithuania	814,23	0	28	8,677,026	274,611	10	3,159,752
2007	Lithuania	814,23	0	32	9,754,219	251,521	13	3,878,093
2008	Lithuania	814,23	0	32	10,114,014	234,251	14	4,317,597
2009	Lithuania	814,23	0	28	8,711,863	24,722	11	3,523,931

2010	Lithuania	814,23	0	28	9,041,425	260,066	11	3,476,589
2011	Lithuania	814,23	0	30	9,813,565	247,739	12	3,961,252
2012	Lithuania	814,23	0	31	10,326,842	267,955	12	3,853,946
2013	Lithuania	814,23	0	32	10,771,531	259,198	12	4,155,715
2014	Lithuania	814,23	0	33	11,140,513	259,219	13	4,297,722
2015	Lithuania	814,23	0	34	11,515,527	293,214	12	3,927,346
2006	Estonia	837,73	0	16	12,199,776	0,796545	21	15315,87
2007	Estonia	837,73	0	18	13,239,922	0,730395	24	18127,07
2008	Estonia	837,73	0	17	12,576,423	0,683301	25	18405,39
2009	Estonia	837,73	0	14	10,744,641	0,718908	20	14945,78
2010	Estonia	837,73	0	15	11,032,182	0,75479	19	14616,23
2011	Estonia	837,73	0	16	11,976,495	0,718819	22	16661,35
2012	Estonia	837,73	0	17	12,575,447	0,778019	21	16163,42
2013	Estonia	837,73	0	17	12,829,267	0,753071	22	17035,93
2014	Estonia	837,73	0	17	13,104,601	0,753814	23	17384,4
2015	Estonia	837,73	0	18	13,468,339	0,901158	20	14945,59
2006	Norway	483,85	0	2795	598262,67	640,698	436	93376,7
2007	Norway	483,85	0	2877	609301,89	585,464	491	104071,6
2008	Norway	483,85	0	2888	603287,1	564,224	512	106923,3
2009	Norway	483,85	0	2841	586677,7	62,815	452	93397,71
2010	Norway	483,85	0	2858	582336,06	603,963	473	96419,16
2011	Norway	483,85	0	2886	580306,29	560,108	515	103606,1
2012	Norway	483,85	0	2965	588552,67	581,527	510	101208,1
2013	Norway	483,85	0	2987	586153,29	587,693	508	99738,01
2014	Norway	483,85	0	3054	592262,2	63,035	484	93957,67
2015	Norway	483,85	0	3084	591496,2	805,744	383	73409,94
2006	Vietnam	9282,44	0	1699501	20399433	15540,9	109	1,312,629
2007	Vietnam	9282,44	0	1820667	21618375	15739,3	116	1,373,528
2008	Vietnam	9282,44	0	1923749	22600784	16183	119	1,396,576
2009	Vietnam	9282,44	0	2027591	23569787	17493,1	116	1,347,376
2010	Vietnam	9282,44	0	2157828	24821885	18924,2	114	1,311,648
2011	Vietnam	9282,44	0	2292483	26098399	20457,8	112	1,275,719
2012	Vietnam	9282,44	0	2412778	27182618	20691,8	117	1313,69
2013	Vietnam	9282,44	0	2543584	28359460	20879,4	122	1,358,251
2014	Vietnam	9282,44	0	2695690	29744035	20995,5	128	1,416,686
2015	Vietnam	9282,44	0	2857432	31202095	21684,7	132	1,438,899
2006	Netherlands	621,7	0	607	37,163,159	0,796545	763	46655,44
2007	Netherlands	621,7	0	633	38,637,712	0,730395	867	52899,75

2008	Netherlands	621,7	0	646	39290,77	0,683301	946	57501,41
2009	Netherlands	621,7	0	625	37799,94	0,718908	869	52579,66
2010	Netherlands	621,7	0	632	38,008,546	0,75479	837	50356,45
2011	Netherlands	621,7	0	642	38,460,313	0,718819	893	53504,86
2012	Netherlands	621,7	0	632	37,710,295	0,778019	812	48469,63
2013	Netherlands	621,7	0	627	37,328,136	0,753071	833	49567,88
2014	Netherlands	621,7	0	633	37,520,754	0,753814	839	49774,55
2015	Netherlands	621,7	0	643	37,946,055	0,901158	713	42108,1
2006	United Kingdom	956,63	0	1597	26,353,955	0,543199	2939	48516,21
2007	United Kingdom	956,63	0	1637	26849,31	0,499715	3277	53729,25
2008	United Kingdom	956,63	0	1632	26,580,589	0,545232	2993	48750,97
2009	United Kingdom	956,63	0	1562	25,272,624	0,640727	2437	39443,67
2010	United Kingdom	956,63	0	1591	25,561,241	0,647385	2458	39483,83
2011	United Kingdom	956,63	0	1618	25,561,776	0,623529	2594	40995,33
2012	United Kingdom	956,63	0	1628	25560,6	0,630936	2581	40512,19
2013	United Kingdom	956,63	0	1655	25,831,195	0,639493	2589	40393,24
2014	United Kingdom	956,63	0	1698	26,316,594	0,607305	2795	43333,41
2015	United Kingdom	956,63	0	1744	26,854,174	0,654247	2665	41045,93
2006	Slovakia	893,58	0	58	10,762,061	0,796545	73	13510,93
2007	Slovakia	893,58	0	64	11,906,703	0,730395	88	16301,73
2008	Slovakia	893,58	0	68	12,544,961	0,683301	99	18359,35
2009	Slovakia	893,58	0	64	11,851,334	0,718908	89	16485,19
2010	Slovakia	893,58	0	67	12,395,241	0,75479	89	16422,11
2011	Slovakia	893,58	0	69	12,799,655	0,718819	96	17806,51
2012	Slovakia	893,58	0	70	12,976,186	0,778019	90	16678,49
2013	Slovakia	893,58	0	71	13,145,228	0,753071	94	17455,5
2014	Slovakia	893,58	0	73	13,445,812	0,753814	97	17837,04
2015	Slovakia	893,58	0	75	13,816,533	0,901158	83	15331,98
2006	Austria	871,04	0	285	34,504,027	0,796545	358	43317,11

2007	Austria	871,04	0	296	35,611,437	0,730395	405	48756,41
2008	Austria	871,04	0	300	36,008,029	0,683301	439	52697,17
2009	Austria	871,04	0	289	34,530,326	0,718908	402	48031,63
2010	Austria	871,04	0	294	35,075,936	0,75479	390	46471,12
2011	Austria	871,04	0	303	36,010,901	0,718819	422	50097,31
2012	Austria	871,04	0	306	36,136,654	0,778019	393	46447,01
2013	Austria	871,04	0	307	36,139,895	0,753071	407	47990,02
2014	Austria	871,04	0	308	36,111,789	0,753814	408	47905,44
2015	Austria	871,04	0	310	36,264,614	0,901158	344	40242,24
2006	Latvia	725,37	0	21	9,202,714	0,796545	26	11553,29
2007	Latvia	725,37	0	23	10,191,037	0,730395	31	13952,77
2008	Latvia	725,37	0	22	9,944,101	0,683301	32	14553,03
2009	Latvia	725,37	0	19	8,647,782	0,718908	26	12029,05
2010	Latvia	725,37	0	18	8,566,947	0,75479	24	11350,11
2011	Latvia	725,37	0	19	9,194,058	0,718819	27	12790,5
2012	Latvia	725,37	0	20	9,778,962	0,778019	26	12569,05
2013	Latvia	725,37	0	21	10,222,922	0,753071	28	13574,98
2014	Latvia	725,37	0	21	10,495,836	0,753814	28	13923,64
2015	Latvia	725,37	0	22	10,769,356	0,901158	24	11950,57
2006	Spain	2074,96	0	1068	24,079,632	0,796545	1341	30230,1
2007	Spain	2074,96	0	1108	24503,69	0,730395	1518	33548,55
2008	Spain	2074,96	0	1121	24,374,679	0,683301	1640	35671,95
2009	Spain	2074,96	0	1081	23,308,327	0,718908	1503	32421,85
2010	Spain	2074,96	0	1081	23,214,806	0,75479	1432	30756,64
2011	Spain	2074,96	0	1074	22985,11	0,718819	1494	31976,21
2012	Spain	2074,96	0	1052	22,490,141	0,778019	1352	28906,93
2013	Spain	2074,96	0	1039	22,296,477	0,753071	1380	29607,4
2014	Spain	2074,96	0	1053	22,669,051	0,753814	1397	30072,47
2015	Spain	2074,96	0	1079	23,261,118	0,901158	1198	25812,47
2006	India	5854,27	0	60701	53,717,482	451,743	1344	1,189,116
2007	India	5854,27	0	66650	58,159,053	413,281	1613	1,407,252
2008	India	5854,27	0	69244	59,589,989	436,459	1586	1,365,306
2009	India	5854,27	0	75115	63,758,034	484,167	1551	1316,86
2010	India	5854,27	0	82822	69,329,124	457,113	1812	1,516,674
2011	India	5854,27	0	88320	72,932,719	468,704	1884	1,556,051
2012	India	5854,27	0	92808	75,626,273	534,658	1736	1,414,479
2013	India	5854,27	0	99211	79,794,192	584,599	1697	1,364,939
2014	India	5854,27	0	106323	84,403,576	608,963	1746	1,386,021

2015	India	5854,27	0	114255	89,522,558	640,387	1784	1,397,945
2006	Czech Republic	635,92	0	3747	366525,92	225,401	166	16261,06
2007	Czech Republic	635,92	0	3954	385635,77	202,527	195	19041,2
2008	Czech Republic	635,92	0	4062	392674,78	170,361	238	23049,57
2009	Czech Republic	635,92	0	3865	370710,48	189,942	203	19517,04
2010	Czech Republic	635,92	0	3954	377902,67	190,681	207	19818,58
2011	Czech Republic	635,92	0	4031	384418,37	176,595	228	21768,36
2012	Czech Republic	635,92	0	3999	380631,47	195,441	205	19475,52
2013	Czech Republic	635,92	0	3971	377576,91	19,535	203	19328,23
2014	Czech Republic	635,92	0	4051	385354,03	207,469	195	18574,05
2015	Czech Republic	635,92	0	4152	394342,28	245,704	169	16049,49
2006	Indonesia	10857,51	0	5393753	24019723	9155,07	589	2,623,653
2007	Indonesia	10857,51	0	5735988	25184622	9126,31	629	2,759,562
2008	Indonesia	10857,51	0	6162847	26678344	9666,29	638	2,759,936
2009	Indonesia	10857,51	0	6452610	27539951	10382,4	621	2,652,561
2010	Indonesia	10857,51	0	6864133	28884425	9055,33	758	3,189,771
2011	Indonesia	10857,51	0	7287635	30235346	8724,59	835	3,465,532
2012	Indonesia	10857,51	0	7727083	31607793	9330,68	828	3,387,512
2013	Indonesia	10857,51	0	8158194	32902043	10401,7	784	3,163,141
2014	Indonesia	10857,51	0	8568116	34069396	11836,5	724	2,878,334
2015	Indonesia	10857,51	0	9013589	35336794	13337,6	676	2,649,412
2006	Finland	883,83	0	187	35,423,838	0,796545	235	44471,86
2007	Finland	883,83	0	197	37,095,292	0,730395	269	50787,99
2008	Finland	883,83	0	198	37,181,435	0,683301	290	54414,43
2009	Finland	883,83	0	182	33,946,833	0,718908	253	47220
2010	Finland	883,83	0	187	34,807,515	0,75479	248	46115,5
2011	Finland	883,83	0	192	35,530,552	0,718819	267	49429,07
2012	Finland	883,83	0	189	34,859,842	0,778019	243	44805,9
2013	Finland	883,83	0	187	34,243,947	0,753071	248	45472,4

2014	Finland	883,83	0	186	34,035,245	0,753814	247	45150,72
2015	Finland	883,83	0	188	34,146,205	0,901158	209	37891,47
2006	Japan	8699,28	0	512452	4008193,5	116,297	4406	34465,15
2007	Japan	8699,28	0	523686	4091823,1	117,752	4447	34749,5
2008	Japan	8699,28	0	518231	4046628	103,36	5014	39150,81
2009	Japan	8699,28	0	489588	3823371,1	935,815	5232	40856,06
2010	Japan	8699,28	0	512364	4001356,5	877,541	5839	45597,37
2011	Japan	8699,28	0	510045	3987972,7	796,907	6400	50043,14
2012	Japan	8699,28	0	518989	4066978,9	798,128	6503	50956,47
2013	Japan	8699,28	0	527362	4141334,4	976,298	5402	42418,75
2014	Japan	8699,28	0	527050	4148016,3	105,874	4978	39178,8
2015	Japan	8699,28	0	532554	4202308,3	121,027	4400	34722,07
2006	Switzerland	1034,19	0	565	75,747,044	125,288	451	60458,34
2007	Switzerland	1034,19	0	588	78,353,376	119,966	490	65312,99
2008	Switzerland	1034,19	0	601	79,207,902	10,824	556	73178,03
2009	Switzerland	1034,19	0	589	76,436,328	108,516	543	70437,84
2010	Switzerland	1034,19	0	606	77,782,032	104,259	581	74604,62
2011	Switzerland	1034,19	0	617	78,412,605	0,886556	696	88446,31
2012	Switzerland	1034,19	0	624	78,429,202	0,9376	665	83648,89
2013	Switzerland	1034,19	0	636	79,118,025	0,926679	686	85378,03
2014	Switzerland	1034,19	0	649	79,693,256	0,91524	709	87073,62
2015	Switzerland	1034,19	0	654	79,866,383	0,961973	680	83023,52
2006	Australia	16058,57	0	1269	61,537,419	132,748	956	46356,57
2007	Australia	16058,57	0	1327	63129,68	119,439	1111	52855,16
2008	Australia	16058,57	0	1362	63,431,402	119,698	1138	52992,87
2009	Australia	16058,57	0	1384	63,275,261	127,954	1081	49451,57
2010	Australia	16058,57	0	1415	63,809,403	10,896	1298	58562,23
2011	Australia	16058,57	0	1453	64,533,205	0,96869	1500	66619,05
2012	Australia	16058,57	0	1506	65,688,027	0,96577	1559	68016,22
2013	Australia	16058,57	0	1537	65,917,667	103,665	1482	63587,2
2014	Australia	16058,57	0	1578	66,900,857	110,968	1422	60288,42
2015	Australia	16058,57	0	1623	67,988,499	133,119	1219	51073,47
2006	Korea	7949,22	0	1087876	22489819	940,097	1157	23922,87
2007	Korea	7949,22	0	1147311	23608371	922,841	1243	25582,27
2008	Korea	7949,22	0	1179771	24102200	1097,62	1075	21958,6
2009	Korea	7949,22	0	1188118	24157567	1272,41	934	18985,68
2010	Korea	7949,22	0	1265308	25608147	1153,18	1097	22206,55
2011	Korea	7949,22	0	1311893	26354109	1105,87	1186	23831,11

2012	Korea	7949,22	0	1341966	26836944	1122,74	1195	23903,08
2013	Korea	7949,22	0	1381838	27515866	1090,4	1267	25234,65
2014	Korea	7949,22	0	1427656	28313053	1050,73	1359	26946,08
2015	Korea	7949,22	0	1474494	29116606	1130,22	1305	25761,89
2006	Canada	5912,56	0	1535	47,191,388	113,403	1354	41613,88
2007	Canada	5912,56	0	1566	47671,57	107,334	1459	44414,23
2008	Canada	5912,56	0	1584	47722,13	106,669	1485	44738,52
2009	Canada	5912,56	0	1541	45,899,283	11,406	1351	40241,35
2010	Canada	5912,56	0	1593	46,920,576	103,005	1547	45551,75
2011	Canada	5912,56	0	1641	47,824,561	0,988899	1659	48361,42
2012	Canada	5912,56	0	1672	48,188,275	0,999566	1673	48209,2
2013	Canada	5912,56	0	1706	48,592,201	102,999	1656	47177,35
2014	Canada	5912,56	0	1749	49,271,708	110,433	1584	44616,83
2015	Canada	5912,56	0	1786	49,795,404	127,825	1398	38955,92
2006	France	1027,84	0	1969	32,067,224	0,796545	2472	40257,89
2007	France	1027,84	0	2015	32,614,406	0,730395	2759	44653,11
2008	France	1027,84	0	2019	32,499,483	0,683301	2955	47562,47
2009	France	1027,84	0	1960	31,376,495	0,718908	2726	43644,66
2010	France	1027,84	0	1998	31,840,572	0,75479	2648	42184,68
2011	France	1027,84	0	2040	32,345,376	0,718819	2838	44997,94
2012	France	1027,84	0	2047	32297,02	0,778019	2631	41511,87
2013	France	1027,84	0	2053	32,248,647	0,753071	2726	42822,85
2014	France	1027,84	0	2060	32,229,388	0,753814	2733	42755,09
2015	France	1027,84	0	2084	32,454,684	0,901158	2313	36014,42
2006	USA	6518,05	0	14614	48,887,044	1	14614	48887,04
2007	USA	6518,05	0	14874	49,266,625	1	14874	49266,63
2008	USA	6518,05	0	14830	48,669,179	1	14830	48669,18
2009	USA	6518,05	0	14419	46,909,503	1	14419	46909,5
2010	USA	6518,05	0	14784	47,726,422	1	14784	47726,42
2011	USA	6518,05	0	15021	48,131,311	1	15021	48131,31
2012	USA	6518,05	0	15369	48,883,782	1	15369	48883,78
2013	USA	6518,05	0	15710	49,599,556	1	15710	49599,56
2014	USA	6518,05	0	16086	50,417,573	1	16086	50417,57
2015	USA	6518,05	0	16590	51,643,523	1	16590	51643,52

Source: International Monetary Fund and Google Map Developer, 2015

4. Table 5.9 Companies of furniture industry by autonomous communities in Spain, 1999-2009 (Units: number)

Year / Area	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
National	20464	20891	21260	21404	21490	21485	21280	20955	20671	20259	19119
Andalusia	2747	3014	3214	3347	3459	3558	3628	3646	3645	3620	3377
Aragon	667	582	663	659	637	618	631	597	582	564	548
Principality of Asturias	364	461	463	443	446	432	425	421	418	393	378
Baleares Island	506	518	524	536	526	516	496	489	492	497	469
Canarias	616	617	624	638	619	611	623	588	584	575	544
Cantabria	160	169	164	170	165	166	161	158	155	150	145
Castilla and Leon	1091	1124	1132	1114	1131	1119	1107	1091	1074	1065	1020
Castilla - La Mancha	1194	1232	1261	1263	1329	1346	1362	1365	1360	1347	1287
Catalonia	3623	3550	3461	3499	3405	3325	3245	3085	3021	2949	2781
Valencia Community	2927	3014	3046	3031	3023	3053	2971	2901	2801	2698	2463
Extremadura	263	266	279	380	380	367	403	415	429	438	428
Galicia	1155	1205	1213	1200	1224	1204	1196	1217	1217	1234	1212
Madrid Community	2543	2530	2582	2492	2522	2521	2426	2382	2327	2213	2070
Region of Murcia	930	965	996	1010	1019	1051	1050	1070	1083	1057	999
Community Foral de Navarra	207	207	234	228	225	224	214	218	221	210	208
Basque County	1229	1203	1164	1148	1134	1122	1090	1061	1014	1018	970
La Rioja	230	224	229	235	235	242	241	240	237	219	209
Ceuta and Melilla	12	10	11	11	11	10	11	11	11	12	11

Source：National Institution of Statistics of Spain (2015).

5. Questions for company interview

Internal situation of the companies

1. What is your historical development and significant evolutions during the development?

2. What is your market share? How much market share do you plan to increase?

3. What is your registered capital, fixed asset and your profit last year? How do you access to the capital? Each year, how much do you spend on design, R&D research, employee training, update of the equipment, marketing etc.?

4. How many employees do you have？ How many are R&D staffs? How many are administration staffs？ How many are labors etc.? What is their salaries level? Did you increase their salary during last 10 years?

5. How do you select your raw materials? do you have any specific requirements?

6. How do you design your product? What are the major characteristics of your design?

7. What is kind of services do you have? Which services are important?

8. What are your product category, product characteristics and production lines? Whether you produce finished product or semi-finished product? Where do you produce? How has your production line been changed over time?

9. What are your competitive advantages: cost, technologies, innovations, design, transportation, management, human resource, marketing &sales, service etc.?

10. How do you transport your product? How much is your transportation cost? Which factor affects the transportation cost most?

11. Do you outsource your product? Which product do you outsource? Why do you outsource these products? How much do you outsource? Do you plan to outsource more in the future?

12. Who are your suppliers, distributors and final customers? What is kind of relationship do you have? Whether it is stable or not? What is the contact method do you have with them? Whether it is face-to-face contact or not?

13. Do you have global production network? Whether value chain and supply chain management are important for you?

External environment

1. How will the political situation and policy affect your business?

2. Whether there is any technology available in the industry that you can use?

3. How do you think about the competition situation? Who are your main competitors? What kind of advantages and disadvantages do you have compare to your competitors? How do you improve your disadvantages? What kind of competition strategies do you make to compete your competitors?

4. Which markets are your target markets? Which customer groups are your target groups? How do you exploit the potential of your target markets and groups?

5. Do you locate in the agglomeration area? Do you belong to any cluster? Do you have close relations with the company in the cluster? Is learning the most important advantage your company can obtain to be located in the cluster? If not, what are the most important factors, network, innovation etc.? What are the advantages and disadvantages you have to be located in the cluster?

6. How are your social networks, connections with R&D and universities? Do you get supports from different levels' governments?

7. Which outsource markets do you choose to outsource? Is there any criteria for select the outsource companies?

8. Whether the geographic distance affects your business with the companies in the foreign countries? Do you trade more often with the countries that have

higher market size (GDP) or degree of development? Do you have trade more often with the companies in the neighbor countries? What are the most important factors affect your international business?

Location decisions

1. How do you make location decisions? What is the process of the location decision? Who will make the location decisions?

2. What is the ultimate goal of your location decision maker? Whether it is profit, psychic income or non-monetary factors like the attractive environment or climate? Or it is something else?

3. What are the factors you consider most when you make location decisions? Are they location factors like transportation cost, labor costs, raw materials, access to the market, external economics etc.? Are they external factors like demand, policy, economic, culture, technology, labor market, infrastructures, the efficiency of governments, your suppliers, partner companies, institutions etc.? Whether you will consider both location factors and external factors? Or you just make decision by sub optimal incomes rather than maximum profit? For example, production manager put in charge of searching for a new location would tend to emphasize a low-cost site, while a sales manager charged with the same task would probably emphasize a location which would facilitate high sales, or the other internal factors like stability, security.

6. Questionnaires send to the Danish companies with 7 questions

1. What is your historical development and significant evolutions during the development?

2. Do you outsource your product? Which product do you outsource? Why do you outsource these products? How much do you outsource? If you plan to outsource more in the future?

3. How do you differentiate your design?

4. How do you transport your product? How much is your transportation cost? Which factor affects the transportation cost most?

5. Who are your suppliers, distributors and final customers? What is kind of relationship do you have? Is it stable or not? What is the contact method do you have with them? Is it face-to-face contact or not?

6. Is learning the most important advantage your company can obtain to be located in the cluster? If not, what are the most important factors, network, innovation etc.? What are the advantages and disadvantages you have to be located in the cluster?

7. What are the factors you consider most when you make location decisions?

7. Questionnaire sends to the Danish company with 15 questions

1. What is your historical development and significant evolutions during the development?

2. How do you access the capital? In which area do you spend most of your capital?

3. How do you select your raw materials? Do you have any specific requirements?

4. Who will participate in the design? How do you make R&D about design and production?

5. Where do you produce? How do you update your production technology? Do you have production cooperation with the other companies?

6. Do you outsource your product? Which product do you outsource? Where do you outsource? Do you plan to outsource more in the future?

7. What are your competitive advantages? Who are your main competitors? What kind of competition strategies do you make to compete your competitors?

8. How do you transport your product? What is your transportation cost? How do you save your transportation cost?

9. Who are your suppliers, distributors and final customers? What is kind of relationship do you have? Is it stable or not? What is the contact method do you have with them? Is it face-to-face contact or not?

10. Are value chain and supply chain management important for you? How do you manage your logistic system?

11. Which markets are your target markets? Which customer groups are your target groups? How do you exploit the potential of your target markets and groups?

12. What are the factors you consider most when you make location decisions?

13. Is learning the most important advantage your company can obtain to be located in the cluster? If not, what are the most important factors, network, innovation etc.? What are the advantages and disadvantages you have to be located in the cluster?

14. How are your social networks, connections with R&D and universities? Do you get supports from different levels' governments?

15. What are the most important factors affecting your international business?