

International trade and the crisis in the Eurozone



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This master thesis is the final assignment of the master Entrepreneurship Strategy and organization Economics. The research provides unique findings on international trade and the financial crisis in the Eurozone.

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Abstract

The financial crisis originated from the U.S. mortgage market and had a global impact. On August 2007, the crisis began with the banks and financial institutions losing capacity as a consequence to the downfall of the interbank market.

Due to the crisis, the Eurozone's economy experienced a downfall in export in September 2008. The purpose of this research is to examine antecedents of the development in exports of 333 product groups of the Euro 17 intra trade during the period of 2008 up to the end of 2009.

In particular, the focus is on explaining the development in exports of two product sorts: intermediate and final goods. This research concludes that final goods import and foreign demand were conclusively the strongest factors that influenced the development in exports in the Eurozone during the crisis between 2008 up to the end of 2009. During the crisis, it was the import of final goods, and not intermediate goods import that had a positive significant impact on total export, final goods export and intermediate goods export, which shows that the Eurozone is probably mainly active in transit trade of final goods. Because the Eurozone looks to be mainly active in transit trade of final goods during the crisis, foreign demand is essential for determining the volume of export.

Keywords: financial crisis, Eurozone, intermediate goods, final goods, import, export, trade

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1 Introduction

1.1 Topic

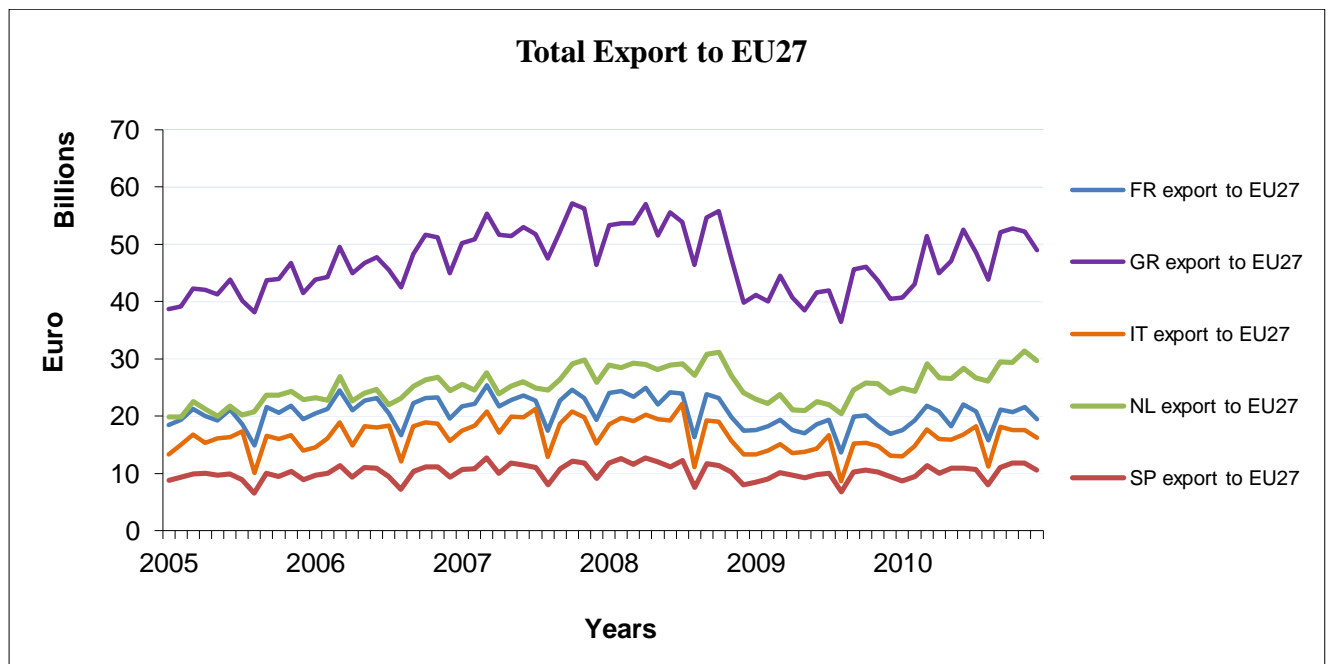
The elimination of trade barriers and the development of a singular currency rate are a few of the collaborative works of 17 countries, which form the entrepreneurial economy district Eurozone¹. The Eurozone enhances the expansion and the speeding up of cross-border entrepreneurship to support exports and realize economic growth.

Export plays a crucial role in the entrepreneurial economy to sustain economic development and help the Eurozone's economy grow. An increase in export provides possibilities to let industries grow, make the quality of products better, reduce prices and a production of wider variety of goods. At the firm level, exports provide a company the opportunity to expand and increase their sales.

In the second half of 2008 the Eurozone was confronted with a decrease in trade. The volume of Eurozone's trade had experienced its biggest decline since World War II. This development in international trade has attracted worldwide attention and ensured that demand dropped into a negative spiral and collapsed asset prices (Eaton et al., 2009; Eichengreen, 2009).

¹ The 12 Euro as national countries that acquired the currency on 1 January 2002 are: Austria, Belgium, Finland, France, Ireland, Italy, Germany, Greece, Luxembourg, The Netherlands, Portugal and Spain. On 1 January 2007 Slovenia increased the number of Euro-using countries to 13. On 1 January 2008 Cyprus(14) and Malta(15) introduced the Euro. Slovakia(16) joined the group of Euro-using countries on 1 January 2009. Estland(17) joined the Eurozone on 1 Januari 2011.

Figure 1.1 Total Export to EU27



- Eurostat 2011

The effect of the crisis can be seen in the remarkable downfall that the export of the Eurozone countries experienced in the second half of 2008 in the Figure 1.1 above. The figure shows a similar trend between the exports of a few selected Eurozone countries which can be an effect of an intensive collaboration.

1.2 Intermediate goods and final goods

Industrialized countries like the Eurozone members produce and export certain goods that are used as input in a foreign production process. These are intermediate goods and are used to produce another intermediate good or a final good. Within vertical specialization networks the number of trade linkages increases due to the fact that intermediate good suppliers can specialize on a particular intermediate good component (Lüthje, 2001). Due to the specialization in particular intermediate goods components, the production of these components become standardized and results in these intermediate goods being sold at a lower price. This development ensured that perplex and integrated production networks were built including intermediate and final good producers who grew dependent on each other (Lorz and Wrede, 2008). The innovation in communication processes and free trade opportunities within the Eurozone enhances the dependency of those networks but also strengthens competition (Greenaway, Gullstrand and Kneller, 2008; Hessels, 2008).

Producers mostly try to distinguish themselves from competitors by for instance lowering their prices or producing their goods in different forms (Lüthje, 2001). According to Dvorak (2009), another effect of the dependency between intermediate goods and final goods producers within a vertical specialization network is that when a shock takes place within a part of the network, it will be conveyed quickly throughout the network. This means that linkages within a vertical specialization network possibly influence each other.

Dvorak (2009) also stated that intermediate goods producers have to endure more from a decline in final demand than final good producers. The steeper downfall of the trade in intermediate components can possibly be explained by the number of trade linkages within a vertical specialization network. The intermediate good production process exists out of different stages and must be produced before the final goods are produced. Due to the different production stages, there are more trade exchanges in intermediate goods that caused an increase in world trade flows, which also makes the trade of intermediate goods more volatile than final goods trade (Chen, 2010). To analyze the difference between both product groups regarding exports it is essential for this research to distinguish intermediate and final goods to clarify the dynamics within exports. This thesis will use the factors of productivity, credit, demand and entrepreneurship to explain the dynamics within the development of the Eurozone's total export by analyzing the Eurozone's intermediate and final goods intra export. To explain the development of the Eurozone's total export this research will look at the different factors above, starting with productivity.

1.3 Productivity

A country's GDP refers to the market value of all final goods and services produced in a country in a certain period. The GDP is an important productivity indicator used in many researches because a decline in GDP indicates that an economy develops unconstructively and can lead to an increase in unemployment due to less available jobs and less spending by firms and households (Investor Guide, 2010). At the macro level, unemployment can be seen as unused production capability, due to the fact that an economy is probably producing less than its capacity (Verick, 2009). This research investigates the impact of the productivity indicators GDP and unemployment on the Eurozone's total export, final goods export and intermediate goods export in the time span of 2006 up to the end of 2007 and 2008 up to the end of 2009. Another factor that may be relevant for explaining the export within the Eurozone is domestic credit.

1.4 Domestic credit

In times of credit restrictions, the perceived risks for producers will rise, for example transport insurance and payments of inventories. The increase of this sort of risk can be a bottleneck in trade because most traders want to avoid a higher level of uncertainty concerning payments and transactions. This development can cause a decline in export. This research will compare the impact of net domestic credit on intermediate goods export and final goods export before and during the financial crisis. The already mentioned economic factor demand may also be relevant for analyzing the export development of the Eurozone.

1.5 Demand

An open economy like the Eurozone can allow a greater number of imports of final goods and especially intermediate goods that may increase capital formation and increase production output than an economy with trade barriers (Çetintaş and Barışık, 2008). In this thesis the impact of the decline in intermediate goods import and final goods import on the exports of final and intermediate goods in 2008 and 2009 will be researched by comparing it with the results of 2006 and 2007.

The level of foreign demand can have an essential influence on the exporting country. When the production of a foreign country increases in the intensive margin, it can increase the export of a trading partner (Behrens et al. 2010; Eaton et al. 2009). Therefore this research will also investigate the impact of foreign demand on the total export, final goods export and intermediate goods export of the Eurozone. The last economic factor which might be relevant to explain the development of the Eurozone's export is entrepreneurship.

1.6 Entrepreneurship

The birth of new enterprises can create an impulse that an economy needs to realize economic growth, because entrepreneurship may create new job opportunities, can cause a productivity shock, can contribute to innovation, can create needs, and might play an important role in maintaining macro-economic stability (OECD Summit, 2008; Koellinger, 2008). This research will investigate the role of new businesses regarding the exports of final and intermediate goods within the Eurozone.

1.7 Problem Definition and aim of the research

In this research, the export of 333 different product groups are researched based on a yearly dataset for the periods of 2006 up to the end of 2007 and 2008 up to the end of 2009. The main goal of this research is to determine which economic factor(s) was/were the cause of the Eurozone's trade crisis. To determine this, the following related questions are asked in this thesis about the export of these product groups.

- What is the impact of the economic factor productivity (GDP, unemployment) on the development in exports of intermediate goods, final goods and total exports during the financial crisis?
- What is the impact of the economic factor net domestic credit on the development in exports of intermediate goods, final goods and total exports during the financial crisis?
- What is the impact of the economic factor demand (import of final goods, intermediate goods and foreign demand) on the development in exports of intermediate goods, final goods and total exports during the financial crisis?
- What is the impact of the economic factor entrepreneurship (new business ratio) on the development in export of intermediate goods, final goods and total export during the financial crisis?

The purpose of this thesis is to provide a clear view of the different levels of impact caused by the economic factors mentioned above on total export, intermediate goods export and final goods export during the financial crisis. The results of the empirical tests will show the dynamics within the development of Eurozone's total exports based on the level of impact. The results of the periods 2006 up to the end of 2007 and 2008 up to the end of 2009 will be compared to observe the influence of the financial crisis. The results will provide the information which factor(s) have essential influence the final goods export or intermediate goods export or both during the crisis of the 2008 up to the end of 2009.

1.8 Contribution and importance of the research

Many researchers focused on the supply side of trade, disruption of global value chains (Yi, 2009), and the rise of protectionism (Baldwin and Evenett, 2009; Jacks et al., 2009). Other researchers focused on the demand side of export: (Eaton et al, 2010). Other conjectures focused on the trade volatility caused by vertical specialization (Yi, 2003; Chen, 2010), the role of credit in trade (Amiti and Weinstein, 2009) or the effect of different economic factors on the trade of a single country (Behrens et al., 2010).

Unlike the most researches above, this research contributes by focusing on multiple economic factors instead of one. This research also focuses on the whole Eurozone unlike previous conjectures that concentrated only on one nation or a small group of countries. Regarding the data analysis this research analyzes some different economic variables in relationship to the development of export that were not taken into account by previous conjectures like Net Domestic Credit and New Business Ratio. Previous research mostly used financial indicators such as share of debts over total liabilities, share of financial debt and alternative banking loans to test the impact of finance credit on export. To test the impact of entrepreneurship on export, most of the foregoing investigations used a total firm indicator. They did not test the impact of new businesses on the development of export, which possible effects are explained in Chapter 2.5. The most important difference with other previous researches is that this thesis does not take the dependent variable export in account as a whole. Export is separated in two groups, namely Intermediate Goods Export and Final Goods Export to analyze the dynamics within Total Exports properly.

1.9 Research set up

To investigate the role of all the economic variables mentioned below regarding exports, this research will run a multiple linear regression following the Ordinary Least Square method and ANOVA test.

Below the economic factors used in this thesis are categorized followed by the variables used in this research:

- Productivity (GDP, Unemployment to Labour Ratio)
- Credit (Net Domestic Credit)
- Demand (Final Goods Import, Intermediate Goods Import, Foreign Demand)
- Entrepreneurship (New Business Ratio)

This research expects that mainly demand will play a significant role regarding the development in export during the financial crisis. This thesis is focused on observing the impact of foreign demand on intermediate goods export, because foreign demand can have a multiplier effect on especially intermediate goods export. This is due to the amount of trade exchanges within a vertical specialization network which is pointed out in Chapter 2.4 (Behrens et al. 2010). This research also expects that the demand of a Eurozone country (import) can significantly influence the export of the same respective country because it can cause a competitiveness effect and may lead to import-led growth (Peltonen et al., 2010; Coe and Helpman, 1995).

For the empirical test, the collected Eurozone yearly data has two timeframes. Firstly, 2006 up to the end of 2007 (pre-crisis) and 2008 up to the end of 2009 (during crisis). These timeframes were chosen to have a clear view on what influence the financial crisis had on export by comparing the dynamics of export pre-crisis with the dynamics during the crisis.

1.10 Structure of the research

This research starts with a review of related literature. Section 3 provides the data and model for the export of the different product groups. The descriptive analysis of the data is also stated in Section 3. In Section 4 the results will be outlined. Finally in Section 5, the conclusions and discussion points will be explained.

2. Related Literature

2.1 Export development

Export plays a crucial role in Eurozone's entrepreneurial economy to sustain economic development and help the economy grow. An increase in export provides possibilities to let industries grow, increase the quality of products, reduce prices and a production of wider variety of goods. On a firm level, exports provide a company the opportunity to expand and increase their sales.

This chapter starts with describing the decline of the EU17 exports. The previous Figure 1.1 includes the decrease of the exports of the EU17. The decline starts in November 2008 and the monthly exports fell around 12% a month to their value in 2008. The negative trend continues throughout 2009.

Between 2008 and the end of 2009 the European economy had its most intense recession since 1930 with a downfall of real GDP of 4.2 % (Buti et al., 2009). One can see in the previous Figure 1.1 that since 2009, the export of the EU17 is showing a little improvement, but not a stable one. The European Economic Recovery Plan (EERP) encouraged the recovery in December 2008. The EERP boosted approximately 5% of EU's 2008 GDP into the EU's economy by investing in strategic plans to reconstruct the financial sector and keeping the business and labour markets rotating.

Table 2.1 Export within EU17

Export within EU17	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Austria	13.72	13.37	8.31	-22.69	16.22
Belgium	11.01	15.49	11,66	-23,41	13.02
Cyprus	-20.03	10,43	7,35	-9,84	16.85
Estonia	-4.99	16.35	14.03	-21	33.04
Finland	16.59	22.11	7.39	-33.49	15.91
France	8,64	13,29	7,08	-22,79	10.14
Germany	11.22	20.31	8.18	-22,97	15.49
Greece	23.27	13,35	7,00	-19,37	8.08
Ireland	-4.21	10.14	1.59	-5.45	0.82
Italy	11.48	18.89	4.22	-25.84	14.99
Luxembourg	10.35	15.07	9.96	-28,95	-6.75
Malta	22	2.25	-8.67	-22.53	7.14
Netherlands	12.12	7.35	9.11	-19.31	20.57
Portugal	12.62	17.18	3.4	-17.64	15.45
Slovakia	26.79	37.36	16.54	-21,62	20.72
Slovenia	16.04	22.32	7.67	-20,46	21.94
Spain	8.89	18.4	7.16	-17,41	10.39

- Source: Eurostat 2010

Table 2.1 shows an overview of the percentage export changes of the EU17 where the strong drop in export in the years 2008 and 2009 is displayed. One can see that all Eurozone countries had to face the impact of the financial crisis on export.

Cross-border entrepreneurship in combination with vertical specialization makes imports and exports highly volatile nowadays in the Eurozone. Within vertical specialization networks the intermediate good production process exists out of different stages and must be produced before the final goods are produced. Every stage consists of specialized producers of a certain production component. Due to the different production stages, there are more trade exchanges in intermediate goods which cause an increase in trade flows (Chen, 2010). According to Flam & Nordström (2007) the trade within the Eurozone has increased by about 26%, mainly due to vertical specialization for the years 2002-2005. The advantages of vertical specialization are that producers and consumers can purchase a wider variety of intermediate and final goods for a lower price (Lüthje, 2001). Since the 1980's, worldwide trade grew strongly and doubled when there was only a 23% of increase in output (WTO, 2007). This development can be explained in two ways: Firstly, trade barriers have been reduced, so transportation and communication have been made easier, especially within the EU17 which has an open economy. Secondly, the increased amount of vertical specialization processes

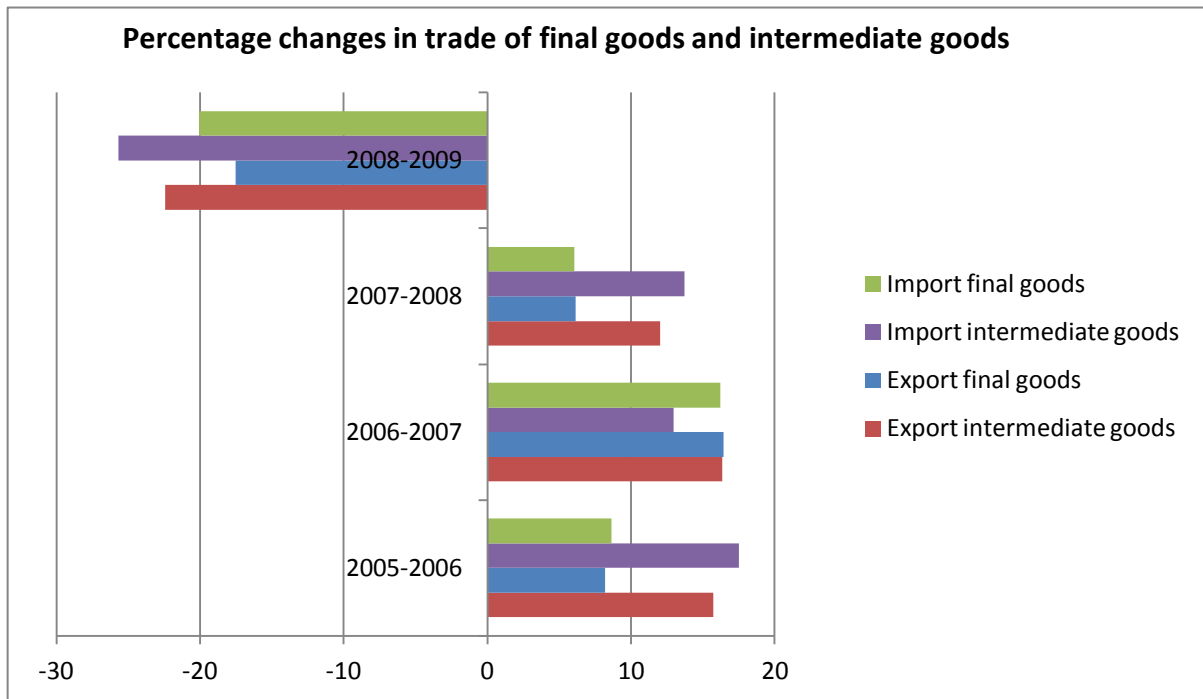
resulted in more stages in the production process, like more divisions and locations that lead to more trade of final goods and especially intermediate goods.

Unfortunately there are also disadvantages to vertical specialization. The establishment of the EU17 ensured that a perplexed and integrated production network was built including intermediate and final good producers who become dependent on each other. One effect of this development is that whenever a shock took place within a part of the network, it was conveyed quickly throughout the network. Dvorak (2009) showed in his article that the Taiwanese computer chip manufacturer Manufacturing Co. had a downfall in sales of electronic equipment to consumers of 8%, which caused a 10% fall in the production of final product shipments and a 20% drop in shipments of intermediate components like computer chips. The respective example shows that a decline in final demand (a part within the network) affected the entire network, and especially the sales of the intermediate goods supplier. The dividing of the production chain in international divisions strengthen the impact of even a small increase in costs due to different production stages which cause a multiplier effect in costs. This makes a production process in a cross-border entrepreneurial economy during a recession more complicated than in a managerial economy. Knowing that the Eurozone is an entrepreneurial economy with cross-country trade of intermediate goods and a high level of vertical specialization (Flam and Nordström , 2007), this research provides a good description of the situation. Chen (2010) examined the role of intermediate goods in analyzing the large trade volatility of the United States in the period of 1980 up to the end of 2009. Chen (2010) developed a trade model that consisted of intermediate inputs and final goods for consumption to research the dynamics of trade flows during a demand shock. It was found that a shock in demand changes prices of intermediate goods in the origin country and destination country and makes final good producers change from their intermediate good supplier.

The fact that the intermediate good supplier mostly has the biggest impact of the decline in trade is because intermediate goods are more volatile in trade than final goods due to vertical specialization and can also be explained by the following: to increase sales final consumer goods producers want to make their final good an imperfect substitute. Their products are produced in different versions to fulfil as many consumers demand as possible. Besides that, the final good producers invest in advertisements, customer service etc. to increase sales and promote their brand. Unlike final goods, consumers pay less attention to the shape and brand of intermediate goods. Take for example the iPhone, the consumers are more aware of the

producer of the smart phone itself instead of the memory producer of the phone. This makes intermediate goods more substitutable and more volatile than final goods (Chen, 2010). Figure 2.1 illustrates the volatility of intermediate goods trade in contrast to final goods trade.

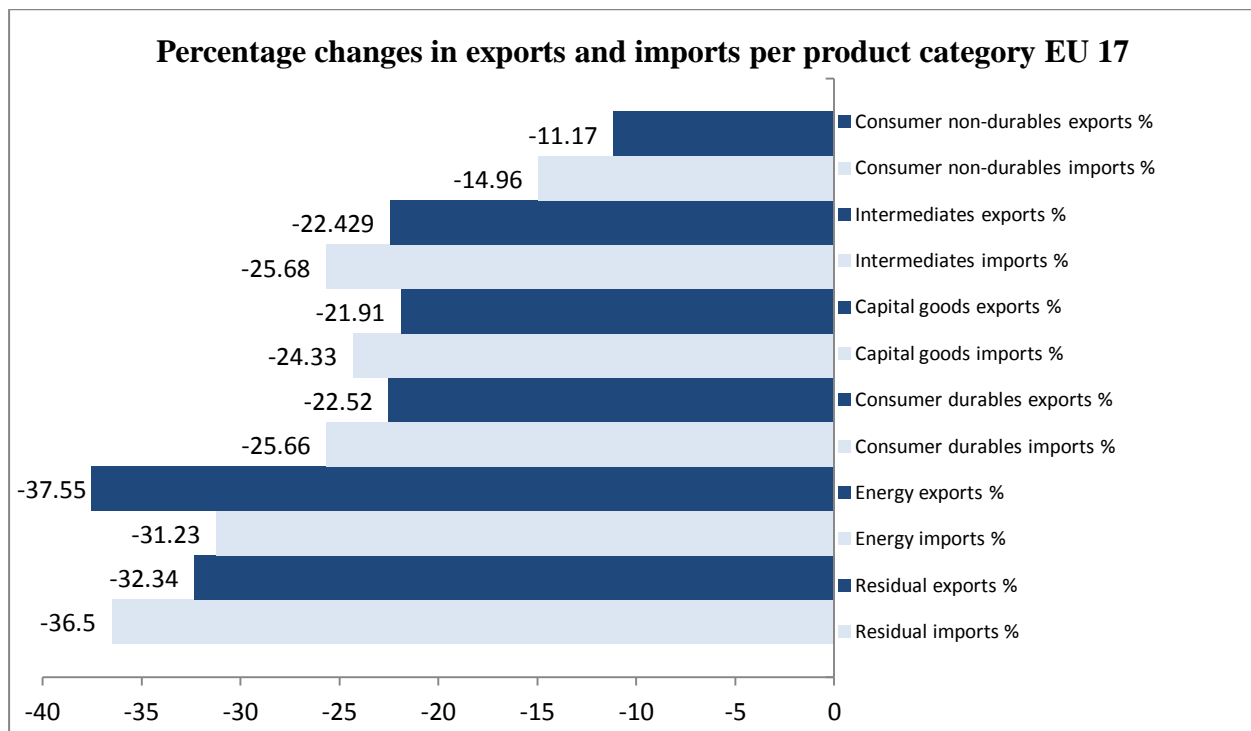
Figure 2.1 Percentage changes in trade of final goods and intermediate goods



- Source: Unctad 2010

In Figure 2.1 it is displayed that intermediate goods are more volatile than final goods. In healthy economic years when demand is high, the trade in intermediate goods is higher than final goods. During a recession it is the other way around, the decline in trade is higher for intermediate goods than for final goods.

Figure 2.2 Percentage changes in exports and imports per product category within the Eurozone

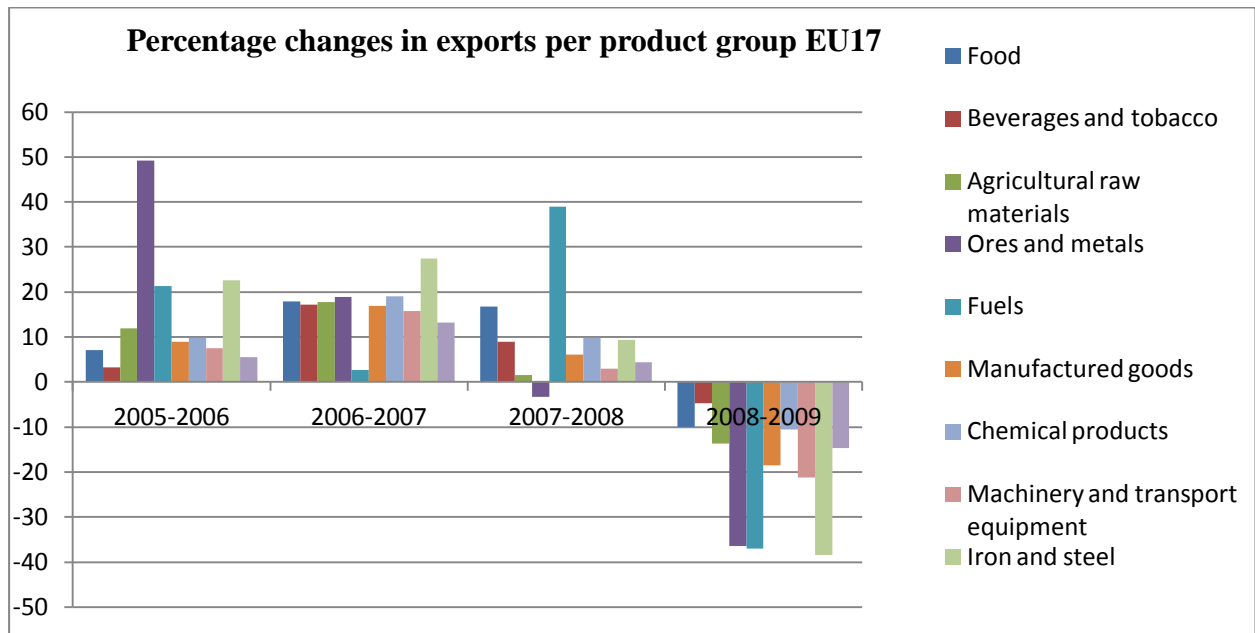


- Source Unctad 2010

Previous research showed that the downfall of various products was not in line with each other (Baldwin, 2009; Francois & Woerz, 2009). In Figure 2.2 we see the differences and changes in export per product category in EU17 trade between 2008 and 2009. The figure displays that the trade in intermediate goods and consumer durables declined more compared to consumer non-durables.

The trade in energy, capital goods and residual goods are also displayed in Figure 2.2. These categories are shown because of the great impact it had to endure due to the crisis. It is likely that the product categories capital goods and residual goods experienced a strong impact of the crisis because these categories are heavily related to productivity. The trade of energy possibly declined due to a hike in price (Baldwin, 2009).

Figure 2.3 Percentage changes in exports per product group within the Eurozone



- Source: Unctad 2010

As mentioned before, the impact of the credit crunch was not uniform across product groups as one can see in Figure 2.3. Looking at product group levels the material industries like iron and steel had to endure the biggest impact of the crisis compared to other product groups. Regarding fuels, the high price of oil in 2008 also caused a faster and steeper decline. By looking at the consumer goods like food, drinks and tobacco, it is clear that the export of these products declined less during the financial crisis in contrast to manufactured goods.

In the research of Behrens et al. (2010) the product groups intermediate goods, capital goods, and consumer durables showed a strong downfall in Belgium’s trade during the credit crunch in contrast to consumer non-durables, while these product groups had a synchronized growth with consumer non-durables in the years 2007 and 2008. According to Behrens et al. (2010), the decline in foreign demand is the main factor. The explanation of this finding can be found in Chapter 2.4. This research goes further by analyzing the decline of final goods and intermediate goods exports by testing the impact of different economic factors on the Eurozone’s exports before and during the crisis. This way, by comparing the influence of different economic factors on exports before and during the crisis, one can see the influence of the financial crisis on the export of intermediate and final goods.

The difference with the current crisis and the crisis of the 1930’s is that the EU countries did not use protectionism strategies this time. The absence of protectionism strategies is due to the strict EU coordination that was agreed upon during the Lissabon treaties. Hence, the crisis

looked like a liquidity shortage at first. There was little concern from the financial institutions, as a total systematic collapse seemed unlikely. This attitude changed immediately in September 2008 with the saving of Fannie Mae and Freddy Mac and the downfall of major US investment bank Lehman Brothers. Confidence was gone, investors moved their money away from banks and stock markets went into a downward spiral. As a consequence, the productivity had a downfall which can be expressed by GDP, which development during the crisis is described in the next chapter.

2.2 Productivity

This research already mentioned that the Eurozone's GDP growth declined during the credit crunch. A country's GDP is the total market value of goods and services in a specific period. This productivity indicator exists out of 4 components (Contessi, 2008):

- Consumption expenditure
- Private businesses and residential investment
- Government consumption expenditures and investment
- Net exports (export – import)

Consumption expenditure is mostly the largest GDP component (Piana, 2001). It can have an indirect influence on export via private business investments and government taxes.

Private businesses and residential investment mostly supports productivity in a way that it reduces labour needs. These investments incorporate innovations to realize scale advantages and technological advantages to increase exports (Piana, 2001).

Yuk (2005) found a strong positive relation between GDP government spending and GDP net export for the UK in the period of 1830 and 1993. Lin (1994) stated that government spending could indirectly increase a country's export by investing in the infrastructure; improve resource allocations and providing grants to targeted export industries. By investing on health and education it can improve its labour force by making it more productive which enhances the export position of a country.

Table 2.2 Eurozone's government expenditure

Years	2007	2008	2009	2010
Government deficit (-) / surplus (+) (million Euro)	-60082	-188988	-566680	-55048
Government expenditure (% of GDP)	45.9	46.9	50.8	50.4

- Source: Eurostat 2010

In Table 2.2, one can see that the Eurozone's government expenditure has increased in 2009 during the crisis. The increase in expenditure refers to the European Economic Recovery Plan (EERP) that was introduced in November 2008 to give a boost to the European economy. According to the European Commission (2009), it is possible that the EU's future GDP would remain in a low dip longer than expected with a chance for a permanent dip. This can be explained by several factors. Firstly, due to rising unemployment, the society's skills and knowledge decrease. Secondly, due to a decline in investment the state of infrastructure and inventory of equipment may deteriorate. Lastly, as a consequence of less investment in R&D, the innovation process may get decelerated, which prevents a productivity shock.

Table 2.3 Eurozone's export and GDP growth rates

EU17 growth rates	2005	2006	2007	2008	2009	2010
Export	10.6	22	2.25	-8.67	-22.53	12.57
GDP	1.7	3.1	2.8	0.4	-4.2	1.7

- Source: Eurostat 2010

Table 2.3 displays that the export and GDP growth rates are undergoing the same development. The difference is that the development of export is more volatile than GDP growth. This big contrast can be explained by the amount of trade exchanges made in a vertical specialization network (Bénassy-Quéré et al., 2009; Behrens et al., 2010).

As mentioned before in the introduction, with vertical integration, production components are exchanged several times, and are thus also registered as trade several times. The consequence is for example: when there is less production, it causes a low drop in GDP but turns into a bigger downfall on exports due to the amount of exchanges. Besides the riskiness in export due to the amount of exchanges, the great level of vertical supply chain in combination with cross-country shipping of goods within the Eurozone also makes trade risky because a small increase in trade costs can have a huge consequence in a trade network (Jacks et al., 2009). Because there are more trade exchanges in a vertical specialization network, the increase in transportation costs, commercial policy variables, insurance costs and financing costs has a

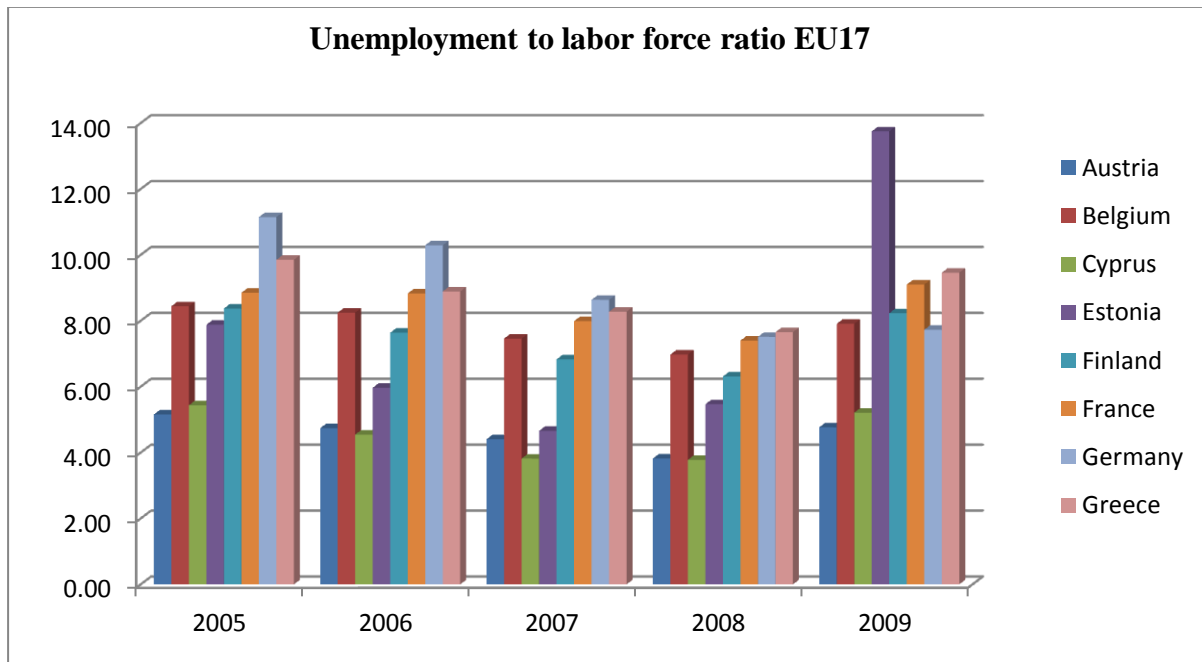
multiplier effect which increases the impact. It is likely that intermediate goods suppliers will feel the biggest impact from an increase in trade costs due to the amount of trade linkages and volatility within a vertical specialization network. Chapter 2.3 provides a deeper insight of this subject.

The GDP is a widely used economic indicator in many analyses and as mentioned by Behrens et al., (2010), GDP is seen here as a very important variable to measure a decline in demand in the field of trade. A positive GDP growth rate probably means that as new business opportunities arise, more job opportunities on an individual level will occur and a generally higher income will be realized. When there is a negative GDP growth rate it is assumed that the opposite takes place. Business investments will be delayed and fewer employees will be contracted to avoid risks. When the GDP declines structurally, the respective economy will head towards a recession.

This research expects that GDP has a stronger positive impact on intermediate goods export than on final goods export before and during the crisis. This expectation is formulated because when there is a small decrease in productivity, it has a bigger negative effect on export (Agnes Bénassy-Quéré et al., 2009; Behrens et al., 2010). Knowing that export is more volatile due to the amount of trade exchanges of mostly intermediate goods within a vertical specialization network (Chen, 2010), a stronger impact on intermediate goods export is expected. By comparing the impact of GDP on the export of intermediate and final goods before and during the crisis the influence of the crisis can be observed.

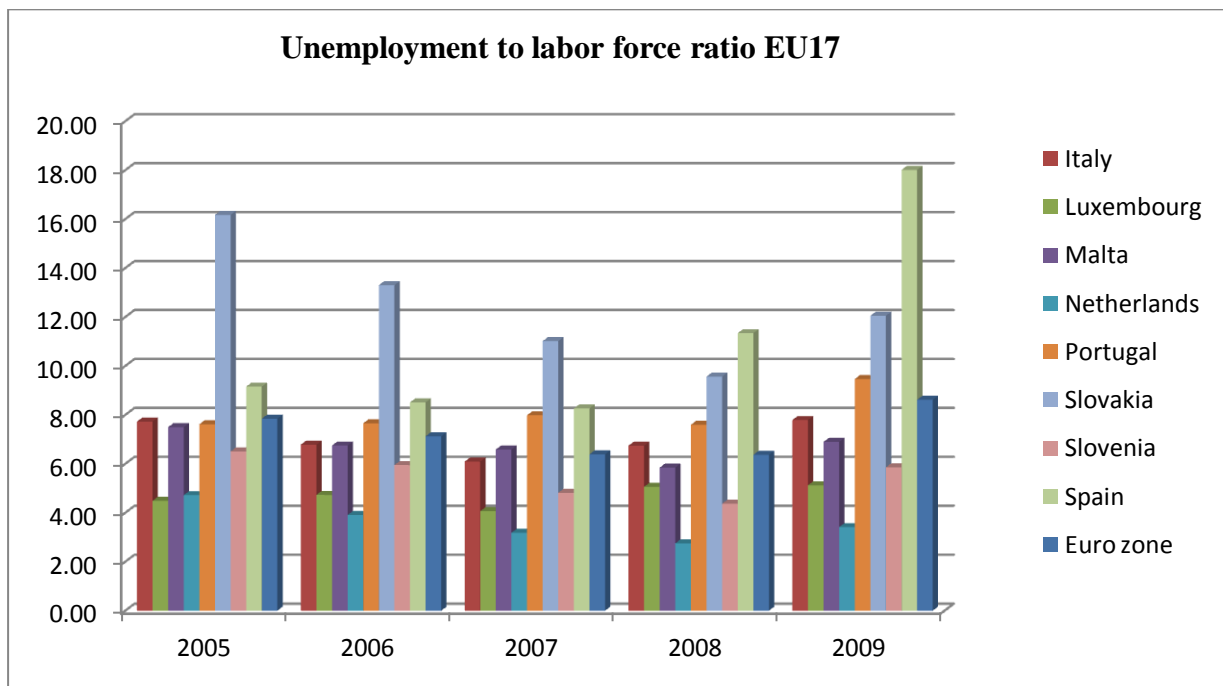
This research already mentioned the productivity factor unemployment that plays an important role in the long-term development of a country. At macro level, unemployment can be seen as unused production capability, due to the fact that an economy is producing less than its capacity. When someone is unemployed, he/she loses income and is forced to reduce his or her standard of living. Besides that, there is less money spent in an economy, which encourages more unemployment (Verick, 2009). Employment ensures that skills and knowledge don't get lost and will be passed on. On the individual level, this macroeconomic factor plays an essential role in the standard of living (Verick, 2009).

Figure 2.4 Unemployment to labour force ratio Eurozone



- Source: Worldbank 2010

Figure 2.5 Unemployment to labour force ratio Eurozone



- Source: Worldbank 2010

As one can see in Figure 2.4 and 2.5, unemployment in the Eurozone has been rising. Compared with other recessions, the downfall in employees is not that strong. This was possible due to a strong reduction in average hours worked per person and the part-time unemployment compensation that the European Union provided (European Commission, 2009). Barakat et al. (2010) researched the effect of the credit crunch on labour market perspectives. The findings of the concerning paper were that especially young male workers were hit harder by the crisis in the Eurozone.

The Eurozone's entrepreneurial economy became more and more a knowledge-based economy instead of an economy based on land, labour and capital. Firms make more use of automation processes nowadays and a big share of required employees had changed from low skilled to high skilled. The shift can be seen in the rise of European granted patents, 34,702 in 2001 to 53,259 in 2005 (European Patent Office, 2011). According to Berman, Bound and Machin (1997) a consequence of this shift is that the demand for skilled workers rose while demand for less skilled workers declined.

This research expects a negative impact for unemployment on intermediate goods export and on final goods export before and during the crisis. A stronger negative impact for unemployment on intermediate goods export instead of final goods export is expected due to the assumption that intermediate goods export has a stronger relation to the level of productivity. The export of intermediate goods has a greater level of return to invested manpower due to the fact that it has a higher amount of trade exchanges within a vertical specialization network than final goods. The amount of trade exchanges causes a multiplier effect on returns, making trade in intermediate goods more beneficial but also more risky. This expectation will be investigated by testing the impact of unemployment on final goods export, intermediate goods export and total export pre-crisis and during the crisis so that the influence of the crisis can be observed.

The availability of credit makes it easier for entrepreneurs to attract extra manpower and invest in capital goods to increase productivity. The role of net domestic credit regarding exports is described in the next paragraph below.

2.3 Net Domestic Credit

In the field of export, net domestic credit is essential for purchasing, investments and reducing risks. According to Auboin (2007), approximately 90 percent of all transactions in the field of trade include a sort of credit or another form of financial support from financial institutions.

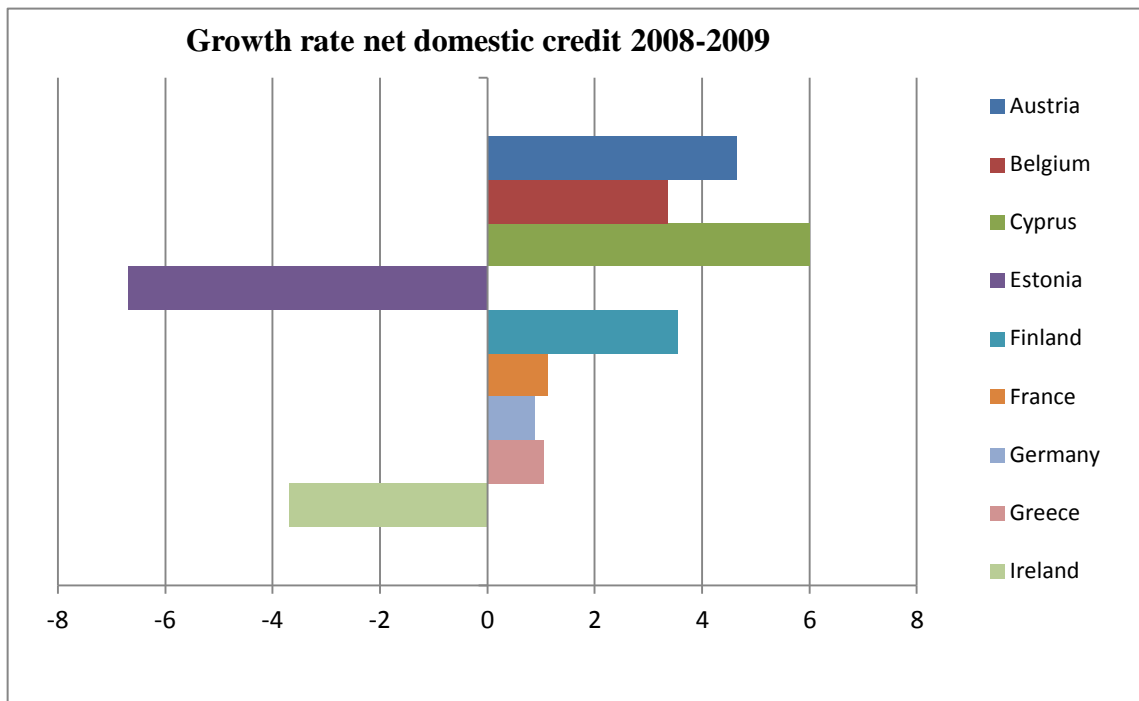
The characteristics of investments regarding economic growth are that it can cause creative destruction which means that the speed up of inventions and innovations due to available credit replace older production processes and products with improvements in procedures, production etc. (King and Levine, 1993). According to Schumpeter, innovation is the mainspring of an economy. In times when financial resource is more difficult to attract, the innovation process may get decelerated. This development can possibly influence export negatively.

Due to credit restrictions during the financial crisis, perceived risks, like transport insurance and payment of inventories will rise. For instance, the letter of credit that makes up 40 percent of all international trade contracts - this letter states that the importers risk in a transaction is covered by a bank, which makes a transaction more attractive for exporters. When there is a lack of banks that are capable to cover the trade transactions, trade will decline significantly due to increased risk (Amiti & Weinstein, 2009). Vertical supply chains are especially risky during credit restrictions due to the fact that all production stages of the chain, for instance the production of components and R&D, have more difficulties attracting credit. This kind of situation makes the vertical specialization process laborious. In times that the banks' health is decreasing and less financial credit can be provided, all parties of the vertical supply chain are cautious. As a consequence, investment plans are cancelled, fewer firms will expand, demand will fall and the production of supply will be adjusted to that decline (Bénassy-Quéré, 2009; Bekaert and Hodrick, 2008).

The decline of demand is probably highly correlated with the burst in the availability of credit (Bénassy-Quéré, 2009). One can imagine that credit availability plays a more important role in a cross border network where the trades of intermediate and final goods are more risky because it has more trade links due to vertical specialization in contrast to domestic sales (Amiti & Weinstein 2009). Another negative externality of the credit crunch is that it creates negative expectations in cash flow which affect many firms in a way that trade gets reduced.

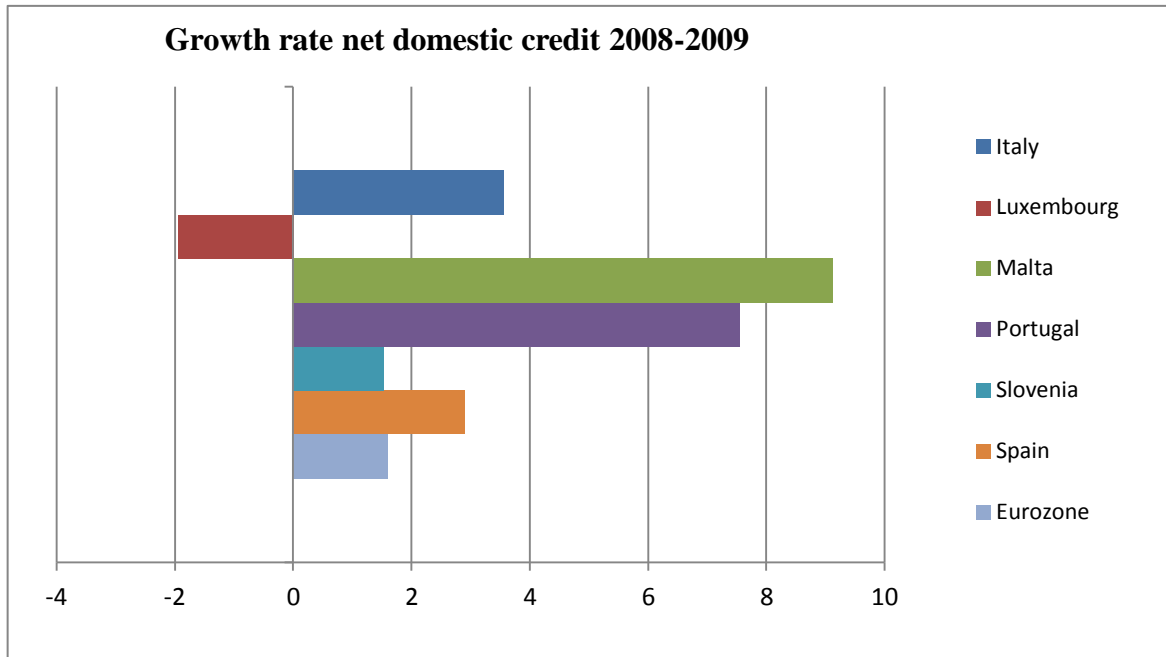
The recession makes entrepreneurs insolvent and most of them will decrease their real investments which decelerates the process of trade (Koellinger and Thurik, 2009).

Figure 2.6 Growth rate available Net Domestic Credit in percentages 2008 - 2009



- Source: Worldbank 2010

Figure 2.7 Growth rate available Net Domestic Credit in percentages 2008 - 2009



- Source: Worldbank 2010

Figures 2.6 and 2.7 show that some EU17 countries individually have shifts in the availability of Net domestic Credit. Contrary the Eurozone as a whole has a small increase of 1.8% in net domestic credit. To explain the difference in growth in net domestic credit between the Eurozone member countries further research is required. Unfortunately there is a difference between the healths of banks in the Eurozone making the provision of credit more complicated which is described below.

In the month of September 2008, the American government was forced to save the two biggest mortgage banks Fannie Mae and Freddie Mac out of financial catastrophe by nationalizing them. The investment bank Lehman Brothers went bankrupt on September the 15th 2008. This was immediately followed with a steep decline on the stock market of Wall Street because investors showed little confidence in the American market and caused a money outflow. To avoid panic in Europe the European minister's council of finance had reached an agreement about setting a guarantee on savings for an amount of at least 50,000 Euro per account holder. This plan had started to convince accountholders to not withdraw money from their accounts. Besides that, the Eurozone regulators had agreed to guarantee the loans between banks and support healthy banks to win the confidence of the inhabitants of the Eurozone. The IMF, EU and Worldbank provided 20 billion Euros to support banks in Europe. The result of the selective support is that not all banks were trustworthy and could

not fulfil the promises they had already made (European Commission, 2009 and Standard & Poor's, 2011). This situation caused distrust between governments, financial institutions, entrepreneurs, traders and consumers. During the crisis, Eurozone banks became more cautious in lending to the private sector. Banks in the Euro area indicate that the tightening in the acceptance criteria is partly related to the balance sheet constraints and the difficult access to the more expensive market funding (Rabobank, 2009).

The current literature provides some contrary findings regarding the relationship between trade finance and exports. Ronci (2005) found a small but non-significant relation between trade and trade financing, where Berman and Martin (2009) stated that countries with great use of trade finance during the credit crunch have a bigger decline in exports, like Africa, than countries that use less trade finance, like Europe. Iacovane and Zavacka (2009) on the other hand found that some sectors rely heavily on trade finance. Amiti & Weinstein (2009) found a strong relation between a negative shock in the sector of financial institutions and amount of export for the US and Japan. To clarify the contrary findings of the above mentioned conjectures this research will test the impact of net domestic credit on export and goes further by comparing the impact of net domestic credit on intermediate goods export and final goods export before and during the crisis. The pre-crisis results will be compared with the crisis results so that the influence of the crisis can be observed.

This research expects that the amount of available credit mostly affects the export development of intermediate goods before and during the crisis. Difficulties in attracting credit can result in companies looking for alternative products of intermediate goods to save costs. The possibility exists that these replacements are intermediate good suppliers from outside the Eurozone, who can deliver cost advantages. This development would be a disadvantage for the Eurozone's intermediate good exporters.

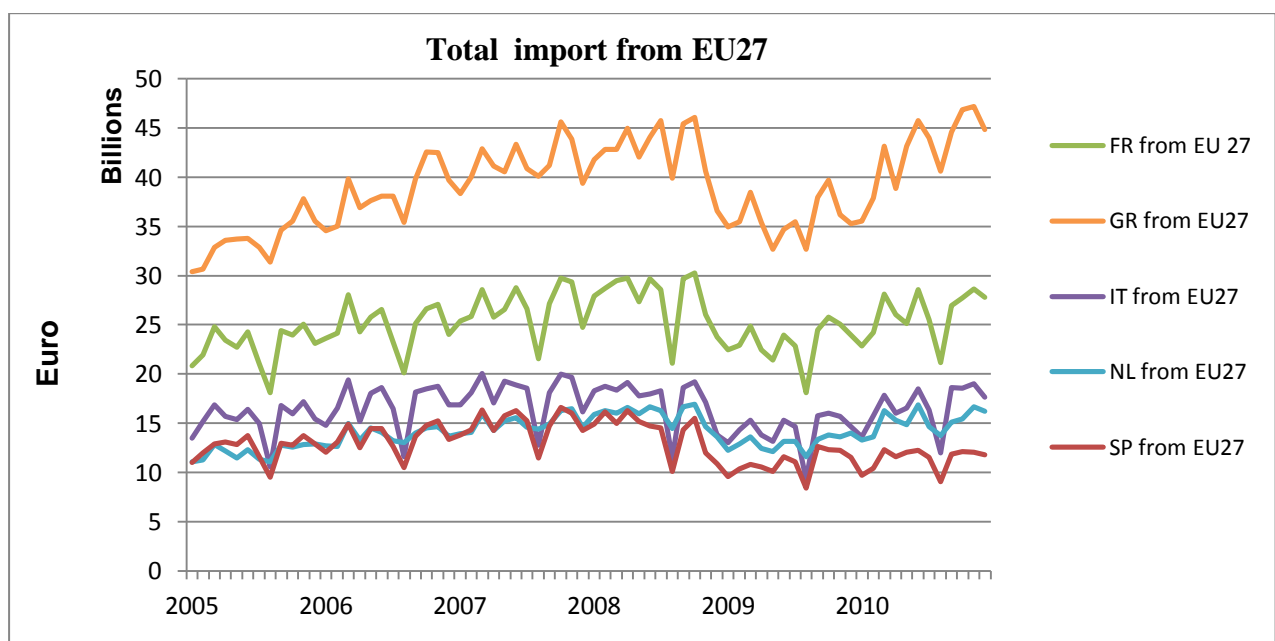
Before firms attract credit to invest in exports they want to know what the state of demand is for a certain product, because without demand there is no trade. The next chapter will describe the role of demand in international trade.

2.4 Demand

An open economy like the Eurozone can benefit from many positive externalities such as an efficient resource allocation, economies of scale and increase in the field of technological innovation/R&D knowledge due to knowledge spill-over and increased competition (Helpman and Krugman, 1985). Import mainly has two effects on the profitability of firms.

At first, imports can have a pro-competitive effect, thus more competition, lower market power of firms and a decline in most firms' profitability (Peltonen et al., 2010). The level of this effect depends on how substitutable the domestic goods and imported goods are. Secondly, imports can cause an opposing effect: Cheaper imported goods may lead to a pro-competitiveness effect on particular firms which use the inputs in their production process or resale imported final goods to realize higher profit (Peltonen et al., 2010). The increase of imports that can increase capital formation, increase production and might cause a growth in import output is called import-led growth (Coe and Helpman, 1995).

Figure 2.8 Total import from EU27



- Source: Eurostat 2010

Figure 2.8 includes the import from a few Eurozone countries. Just like the total export in Figure 1.1, one sees that the import of a few selected Eurozone countries show a similar development. These countries are chosen randomly to show the parallel development between the Eurozone countries.

Awokuse (2007) tested the role of exports and imports expansion regarding economic growth of Bulgaria, Czech Republic and Poland. Concerning imports only the Polish data showed that import has a significant role in economic growth. In his findings he wrote that past findings regarding economic growth without using import, as a growth factor in their analysis may be incomplete. Also Çetintaş and Barışık (2008) stated that the import of inputs and new innovative technologies like more productive capital goods are very important for a fast economic growth. The import of these two groups is required for industrialization. They found that economic growth in transition economies are led by a growth in demand. Especially the imports of intermediate and investment goods can be seen as factors that support diversification of the economy, lower prices and increase export that will lead to economic growth. The import of intermediate goods can increase the level of productivity and trade. The import of innovative technology can cause knowledge spill-over supporting innovation processes. This is in line with Schumpeter's theory that states that innovation is the fuel to maintain economic growth.

Economic growth can be a result of an increase of the amount of input or innovation of production factors, or a combination of. The growth of production can be a sign of diversification and innovation in capacity that enhances activities and raises competition levels (Çetintaş and Barışık, 2008).

This thesis will research if import has an impact on export. Imports will be used as an indicator to see how Eurozone's demand for foreign products (import) influences its export. This research expects that the import of intermediate goods has a bigger impact on export of intermediate goods before and during the crisis, since these goods are traded several times within a vertical specialization network (Chen, 2010) before it reaches the final production stage. Concerning final goods import, this research expects a bigger impact on final goods export than on intermediate goods export before and during the crisis because final goods cannot be sold as intermediate goods. The pre-crisis results will be compared with the crisis results so that the influence of the crisis can be observed.

Foreign demand has the ability to enhance the export of a certain country by for example import goods of the respective country. Behrens et al. (2010) found a strong relation between Belgium's GDP growth and demand of goods. First when the Belgian GDP growth rate was around one percent in the year 2007-2008, the exports to Belgium of a trading partner increased around one percent (0.0138). So when GDP increased by 1%, demand increased by

1.38 %. A remarkable finding of Behrens et al. (2010) was that when there was a downfall of the GDP in 2008-2009, the demand (import of Belgium) had a disproportionate fall. Import fell by 0.0253 when there was a 1 percent GDP drop. This difference can be explained by vertical specialization.

Eaton et al. (2010) used a trade model between 30 countries that distinguishes the increase of trade frictions from a downfall in the production of tradable goods that is based on the model of Head and Ries (2001). Their research concluded that the downfall in demand and not the increase in trade frictions can explain the most of the decline in manufacturing trade. The results of Eaton et al. (2010) are quite similar to the findings of Behrens et al. (2010).

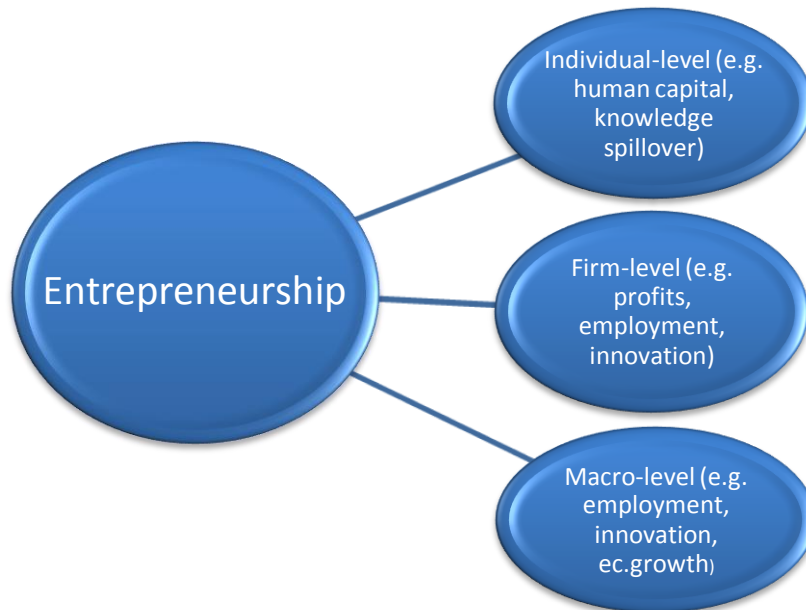
To test the influence of foreign demand on total export, final goods export and intermediate goods export this research will use the variable foreign demand. This research expects that foreign demand has a stronger impact on the export of intermediate goods than on export of final goods before and during the crisis. When the demand of the destination countries increases, the vertical supply chain process in the Eurozone will increase in its intensive margin. This development enhances the export of intermediate goods more than the export of final goods due to the amount of trade linkages concerning intermediate goods. The results of 2006 and 2007 will be compared with the results of 2008 and 2009 so that the impact of the crisis can be observed.

Besides consumers and governments, business ownerships have an effect on the size of demand. The role of the latter in the field of trade will be described in the next chapter.

2.5 Entrepreneurship

Entrepreneurship can cause several effects on individual, firm and macro levels. Since this research is focused on macro level, the possible influences of entrepreneurship during a recession will be described in this paragraph. The possible positive effects of cross-border entrepreneurship are displayed in Figure 2.9 below.

Figure 2.9 Cross-border Entrepreneurship



- Source: Adapted from Hessels (2008)

According to Joseph Schumpeter, entrepreneurship is the most important factor for economic growth because entrepreneurship provides renewal which supports economic growth, like start ups and increased competition (Thurik, 2003). Entrepreneurs can perceive and create new economic opportunities (new products, production methods), introduce new ideas, higher productivity, new niches and industries and more competitiveness.

Besides Schumpeter's theorem, the endogenous growth model states that entrepreneurship ensures that there is innovation (the creation of better or more efficient products, processes or technologies that are acknowledged by markets, regulators, and society) and human capital formation (the stock of knowledge, capabilities and personality attributes embodied as economic value) within an economy. These two factors lead to economic growth (Mokyr, 1990).

Entrepreneurship in general can play a very important role during a recession because it can lead to a productivity shock by diffusing new knowledge, new technologies and new products which can create demand and may lead to economic growth (Schmitz, 1989). Besides diffusion of new technology and products, innovations may also lead to productivity shocks (Koellinger, 2008).

The SME sector (Small and Medium-sized Enterprises) plays an important role in the growth of a country by creating new job opportunities and is able to uphold macro-economic stability and growth (OECD Summit, 2008). The small firms in general and new start-ups in particular have been the locomotive of employment creation. In the US, 5.8 million new jobs were created by small and new firms between the years 1987 and 1992 while the bigger established enterprises lost 2.3 million jobs. The job losses of the larger enterprises can be explained by the shift in demand from low skilled employees to high skilled employees (Audretsch, 1995).

A reason why the Small and Medium-sized Enterprises were being affected during the crisis could be due to their dependency on banks. Only a limited entry of new firms was possible because the attraction of credit was difficult. The crisis also forced the SME's to lower production and caused more financial constraints. At a time of less available credit, entrepreneurs need strong government support to see perspectives and start their own business (World Economic Forum, 2008).

One can see the development of new entrants in the Eurozone expressed as “new business ownership” (nbor, younger than 12 months) in Table 2.4 below.

Table 2.4 New Business Ownership Ratio

Nbor as % of population	2005	2006	2007	2008	2009
Austria	2.4	NA	1	NA	NA
Belgium	1.2	1.1	0.4	0.9	1.6
Cyprus	NA	NA	NA	NA	NA
Estonia	NA	NA	NA	NA	NA
Finland	1.9	2.4	2.7	3.3	2.3
France	0.7	0.7	0.9	1.9	1.4
Germany	2.4	1.7	1.6	1.5	2.1
Greece	1.6	2.3	1.1	4.6	4.7
Ireland	4.7	2.9	4.2	4.3	NA
Italy	2.3	1.4	1.5	2.7	1.9
Luxembourg	NA	NA	NA	NA	NA
Malta	NA	NA	NA	NA	NA
Netherlands	1.9	1.9	2.5	3.2	4.1
Portugal	NA	NA	4.1	NA	NA
Slovakia	NA	NA	NA	NA	NA
Slovenia	1.4	1.8	1.8	2.4	2.1
Spain	3.4	4.4	4.3	3.9	2.8
Eurozone	1.7	1.6	2.0	2.2	1.7

- Source: Global Entrepreneurship Monitor 2010

Table 2.4 show that there is no clear pattern in increase or decline of new business ownerships between the Eurozone countries. The differences in the development of the ratio can probably be explained by the difference in financial resource.

Previous conjectures stated that small firms have more difficulties surviving a financial crisis due to financial start up conditions. Additionally it also takes financial resources to perform counter-cyclical actions. Normally, small firms are more willing to sustain/maintain current size instead of taking risks and grow during an economic crisis while they can be as efficient as larger enterprises and can also serve niche markets (Van Gelderen, Frese and Thurik, 2000).

According to Barlett (2008), an economic crisis provides perspectives for medium-sized firms by performing counter-cyclical actions, like taking over talented employees from failing competitors and promoting their product when competitors are weak to gain market share.

Small firms have the ability to innovate faster than larger established firms because new firms don't have to deal with incompatibilities while established firms have to change from installed technology to new technology (Jovanovic & Rousseau, 2009). The older established firms have the risk to get in a technological lock-in. However, the entrepreneurial economy provides the opportunity to change from the established technology in the incumbent firm by starting a new one (Christensen, 2000).

By reading all of the above we can see that entrepreneurs have to face a high level of uncertainty during a recession. On the other hand "uncertainty is a fact of economic life entrepreneurs are needed to arbitrage, to take risk and to innovate" (Van Gelderen, Frese and Thurik, 2000, p.6). Uncertainty exists due to an unpredictable environment, like for instance innovation in technology, new competitors, new policy regulations, possible bankruptcy of suppliers and competitors, consumer preferences and limited resources (Miller and Friesen, 1982). According to previous conjectures, it is the start-up firms in general that increases country productivity, increases job creation and enhances innovation. Therefore this thesis will investigate the impact of the new business ratio on total export, intermediate goods export and final goods export.

This thesis expects that the new business ratio has a bigger impact on intermediate goods export than on final goods export before and during the crisis. This expectation is formulated because when the sale of final goods reduces, a bigger impact on the sales of intermediate goods occurs due to two reasons (Chen, 2010). The first reason is that intermediate goods are traded more frequently in a vertical specialization network than final goods which increases the number of exports. The second reason is that the final goods producers have the opportunity to switch from intermediate good suppliers regarding cost advantage. The pre-crisis results will be compared with the crisis results so that the influence of the crisis can be observed.

3 Data

The EU17 intra trade data for the empirical section was collected from the Dutch Central Bureau for Statistics (CBS), Eurostat, Global Entrepreneurship Monitor, The European Commission, United Nations Conference on Trade and Development (UNCTAD) and the World Bank. The exports of the EU17 countries (Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, The Netherlands, Portugal, Slovakia, Slovenia and Spain) are selected regarding the 333 different product groups available on Unctad. The 333 product groups can be divided into 6 main groups namely: 1. Food, 2. Beverages and tobacco, 3. Agricultural raw materials, 4. Ores, metals and precious stones, 5. Fuels 6. Manufactured goods. The Eurozone's Total Export, Intermediate Goods Exports and Final Goods Exports within the EU17 are analyzed regarding the effect of the explanatory variables, GDP, Unemployment, Net Domestic Credit, Import of Final Goods, Import of Intermediate Goods, Foreign Demand and New Business Ratio. The results of 2006 and 2007 (pre-crisis) are compared with the results of 2008 and 2009 (crisis) to observe the influence of the crisis.

Using the EU17 has the advantage that the trade data concerning the 333 existing product groups is quite complete. The non-border trade zone of the EU17 and one currency (Euro) makes the zone ideal to research the impact of the crisis, because there are no trade frictions and currency fluctuations (excluding trade with Slovakia and Estonia) influencing transactions of exports. Officially the Eurozone had 13 member countries in 2006. Slovenia joined the Eurozone on the first of January 2007. One year later, on the first of January 2008 Cyprus joined the Eurozone. On the first of January 2009, Slovakia joined the Eurozone and on the first of January 2011, Estonia also joined the group of Euro-using countries. In 2006 Slovenia, Cyprus, Slovakia and Estonia were already members of the EU, which means that they already benefited from trade without barriers within the Eurozone in 2006. This means that only the currency rate could have influenced the amount of trade between these four respective countries with the Eurozone. However, the currency fluctuations in the respective time span influenced the amount of trade of these four countries minimally, which makes these four countries suitable for this research². To gather enough observations to run the multiple-linear regression test, the data regarding the EU17 is used instead of the EU13 because quarterly and monthly data were not available concerning the development of most economic factors.

² <http://www.oanda.com/currency/historical-rates/>

3.1 The theoretical framework

To find out which explanatory variables have an impact on exports during the financial crisis, this research ran six regressions. The regressions are based on the development of the Eurozone's Total Export, Intermediate Goods Export and Final Goods Export before and during the financial crisis.

This thesis uses multiple scale variables to explain the development of Total Export, Final Goods Export and Intermediate Goods Export. Via the Analysis Of Variance test (ANOVA) it is possible to see the level of influence of the explanatory variables on the dependent variables. The advantage of the ANOVA test is that it compares the level of impact between all independent variables of the model. Because the purpose of this thesis is to investigate the level of impact of different economic factors on the three dependent exports variables pre-crisis and during crisis, the ANOVA test was chosen to be used. The empirical tests have been performed with SPSS.

This research uses the following regressions for measuring the impact on exports by productivity, financial, demand and entrepreneurial characteristics.

Formulas:

(3.1) Regression Total Export

$$\text{Total Export Eurozone}_t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon$$

(3.2) Regression Final Goods Export

$$\text{Final Goods Export Eurozone}_t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon$$

(3.3) Regression Intermediate Goods Export

$$\text{Intermediate Goods Export Eurozone}_t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon$$

3.1.1 Variables of formulas 3.1, 3.2 and 3.3.

Dependent variables:

The dependent variables are three export groups from the Eurozone, distinguished by product group. They share the same characteristics in the sense that they each experienced a steep decline.

Product characteristics: Total Export (TOT_EXP), Final Goods Export (FIN_EXP) and Intermediate Goods Export (INT_EXP).

The data of the dependent variables are collected from UNCTAD by collecting the data of all 333 product groups. These groups are separated in final goods and intermediate goods. The exports are measured in billion Euros. This research re-calculated the export groups as index numbers with the year 2005 as index year for the pre-crisis regression and 2007 as index year for the crisis regression. The index numbers of 2006, 2007, 2008 and 2009 were used in this research because they indicate the development of the concerning export groups.

Explanatory variables

The explanatory variables are economic indicators for a specific EU17 country that possibly clarifies the cause of the downfall in exports.

- Productivity

Productivity characteristics: $\beta 1X1_t$: GDP (GDP). The variable GDP indicates the size of productivity of a EU17 country in the years 2006, 2007, 2008 and 2009. The GDP of the Eurozone countries are measured in billion Euros. The GDP data has been found on the website of UNCTAD.

Productivity characteristic: $\beta 1X2_t$: Unemployment to Labour Force Ratio (UNEMPLB). This ratio shows the level of unemployment to the labour force by Eurozone country in the years 2006, 2007, 2008 and 2009. The data regarding this variable has been found on the website of the Worldbank.

- Credit

Financial characteristics: $\beta 1X3_t$: Net Domestic Credit as % of GDP (NDCGDP). The Net Domestic Credit provides the amount of available credit as percentage of GDP of a Eurozone member country. The rates of 2006, 2007, 2008 and 2009 are used in this research because they provide the development of available credit clearly. The data of this variable has been collected from the Worldbank website.

- Demand

Demand characteristics: $\beta 1X4_t$: Final Goods Import (FIN_IMP). The variable Import of Final Goods shows the amount of imported final goods of an Eurozone country, which are also calculated as index numbers like the export variables with the year 2005 as index year for the pre-crisis regression and 2007 as index year for the crisis regression. The index numbers are based on the import data from the website of UNCTAD which are measured in billions (Euros). The index numbers of 2006, 2007, 2008 and 2009 are used in this thesis because they show the development of this economic factor.

Demand characteristics: $\beta 1X5_t$: Intermediate Goods Import (INT_IMP). The variable Import of Intermediate goods shows the amount of imported intermediate goods of a Eurozone country which are also calculated as index numbers with the year 2005 as index year for the pre-crisis regression and 2007 as index year for the crisis regression. The index numbers are based on the import data from the website of UNCTAD which are measured in billions (Euros). The index numbers of 2006, 2007, 2008 and 2009 show the development of this economic factor.

Demand characteristics: $\beta 1X6_t$: Foreign Demand (FOR_DEM). The variable Foreign Demand shows Eurozone's demand calculated as Eurozone's total GDP minus the GDP of the respective exporting country for the years 2007, 2008 and 2009. Thereafter the outcomes were re-calculated into index numbers with 2005 as index year for the pre-crisis regression and 2007 as index year for the crisis regression. The index numbers of 2006, 2007, 2008 and 2009 show the development of foreign demand and are used in the regressions.

- Entrepreneurship

Entrepreneur characteristics: $\beta_1 X_t$: New Business Ratio (NEW_BUS). The amount of new businesses (up to 1 year old) as percentage of the total enterprises amount of a respective Eurozone country. The new business data and total enterprises data are indicated in thousands and were collected from the European Commission website. The rates of 2006, 2007, 2008 and 2009 are used in this research because they provide the development of new businesses clearly.

t: time (annual data)

ε : Error term

3.2 Descriptive data analysis

In order to analyze the robustness of this research it is important to have a look at the distribution of the data. Firstly, this research checks the histogram and Q-Q plot below to analyze the distribution of the data.

Figure 3.1 Distribution of the data of regression 3.1 (2006-2007)

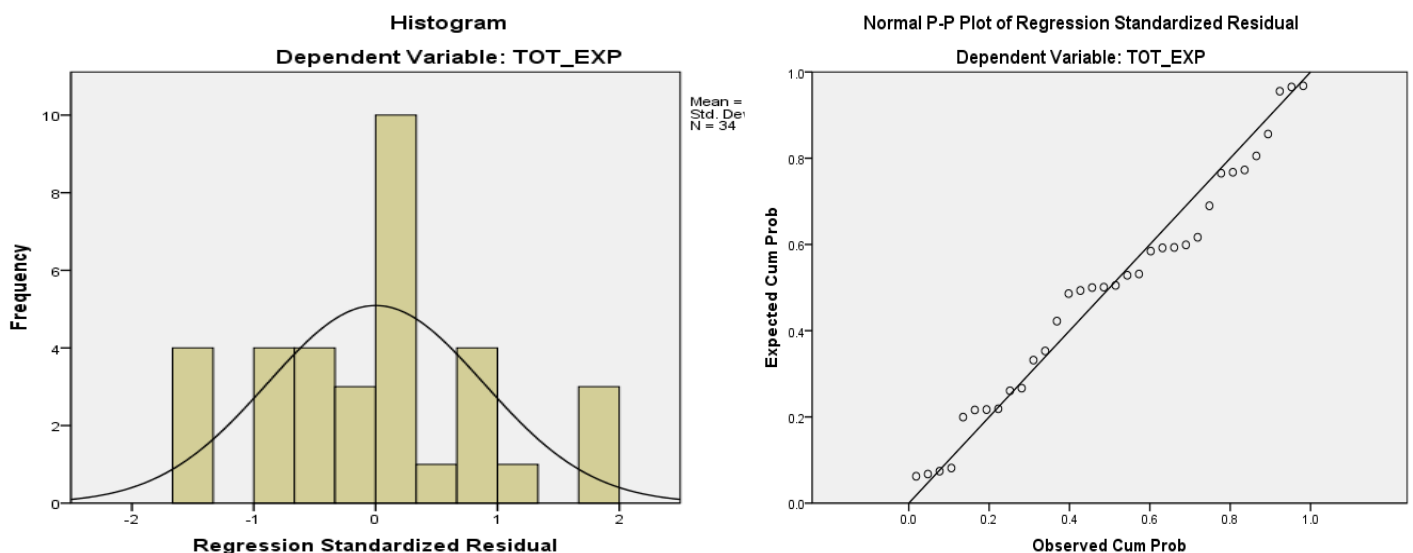


Figure 3.2 Distribution of the data of regression 3.2 (2006-2007)

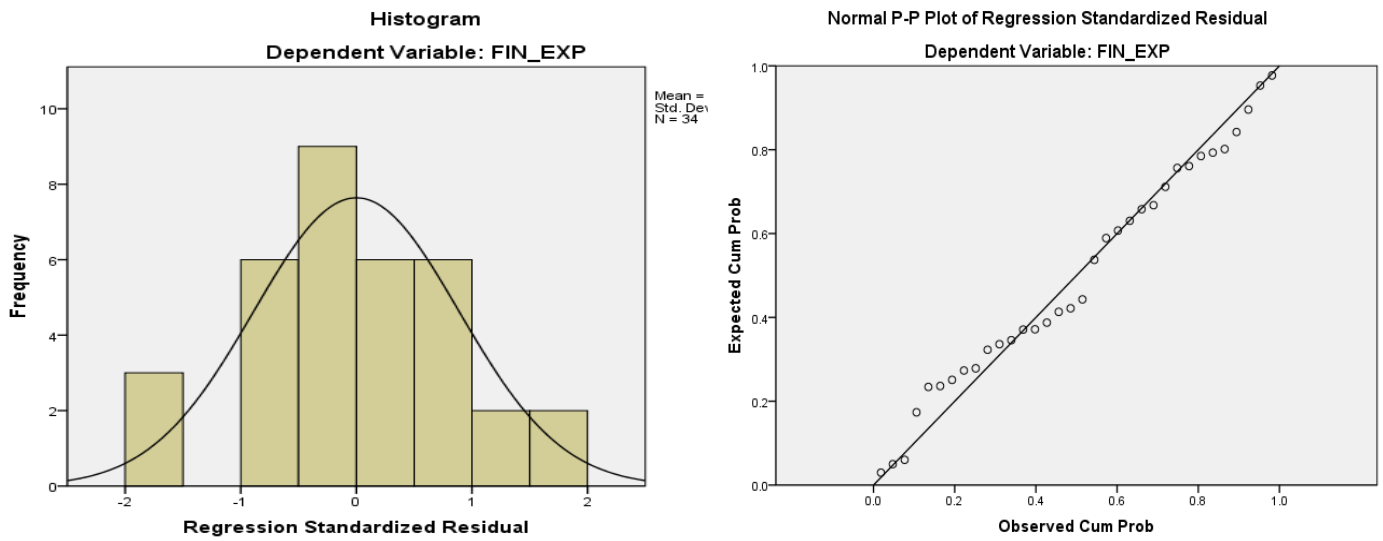


Figure 3.3 Distribution of the data of regression 3.3 (2006-2007)

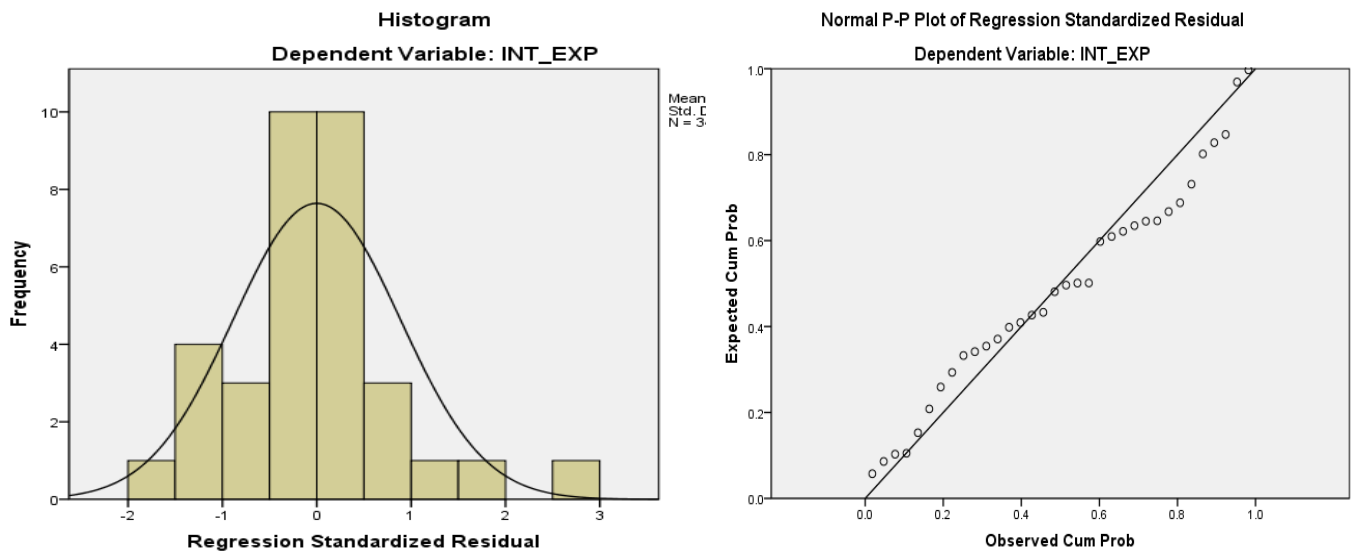


Figure 3.4 Distribution of the data of regression 3.1 (2008 - 2009)

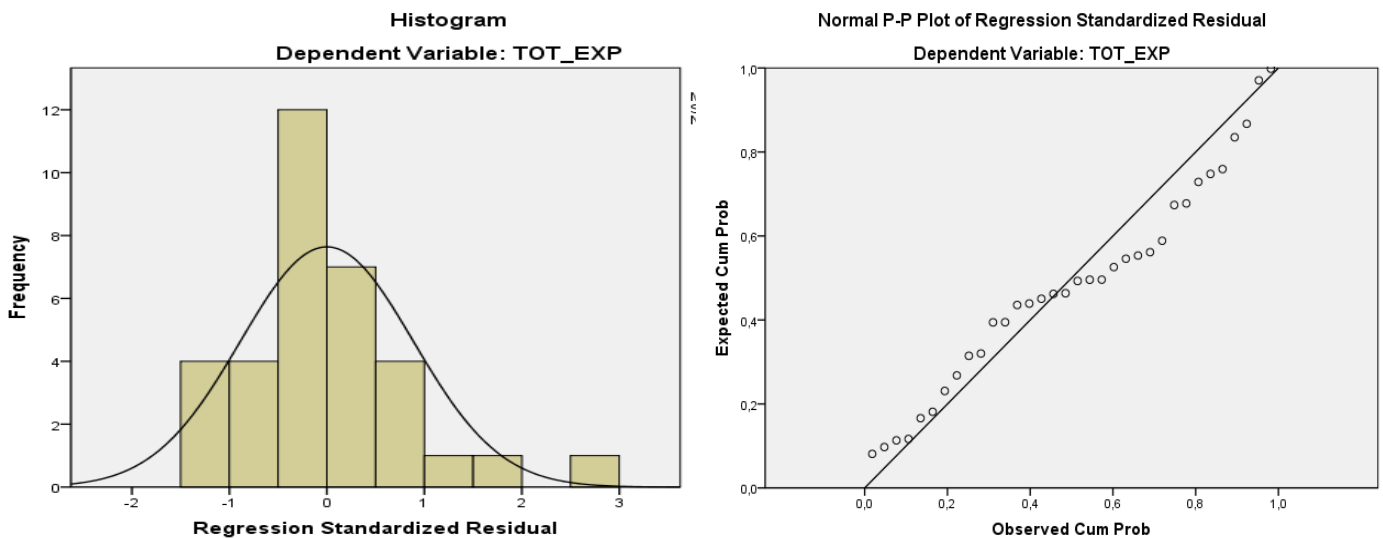


Figure 3.5 Distribution of the data of regression 3.2 (2008 – 2009)

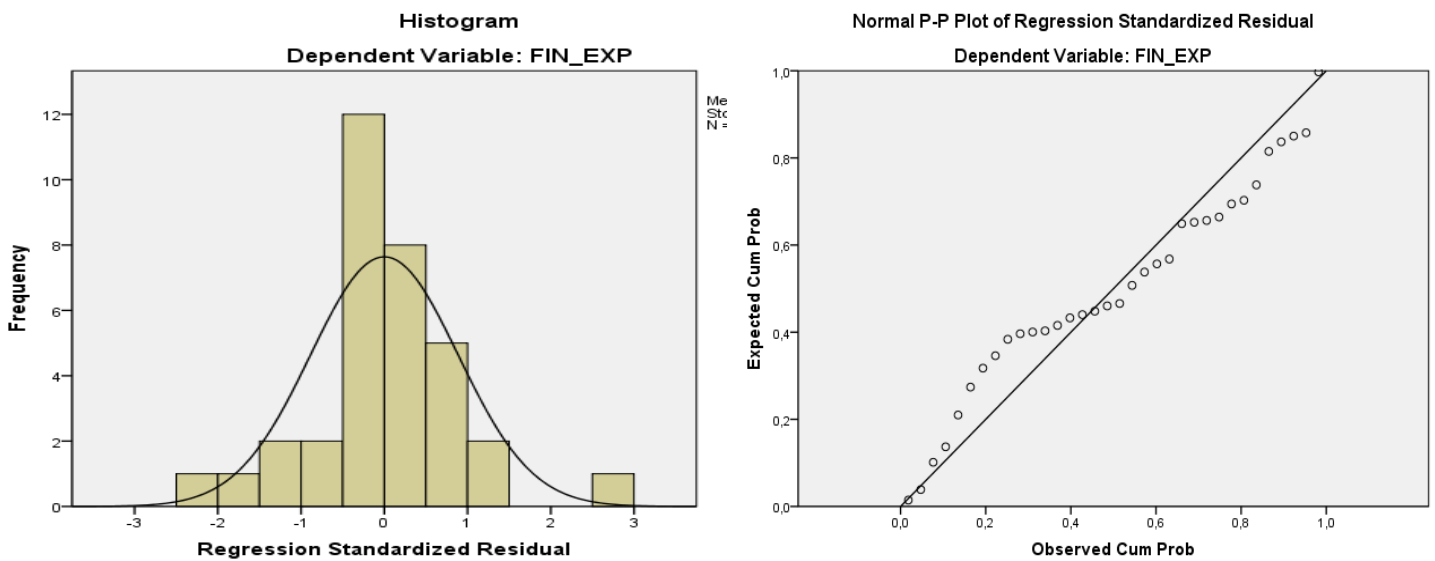
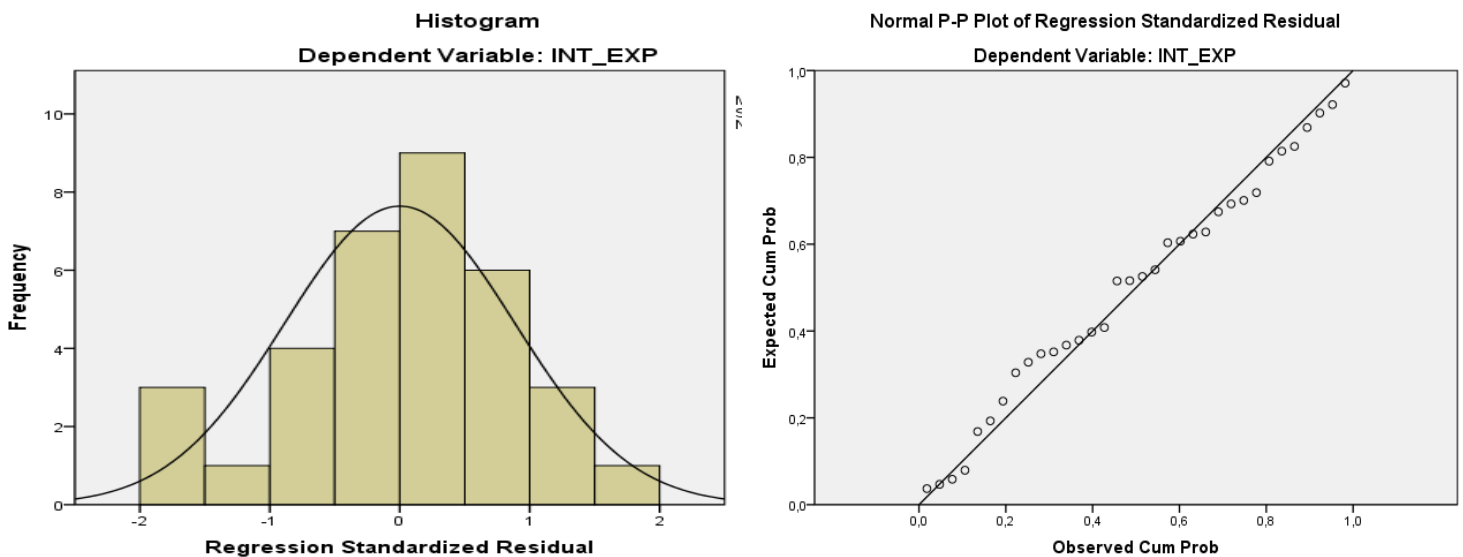


Figure 3.6 Distribution of the data of regression 3.3 (2008 – 2009)



Overall the histogram and the Q-Q plot demonstrate that the residuals are quite normally distributed. However, there are a few peculiarities regarding the figures above. Figure 3.1 shows a remarkable distribution on the right tail, just like the Figures 3.3. , 3.4, and 3.5.

When knowing that a visual rating is not accurate, the skewness and kurtosis calculations are used. The left oblique distribution has a negative value and right oblique distribution a positive value. If it is in the middle the value of skewness is 0. The formula used for calculating skewness is:

(3.4) Skewness

$$skewness = \frac{\sum_{i=1}^N (Y_i - \bar{Y})^3}{(N - 1)s^3}$$

Looking at the skewness output of Table 3.1. shows that the variables are normally distributed with a skewness around 0. The variables GDP, FIN_IMP and NEW_BUS are right oblique distributed, but not extremely.

Table 3.1 Descriptive Statistics of regression 3.1, 3.2 and 3.3 (2006 and 2007)

	TOT_EXP	FIN_EXP	INT_EXP	GDP	UNEMP	NDCGDP	FIN_IMP	INT_IMP	FOR_DEM	NEW_BUS
N Valid	34	34	34	34	34	34	34	34	34	34
Missing	0	0	0	0	0	0	0	0	0	0
Skewness	,094	-,082	,743	1,602	,655	,298	3,465	,340	,004	1,653
Std. Error of Skewness	,403	,403	,403	,403	,403	,403	,403	,403	,403	,403
Kurtosis	1,577	2,690	1,952	1,405	,432	-,094	11,834	-,403	-2,109	3,249
Std. Error of Kurtosis	,788	,788	,788	,788	,788	,788	,788	,788	,788	,788
Range	84,18	102,04	88,57	3322685,46	10,12	249,80	175,35	20,57	17,62	,20
Minimum	79,97	68,09	90,61	6462,03	3,18	,30	104,84	7,21	108,91	,00
Maximum	164,15	170,13	179,18	3329147,49	13,30	250,10	280,19	27,78	126,53	,20

Glancing at the skewness SPSS output below (Table 3.2) shows that most variables are normally distributed because they have a skewness value around 0. The variable GDP is right oblique distributed, which is expected due to the positive values and that means that the tail on the right side is longer than the left side. The UNEMPLB and NEW_BUS variables are a bit to the right because both increased slightly in the years 2008 and 2009.

Table 3.2 Descriptive Statistics of regression 3.1, 3.2 and 3.3 (2008 and 2009)

	TOT_EXP	FIN_EXP	INT_EXP	GDP	UNEMP	NDCGDP	FIN_IMP	INT_IMP	FOR_DEM	NEW_BUS
N Valid	34	34	34	34	34	34	34	34	34	34
Missing	0	0	0	0	0	0	0	0	0	0
Skewness	-,367	-,199	-,725	1,574	1,281	,707	-,476	-,126	-,001	2,794
Std. Error of Skewness	,403	,403	,403	,403	,403	,403	,403	,403	,403	,403
Kurtosis	-,775	-1,460	-,297	1,271	2,490	-,615	-,539	-1,186	-2,124	9,541
Std. Error of Kurtosis	,788	,788	,788	,788	,788	,788	,788	,788	,788	,788
Minimum	68,80	-30,19	91,33	7987,43	2,75	44,70	67,94	73,05	101,23	,88
Maximum	116,54	16,39	118,65	3634527,48	18,01	269,70	116,39	132,15	109,99	53,30

By testing the kurtosis one can check if the distribution has a steep curve or that it has a flat curve. If there is a normal distribution the kurtosis will have a value of 0. A negative result points to a flatter distribution and a positive outcome refers to a sharper distribution than a normal distribution. The minimum number is -3, which is referred to as a total flat distribution. The maximum result is unlimited. The kurtosis can be tested statistically and indicates whether the observed distribution deviates from the normal distribution.

(3.5) Kurtosis

$$kurtosis = \frac{\sum_{i=1}^N (Y_i - \bar{Y})^4}{(N - 1)s^4} - 3$$

Table 3.1 displays that the variables Foreign Demand has a kurtosis value of <0 which refers that the distribution of the data of this variable is flat and has thick tails. The value of the kurtosis is not extreme.

The variables UNEMP and INT_IMP are close to 0 which refers to a normal distribution.

The variables TOT_EXP, FIN_EXP, INT_EXP, GDP and NEW_BUS have a kurtosis value of >0 which means that the distribution of the data of these variables have a steep curve and thin tails.

The variable FIN_IMP has a remarkable kurtosis result which indicates a level of 11.83%. Most observations in this model lie between the 0 and three percent. The 11.38 % means that the data of this variable has a steep curve and thin tails. This can be explained by the fact that for all 17 countries the developments of import of final goods were quite similar.

Table 3.2 shows that the variables FIN_EXP, NDCGDP, INT_IMP and FOR_DEM have a kurtosis value of <0 which means that the data of these variables are flat distributed and have thick tails, although the values of the kurtosis of these variables are not extreme.

The variables TOT_EXP, INT_EXP, NDCGDP and INT_IMP are close to 0 hence they are normally distributed.

The GDP and UNEMLB have a kurtosis value of >0 which means that the data distribution has a steep curve and thin tails.

The most remarkable kurtosis result is from the variable NEW_BUS that indicates a level of 9.54 % while most observations lie between the 0 and three percent. This means that the data

distribution of the variable New Business Ratio has a steep curve and thin tails. This can probably be explained by the fact that all GDP data of the Eurozone in the period of 2008 and 2009 are within a specific certain range.

Another important factor to check the robustness of this research is the R square of the model; see Steel and Torrie (1960). This explains the proportion of variability in the data set that is accounted by the model. It provides a measure of how well future outcomes are likely to be predicted by the model.

Table 3.3 Model Summary of the regressions 3.1, 3.2 and 3.3 (2006 and 2007)

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Total Export	,818	,669	,580	10,23148	1,492
Final Goods Export	,752	,566	,449	13,62495	1,058
Intermediate Goods Export	,683	,466	,322	14,30280	2,353

Table 3.3 shows that the explanatory power of the regression of Total Export and Final Goods Export are quite strong. The independent variables are responsible for 67 percent and 57 percent respectively. While the independent variables of the regression on intermediate goods export show a quite strong explanatory power of 47 percent.

It can also be confidently stated that there is no concern for autocorrelation, given the Durbin-Watson result that is around 2 displayed in Table 3.4.

Table 3.4 Model Summary of the regressions 3.1, 3.2 and 3.3 (2008 and 2009)

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Total Export	,970	,940	,924	3,48316	2,395
Final Goods Export	,964	,929	,910	4,36357	2,238
Intermediate Goods Export	,684	,468	,325	6,12396	2,010

Table 3.4 shows that the explanatory power of the regression of Total Export and Final Goods Export are strong. The independent variables are responsible for 94 percent and 93 percent respectively. While the independent variables of the regression on intermediate goods export show a quite strong explanatory power of 47 percent.

It can also be confidently stated that there is no concern for autocorrelation, given the Durbin-Watson result that is around 2 displayed in Table 3.4.

Scatterplots Pre-Crisis 2006 and 2007

Figure 3.7 Scatterplot of regression 3.1 2006 & 2007

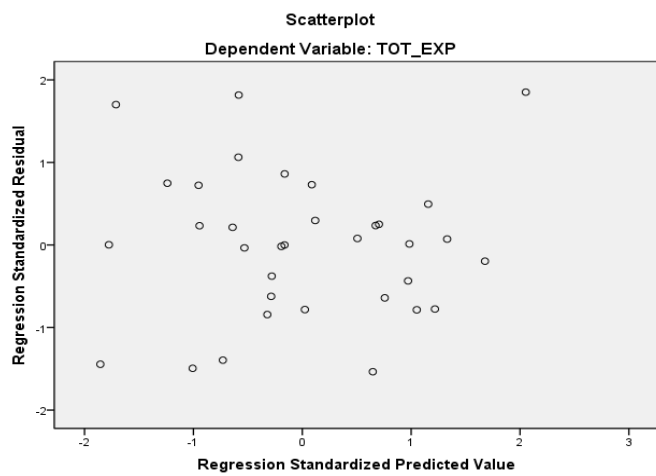


Figure 3.8 Scatterplot of regression 3.2 2006 & 2007

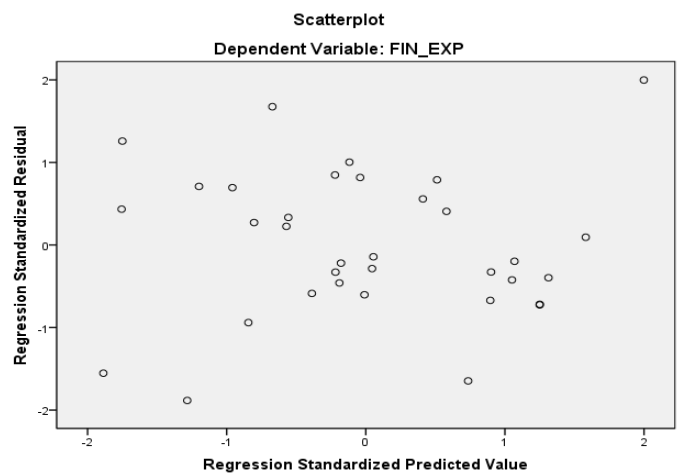
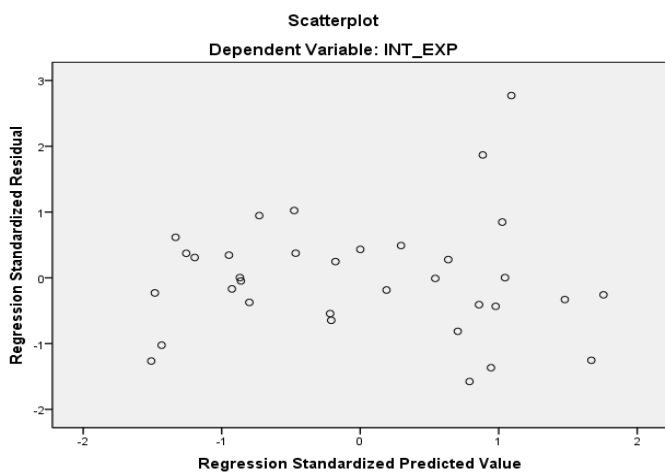


Figure 3.9 Scatterplot of regression 3.3 2006 & 2007



Scatterplots Financial Crisis 2008 and 2009

Figure 3.10 Scatterplot of regression 3.1 2008 & 2009 Figure 3.11 Scatterplot of regression 3.2 2008 & 2009

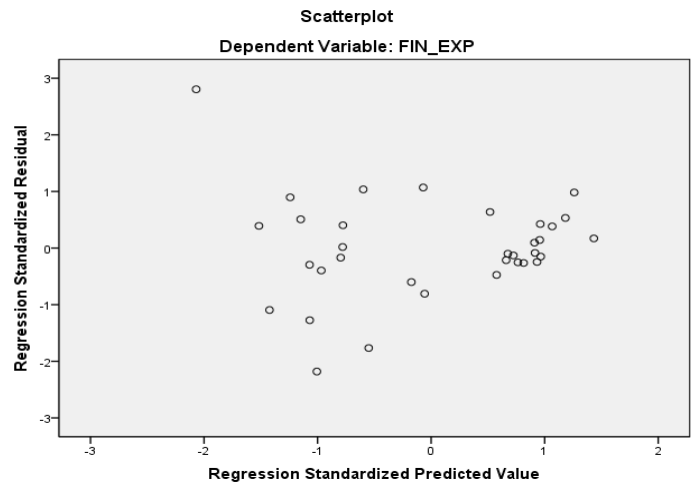
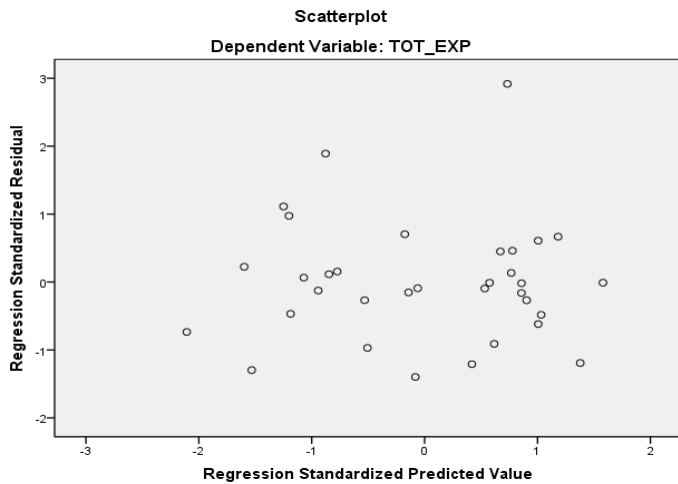
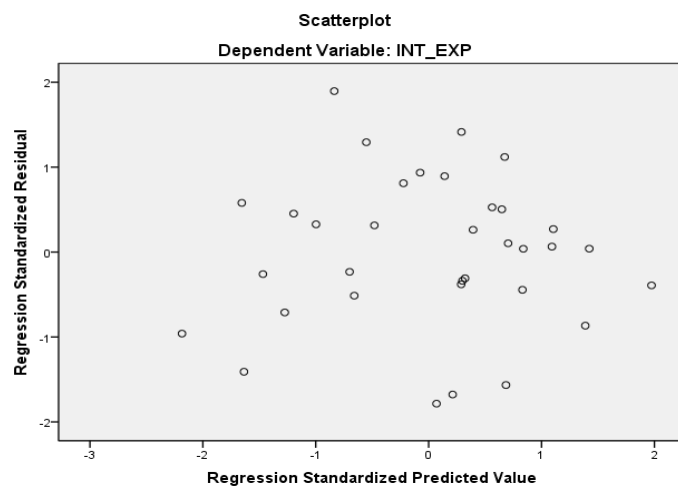


Figure 3.12 Scatterplot of regression 3.3 2008 & 2009



An assumption that is not met with such determination is heteroskedasticity. The presence of heteroskedasticity can be noticed by looking at the scatterplot that displays the Standardized Predicted Value with the Standardized Residual. There is a sign of heteroskedasticity if the plot has a form of a fan. At first sight the scatterplots above do not seem to show a form of heteroskedasticity. Therefore this research did not perform the White's test in Eviews. Additionally, the heteroskedasticity does not affect the correctness of the coefficients, but only the standard errors.

Table 3.5: Multicollinearity Regression 3.1, 3.2 and 3.3

Dependent variable: Total Export	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	-62,675	24,413		-2,567	,016	-112,856	-12,493					
GDP	,000	,000	,018	,351	,729	,000	,000	-,011	,069	,017	,847	1,181
UNEMP	,416	,216	,104	1,924	,065	-,028	,860	-,242	,353	,092	,780	1,282
NDCGDP	,003	,012	,014	,270	,789	-,021	,027	,015	,053	,013	,838	1,193
FIN_IMP	,738	,080	,706	9,221	,000	,574	,903	,942	,875	,442	,392	2,554
INT_IMP	,130	,082	,168	1,584	,125	-,039	,298	,778	,297	,076	,205	4,875
FOR_DEM	,673	,303	,221	2,221	,035	,050	1,296	,831	,399	,106	,233	4,297
NEW_BUS	-,058	,082	-,048	-,713	,482	-,227	,110	,287	-,138	-,034	,506	1,976

From the table above it can be concluded that no variables show a high VIF (Variance Inflation Factor) value that refers to multi-collinearity. This is the case for all six regressions that were constructed using the above-mentioned explanatory variables.

4 Results

In this chapter the results of the regression regarding to the Eurozone's Total Export, Final Goods Export and Intermediate Goods Export pre-crisis 2006 up to the end of 2007 and during the crisis 2008 up to the end of 2009 will be discussed.

This research already showed that the exports of the EU17 had a decline during the credit crunch and that the downturn of intermediate goods was relatively higher than final goods. Secondly, in Table 2.3 we saw that the Eurozone's GDP had a strong decline in growth in 2008 and had a negative growth rate in 2009. In Figure 2.4 and 2.5 one sees that the unemployment rates had a slight increase. The Eurozone countries had a small increase in net domestic credit displayed in Figure 2.6 and 2.7. In the field of imports, a steep decline was observed during the crisis (see Figure 2.8). When looking at the new business ownership ratio, an overall decrease in start up of new businesses that are younger than 42 months is seen, (see Table 2.4). The impact of these economic factors on exports will be discussed in section 4.1.3.

This research also tested the correlations between all variables by using the Pearson correlation test in SPSS to see if the economic factors have a significant relationship with each other. The Pearson correlation outputs are shown in Appendix B where the focus lies on the correlations during the crisis. The significant results of these relations can be found in Appendix C. The insignificant correlations between the economic factors are stated in Appendix D.

4.1 Regression Model

Section 4.1.3 consists of the result tables of the three regressions regarding 2006 up to the end of 2007 and Section 4.1.4 consists the result tables of the three regressions regarding 2008 up to the end of 2009 with the following dependent variables: Total Exports, Final Goods Export, Intermediate Good Exports and explanatory variables GDP, Net Domestic Credit as a % of GDP, Unemployment to Labour Force Ratio, Import of Final goods, Import of Intermediate goods, Foreign Demand and New Business Ratio. Section 4.1.3 and 4.1.4 will describe the impact of the explanatory variables on the dependent variables. The model was run via the OLS method with the use of the ANOVA test. Section 4.1.2 shows the degree of

influence of the six regressions, these are described regarding the results which are stated below.

4.1.2 Regression model analyses

Regression 1 2006-2007: Total Export Eurozone $t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \epsilon_t$,

Table 4.1 ANOVA output Total Export

Dependent variable: Total Export	Sum of Squares	df	Mean Square	F	Sig.
Regression	5503,116	7	786,159	7,510	,000
Residual	2721,763	26	104,683		
Total	8224,879	33			

Table 4.2 Model summary Total Export

Total Export	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	,818	,669	,580	10,23148	1,492

The following hypothesis is formulated = $H_0: b=0$

$H_1: b \neq 0$

By looking at the output in Table 4.1 we see that the F-test is significant, meaning that H_0 is rejected. This means that the explanatory variables can possibly have an influence on the dependent variables. The high R^2 of 0,669 displayed in Table 4.2 indicates that the explanatory variables have a quite strong explanatory power.

Regression 2: Final goods export Eurozone 2006-2007 $y_t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon_t$

Table 4.3 ANOVA output Final Goods Export

Dependent variable: Final Goods Export	Sum of Squares	df	Mean Square	F	Sig.
Regression	6292,251	7	898,893	4,842	,001
Residual	4826,619	26	185,639		
Total	11118,870	33			

Table 4.4 Model summary Final Goods Export

Final Goods Export	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	,752	,566	,449	13,62495	1,058

The following hypothesis is formulated = $H_0: b=0$

$H_1: b \neq 0$

The output of Table 4.3 shows that the F-test has a significant outcome which means that H_0 is rejected. Just like the previous regression, the explanatory variables possibly have a very strong influence on the dependent variables. The final goods export regression also showed a high R^2 of 0,566 as one can see at Table 4.4, which could be an indicator that the explanatory variables have a quite strong explanatory power.

Regression 3: Intermediate Goods Export Eurozone 2007-2008_t = $\alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \epsilon_t$,

Table 4.5 ANOVA output Intermediate Goods Export

Dependent variable: Intermediate Goods Export	Sum of Squares	df	Mean Square	F	Sig.
Regression	4644,474	7	663,496	3,243	,013
Residual	5318,822	26	204,570		
Total	9963,296	33			

Table 4.6 Model summary Intermediate Goods Export

Intermediate Goods Export	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	,683	,466	,322	14,30280	2,353

The following hypothesis is formulated = $H_0: b=0$

$H_1: b \neq 0$

Table 4.5 displays that the results of the F value are significant which rejects H_0 . The explanatory variables can possibly have an influence on the dependent variables. The final goods export regression showed a R^2 of 47% as one can see at Table 4.6, which is reasonably strong. This can be an indicator that the explanatory variables have an effect on final goods export.

Regression 1 2008-2009: Total Export Eurozone $t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon_t$,

Table 4.7 ANOVA output Total Export

Dependent variable: Total Export	Sum of Squares	df	Mean Square	F	Sig.
Regression	4963,997	7	709,142	58,450	,000
Residual	315,443	26	12,132		
Total	5279,440	33			

Table 4.8 Model summary Total Export

Total Export	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	,970	,940	,924	3,48316	2,395

The following hypothesis is formulated = $H_0: b=0$

$H_1: b \neq 0$

By looking at the output in Table 4.7, we see that the F-test is significant, meaning that H_0 is rejected. This means that the explanatory variables can possibly have an influence on the dependent variables. The high R^2 of 0,940 in displayed in Table 4.8 is a very strong indicator that the explanatory variables have strong explanatory power.

Regression 2: Final goods export Eurozone 2008-2009 $y_t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon_t$,

Table 4.9 ANOVA output Final Goods Export

Dependent variable: Final Goods Export	Sum of Squares	df	Mean Square	F	Sig.
Regression	6453,842	7	921,977	48,421	0
Residual	495,06	26	19,041		
Total	6948,902	33			

Table 4.10 Model summary Final Goods Export

Final Goods Export	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	,964	,929	,910	4,36357	2,238

The following hypothesis is formulated = $H_0: b=0$

$H_1: b \neq 0$

The output of Table 4.9 shows that the F-test has a significant outcome which means that H_0 is rejected. Just like the previous regression, the explanatory variables possibly have a very strong influence on the dependent variables. The final goods export regression also showed a high R^2 of 0,929 as one can see in Table 4.10, which could be an indicator that the explanatory variables have strong explanatory power.

Regression 3: Intermediate Goods Export Eurozone 2008-2009 $t = \alpha_t + \beta_1 X_{1t} + \beta_1 X_{2t} + \beta_1 X_{3t} + \beta_1 X_{4t} + \beta_1 X_{5t} + \beta_1 X_{6t} + \beta_1 X_{7t} \varepsilon_t$,

Table 4.11 ANOVA output Intermediate Goods Export

Dependent variable: Intermediate Goods Export	Sum of Squares	df	Mean Square	F	Sig.
Regression	858,938	7	122,705	3,272	,013
Residual	975,076	26	37,503		
Total	1834,014	33			

Table 4.12 Model summary Intermediate Goods Export

Intermediate Goods Export	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	,684	,468	,325	6,12396	2,010

The following hypothesis is formulated = $H_0: b=0$

$H_1: b \neq 0$

Table 4.11 displays that the results of the F value are significant which rejects H_0 . The explanatory variables can possibly have an influence on the dependent variables. Table 4.12 shows that the final goods export regression has a R^2 of 47%, which is reasonably strong. This can be an indicator that the explanatory variables have an effect on final goods export.

In summary it can be stated that due to the significant F values the explanatory variables can possibly have an impact on the dependent variables. The possible impacts are described in the following subchapter below.

4.1.3 Regression model results 2006 and 2007

Regression 1: Total Export Eurozone_t = $\alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \epsilon$

Table 4.13 Total Export regression 2006 and 2007

Dependent variable: Total Export	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	-32.990	35.642		-.926	.363	-106.254	40.273					
GDP	.000	.000	-.129	-1.003	.325	.000	.000	.065	-.193	-.113	.771	1.297
UNEMP	2.314	1.084	.339	2.134	.042	.085	4.542	.388	.386	.241	.504	1.982
NDCGDP	-.121	.047	-.423	-2.590	.016	-.217	-.025	-.542	-.453	-.292	.476	2.099
FIN_IMP	.013	.060	.032	.212	.834	-.110	.136	.275	.041	.024	.566	1.766
INT_IMP	-.245	.462	-.082	-.530	.601	-1.195	.705	.308	-.103	-.060	.532	1.878
FOR_DEM	1.323	.288	.638	4.594	.000	.731	1.916	.532	.669	.518	.660	1.516
NEW_BUS	-16.914	52.380	-.047	-.323	.749	-124.583	90.755	.146	-.063	-.036	.611	1.637

Table 4.13 shows that the productivity factor Unemployment has a positive significant relation with Total Export in the period of 2006 up to the end of 2007. Unemployment also has the highest B of 2.314 which indicates the strength of the effect. The positive significant relation in this model means that an increase in Unemployment increases Total Export. This thesis expected a negative influence of Unemployment on Total Export. This result is contrary to the expectations of this research and previous literature. Verick (2009) stated that economic growth and expansion in export decreases unemployment significantly and vice versa. However this research provides a counter intuitive positive relationship. A possible suggestion for an explanation could be the fact that probably the production processes which required craftsmanship is replaced by the use of automation processes or outsourcing of production to cheaper labour countries. Note that these are assumptions and require further research to confirm this.

The regression output shows that Net Domestic Credit has a negative significant relation with Total Export in the time span of 2006 up to the end of 2007. This means that an increase in Net Domestic Credit decreases Total Export. This research did not expect the negative effect of the variable Net Domestic Credit on Total Export. Based on previous conjectures this research expected that banks play a crucial role in trade because they reduce risks and uncertainty (Amiti & Weinstein, 2009; Baldwin and Evenett, 2009). Especially in a vertical specialization networks which production processes exist out more trade exchanges than a regular production network (Bénassy-Quéré et al., 2009; Bekaert and Hodrick., 2008). Auboin (2007) stated that approximately 90 percent of all transactions in the field of trade

include a sort of credit or another form of financial support from financial institutions. This statement does not support the result displayed in Table 4.13.

Table 4.13 also shows that the variable Foreign Demand has a positive significant relation with Total Export. This result is complementary with the previous conjectures (Behrens et al., 2010; Eaton et al., 2010). The strong effect can probably be explained by the high amount of vertical specialization networks within the Eurozone (European Commission, 2009). In such a kind of network, foreign demand is an important factor to determine the volume of trade within a strong collaborative network.

$$\text{Regression 2: Final goods export Eurozone}_t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon$$

Table 4.14 Final Goods Export regression 2006 and 2007

Dependent variable: Final Goods Export	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	-50.500	47.463		-1.064	.297	-148.063	47.062					
GDP	.000	.000	-.113	-.770	.448	.000	.000	.056	-.149	-.100	.771	1.297
UNEMP	2.657	1.444	.335	1.840	.077	-.311	5.624	.388	.339	.238	.504	1.982
NDCGDP	-.120	.062	-.363	-1.937	.064	-.248	.007	-.525	-.355	-.250	.476	2.099
FIN_IMP	.033	.080	.072	.420	.678	-.130	.197	.255	.082	.054	.566	1.766
INT_IMP	-.631	.615	-.181	-1.025	.315	-1.896	.635	.231	-.197	-.132	.532	1.878
FOR_DEM	1.436	.384	.595	3.742	.001	.647	2.224	.443	.592	.484	.660	1.516
NEW_BUS	25.467	69.753	.060	.365	.718	-117.912	168.846	.200	.071	.047	.611	1.637

Table 4.14 shows that the variable Foreign Demand has a positive significant effect on Final Goods Export. This outcome is in line with the previous conjectures (Behrens et al., 2010; Eaton et al., 2010). Due to the intensive collaboration between the Eurozone countries, firms have great influence on each other determining the volume of intermediate goods export. This result can be an indication that the Eurozone is active in transit trade of final goods.

Regression 3: Intermediate goods export Eurozone $t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon$

Table 4.15 Final Goods Export regression 2006 and 2007

Dependent variable: Intermediate Goods Export	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	-39.972	49.825		-8.02	.430	-142.388	62.444					
GDP	.000	.000	-.248	-1.521	.140	.000	.000	-.079	-.286	-.218	.771	1.297
UNEMP	1.874	1.516	.249	1.236	.227	-1.242	4.989	-.043	.236	.177	.504	1.982
NDCGDP	-.001	.065	-.004	-.020	.985	-.135	.133	-.007	-.004	-.003	.476	2.099
FIN_IMP	.047	.084	.107	.564	.578	-.125	.219	.204	.110	.081	.566	1.766
INT_IMP	-.004	.646	-.001	-.006	.995	-1.332	1.324	.236	-.001	-.001	.532	1.878
FOR_DEM	1.343	.403	.588	3.334	.003	.515	2.170	.595	.547	.478	.660	1.516
NEW_BUS	-130.663	73.223	-.327	-1.784	.086	-281.175	19.850	-.263	-.330	-.256	.611	1.637

Table 4.15 displays that the variable Foreign Demand has a positive significant effect on Intermediate Goods Export. This result is in line with the previous conjectures (Behrens et al., 2010; Eaton et al., 2010).

4.1.4 Regression model results 2008 – 2009

Regression 1: Total Export Eurozone $t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon$

Table 4.16 Regression output Total Export 2008 and 2009

Dependent variable: Total Export	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	-62.675	24.413		-2.567	.016	-112.856	-12.493					
GDP	.000	.000	.018	.351	.729	.000	.000	-.011	.069	.017	.847	1.181
UNEMP	.416	.216	.104	1.924	.065	-.028	.860	-.242	.353	.092	.780	1.282
NDCGDP	.003	.012	.014	.270	.789	-.021	.027	.015	.053	.013	.838	1.193
FIN_IMP	.738	.080	.706	9.221	.000	.574	.903	.942	.875	.442	.392	2.554
INT_IMP	.130	.082	.168	1.584	.125	-.039	.298	.778	.297	.076	.205	4.875
FOR_DEM	.673	.303	.221	2.221	.035	.050	1.296	.831	.399	.106	.233	4.297
NEW_BUS	-.058	.082	-.048	-.713	.482	-.227	.110	.287	-.138	-.034	.506	1.976

Table 4.16 shows that the Import of Final Goods has a positive significant effect on Total Export. The effect of the concerning explanatory variable is very significant compared with the other independent variables as displayed above. Table 4.13 shows that the variable Final Goods Import has the highest B which means that the concerning variable has the strongest relation with Total Export in the respective model. This result is in line with Coe and Helpman (1995), which stated that import is an essential factor to increase export. However

for the variable import there is a reversed causality problem. One can think that export influences import. When there is less income from exports due to a decline in foreign sales this will cause a decline in demand for foreign products in the consisting country (so a decline in import for the consisting country). There are methods to solve this problem, for example the use of time lags between variables or the use of an instrumental analysis. Further research is needed to solve this problem.

Table 4.16 also shows that the variable Foreign Demand has a positive significant relation with Total Export. This result is in line with the previous conjectures (Behrens et al., 2010; Eaton et al., 2010). These reports stated that the decline in foreign demand was the most important factor that influenced the world trade during the crisis. The strong effect can probably be explained by the high amount of vertical specialization networks within the Eurozone (European Commission, 2009). Due to the intensive collaboration between the Eurozone countries, firms have great influence on each other.

$$\text{Regression 2: Final goods export Eurozone}_t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon$$

Table 4.17 Regression output Final Goods Export 2008 and 2009

Dependent variable: Final Goods Export	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	-208.266	30.584		-6.810	.000	-271.131	-145.400					
GDP	.000	.000	.008	.148	.884	.000	.000	-.021	.029	.008	.847	1.181
UNEMP	-.039	.271	-.009	-.145	.885	-.596	.517	-.336	-.029	-.008	.780	1.282
NDCGDP	.013	.015	.053	.922	.365	-.017	.043	.051	.178	.048	.838	1.193
FIN_IMP	.809	.100	.674	8.059	.000	.602	1.015	.933	.845	.422	.392	2.554
INT_IMP	.045	.103	.051	.440	.663	-.166	.256	.760	.086	.023	.205	4.875
FOR_DEM	1.118	.380	.319	2.943	.007	.337	1.898	.847	.500	.154	.233	4.297
NEW_BUS	-.080	.103	-.058	-.783	.440	-.292	.131	.253	-.152	-.041	.506	1.976

The Import of Final Goods shows in Table 4.17 that it has a positive significant relation with the Export of Final Goods during the crisis. The respective variable show the highest B value in this model, which means that the variable Final Goods Import has probably the strongest relation with Final Goods Export. This result is in line with the previous conjectures (Coe and Helpman, 1995; Centintas and Darsik 2008), which stated that demand is an essential factor in export. There is indication for significant impact but it can't be excluded that there is a

reversed causality or even a two-way causality where import and export influences each other.

Table 4.17 also shows that the variable Foreign Demand has a positive significant relation with Final Goods Export. This result is in line with the previous findings of Behrens et al. (2010), Eaton et al. (2010). Unlike Final Goods Import, one can see at Table 4.17 that the Intermediate Goods Import does not have a significant effect on the Final Goods Export. Table 4.17 only shows a positive significant relation between the Import and Export of Final Goods and an insignificant effect of Intermediate Goods Import on Final Goods Export. This probably means that the Eurozone is mainly active in transit trading. If the Eurozone does not produce much itself, it is not possible that the import of intermediate goods enhances the export of final goods. However it is possible that the final good production is outsourced to cheaper labour countries. The final goods that are produced in the cheaper labour countries will most likely be traded throughout the Eurozone to fulfil the foreign demand. Therefore it is probably essential for determining the volume of final goods export.

Regression 3: Intermediate goods export Eurozone $t = \alpha_t + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \epsilon$

Table 4.18 Regression output Intermediate goods Export 2008 and 2009

Dependent variable: Intermediate Goods Export	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	184.650	42.922		4.302	.000	96.423	272.877					
GDP	.000	.000	.226	1.452	.158	.000	.000	.241	.274	.208	.847	1.181
UNEMP	.446	.380	.190	1.174	.251	-.335	1.226	.202	.224	.168	.780	1.282
NDCGDP	-.053	.020	-.404	-2.587	.016	-.095	-.011	-.352	-.452	-.370	.838	1.193
FIN_IMP	.489	.141	.794	3.476	.002	.200	.779	.281	.563	.497	.392	2.554
INT_IMP	.070	.144	.154	.488	.630	-.226	.366	.050	.095	.070	.205	4.875
FOR_DEM	-1.211	.533	-.674	-2.273	.032	-2.307	-.116	.004	-.407	-.325	.233	4.297
NEW_BUS	-.056	.144	-.078	-.387	.702	-.352	.241	-.064	-.076	-.055	.506	1.976

Table 4.18 shows a negative significant relation between Net Domestic Credit and Intermediate Goods Export. This means that an increase in Net Domestic Credit decreases the Export of Intermediate goods. This research did not expect the negative effect of the variable Net Domestic Credit on Intermediate Goods Export. Based on previous conjectures this research expected that health of banks play a crucial role in trade because they reduce risks and uncertainty (Amiti & Weinstein, 2009; Baldwin and Evenett, 2009). Especially in a vertical specialization networks where production processes exist out more trade exchanges

than a regular production network (Bénassy-Quéré et al., 2009; Bekaert and Hodrick, 2008). In addition Auboin (2007) stated that approximately 90 percent of all transactions in the field of trade include a sort of credit or another form of financial support from financial institutions. These statements of previous conjectures have formed this research's expectation among available credit.

The Import of Final Goods in Table 4.18 shows that it has a positive significant relation with the Export of Intermediate Goods of 0.005% during the crisis. This result is quite unique regarding previous conjectures (Coe and Helpman, 1995; Çetintaş and Barışık, 2008), which stated that an increase in import of intermediate goods might lead to import-led growth by supporting the export of final goods. On the contrary, the output of Table 4.18 shows that an increase of Final Goods Import has a positive significant effect on the Intermediate Goods Export. This can be an effect of imported capital goods and machinery. The import of new capital goods and machinery from industrialized countries enhances production scale advantage by realizing cost advantage and knowledge spillover (Çetintaş and Barışık, 2008). These effects make the trade in intermediate goods more attractive.

The variable Foreign Demand has a negative significant relation with Intermediate Goods Export. This result is not in line with the previous findings of (Behrens et al. 2010; Eaton et al. 2010). These papers stated that foreign demand especially support the intermediate good export. The negative relation can probably be explained by the fact that the Eurozone mainly trade final goods with each other. Their intermediate goods export mostly has a cheaper labour country as destination. In the cheaper labour countries these intermediate goods get implemented to construct a final good. After production, these final goods can be traded within the Eurozone.

Concluding remarks, discussion and recommendations

This research examined the effect of the financial crisis by comparing its impact on the development of total export, final goods export and intermediate goods export using the economic factors: productivity, credit, demand and entrepreneurship within the Eurozone for the timeframes of 2006 up to the end of 2007 and 2008 up to the end of 2009.

The foregoing literature concludes that foreign demand was the main cause of the decline in exports (Behrens et al., 2010; Eaton et al., 2009).

This research ran six linear regressions following the OLS method and the ANOVA test. The model contains data from the Eurozone's GDP, unemployment, net domestic credit, imports of final goods, import of intermediate goods, foreign demand and new business ratio for the periods 2006 up to the end of 2007 and 2008 up to the end of 2009.

This thesis formulated the following expectations:

- A stronger positive significant impact of GDP on intermediate goods export than on final goods export
- A stronger negative significant impact of unemployment on intermediate goods export than on final goods export.
- A stronger positive effect of net domestic credit on intermediate goods export than on final goods export.
- A stronger positive effect of the final goods import on final goods export than on intermediate goods export.
- A stronger positive effect of the intermediate goods import on intermediate goods export than on final goods export.
- A stronger positive effect of foreign demand on intermediate goods export than on final goods export.
- A stronger positive effect of new business ratio on intermediate goods exports than on final goods export.

The primary findings for the period 2006 up to the end of 2007 are:

- Unemployment has a positive significant impact on total export
- Net domestic credit has a negative significant impact on total export
- Foreign demand has a positive significant impact on total export, final goods export and intermediate goods export

The primary findings for the period 2008 up to the end of 2009 are:

- Net domestic credit has a negative significant impact on intermediate goods export.
- The import of final goods has a positive significant impact on total export, final goods export and intermediate goods export. The results show a stronger positive impact on final goods export than on intermediate goods export.
- Foreign demand has a positive significant impact on total export and final goods export. Contrary, the economic factor foreign demand has a negative significant impact on the intermediate goods export.

This research expected a stronger positive impact of GDP on intermediate goods export than on final goods export. Previous research (Chen, 2010; Dvorak, 2009) stated that productivity is stronger related with the trade of intermediate goods instead of final goods trade. The findings of this research show that GDP has no significant impact on neither final goods export nor intermediate goods export pre-crisis and during the crisis.

This thesis expected a stronger negative impact of unemployment on intermediate goods export instead on final goods export. Previous conjectures stated that there is an indirect negative significant relation between unemployment and export (Verick, 2009). The findings of this research show that unemployment has a positive significant impact on total export pre-crisis and a positive insignificant impact during the crisis. Most likely unemployment was less important during the crisis due to fewer investments in employment and automation processes.

This thesis expected a stronger positive effect of net domestic credit on intermediate goods export than on final goods export based on the findings of previous conjectures (Amiti &

Weinstein, 2009; Baldwin and Evenett, 2009). The results of this research show that net domestic credit has a negative significant impact on total export pre-crisis and a negative significant impact on intermediate goods export during the crisis which are contrary to previous findings. Based on previous conjectures this research expected that banks played a crucial role in trade because they reduce risks and uncertainty (Amiti & Weinstein, 2009; Baldwin and Evenett, 2009). A possibility during the crisis is that fear and distrust that prevailed in trade, affected the role of net domestic credit regarding export. The fact that banks increased the criteria for lending credit to the private sector might have a major impact on export. Such a kind of situation reduces spending and investments of firms and consumers.

The finding that the import of final goods has a positive significant impact on total export, final goods export and intermediate goods export during the crisis is in line with the expectations of this research and with the previous conjectures (Coe and Helpman, 1995) Behrens et al. (2010); Eaton et al. (2010). A possibility is that the import of final goods leads to import-led growth due to the advantages of imported capital goods and machinery from industrialized countries. Imported capital goods and machinery from industrialized countries can cause production scale advantages and knowledge spill over in favour of a production process (Çetintaş and Barışık, 2008). Another possibility is that an increase in final goods import has an upward transit trade effect within the Eurozone. Cheaper imported final goods may lead to a pro-competitiveness effect on particular firms which resell imported final goods to realize higher profit (Peltonen et al., 2010).

This research expected a stronger positive effect of the intermediate goods import on intermediate goods export than on final goods export. Previous conjectures stated that import of intermediate goods supports exports (Coe and Helpman, 1995). The results of this research show that import of intermediate goods has no significant impact on neither final goods export nor intermediate goods export before and during the crisis.

This research expected a stronger positive effect of foreign demand on intermediate goods export than on final goods export. Previous conjectures stated that foreign demand is the most important factor that can cause a downfall in export (Eaton et al., 2009; Behrens et al., 2010). The pre-crisis results show a stronger positive relation towards final goods export than intermediate goods export. Foreign demand also showed a positive significant impact on total export pre-crisis. The results of this research regarding the regressions of 2008 and 2009 show that foreign demand has a strong positive effect on total export and final goods export.

This impact can probably be explained by the intensive collaboration between firms within the Eurozone. Contrary, foreign demand has a negative significant effect on intermediate goods export during the crisis. The negative impact can probably be explained by the fact that the Eurozone's foreign demand is mainly focused on final goods during the crisis. A possibility can be that a big share of Eurozone's intermediate goods is exported to cheaper labour countries to produce final goods against a lower price. When the production process is fulfilled, the final goods will be imported back to the respective Eurozone country for domestic sale or final goods export. Note that further research is required to confirm this.

This research concludes that final goods import and foreign demand were conclusively the strongest factors that influenced the development in Exports in the Eurozone during the crisis between 2008 up to the end of 2009. The conclusion of this thesis is mostly in line with the findings of Behrens et al. (2010) and Eaton et al. (2009). This thesis adds to the foregoing conjectures that final goods import also has a significant effect on total exports during the crisis. In times when foreign demand apparently declined (during the financial crisis) due to fear and distrust (no other economic factors changed significantly in growth), fewer goods were exported causing a decline in trade. During the crisis, it was the import of final goods, and not intermediate goods import that had a positive significant impact on total export, final goods export and intermediate goods export, which shows that the Eurozone is probably mainly active in transit trade of final goods. This assumption is contrary to Coe and Helpman (1995) where it was stated that mainly intermediate goods import supports export. On the other hand this research's result is in line with Peltonen et al. (2010), which stated that cheaper imported final goods may lead to a pro-competitiveness effect on particular firms which resell imported final goods to realize higher profit. On the contrary, this research concludes that the import of final goods did not have a significant impact on export pre-crisis. This means that in the times of the crisis of 2008 and 2009 the role of final goods import regarding export changed and became more significant. Most-likely when foreign demand increases (demand of Euro countries) the export of intermediate goods to cheaper labour/production countries increases as well. This development can be clarified by the assumption that the production of final goods is outsourced to cheaper labour/production countries to fulfil the final goods demand of the Eurozone countries. Note that it requires further research to conclude that foreign demand within the Eurozone increases a respective Eurozone country's export of intermediate goods to a cheaper labour country. Because the Eurozone looks to be mainly active in transit trade of final goods during the crisis, foreign

demand is essential for determining the volume of export. This thesis concludes that final goods can have a significant role regarding exports besides intermediate goods. Previous conjectures (Dvorak, 2009; Chen, 2010; Coe and Helpman, 1995) stated that mainly intermediate goods play the most important role regarding exports. The results of this thesis illustrate that an irregular development in an economy (financial crisis) can change the roles of economic factors regarding exports.

Limitations and recommendations

The limitations and recommendations for future research are closely linked with each other. The first limitation is that the amount of observations is limited due to the fact that yearly data is used for every variable and therefore can be argued because of lack of explaining power. This thesis was forced to implement the data of Estonia and Slovakia. The fact that the respective countries joined the Eurozone in 2009 and 2011 means that exchange rates fluctuations had to be incorporated to analyze the trade between the Eurozone and these two countries. For further research it is better to use monthly data for more explaining power. However it is difficult to find monthly data for every economic factor used in this research.

The role of credit could not be tested properly. The amount of net domestic credit increased during the financial crisis, while on the other hand it was more difficult to attract credit than before the crisis due to tightened acceptance criteria of banks. For further research it is advised to use the data for provided credit instead of available net domestic credit. Note that the provided credit data is difficult to find.

This thesis only performed a graphical analysis for the present of heteroskedasticity. However a formal test would be recommended. For example the Newey-West test which correct for the present of heteroskedasticity and autocorrelation.

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Appendix A List of variables

Dependent Variable

Total exports EU17

Export of final goods EU17

Export of intermediate goods EU17

Source

UNCTAD

Explanatory Variables

Unemployment to Labour Ratio

GDP Growth Ratio

Net Domestic Credit as % of GDP

Final Goods Import

Intermediate Goods Import

New Business Ratio

Worldbank

Eurostat

Worldbank

Eurostat

Eurostat

European Commission

Appendix B Output correlations between economic factors

Table B.1 Correlation output Economic factors 2006 & 2007

Pearon Correlation	GDP	sig.	UNEMP	sig.	NDCGDP	sig.	FIN_IMP	sig.	INT_IMP	sig.	FOR_DEM	sig.	NEW_BUS	sig.
GDP			.317	.034	-.044	.402	-.201	.127	-.115	.259	.088	.310	-.183	.150
UNEMP					-.504	.001	-.141	.213	.072	.343	-.152	.195	.340	.025
NDCGDP							-.402	.009	-.153	.194	.044	.403	-.395	.010
FIN_IMP									.381	.013	.207	.120	.127	.237
INT_IMP											.455	.003	.362	.018
FOR_DEM													-.137	.220
NEW_BUS														

Table B.2 Correlation output Economic factors 2008 & 2009

Pearon Correlation	GDP	sig.	UNEMPLFR	sig.	NDCGDP	sig.	FIN_IMP	sig.	INT_IMP	sig.	FOR_DEM	sig.	NEW_BUS	sig.
GDP			.152	.195	-.145	.207	-.069	.349	-.113	.262	.038	.414	-.342	.024
UNEMP					-.054	.382	-.290	.048	-.414	.007	-.360	.018	-.097	.292
NDCGDP							.072	.342	-.035	.422	-.098	.291	.295	.045
FIN_IMP									.710	.000	.738	.000	.330	.028
INT_IMP											.804	.000	.474	.002
FOR_DEM													.159	.185
NEW_BUS														

Appendix C Significant correlations between Economic factors during the crisis

- GDP with New Business Ratio

During the years of 2006 and 2007, GDP had a negative insignificant correlation with New Business Ratio. During the crisis the Eurozone had a positive significant correlation between GDP and NBR. This means that an increase in the amount of enterprises increases GDP and vice versa. The significant correlation can probably be explained due to the fact that the number of NBR is volatile because it has limited financial resources. During the crisis the GDP and NBR decreased simultaneously what might indicate a relation (See Table 2.4). This correlation is in line with previous conjectures. Foregoing research stated that new businesses have difficulties surviving a crisis due to its limited financial resources, and therefore are volatile towards the development of GDP (Van Gelderen, Frese and Thurik, 2000).

- Unemployment with Imports of Final and Intermediate Goods

In the years 2006 and 2007 the economic factor Unemployment has a negative insignificant correlation with Final Goods Import and a positive insignificant correlation with Intermediate Goods Import. During the crisis, Unemployment has a negative significant correlation with the Final Goods Import and even a stronger negative significant correlation with Intermediate Goods Import. This correlation is in line with Coe and Helpman (1995), which stated that an increase in imports might lead to new jobs. This can be referred to import-led growth what increases production and create new job opportunities. The stronger negative correlation between Unemployment and Imports of Intermediate Goods can be clarified by the statement; that a vertical integration network mostly exist out intermediate goods related handlings (Chen, 2010). This is why the production and trade of intermediate goods also makes more use of manual labour capacity within a vertical supply network.

- Unemployment with Foreign Demand

During the years 2006 and 2007 Unemployment has a negative insignificant correlation with Foreign Demand. Table B.1 shows that Foreign Demand has a negative significant correlation with Unemployment during the crisis. This means when Foreign Demand increase, Unemployment will decrease, this is in line with Behrens et al. (2010). Behrens et

al. (2010) stated that foreign demand can increase the supplying countries productivity. Mostly when the productivity in a country increases, more manual labour is required (Verick, 2009). This development decreases the amount of unemployment.

- Net Domestic Credit with New Business Ratio

Pre-crisis the Net Domestic Credit has a negative significant correlation with New Business Ratio. During the crisis the Net Domestic Credit has a positive significant correlation with New Business Ratio. Most likely when available credit rises it is more attractive to start up a business. Firms can cover risks more easily and can attract credit to invest in sustainability that increases the number of business ownership. However, during a recession it is going to be more difficult to start up due to credit constraints (Van Gelderen, Frese and Thurik, 2000; Bénassy-Quéré, 2009; Bekaert and Hodrick, 2008).

- Intermediate Goods Import and Final Goods Import with New Business Ratio

In the years 2006 and 2007 the Final Goods Import has a positive insignificant correlation with New Business Ratio while the Intermediate Goods Import has a positive significant correlation with the New Business Ratio. In the years 2008 and 2009 the New Business ratio has a positive significant correlation with Import of Final Goods as well as with Import of Intermediate Goods. This result is in line with Coe and Helpman, 1995, which stated that economic growth could be caused by a growth in import. In times of economic growth there is more willingness among entrepreneurs to start up new businesses. Most new businesses stimulate the productivity of a country (Van Gelderen, Frese and Thurik, 2000). New production processes have a bigger impact on intermediate goods, even if it is focussed on the sales or production of final goods. Taking this in consideration, it is logical that New Business Ratio has a stronger positive correlation with the Import of Intermediate Goods. This can be clarified by the statement the latter is more volatile than the Import of Final Goods (Chen, 2010).

- Final Goods Import with Intermediate Goods Import

Final Goods Import is positive significant correlated with the Intermediate Goods Import before and during the crisis. This probably means when the trade volume in the Eurozone rises, the two import groups increase simultaneously.

- Imports of Final and Intermediate Goods with Foreign Demand

Pre-crisis the Final Goods Import has a positive insignificant correlation with Foreign Demand. The Intermediate Goods Import has a positive significant correlation with Foreign Demand as well. In 2008 and 2009 the economic factor Foreign Demand has a positive significant correlation with Final Goods Import and Intermediate Goods Import. This is in line with Behrens et al. (2010), which stated that foreign demand might increase the trade flows between two trading countries.

Appendix D Insignificant correlations between economic factors during the crisis

- GDP with Unemployment

Pre-crisis GDP has a positive significant correlation with Unemployment. During the crisis the Eurozone has a positive insignificant correlation between Unemployment and GDP. This possibly means that when Unemployment decreases the GDP will decrease as well or vice versa. This negative correlation is not in line with previous findings that stated that unemployment could be seen as unused production capability (Sher Verick, 2009). Such a development could be caused when automation processes replaces manual labour.

- GDP with Net Domestic Credit

The regression output shows a negative insignificant correlation between before and during the crisis between GDP and Net Domestic Credit, which is contrary to previous conjectures. According to Bénassy-Quéré (2009) and Bekaert and Hodrick (2008) when banks can provide the required amount of credit to firms, they can start with new investment plans. These investments are made so that firms can expand, which will increase their production and most likely their sales. The correlation can be explained by an increase in net domestic credit and a decrease in GDP in the period of 2008 up to the end of 2009.

- GDP with Imports of Final and Intermediate Goods

Table B.1 and B.2 shows that GDP has a negative insignificant correlation with Final Goods Import and Intermediate Goods Import before and during the crisis. Previous research stated that import of capital goods, machinery and intermediate goods might positively influence the output of a country (Coe et al., 1997; Coe and Helpman, 1993). The Eurozone countries probably outsource their production to cheaper labour countries and are mainly active in transit trading.

- Unemployment with net domestic credit

In the years 2006 and 2007 Unemployment has a negative significant correlation with Net Domestic Credit. During the crisis the Pearson correlation test shows a negative insignificant correlation between Unemployment and Net Domestic Credit. The negative correlation means that more available credit reduces unemployment. This probably means that when there is more available credit, more new businesses will occur and established firms will invest more into creating new job opportunities (Van Gelderen, Frese and Thurik, 2000; Bénassy-Quéré, 2009).

- Unemployment with New Business Ratio

Before the crisis Unemployment has a positive significant correlation with New Business Ratio. During the crisis Unemployment has a negative insignificant correlation with New Business Ratio. The negative correlation can most likely be explained by the fact that new businesses create new jobs (Audretsch, 1995).

- Net domestic credit with import of final and intermediate goods

In the years 2006 and 2007 Net Domestic Credit has a negative significant correlation with Final Goods Import and a negative insignificant correlation with Intermediate Goods Import. During the crisis Net Domestic Credit has a positive insignificant correlation with Final Goods Import and has a negative insignificant correlation with the Import of Intermediate Goods. This is not complementally with the conjectures of Bekeart and Hodrick (2008), which stated that an increase in net domestic credit is beneficial and significant for trade in a way that perceived imports risks could be covered.

- Net Domestic Credit with Foreign Demand

Pre-crisis Net Domestic Credit has a positive insignificant correlation with Foreign Demand. During the crisis the Net Domestic Credit has a negative insignificant correlation with Foreign Demand. This is not complementally with the conjectures of Bénassy-Quéré (2009), which stated that an increase in net domestic credit increases demand. This correlation can possibly be explained due to the fact that net domestic credit increased in the period of 2008 up to the end of 2009, while foreign demand decreased. The latter probably decreased due to fear and distrust on the market.

- Foreign Demand with New Business Ratio

In the years 2006 and 2007 Foreign Demand has a negative insignificant correlation with New Business Ratio. During the crisis Foreign Demand has a positive insignificant correlation with New Business Ratio. This result is relatively in line with Coe and Helpman (1995). Their paper stated that new businesses increases productivity in countries, which consequently increase the level of foreign demand.