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THE GLOBAL TRADE COLLAPSE AND ITS EFFECTS ON THE INTERNATIONAL ECONOMY

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INTRODUCTION

During the first years of the third millennium international economy was undergoing an impressive and *extra*-ordinary growth rate. However, under a quiet surface, it was characterized by both real economy and financial severe imbalances. Suddenly, in fact, in 2008 world GDP and international trade flows dropped sharply, and continued falling for at least one year. The aim of this dissertation is to shed light on these macro economic movements: where did the Global Trade Collapse originate? And what are its effects on the international economy?

Hence, since the Great Recession that produced the international trade collapse was ultimately triggered by the financial crisis of 2007-2008, the first chapter focuses on the four different but connected processes that undermined the basis of the international finance structure and that brought to the Subprime crisis. First, starting from the first years of the eighties a wave of financial liberalization and deregulation spread all over the world, starting from the United Kingdom and the United States. Second, as Martin Wolf pointed out: funding, banking and holdings of the new assets, undertook a process of globalization¹. One of the consequences of this process was that the current account deficit of most of the countries was funded, and thus sustained, through international bank financing, extremely increasing the level of interdependency. Moreover, starting from 2000, with the creation of the financial instrument of derivatives most of the commercial banks stopped holding the

¹ M. Wolf, *The Shifts and the Shocks*, Penguin, Great Britain, 2015.

instruments of credit they issued, lowering the quality of mortgages. Third, a series of legal, technical and organizational innovations, as the establishment of the shadow banking system and the creation of derivatives resulted in faster but less transparent transactions. Lastly, overall «leverage of non-financial borrowers, such as house buyers, who borrowed more relative to the value of houses; leverage embedded in new instruments, particularly derivatives; and leverage inside the financial sector itself, [...] became extraordinarily high in many institutions»².

After a period of rising inflation in the first years of 2000, the outburst of subprime bubble in the United States, via a phenomenon of general mortgage insolvency, triggered the great financial crisis in the 2007. Due to the strict connection between two of the most important financial centers, Wall Street and the City (the London Stock Exchange) the shock was easily transmitted in Europe. The transmission happened through two main channels: first, via the newly created financial instruments (as CBO and CDS) that were held by many of the most important European banks; second, the turmoil of the financial and banking system caused the so called *sudden stop* or credit crunch. When the movement of capital was frozen and liquidity dried-up, those European countries that were heavily reliant on capital inflow in order to finance their huge current account deficits found themselves on the brink of bankruptcy. The outcome of both the financial and sovereign-debt crisis was the Great Recession: world GDP impressively dropped by almost 30% in 2009³ reflecting a sharp fall in investment and consumption and causing a huge depression in the most-hit economies, reflected by an extremely high level of unemployment.

On the other hand the second chapter sheds light on the phenomenon of the Global Trade Collapse itself and on its causes. Through data and figures it shows how the Great Recession ruthlessly hit international trade flows. Each country's volume of exports and imports, in fact, dropped by more than 20% in the period between the end of 2008 and the second quarter of 2009⁴. Even though the world economy had already experienced various severe crises (e.g. the Great Depression, the Oil Crises) none of them was so sudden, so

² M. Wolf, *The Shifts and the Shocks*, cit. p. 131.

³ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, A VoxEU.org Publication.

⁴ *Ibid.*

severe and so synchronized as the one of 2008⁵. For this reason this phenomenon is known in the economic and academic world as the Global Trade Collapse. More precisely the negative-demand shock that affected primarily durable/manufactured goods, a trade-specific credit crunch and a rise in trade cost deeply undermined international trade. Furthermore, in a more direct manner, exporters that were heavily reliant on external finance had been negatively affected by the banking crisis.

Moreover, as the third chapter demonstrates, the existence of international supply chains significantly amplified the effect of the financial crisis and of the Great Recession. The fragmentation of the various stages of the production chains across the world, in fact, means that trade flows are based not only on final goods but also on intermediates. Hence, on the one hand, if as a result of the credit crunch a firm's request for credit is denied, the company will be forced to scale down its production, adversely affecting both its suppliers and clients across the world. On the other hand, as the O'Rourke Barbie doll example brilliantly explains, «(e)very time the US buys one fewer Barbie doll, trade declines not only by the value of the finished doll, but by the value of all the intermediate trade flows that went into creating it»⁶. Hence, an «adverse external shocks may affect firms not only through final demand (a sudden decline in exports), but also through a disruption of the flow of inputs received from their suppliers»⁷.

To conclude, the last chapter describes the recovery process and the effects of the Global Trade Collapse on the structures of international economy. Broadly speaking, the recovery of global trade was relatively rapid, according to the European Commission data, in fact, the volume of world trade reached its pre-crisis level already in the mid of 2010⁸ even though, the reprise has slowed down in the second quarter of 2011 as a consequence of the European sovereign-debt crisis, of the Japanese Tōhoku earthquake of March the 11th

⁵ *Ibid.*

⁶ O'Rourke, K. *Collapsing trade in a Barbie world*, The Irish Economy, July 18 2009. [Available online from: <http://www.irisheconomy.ie/index.php/2009/06/18/collapsing-trade-in-a-barbie-world/>]

⁷ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p. 84.

⁸ European Commission, Economic and Financial Affairs (2012) Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012. [Available online from: http://ec.europa.eu/economy_finance/publications/qr_euro_area/2012/pdf/qrea2_section_1_en.pdf]

2011 that caused a drop in the level of production of that country, and of the uncertainty concerning US fiscal policy. Overall, it is relevant to notice that since diverse regions were hit differently also recovery processes were developed with different paces. Some countries, as the US, or regions, as the European Union, have been hit by both the financial crisis and the real/trade crisis, hence they have experienced a relatively slow recovery. Conversely, many emerging countries were affected *only* by the negative-demand shock and thus saw a relatively rapid reprise. However, Global Trade Collapse has left lasting marks on the international economy. First of all, on the demand-side there has been a regional shift in favor of emerging markets in terms of income growth and, thus, import demand⁹. Conversely, on the supply-side both trade elasticities and the international production structures are changing: international supply chains, for instance, have undertaken a process of consolidation as a result of the shock¹⁰. Lastly, on the financial side, bank intermediate trade financing is still suffering the effect of the crisis¹¹ thus slowing the recovery process.

Global trade's growth rate is today far below the level it would have been in absence of the Great Recession¹². Nevertheless, it is crucial to take into account that the high growth rate experienced by world trade and world GDP between 2002 and 2008 was also the outcome of a, *extra-ordinary* buoyant context which was characterized «by a global liquidity glut and excessive consumption in several advanced countries»¹³. Hence, it is likely that, at least in the medium term, trade will grow with the trend growth observed in the 90s¹⁴.

⁹ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

¹⁰ *Ibid.*

¹¹ *Ibid.*

¹² European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

¹³ *Ivi* p. 9.

¹⁴ *Ibid.*

CAPITOLO PRIMO

THE FINANCIAL CRISIS AND THE GREAT RECESSION THAT TRIGGERED THE GLOBAL TRADE COLLAPSE

1.1 An Increasing Financial Instability: Liberalization, Globalization, Innovation, and Leverage

Some of the features of the financial system itself had been among the causes of the outbreak of the financial crisis of the 2007-2008 that triggered the following global trade collapse. More precisely, the process of financial liberalization, the mounting globalization, the introduction of some legal, technical, and organizational innovations, and the role played by the increased leveraged are essential in explaining the deep downturn of the first decade of the third millennium¹⁵.

1.1.1 Financial Liberalization

As far as the financial liberalization is concerned, it is important to underline a premise: there is a strong connection that this process had, and have, with the trend of

¹⁵ M. Wolf, *The Shifts and the Shocks*, Penguin, Great Britain, 2015.

deregulation. Strictly speaking, the more financial markets were liberalized, the more they escaped the control and the regulation of the official authorities. This had been a constant trend, from the beginning of 1980s until today, of the evolution of this system. The turning point of this story took place at the beginning of the 70s when the Bretton Woods system collapsed: its breakdown meant the end of fixed exchange rate and, thus, for many, the end of international economic stability. The recognition by the most important players of the international monetary system of the impossibility to re-establish a second Bretton Woods, is representative of the shift towards a new economic system. Subsequently, starting from the 80s almost all the fields of economy experienced a very long-lasting period of liberalization. It was an actual revolution which began in the cultural sphere and then spread throughout many sectors of the society. This new attitude was embodied by two of the most influencing world leaders: Margaret Thatcher and Ronald Reagan, respectively elected in the 1979 in Great Britain and in the 1981 in the United States. They were supporters of a new theory called new-liberalism which was built on the concept according to which the best way to allocate resources was to let the market play freely, with an high degree of *laissez-faire*¹⁶: the less restrictions the better. Lastly, the fall of the Soviet Union in the December of 1991 strengthened the idea that state-controlled economy was neither successful nor sustainable.

In the meanwhile, Milton Friedman's *monetarism*, an innovative approach to economic policies, made its appearance in the economic field. This new theory broke definitely the link between the value of money and gold: he argued that the strength of a certain currency should be measured by its capacity to buy goods and services in comparison with another currency¹⁷. In other words, the value of the currency depends on its demand and supply, as for every other good. Hence, following this theory, because inflation is strictly connected with the devaluation of a currency it is important to keep it under control by tying liquidity (the mass of money M1) with the index that measures the magnitude of an economy, GDP (Gross Domestic Product)¹⁸. A growing economy, for instance, can face a monetary expansion and still avoiding inflation.

¹⁶ *Ibid.*

¹⁷ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, CEDAM, Italy, 2013.

¹⁸ *Ibid.*

Demonstrating the success of this new theory, the movements of capital liberalization, which can be considered the event that better represents *monetarism*, was established by one of the most crucial protocols of the WTO agreement and functioned as the engine of financial liberalization. The rationale behind these opening measures has its roots in what international players believed to be the expected gains of financial liberalization. First of all, according to the neoclassical growth model, capital should flow from capital-rich countries (where there is low return due to decreasing marginal productivity of capital, MPK) to capital-poor countries (where, for the same reasons, the return on capital is higher)¹⁹.

Capital Flows towards capita-poor country after financial opening

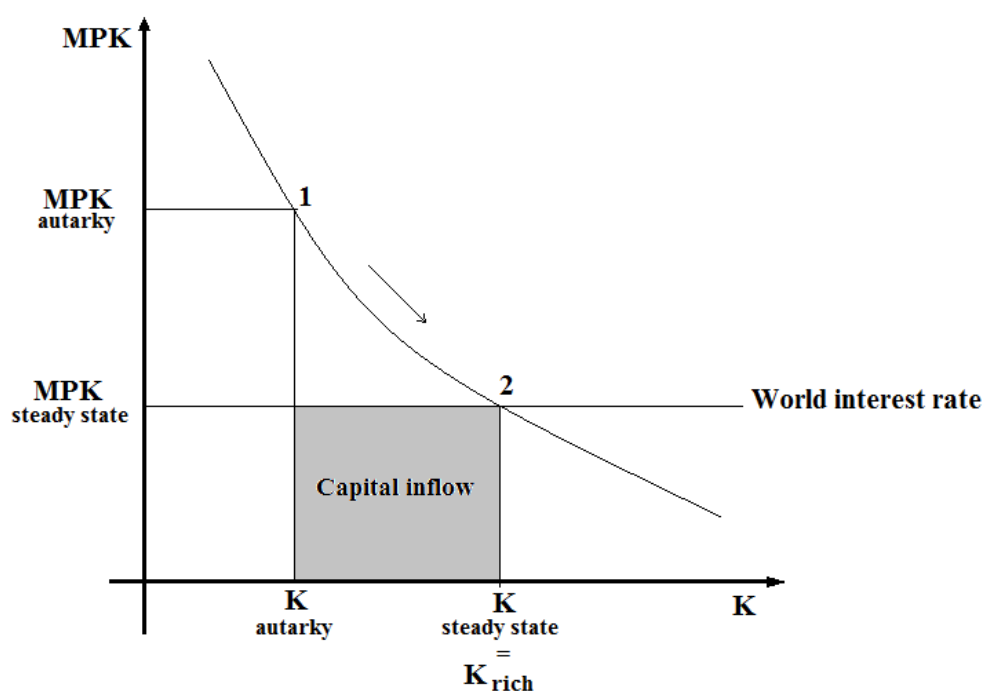


Figure 1, Opening to capital movements in capital poor country. Source: Lecture at Sciences Po by Professor Ludovic Subran (2015)

¹⁹ Krugman, P. R. & Maurice Obstfeld, 2008, *International Economics: Theory and Policy*, Addison-Wesley, 8th edition, Prentice Hall.

More specifically, as Figure 1 shows, these measures should have allowed a faster transition to the so-called steady state, a condition in which the return on capital in poor countries equalizes world interest rate. Hence, these movements should have allowed increased investment (and higher GDP growth rate) in capital poor countries and higher returns on capital owned by investors in developed countries. Moreover, capital movement liberalization should have triggered intertemporal trade gains, that could be defined as exchange of goods and services for claims to future goods and services (i.e. international borrowing/lending)²⁰. Lastly, financial liberalization should have fostered international risk sharing; in other words, according to the portfolio theory, more diversification opportunities permit investors to lessen the risk of their portfolio for the same expected return or increase their return for the same level of risk²¹.

With the introduction in the United States of the *Depository Institutions Deregulation and Monetary Control Act* (DIDMCA), approved in the 1980, the financial world took another step toward deregulation²². This federal financial statute opened the financial markets to the investment of commercial banks and thus attracted an enormous flow of capital. Nevertheless, the London Stock Exchange (LSE) experienced probably the greatest deregulation shocks with the approval of the *Financial Service Act* (FSA) in the 1986, which, for its innovative contents was called «the Big Bang»²³. It opened the door to self-regulating organizations (SROs), it abolished any judicial control over derivatives, and it made it possible for the banks to operate in the Stock Exchange²⁴. Paradoxically, after the crisis of October the 19th 1987, a new wave of deregulation took place: many financial players believed that the high transparency of the negotiation magnified the panic effect and, moreover, from their perspective, the fact that those negotiation were concentrated in *one single* official market made it possible the rise of a big pressure on financial transition.

Hence, the solution was found in less transparency and in the rise of the so-called *over the counter* market (a financial market placed out of the control of the official

²⁰ *Ibid.*

²¹ *Ibid.*

²² *Depository Institutions Deregulation And Monetary Control Act of 1980 Federal Reserve Bank of Boston.*

²³ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

²⁴ *Financial Service Act 1986*, it was repealed and replaced by Financial Services and Markets Act of 2000 that, however, did not abolish nor changed the rules about derivatives.

authorities) and of *offshore finance*²⁵. The management of the *dot.com bubble* of 2003 showed to the public the new approach adopted by the U.S. Central Bank, FED; it was Greenspan himself, former president of the Federal Reserve, who recognized that instead of trying to avoid and contain a potential bubble the regulators had chosen to elaborate some measures to reduce its impact: it was a strategy focused on limiting the impact rather than on avoiding the crisis in the first place.

1.1.2 Globalization

As far as globalization is concerned, according to Martin Wolf, there are three ways in which finance experienced this process of high interconnection: funding, banking and holdings of the new assets, went global²⁶. First of all, it is important to define the one of the crucial features of national accounting: the current account. This value, which could be defined as a record of all international transactions concerning goods, services and income, will be fundamental in order to explore the concept of global funding and for the development of this thesis. The current account (CA) is given by the Trade balance (the difference between exports and imports) plus the Net Income Factor income from abroad plus Net Unilateral Transfers²⁷.

$$CA = TB (EXP - IMP) + NIFA + NUT$$

If a given State has a positive current account it means that is a net creditor; on the other hand, if the current account is negative that given State is a net debtor. Thus, a State that runs a current account deficit should finance its debt through the Financial Account. More specifically, if a country in year t runs a Current Account deficit, its NIFA deteriorates ($NIFA < 0$), that means that its debt increases.

$$CA(t) = NIFA(t) - NIFA(t-1) \rightarrow \text{flow}$$

$$NIFA(t) = CA(t) + NIFA(t-1) \rightarrow \text{stock}$$

²⁵ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

²⁶ M. Wolf, *The Shifts and the Shocks*, cit.

²⁷ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, 3rd Edition, Worth Publishers.

Hence, regarding the first aspect of financial globalization, by arguing that «funding went global»²⁸, Martin Wolf underlines the fact that the current account deficit of most of the countries was funded, and thus sustained, through international bank financing. In fact «[t]he import of capital into the UK, funding the rapid growth of credit, in part took the form of foreign purchases of UK credit securities, in particular retail mortgage-backed securities (RMBS)»²⁹. The fact that funding went global in addition with the rise of a highly interconnected and interdependent network, which were direct consequences of globalization and financial liberalization, meant that any kind of massive shock would be easily transferred worldwide.

This is even truer because of the second feature of globalization: the banking system itself became global during the last decade. The trading activities between investment banks grew sharply in the years preceding the outbreak of the crisis, and, in fact «between the late 1990s and 2008, the consolidated foreign claims of UK headquartered banks [...] rose from less than \$500bn to \$4tn, or about 150 per cent of GDP»³⁰. Lastly, the third aspect of globalization, which is relevant in explaining the fragility of the financial system, is the fact that the newly created (risky) assets were held by banks and investors practically in every part of the world. In other words, what after the crisis would have been called *toxic assets* had contaminated almost all the most important financial institutions and banks of the world.

This outcome was not just the product of the financial globalization that increased the level of interconnection, it was also the result of a process of profound modification of the nature of banks themselves: the shift from the *originate to hold* system to the *originate to distribute* model³¹. Before the repeal of the *Glass Steagall Act* in the US in 1999, commercial banks were used to hold their credit until it was extinguished and, thus, an important consequence of this behavior was the fact that the procedure to obtain a loan was very long and accurate³². The profile and the guarantees of a customer asking for a mortgage, for instance, were deeply analyzed before he/she was conceded the loan. However, after the repeal of the *Glass Steagall Act*, starting from the first years of 2000,

²⁸ M. Wolf, *The Shifts and the Shocks*, cit. p. 126.

²⁹ *Ibid.*

³⁰ *Ibid.*

³¹ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

³² *Ibid.*

most of the commercial banks slowly began to modify their core business. They stopped holding the instruments of credit they have issued, began to extract them by the loans and sell them under the form of derivatives³³ in order to enhance their disposable liquidity³⁴. This process could also be called an externalization of debt and it had a strong impact over bank's behavior and attitude.

This shift is at the basis of the subprime crisis and, thus, it is fundamental to underline its consequences. A crucial result of the abandonment of the *originate to hold* model was the fact that the rationale behind the scrupulous examination of the profile of the customer asking for a mortgage became way more weaker. Strictly speaking, if before the shift a bank would have been careful in granting a loan because it would have impacted on the strength of its internal assets, after the move towards the externalization of the customer's debt there was no incentive to operate in such a meticulous manner. This meant standardized and superficial procedures that did not take into account the detail of the single individual. Long story short, to move outside the bank the risk of insolvency meant less carefulness.

During this period the data relative to the subscription of mortgage experienced a sensitive increase, also due to the role played by mortgage brokers who developed a selling system with a widespread coverage. The apex, in a negative way, of this conduct was represented by the birth of the so-called *ninja mortgage*, a sub category of subprime mortgage³⁵. *Ninja* is the acronym of *No Income*, *No Job*, and *No Asset*, hence very low credential for a customer that is supposed to pay back the loan. Nevertheless, this was no longer a problem for the bank, or the credit agency, granting a loan since the institute would have extracted the pending debt and would have sold it to another institute, which would use it to produce an innovative financial instrument. It is clear that a derivative based on such kind of mortgage would be a highly risky asset because the risk of default is very plausible. Hence, this is one of the most destabilizing consequences of the shift from the *originate to hold* model to the *originate to distribute* system. According to Martin Wolf,

³³ What derivatives are and what role they played in the crisis will be discussed in the following part about Innovation.

³⁴ *Ibid.*

³⁵ Betting the Earth [online]. Dissent, No. 28, Summer 2008 - 2009: 6-9. Availability:

<<http://search.informit.com.au/documentSummary;dn=531480593191928;res=IELLCC>> ISSN: 1443-2102. [cited 10 Mar 16].

many financial actors and policy makers were convinced of the fact that this new model would have almost automatically distributed the riskiest assets in the hands of the most expert investors³⁶. However, what happened was exactly the opposite complex derivatives were sold to customers that were ignoring the actual content of the instrument: a clear case of asymmetric information where the seller knew much more than the buyers. The problem, as will be explained in the following lines, came about when the holders of those derivatives started realizing that.

1.1.3 Legal, Technical and Organizational Innovations

The fourth cause of financial fragility has its roots in a series of innovations that changed the way in which financial markets worked. There are three categories of transformation: a more general one concerning information and communications system, an organizational transformation of the banking system, and a strictly financial one regarding the creation and pricing of derivatives (namely MBO, CDO, CDS). Moreover, as a more general consideration it is important to notice that, as Martin Wolf pointed out, sometimes the concept of innovation itself is a cause of fragility since progress and changes brings about something we are not used to, something unknown with which we have to learn to deal³⁷.

As far as information and communication technology is concerned, starting from the second half of the 1980s, the telematics interconnection became more and more globalized. Thanks to this revolution the financial market was fully integrated and connected in a worldwide networks that is operative twenty-four hour per day. Since that moment, the flow of investments is restless and is moving quickly towards the most remunerative assets and markets. The extremely high frequency of operations increases the number of commission and, hence, the gains that traders get from any transactions. This transformation had a huge impact on the attitude of financial actors since there was a shift from long-term investments to short term speculation; accurate examination of investments was no longer necessary³⁸. This change of mentality was also magnified by the augmented flow of capital triggered by

³⁶ M. Wolf, *The Shifts and the Shocks*, cit.

³⁷ *Ibid.*

³⁸ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

the financial market liberalization that allowed banks to directly invest money³⁹. Thus, this was the highly interconnected environment in which all the other financial innovations took place.

The organizational mutation of the banking system can be summarized in the concept of *shadow banking* introduced by Paul McCulley who «defined it as “the whole alphabet soup of levered up non-bank investment conduits, vehicles, and structures”»⁴⁰. It is a parallel, immaterial financial system which escapes the control and the regulations of official authorities and that is completely under the control of private agents, the so-called market maker, that establish the rule and the procedure of the game. Nevertheless, as Martin Wolf underlines, the problem was that this innovative system was vulnerable to the same risks of the traditional ones, but without having a lender of last resort and a buffer system able to contain an eventual crisis, which, moreover, would have been magnified by the lack of transparency and the extreme connection of the net⁴¹.

Moreover, this system was extremely opaque for an external actor and thus also for official authorities and policy makers. The lack of regulation made the conflict of interests a constant feature of this scenario where it could also happen that two entities of the same institute (under different juridical label) sold and then bought the same tranches of derivatives just for augmenting their market value. A clear example of how this system was developed was the alliance between the London Stock Exchange (which had been privatized at the beginning of 2000s) and Lehman Brothers investment bank, that gave birth to a alternative financial platform called *Bajkal*⁴². This name was not chosen causally since it is the name of deepest lake of the world placed in Siberia⁴³: the lake was taken as a metaphor of the depth and the obscurity of the platform. The dimension of this new system was massive and, in fact, it «became bigger than the traditional system, in the early 2000s, and remained so until after 2008, even though the traditional system also grew substantially»⁴⁴.

³⁹ *Ibid.*

⁴⁰ M. Wolf, *The Shifts and the Shocks*, cit. p. 128.

⁴¹ M. Wolf, *The Shifts and the Shocks*, cit.

⁴² G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

⁴³ *Ibid.*

⁴⁴ M. Wolf, *The Shifts and the Shocks*, cit. p. 130.

1.1.4 Derivatives

On the other hand, the more strictly financial innovation was about the creation and the process of pricing derivatives. These financial instruments are at the very basis of the crisis that shook most of the financial institutions and the world in 2007-2008 and that was transmitted to the *real* economy of trade causing the Great Collapse. Thus, it is essential to understand what they are and what role they played in the crisis.

First of all it is important to remember that the kind of derivatives that are analyzed here are the ones which are based on mortgage and that are thus connected to the United States' real estate sector. Starting from the end of the 1990s and the beginning of 2000s, in relations with the rise of the real estate sector, new figures began to make their appearance: they were mortgage broker and mortgage banker or lender which were specialized in mortgage loan and worked for investment banks or even commercial banks. In the first phase, once these institutes had conceded the loan through a standardized and fast procedure, the mortgage loans were assembled into collections on the basis of riskiness of insolvency⁴⁵. The higher the risk, the higher the interest rate in the asset. This first type of basic derivatives was called *Mortgage Backed Securities*, MBS, because they originated from credit instrument extracted by mortgages⁴⁶.

Hence, in the second phase, credit institutes and commercial banks sold different tranches of MBS to investment banks that securitized a mix of different MBS into a financial instrument that the investors could buy. These securities, which are made of various MBS or ABS (diversified for riskiness and geographical area), are the so-called *Collateralized Debt Obligation*, CDO. When CDOs were further divided and re-assembled to create a more hybrid instrument this was called CDO squared. This procedure resulted in a benefit for both commercial banks and investment banks: on the one hand, the former gain immediate liquidity and the externalization of risk of insolvency; on the other hand the latter were provided with a financial instrument they could sold.

⁴⁵ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

⁴⁶ Commercial banks did not sell only MBS but also ABS, Asset Backed Securities, which did not depend on mortgages but on different kind of asset.

The demand for this new financial instruments rose sharply up to the point where it could not be matched by the supply of CDOs⁴⁷. The solution devised to avoid the rise of prices, and thus a speculative bubble, was the creation of the so-called *naked* or *synthetic* CDO⁴⁸. This new category of derivatives was completely different from the previous one because they have no kind of connection with an underlying mortgage (nor another asset); their value was established with respect to other CDO which belonged to the first generation and, thus, they worked as a sort of index following the value of the relative CDO. The last innovation concerning derivatives was the creation of the so-called *Credit Default Swaps*, CDS. They had been devised to worked as insurance in order to cover the risk deriving from the possibility of default of other CDOs.

As Martin Wolf pointed out, these financial innovations represent one of the greatest causes of financial fragility⁴⁹ because the more complex became the world of derivatives the less those financial instrument were connected to the real economy. Once the first tranches of MBS or ABS left the institute that issued the mortgage loans, those instruments entered in a chain of hybridization and, at the end of the process, the result was a complex instrument whose value and risk was calculated via complex algorithm. The point is that no one, at the end, was able to go back to the original value and the actual risk of the instrument. Here emerges another important aspect of this intellectual innovation: the pricing of derivatives. The procedure of pricing derivatives is developed during the construction of the derivatives itself and it ends up with the elaboration of the notional value. It is a process made by an informatics system and in which the human operator take part only marginally. Every single asset has its relative value which has been established by the rating agencies, even though this did not work as a guarantee because, as Joseph Stiglitz pointed out, rating agency used the same wrong model which the investment banks used as a benchmark⁵⁰. More specifically the model used by the agencies to rate the single MBS, assumed the stable and normal functioning of the market, or considered *just* the standard deviations, and it did not take into account systemic crisis and shocks. It is the software

⁴⁷ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

⁴⁸ *Ibid.*

⁴⁹ M. Wolf, *The Shifts and the Shocks*, cit.

⁵⁰ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

itself that select the various assets (MBS or ABS) that will compose the final derivative. At the end of the assembling process the software issues, together with the financial instrument ready to be trade, the so-called notional value of the derivatives. It is one of the most important data because it incorporates both the value of the initial asset and the production cost⁵¹. Moreover, it is interesting to notice that in order to obtain the notional value the software uses the statistical average in a way that almost eliminates the risk of systemic crisis since its aim is to eliminate potential aberrations.

The notional value represent the starting price of these innovative financial instruments and offers a measure to weight the total value of derivatives in the financial word. «According to the Bank for International Settlements, between June 1998 and June 2008 the notional value of outstanding over-the-counter derivatives exploded from \$72tn to \$673tn (whereupon it stagnated), the latter being just under eleven times global gross product»⁵².

1.1.5 Leverage

The last cause of fragility is leverage, which, according to Martin Wolf, caused instability in three different extents: «leverage of non-financial borrowers, such as house buyers, who borrowed more relative to the value of houses; leverage embedded in new instruments, particularly derivatives; and leverage inside the financial sector itself, which became extraordinarily high in many institutions»⁵³.

As far as the first group is concerned, for instance, the environment of laxity represented one of the cause of the high level of indebtedness. In other words, the fact that the banks conceded mortgage loans in such a not scrupulous way and with such a low interest rates encouraged this attitude of their customers. Moreover, the derivatives themselves, as CDOs for instance, are intrinsically based on the concept of leverage⁵⁴. Moreover, not only the models used to estimate the value of derivatives were wrong, as

⁵¹ Ibid.

⁵² M. Wolf, *The Shifts and the Shocks*, cit. p. 128.

⁵³ *Ivi* p. 131.

⁵⁴ M. Wolf, *The Shifts and the Shocks*, cit. p. 131.

mentioned above, but also the models for the risk management adopted by the great investment banks were fallacious⁵⁵. Those were used to calculate the leverage ratio that more than doubled, during the first years of 2000, creating a financial scenario which was very vulnerable to crisis⁵⁶. The point is that regulators used the same models used by the players of the game and, hence, they could not forecast the big shock too.

1.2 The Subprime crisis

1.2.1 Premises

It is important to take into consideration, as a starting point, the fact that the delicate castle built on derivatives based of mortgages had been devised to work only in the absence of general crisis of insolvency. There existed CDOs (and their different declinations as CDO *squared* and *synthetic* CDOs) and CDSs emitted by, among the others, the great insurance company American International Group, AIG. These two kinds of derivatives, if held together by the same investors, should have worked on the basis of the same idea behind the concept of diversification of portfolio. However, the model and this system based on buffers could have worked only if the rate of insolvency would have been under its physiological limit⁵⁷. If, on the other hand, there exists a case of general insolvency, which is translated in a liquidity crisis, then all system tumbles down and the CDSs fail to cover the loss of all the investors. This is exactly what happened after the Subprime Bubble exploded in the 2007.

Moreover, it is essential not to forget that, as will be explained more in detail in the following chapters, even though the huge crisis of 2007-2008 had been triggered by the subprime bubble, it definitely took place in a world economy which was characterized by critic imbalances. The enormous current account deficit of many high-income countries, together with the high level of private debt, for instance, made the economic stability of

⁵⁵ M. Wolf, *The Shifts and the Shocks*, cit.

⁵⁶ *Ibid.*

⁵⁷ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

those countries very vulnerable to any shocks⁵⁸. The point is that the world economy had been developed in such a way that it could no be sustained any longer and the crisis that shocked the financial markets worldwide was *just* the incident that triggered the fall.

1.2.2 Legal Changes

In the year 2002 two crucial event changed the U.S. market: first, under the George W. Bush presidency, the United States congress passed a law which modified the *Community Reinvestment Act*, CRA, in order to make it easier the access to credit by lowering the interest rate and parameters needed in order to obtain a loan⁵⁹. Second, *Fannie Mae* (Federal National Mortgage Association) and *Freddie Mac* (Federal Home Loan Mortgage Corporation), extended the guarantee to cover also the subprime mortgages⁶⁰. The years following this date, in fact, showed a rapid increase of subprime mortgages and in the first half of the third millennium the volume of loan in the real estate sector reached a level which was very close to the American GDP⁶¹. This expansionary policy caused an increase in the demand of houses that, consequently, resulted in a rise of nominal prices in the real estate sector, which almost doubled between the 2000 and 2005. Thus, in a vicious cycle, the propensity to indebtedness raised too, nourishing in this way the derivatives market.

1.2.3 Rising inflation and the Turmoil in the Real Estate Sector

In the meanwhile, even though the real inflation was raising, also thanks to the overnight interest rate establish by the FED the indices were unable to grasp its real value due to the fact that the house prices was excluded from the basket used as a benchmark to estimate the level of inflation⁶². However, starting from 2007, the prices of the houses started to decline steadily, together with the demand. Once the rising trend of the real estate sector was reversed, people who had subscribed a mortgage started trying to sell their

⁵⁸ M. Wolf, *The Shifts and the Shocks*, cit.

⁵⁹ *Ibid.*

⁶⁰ *Ibid.*

⁶¹ *Ibid.*

⁶² *Ibid.*

property to avoid losses deriving from the devaluation of their houses⁶³. What happened was a sort of bank run applied to the real estate sector, a fatal domino effect that caused the explosion of a massive bubble. In addition to this, from 2003 to 2007 the FED interest rate rose from 1% to 5.25% in order to keep the inflation under control and to fight the fall of value of the dollar; the rise of interest rate by the Central Bank had a strong impact on the payment of loans because many of them were adjustable rate mortgages⁶⁴.

The cumulative effect of falling prices and demand in the real estate sector, and the increase of interest rate caused a wave of insolvency which quickly became a liquidity crisis. In other words, more and more people stop paying their mortgage (mainly subprime mortgages) thus interrupting the cash flow that pumped liquidity in the financial market of derivatives. As mentioned above, the extremely high level of hybridization of CDOs, *squared* CDOs, and *synthetic* CDOs made it very difficult, if not impossible, to forecast which asset would have been more vulnerable because investors themselves did not know how their assets were composed. In addition, the highly mixed structure of derivatives was one of the main causes of the transmission of the shock to many investors. Lastly, the fact that the rating agencies and the regulators were using exactly the same model for the risk management allowed the crisis to erupt almost unpredictably. The uncertainty about the content, and thus the potential illiquidity, of each derivatives and the falling prices of the assets caused the collapse of the quotation of derivatives in a negative reinforcing cycle. Many of the most important commercial and investment banks had invested in the new financial instrument and, hence, as a consequence of reciprocal suspicion, the interbank interest rate rise sensibly magnifying the credit crunch phenomenon⁶⁵.

The two Government Sponsored Enterprises (GSE), Fannie Mae and Freddy Mac (which in the half of 2008 held almost three-quarters of the US loans) were supposed to work as a buffer in case of default but, on contrary, they did not achieve their goal because they could not cover all the losses and eventually they ended up nationalized⁶⁶ since it was

⁶³ M. Wolf, *The Shifts and the Shocks*, cit.

⁶⁴ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

⁶⁵ M. Wolf, *The Shifts and the Shocks*, cit.

⁶⁶ More specifically Fannie Mae and Freddie Mac were taken into *conservatorship* by the US government.

the only way to avoid a further contagion⁶⁷. The two enterprises were not the only ones saved: with a massive and effective maneuver the colossus American International Group, AIG, was rescued by the US government by «taking 79.9 per cent equity stake and lending it \$85bn on September 16»⁶⁸. AIG was a vital actor in the scenario since it was the biggest American insurance company and, moreover, during the first years of 2000 it had issued tons and tons of CDSs and thus was strictly connected with many investment banks, as *Goldman Sachs*, for instance. There was the fear that if AIG collapsed it would have further transmitted the shock to the latter.

As a result of these government's operations it was possible to stop the falling prices of the real estate sector, thus avoiding further mortgage defaults⁶⁹. Moreover, the modification by the Congress at the beginning of the 1990s of article 33 of the *Federal Reserve Act*⁷⁰, made it possible for the Federal Reserve the injection of liquidity that was necessary to avoid the collapse of the main investment banks that fell under the category *too big to fail*. Nevertheless, there were also casualties that were not bailed out, like the fifth world investment bank, *Lehman Brothers* that declared bankruptcy on September the 15th. Even though, on the one hand, the FED's decision to not intervene remains controversial, on the other hand it is recognized that it was very difficult to have an accurate estimate about the balance sheet and the liabilities of the giant of investment banking.

As it is also acknowledged that the collapse of LB triggered a panic crisis in the financial market. However, it is possible that the FED, knowing the strong relationship between LB and European investors and stakeholders⁷¹, did not want to press too heavily the American taxpayers and that it wanted to boost the intervention of the other central banks, namely the European Central Bank the Bank of England⁷².

⁶⁷ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

⁶⁸ M. Wolf, *The Shifts and the Shocks*, cit. p. 21.

⁶⁹ G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

⁷⁰ Federal Reserve Act, Board of Governors of the Federal Reserve system, [Available online from: <http://www.federalreserve.gov/aboutthefed/section14.htm>]

⁷¹ Lehman Brother was part of the financial pool Bajkal together the London Stock Exchange, as mentioned above.

⁷² G. Di Gaspare, *Teoria e Critica della Globalizzazione Finanziaria*, cit.

1.2.4 The Spread of the Financial Crisis and the Credit Crunch

The crisis was not confined to the American institutions and banks, obviously, and also the British government was called to make rapid intervention: «On 17 September, with government encouragement, Lloyds TSB announced a £12.2bn takeover of Halifax Bank of Scotland (HBOS) [...] (o)n 29 September the government decided to nationalize Bradford & Bingley, the biggest lender in the UK's "buy-to-let" market»⁷³. The crisis then rapidly spread throughout the Eurozone and reached the rest of the world, as will be explained in the next paragraph. Here it is essential to underline the concept that the crisis started at the heart of the financial system, in two of the most important financial centers, New York and London, then, in a bunch of weeks it was transmitted to the rest of the world.

The main and most evident result of the subprime crisis was the so-called *credit crunch*, also known as *sudden stop*. Here it is important to focus on one relevant index which shows the gap «between three-month Libor (the rate at which banks can borrow from one another) and the Overnight Index Swap rate (the implied central-bank rate over the same three month period)»⁷⁴. This measure indicates the risk associated with credit by banks, and, thus, a high value means lack of trust about each other's credibility. As the picture below shows, in time of stability the spread is usually close to one basis point.

As it can be seen from the picture, starting from the end of July 2007 the gap began to rise sharply reaching more than 80 basis points at the end of August 2008. Then, in just a week, that correspond the declaration of bankruptcy by Lehman Brothers in September the 12th, the spread gained 40 more points touching the highest value at 364 basis points at the end of October 2008.

Libor – OIS

⁷³ M. Wolf, *The Shifts and the Shocks*, cit. p.22.

⁷⁴ Ivi p.24.

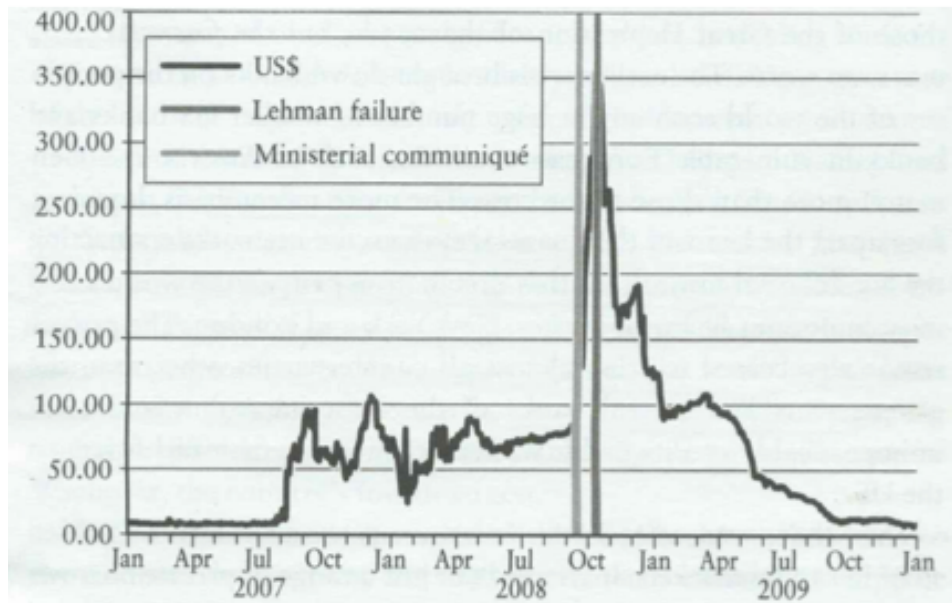


Figure 2, Libor – Overnight Index Swap, source: Martin Wolf (2015) Figure 1, p.24.

The financial crisis of 2007-2008 was an event that changed, and that continues changing, the structure of the global markets in so far as the Martin Wolf wrote in an article in the *Financial Times* of 25 March 2008: «Remember Friday March 14 2008: it was the day the dream of global free-market capitalism died. For three decades we have moved towards market-driven financial systems. By its decision to rescue Bear Stearns, the Federal Reserve, the institution responsible for monetary policy in the US, chief protagonist of free-market capitalism, declared this era over. It showed in deeds its agreement with the remark by Joseph Ackermann, chief executive of Deutsche Bank, that “I no longer believe in the market’s self-healing power”. Deregulation has reached its limits»⁷⁵.

To conclude, the subprime crisis that badly hit the real estate sector at the beginning of 2007 was transmitted through the financial market via the newly created instrument of derivatives. The fact that not only single *small* investors but also investment and commercial banks held this kind of asset caused an enormous loss which was called the credit crunch and severely hit the real economy in what will be called the Great Recession.

⁷⁵ Ivi pp. 20-21.

1.3 The Spread of the Crisis and the Great Recession that triggered the Global Trade Collapse

As a general consideration it is necessary to underline the fact that even though financial markets should be used to decrease risk and smooth consumption, under certain circumstances they are also blamed for making countries more vulnerable to financial crisis⁷⁶. In other words, it is acknowledged that financial openness can facilitate the transmission of shocks from one country to another. In addition, the more countries are integrated, the more we see co-movement of their financial activity, which is reflected in the correlation of financial returns, for instance.

Even though a financial crisis can spread through various channels of transmission, as the portfolio rebalancing channel⁷⁷ or the Foreign Direct Investment channel⁷⁸, the banking/lending channel had played the most significant role in transferring the shock from the U.S. financial market to the European and global one⁷⁹. Strictly speaking, commercial and investment banks experiencing losses in their own markets usually reduce lending abroad and/or cut funds to their foreign affiliates. When the story is about global banks that are connected with the world network, there could be an international dry-up of liquidity.

1.3.1 From the Financial Crisis to the Economic Crisis

Thanks to the various transmission channels, the financial crisis of 2007-2008 quickly became an economic crisis that hit (in different ways and with various degree) almost every region of the world. Nevertheless, as will be described in this paragraph, even though every country experienced the effects of this turmoil, the Western world, and precisely Europe, was the region that was the most heavily stroke. Moreover, the Eurozone represents the second world economy in the world, right after the United States and, for this

⁷⁶ Krugman, P. R. & Maurice Obstfeld, 2008, *International Economics: Theory and Policy*, Addison-Wesley, 8th edition, Prentice Hall.

⁷⁷ The investor who suffers losses in his/her own market usually repatriates funds from abroad, and this has also the effect of lowering the asset prices in the foreign country.

⁷⁸ Multinational Corporations taking losses in their own markets usually cut investments abroad, thus lowering capital inflow, labor supply and, in general, real activity.

⁷⁹ Krugman, P. R. & Maurice Obstfeld, 2008, *International Economics: Theory and Policy*, cit.

reason, the sovereign debt crisis, which was *triggered* but not *caused* by the financial earthquake, that shook the Old Continent destabilized the entire world economy⁸⁰. In other words, the impact the financial crisis had on the Eurozone amplified the magnitude of the shock hence sparking a serious global catastrophe: according to Martin Wolf, in fact, «the crisis of the Eurozone changed what would, in any case, have been an enormous shock, into a far more serious global crisis»⁸¹. These are the reasons why this paragraph will be mainly focused on the events that took place in the Eurozone, even though it will also briefly cover what happened in the rest of the world.

In order to better understand the effects of the crisis in the Eurozone it is crucial to analyze the pre-crisis economic background that characterized Europe. As Martin Wolf pointed out, in fact, the vast Current Account imbalances of the European States was one of the main features that made this scenario very unstable and vulnerable to any kind of crisis, let alone a systemic one⁸². According to the author, the infamous *sudden stop* of capital flows to Europe, caused by the financial crash in the United States and in Great Britain, caused the end of private financing and made this fundamental asymmetry no longer sustainable⁸³.

Before the event that took place in the U.S. in the mid of 2007, many European Southern States, like Italy and Spain, for instance, but also Ireland, were recipient of enormous flows of private capital that came mainly from the rest of Europe and that was primarily invested in public debt⁸⁴. The rationale behind this movement of capital was the quest for higher returns: the capital came from countries where the rate of saving was high, and thus where the demand of capital and its return were low, and were directed to States that were characterized by low saving rate and higher demand of capital, hence greater profits⁸⁵. Furthermore, it is quite interesting to notice that before the Greek crisis in 2009,

⁸⁰ M. Wolf, *The Shifts and the Shocks*, cit.

⁸¹ M. Wolf, *The Shifts and the Shocks*, cit. p.87.

⁸² *Ibid.*

⁸³ *Ibid.*

⁸⁴ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, 3rd Edition, Worth Publishers.

⁸⁵ M. Wolf, *The Shifts and the Shocks*, cit.

investors usually treated the bonds of different European States as almost equally risky, or better, equally safe⁸⁶.

Spreads of German Bund Yields

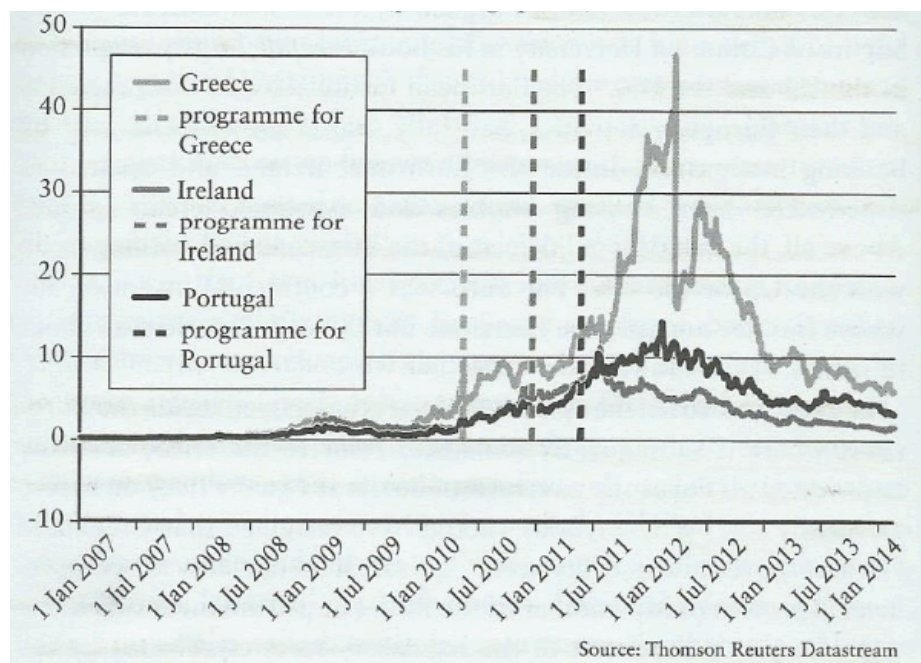


Figure 3, Spreads over German Bund Yields, source: Martin Wolf (2015) Figure 6, p.48.

The result was that, as Figure 2 unmistakably shows, before the advent of the crisis, the spread between German bund yields and Greek bund yields was almost zero, meaning that they were equally treated by investors. The reasons were mainly two: first, investors did not estimate correctly the macroeconomic fundamentals of the countries that issued the bond; second, there was a general belief that the European Union could easily deploy a safety net for these countries in case of troubles⁸⁷. Moreover, it was also a consequence of the regulation «established by the Basel Committee on Banking Supervision [...] Basel I, the first of these regulations, [...] allowed banks to treat government debts as risk free and therefore to fund such debt with zero equity»⁸⁸.

This huge capital flow was vital for Southern Europe's Countries in order to sustain their enormous current account deficit. As already mentioned in the first paragraph, to run a

⁸⁶ *Ibid.*

⁸⁷ *Ibid.*

⁸⁸ M. Wolf, *The Shifts and the Shocks*, cit. p.47

current account deficit means that the total amount of spending is higher than the total income. This outcome could be the result of many variables. On the one hand, current account deficit could be the result of too low private saving which generally generates asset bubbles as in the case of the real estate sector in Spain or in Ireland. On the other hand, it could depend on too high public borrowing as a consequence of excessive public spending (in relation to the tax revenue) or the excess of the quantity of imports over exports (a negative Trade Balance). Moreover, the current account position could be viewed also as a measure reflecting the level of competitiveness of a certain economy: a surplus country is characterized by a rising attractiveness while, on contrary, a debtor country presents a lower degree of competitiveness⁸⁹.

By competitiveness it is meant, for instance, the cost of labor (nominal wages): in a stable economy as Germany the nominal wages had been stable in the period preceding the outbreak of the crisis while, on the other hand, in countries affected by bubbles, as Spain for example, the cost of labor had been rising⁹⁰. In addition, relatively higher nominal wages were also the results of the low flexibility of the market, caused mainly by the legislative structure). Lastly, as far as competitiveness is concerned, it is important to underline that highly competitive country that ran current account surpluses experienced the expansion of the manufacturing-export sector while the least competitive ones saw the growth of domestic oriented industries⁹¹.

As Figure 3 demonstrates, even before the outbreak of the financial crisis many European States (mainly Southern and Baltic States) ran massive current account deficit and thus they were heavily reliant on foreign capital inflow in order to finance their debt. In other words, accumulating massive current account deficit automatically leads to a negative Net International Investment Position, NIIP, with the rest of the world, which, in this case, is largely represented by other European States. If Greece is a debtor country it means it runs also a negative NIIP and thus the value of the foreign asset it holds is less than the domestic assets held by foreigners.

⁸⁹ *Ibid.*

⁹⁰ *Ibid.*

⁹¹ *Ibid.*

Current Account Surpluses and Deficit in the Eurozone

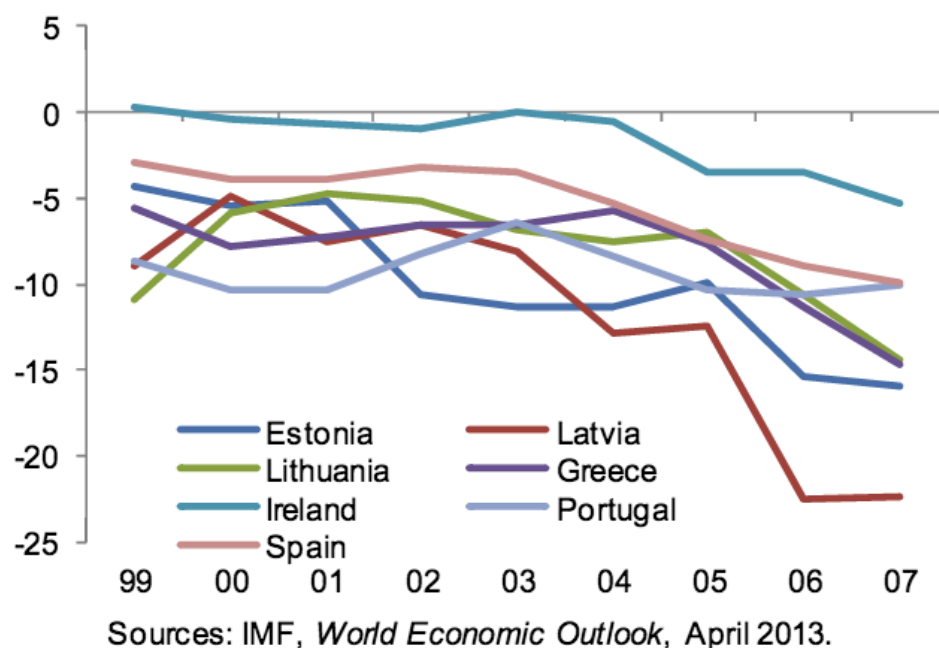


Figure 4, Current Account surpluses and deficit in the Eurozone, source: IMF Website.

Strictly speaking this dynamics results in capital inflows: the higher the deficit the more capital is needed to finance it⁹². As some argue⁹³, it should have been the role of the European Central Bank to primarily defend and pursue financial stability but, however, it was more concentrated on targeting the inflation. The huge asymmetry caused by the current account imbalances made it possible the surge of speculative bubbles in the recipient countries and an increasing exposure of the creditors.

The common currency introduced in the scenario of the European Union, in fact, was also devised with the objective of facilitating these movements of capital. The introduction of the euro overcame the problem of the risk linked to the exchange rate and, thus, favored the transfer of capital from countries that were characterized by an excessive rate of savings (and where the return on capital was relatively low) to countries where there was an higher demand for investments⁹⁴. This is the reason why the most indebted countries were the most hit by the *sudden stop* caused by the financial crisis. However, as Martin Wolf pointed out,

⁹² Krugman, P. R. & Maurice Obstfeld, 2008, *International Economics: Theory and Policy*, cit.

⁹³ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

⁹⁴ M. Wolf, *The Shifts and the Shocks*, cit.

the problem was that due to weak economic fundamentals and to structural fragilities, who received the funds (the countries which ran the deficit) were not able to efficiently manage the incoming resources⁹⁵. For instance: «In Greece, much of the borrowing was by a fiscally irresponsible government that was later found to be falsifying its account»⁹⁶.

1.3.2 The Sovereign Debt Crisis

Being this the economic background of the Eurozone, after the outbreak of the financial crisis in the U.S. in the 2007, it was just a question of timing for the sudden stop of capital to trigger the sovereign debt crisis in the Old Continent. Nevertheless, before the autumn of 2009, many European leaders believed that, even though many of their home country's banks were involved, it was mainly an Anglo-Saxon crisis and that it would have been confined in the financial realm⁹⁷. The turning point for the Eurozone was represented by the occurrence of the Greek crisis, which began to make itself felt at the beginning of October 2009. As Martin Wolf sustains, «What made the Greek fiscal position so bad was not that its spending was extraordinarily high by the Eurozone standards, but rather that its revenue was so low, given the country's high spending. Thus, in 2009, the ratio of Greek public spending to GDP was 54 per cent, according to the IMF»⁹⁸.

Starting from that moment, the gap between the yields of German *bund* and the yields on Greek (and other debtor countries as Italy, Spain and Portugal) bonds began to widen. This shift was due to the fact that the yields on one country's bond is strictly connected to the degree of risk associated to that country: if one country's economy has been severely hit by the crisis the possibility that the Government could be insolvent, which is translated in the prospect of losses for the investor, is higher than before the turmoil. Hence, higher risk means higher yields and, in a vicious cycle, for the State it is even more expensive to finance its debt. In fact, as could be depicted from Figure 2 above, after the Greek crisis the spread between Greek bond over German *bund* reached almost 300 basis points⁹⁹. On the brink of bankruptcy, Greece called for external help, which came from the intervention of

⁹⁵ *Ibid.*

⁹⁶ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit. p.843.

⁹⁷ M. Wolf, *The Shifts and the Shocks*, cit.

⁹⁸ *Ivi* p. 46.

⁹⁹ M. Wolf, *The Shifts and the Shocks*, cit.

the so-called *troika*: the European Union, the European Central Bank, ECB, and the International Monetary Fund, IMF, in April 2010¹⁰⁰. The funds provided through the intervention would have been dependent on the adoption of strong measures to be adopted by the government in order to save the Greek disrupted economy: cut in the public spending in the short run and structural reform in the long run.

However, Greece was not the only victim of the financial earthquake: Italy, Spain, Portugal and Ireland (the so-called PIIGS) were in danger too. Ireland, whose economy had been experiencing a real estate bubble, was the next and it was followed by Portugal, which, on contrary, was not affected by an asset bubble but by many years of economic stagnation and low level of growth¹⁰¹. In order to sustain those economies and to avoid a disaster that would have endangered the whole European Union, the *European Financial Stability Mechanism*, EFSM, (a fund financed by the Member States) and the *European Financial Stability Facility*, EFSF, were established. They were financed through the support of the other European Member States and through an innovative tool of the European Central Banks: for the first time this institution intervened to help countries by buying their government bonds¹⁰². Moreover, «funds of up to €60 billion from the EU budget provided a theoretical credit line of up to €500 billion. A further sum of €250 billion was pledged by the IMF»¹⁰³. The announcement of these measures of intervention itself was enough to temporarily heal the panic and to slow the rise of the spread, at least for a period of one year, after which it began to rise again.

Even though Greece, Portugal and Ireland are three important European economies their magnitude is not as much as heavy as the economies of the two countries hit in 2011: Italy and Spain. The collapse of these two big countries would have endangered the stability of all the European Union and, moreover, due to their size it would have been impossible for the *troika* to save them as it had been done with the other States. As can be seen from Figure 4, the spread between the yields of Italian and Spanish bond on the yields on German

¹⁰⁰ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

¹⁰¹ M. Wolf, *The Shifts and the Shocks*, cit.

¹⁰² Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

¹⁰³ *Ivi* p.847.

bund started widening in the after May 2008 but the alarming gap took place starting from 2011.

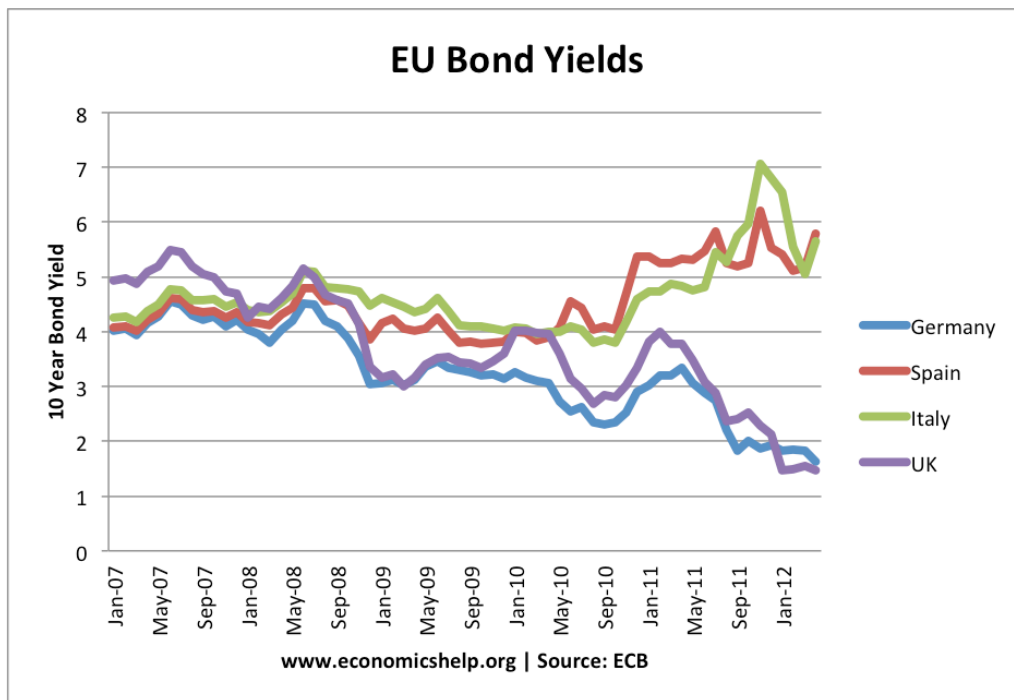


Figure 5, EU Bond Yields, Source: The European Central Bank website (2013).

The issues of the management of the crisis in Italy, Spain, and Greece generated domestic and European political tensions and struggles that questioned the unity of Europe. The different European leaders advocated, and advocates, contrasting solution for the crisis and the leverage are used on the basis of the balance of political and economic power. Germany, as the greatest creditor has a strong say in any decision, for instance, and proposes the strong line of austerity. This State, in fact, strongly opposes the idea of *moral hazard*: this term indicated the behavior assumed by those individuals, or those States in this case, who, knowing that they will not have to pay for their recklessness, will adopt an irresponsible conduct¹⁰⁴.

Cyprus was the fourth¹⁰⁵ European country that asked and obtained external aid to fight the crisis: in May 2013 the *Extended Fund Facility* was established¹⁰⁶. This was not an independent fund, but on the other hand it was parte of the newly created the *European*

¹⁰⁴ M. Wolf, *The Shifts and the Shocks*, cit.

¹⁰⁵ After Greece, Ireland and Portugal.

¹⁰⁶ M. Wolf, *The Shifts and the Shocks*, cit.

Stability Mechanism, ESM, which replaced both the *European Financial Stability Mechanism* and the *European Financial Stability Facility*. The Cyprus case is a very interesting one because the way in which this country was helped presented two innovative features: first, as far as the banking system is concerned, it was the first intervention that resulted in losses on creditors and depositors; second, it was imposed a capital control over the movement of euro across the border of the country¹⁰⁷. The point is that the way in which the Cypriot crisis was managed represented a watershed in the perception of the market player. Cyprus demonstrated that «some euros were more equal than others»¹⁰⁸, as Martin Wolf pointed out quoting a metaphor used by George Orwell in his famous opera *The Animal Farm*. In other words, investors began to understand that an euro deposit backed by a strong sovereign state with a healthy economy was *stronger*, or better, *safer* than an euro deposit backed by a weaker State: this simple change of mindset could have caused a series of bank runs that would have further hindered the already catastrophic situation¹⁰⁹.

1.3.3 The Management of the Crisis

The pressure on the banking system, especially those of the country most heavily hit by the crisis, was becoming unsustainable and, moreover, the strong link of interdependency between sovereign states and the former made investors very suspicious¹¹⁰. In order to avoid any further deterioration of the situation, the European Central Bank decided to intervene at the end of 2011 through a long-term refinancing operation, LTRO¹¹¹. However, the side effect of this program, that was supposed to ease the pressure on vulnerable systems, was that many domestic banks used the funds coming from the ECB to buy sovereign debt, thus further exacerbating the linkages with governments and irritating the investors. In this scenario of increased instability and disorientation, in September 2012 the president of the European Central Bank, Mario Draghi, delivered what would have become a famous speech that radically changed the perception of the investors and of the European citizens. Here are some important and significant part of his discourse: «The first message I would like to send, is that the euro is much, much stronger, the euro area is much, much stronger than

¹⁰⁷ *Ibid.*

¹⁰⁸ M. Wolf, *The Shifts and the Shocks*, cit. p. 50.

¹⁰⁹ M. Wolf, *The Shifts and the Shocks*, cit.

¹¹⁰ *Ibid.*

¹¹¹ *Ibid.*

people acknowledge today. [...] you see that as far as inflation, employment, productivity, the euro area has done either like or better than US or Japan»¹¹². Then he continued, focusing specifically on the crisis: « When people talk about the fragility of the euro [...] and perhaps the crisis of the euro, very often non-euro area member states or leaders, underestimate the amount of political capital that is being invested in the euro. [...] Within our mandate, the ECB is ready to do *whatever it takes* to preserve the euro. And believe me, it *will be enough*»¹¹³. Due to this last sentence this speech delivered in London will become famous as the *whatever-it-takes* speech. In addition, in in that occasion the president Mario Draghi publicly launched the *Outright Monetary Transaction* program, OMT: it was devised to buy their own sovereign bonds from suffering Member States¹¹⁴. There result was an augmented trust in the European institutions role: the ECB had committed itself and had guaranteed the solvency of the Member States, thus lowering the risk of bank runs. The confirm of this shift can be noticed also in Figure 2 and Figure 4 above: after September 2012 the gap between the yields of Southern European States' bond and the yields on German Bunds started decreasing, even though they did not reached the pre-crisis level.

What have began as a financial banking and sovereign debt crisis then, was quickly transmitted to the real economy «through the so-called financial accelerator mechanism»¹¹⁵: the dry-up of liquidity in the banking system and the decrease of capital inflow caused the so-called *credit crunch*, that resulted in the fall of investment due extremely high cost of capital. This dynamic triggered The Great Recession. And the Western economies, especially the European Union, were the ones that suffered more because, as will be better explained in the following lines, even though the rest of the world was hit too, it took less time for other regions to return to the pre-crisis level of growth. Nevertheless, it is important to examine the European recession, since it was precisely this downturn that magnified the global crisis¹¹⁶. Thus, as far as the Eurozone is concerned, the fear of default of sovereign states, the extremely high interest rates imposed by banks, and the impaired functioning of

¹¹² *Verbatim of the remarks made by Mario Draghi*, The European Central Bank Website [Available online from: <https://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html>].

¹¹³ *Ibid.*

¹¹⁴ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

¹¹⁵ *Ibid.*

¹¹⁶ M. Wolf, *The Shifts and the Shocks*, cit.

the monetary transmission channels frozen the economic systems¹¹⁷. The main effects of the Great Recession were the following ones: economic recession and the stagnation which is demonstrated by the fall of real GDP in many European Countries; the rapid increase of unemployment rate (in all the region but mainly in Italy, Spain and Greece); the sharp decrease of imports as a channel of transmission of the crisis to other region.

1.3.4 The Great Recession

As far as economic recession is concerned, one of the most significant indicators of the Great Recession is the growth rate of real GDP and, as Figure 6 demonstrates, all of the most crisis-hit European economies experienced a vertiginous decline in the 2009, with Greece being the most suffering State whose real GDP continued falling until 2011.

Real GDP Growth Rate in Crisis-hit European Economies

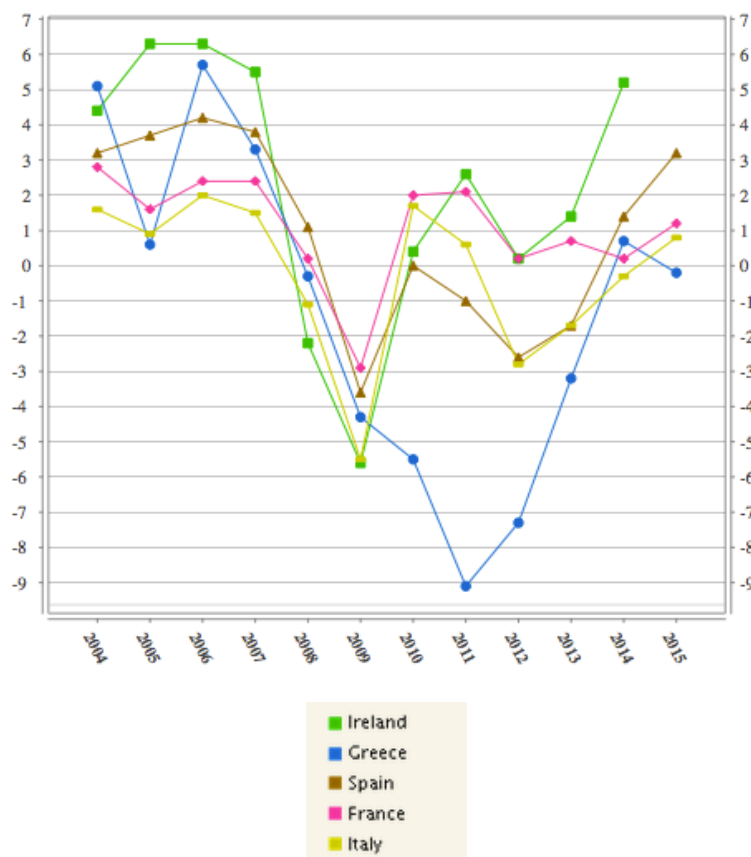


Figure 6, Real GDP growth rate – volume, source: Eurostat (2016).

¹¹⁷ *Ibid.*

The fall in GDP was due to the fact that the level of consumption in many countries had reached, during the years, unsustainable levels¹¹⁸. The boom preceding the crisis had pumped up prices, including wages, that made peripheral countries uncompetitive and that could no longer be maintained once the artificially high demand started to fall vertiginously¹¹⁹. Together with demand also prices started falling: house prices, asset prices, firm values, the level of consumption and thus demand. Long story short, what this graph shows is that the whole economy contracted.

As far as the falling unemployment rate is concerned, this rate is strictly connected to the output level. Generally, as output fall the level of employment drop too due to lower labor demand. As Figure 5 clearly shows, it was an authentic global crisis since not only the European Union, but also the U.S. and Japan, experienced a huge increase of the unemployment rate between the 2008 and 2010.

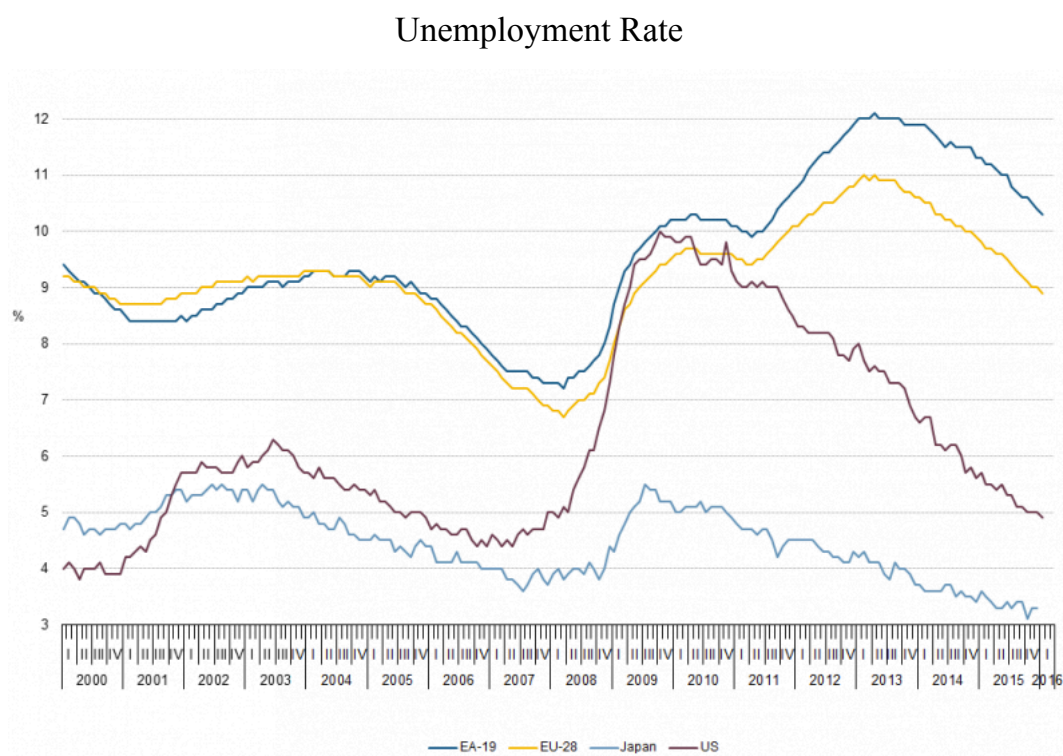


Figure 5, Unemployment rate EU-28, EA19, US and Japan, seasonally adjusted January 2000 – January 2016, source: Eurostat.

¹¹⁸ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

¹¹⁹ *Ibid.*

As can be depicted from the graph, the unemployment rate was falling throughout the world before the outbreak of the crisis in 2007. Then, starting from the first quarter of 2008, we can see a steep increase in the rate, especially in the U.S. that, during the period between 2008 and 2009 reached the higher European level of unemployment. It is interesting to notice the difference between the U.S. and Europe: after the end of 2009, in fact, the rate of unemployment in the U.S. began to decrease while, on the other hand the one of EU continued rising until the first quarter of 2014.

Lastly, as Figure 6 shows there was a decrease in imports between 2008 and 2009.

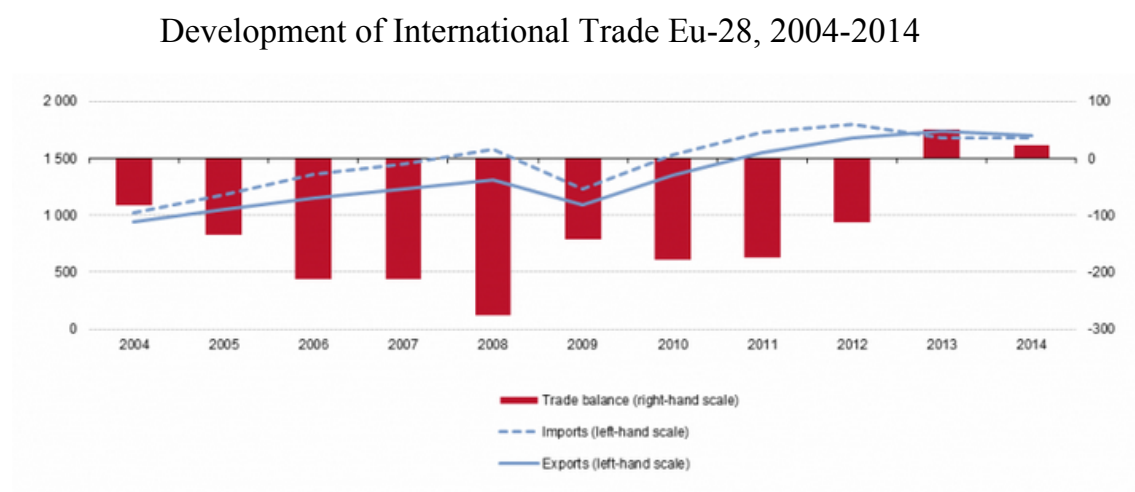


Figure 6, Development of international trade eu-28, 2004-2014

Source: Eurostat.

This fall was the main way in which the Recession was transmitted to other regions of the world via a fall of their exports¹²⁰. Since this topic is strictly connected with Global Trade, it will be deeply analyzed in the following chapters, nevertheless, in order to have in mind a broad picture it is important to contextualize it in the framework of the Great Recession that is discussed in this paragraph. So, the fall in the volume of imports was part of a general drop of consumption that resulted from both the credit crunch and the extremely high unemployment rate. On one side, the steep drop of capital inflow made it impossible to finance increasing volume of imports. On the other side, the phenomenon of unemployment meant less disposable income for household, and thus, less consumption¹²¹.

¹²⁰ *Ibid.*

¹²¹ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

This was even truer for durable goods (refrigerators, cars, washing machines) that are mainly imported products. Furthermore, these results were also magnified by the fact that creditors states, led by Germany, the greatest creditor, had imposed the adoption of important reforms and austerity programs in order to cut structural fiscal deficit to crisis-hit States as conditions to obtain external aid¹²². In other words, even though fundamental changes were necessary for those economies, the timing of their adoption was questionable.

Finally, in order to have a complete picture of the world economy, it is important to underline that the rest of the world the effects of the crisis were way less catastrophic, or, at least more concentrated in time¹²³. More precisely, even though emerging market experienced a fall in export in the years following the crisis, due to a fall in import of high-income countries, their growth rate rapidly resumed. They had less connection with the financial system and their banks did not hold the same volume of toxic assets¹²⁴. It was the case of Asia (Japan excluded) where the effect of the crisis were mitigated with an increase in public spending; but it was also the case of South American, with the exception of Mexico that was more connected to the American economy¹²⁵.

To summarize and conclude, first the subprime bubble in the real estate sector in the United States triggered the great financial crisis in the 2007: it was a system that could not be sustained any more and when its basis tumbled it all fell apart. Due to the strict connection between two of the most important financial centers, Wall Street and the City (the London Stock Exchange) the shock was easily transmitted in Europe. The transmission happened through two main channels: first, the newly created financial instruments (as CBO and CDS) that were held by many of the most important European banks, lost most of their value and where denominated *toxic asset*; second, the turmoil of the financial and banking system caused the so called *sudden stop* or credit crunch. When the movement of capital was frozen and liquidity dried-up, those European country that were heavily reliant on capital inflow in order to finance their huge current account deficits found themselves on the brink of bankruptcy. Moreover, as Wolf underlines, «the difficulties of Greece and the rest

¹²² M. Wolf, *The Shifts and the Shocks*, cit.

¹²³ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

¹²⁴ *Ibid.*

¹²⁵ *Ibid.*

of the vulnerable countries were take to be representative of the threats confronting high-income countries outside the Eurozone. This [...] justified the premature swing towards austerity across the high-income countries in 2010 that has surely slowed the recovery»¹²⁶. Hence a shock that started as a financial crisis was transmitted to the real economy causing the so-called Great Recession. Instability, uncertainty and fear do not obviously favor the growth of trade and welfare. The end of liquidity, the so-called credit, crunch and the austerity policies further slowed the growth of GDP and trade.

¹²⁶ M. Wolf, *The Shifts and the Shocks*, cit., p.87.

CHAPTER TWO

THE GLOBAL TRADE COLLAPSE: CAUSES AND DYNAMICS

2.1 An Unprecedented Experience: Figures and Data

In a broad perspective, the Global Trade Collapse triggered by the financial crisis of 2007-2008 is one of the faces, the international one, of the Great Recession. Between the third quarter of 2008 and the second quarter of 2009 international trade flows dramatically collapsed: «world trade fell by 30 percent in nominal terms, and 18 percent in real terms»¹²⁷. But *what* happened in detail and what are the features of this destabilizing phenomenon? What we mean with the expression “trade collapse”?

A comparison with the previous crises that affected the world economy together with an accurate exam of figures, data, and graphs provided by the most recent literature about the world crisis represents an effective way to understand the magnitude and the dynamics of this event. Thus, the first paragraph of this chapter comprises an overview of the world trade downturn’s feature in the years following the financial turmoil of 2007; the second and the third paragraphs deal with the explanation of the causes and of the channels of transmission that are at the basis of this downturn.

¹²⁷ Chen, N. & Juvenal, L. (2016), *Quality and the Great Trade Collapse*, IMF Working Paper 16/30.

2.1.1 Comparison with Previous Crisis

Richard Baldwin, editor of the book *The Great Trade Collapse: Causes, Consequences and Prospects*, defined this crucial event with three words: «*sudden, severe and synchronized*»¹²⁸. Nevertheless, it is not the first time in economic history that such a destabilizing phenomenon shook international stability since the worldwide economy experienced four main crises in the last century:

1. The Great Depression that started in the autumn of the 1929, triggered by the stock-exchange crisis
2. The oil crisis of the early seventies, caused by the turmoil in the Middle East that resulted in an increase of oil prices
3. The recession of 1982-1983 that was, from a certain perspective, the collateral effect of the policies adopted by the neo-liberal leaders in order to fight the increasing inflation
4. The so-called *dot com* bubble (named in this way since the crisis concerned the drop in equity value in the internet sector) of 2001-2002

However, none of the above-mentioned crises was simultaneously so sudden, so severe, and so synchronized as the one of 2008¹²⁹. More specifically, the most recent crisis was not the *greatest one* by the quantitative criterion of the absolute volume of trade collapse but, on contrary, its peculiarity lies in the qualitative aspect. Strictly speaking the Great Depression, for instance, was larger in terms of drop in the volume of world trade, but the Trade Collapse of 2008 was sharper, it was an unique phenomenon: this is demonstrated by the fact that «It took 24 months in the Great Depression for world trade to fall as far as it fell in the 9 months from November 2008»¹³⁰. While Figure 1 clearly shows the slump in merchandise export from 1950 to 2012, Figure 2 shows a significant difference between the 2008 trade collapse and the Great Depression.

¹²⁸ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, A VoxEU.org Publication.

¹²⁹ *Ibid.*

¹³⁰ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, cit. p.2.

Volume Of World Merchandise Export And GDP

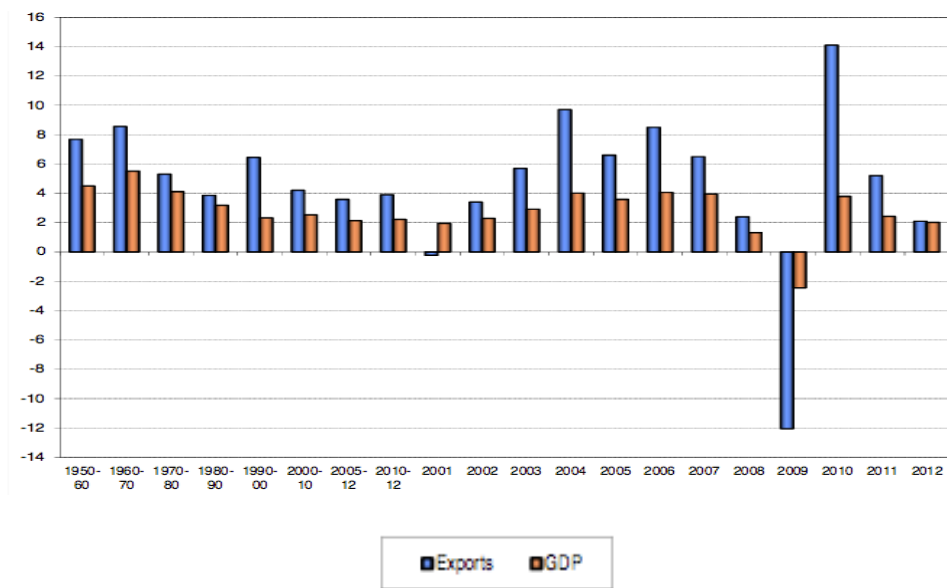


Figure 1, Volume of World Merchandise exports and gross domestic products, 1950-2012, source: WTO (2013)

Volume of Trade, Now Vs Then

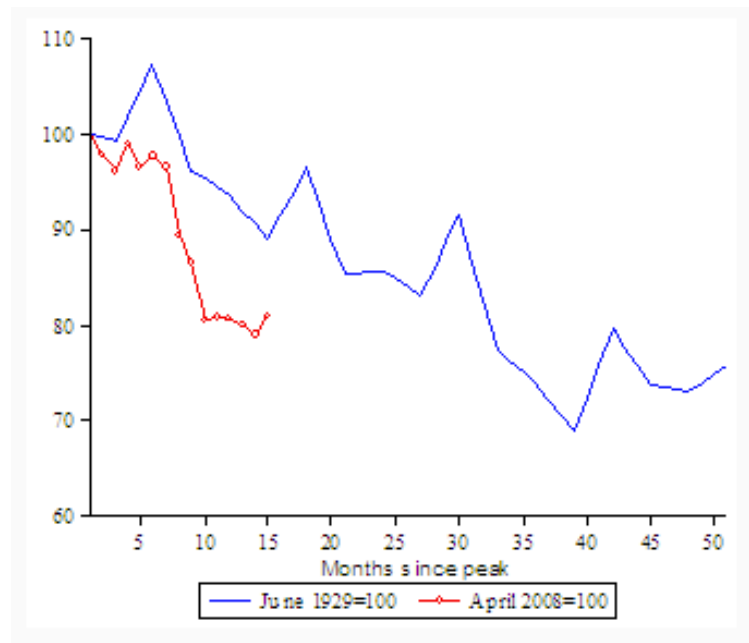


Figure 2, Volume of trade, now vs. then, source: Eichengreen & O'Rourke (2010)¹³¹

¹³¹ *A Tale of Two Depressions*, Website column on Vox.EU.org [Available from: <http://voxeu.org/article/tale-two-depressions-what-do-new-data-tell-us-february-2010-update>]

Comparing the two world-trade crises of 1929 and 2008 is useful to fully comprehend the peculiarities of the current scenario. Surprisingly, according to professor Kevin O'Rourke, there are more differences than similarities between the Great Depression and the Current Crisis. As far as correspondences are concerned, what these two events have in common is the fact that they had been transmitted through trade flows, capital flows and commodity prices¹³².

On the other hand, as mentioned above, world trade fell much more rapidly in the first year of the current crisis, mainly due to a greater elasticity of trade with respect to production. The higher elasticity, as O'Rourke pointed out, is explained by the growth of vertical specialization (which will be the focus of the next chapter) and by the difficulty to obtain trade finance during the credit crunch¹³³. Lastly, one of the most important differences has its roots in the international monetary system: flexible exchange rates fostered a greater willingness to run budget deficit in the current crisis while in the '30s those countries that did not abandon the Gold Standard (e.g. France) could not use the tool of expansionary monetary policy¹³⁴. This explains why these countries retreated to protectionism: in the '30s, for instance, some, very few, maintained free trade (e.g. the United Kingdom) and some retreated to protectionism (e.g. the United States). However, it is important to remember that, even nowadays, countries with currency boards or with substantial foreign-currency denominated debt or countries pegging their currency to others cannot use freely monetary policies.

2.1.2 Explaining the Gap between the fall of World Trade and the fall of GDP

Moving on to the features of Global Trade Collapse, it is interesting to notice the huge gap between the fall of world trade and the fall of world GDP. The research question is: why the difference between the drop of global trade and the decline of world GDP was so huge? This dynamic is not a prerogative of the current crisis but, on contrary, as Caroline Freund pointed out, it characterized also the previous economic crisis mentioned above: the

¹³² Findlay R. & H. O'Rourke K. H., 2007, *Power and Plenty: Trade, War, and the World Economy in the Second Millennium*, Princeton University Press.

¹³³ *Ibid.*

¹³⁴ *Ibid.*

oil-shock of the early seventies, the fighting-inflation related downturn of 1982, and the *dot.com* bubble of 2002¹³⁵. Nevertheless, even though in previous downturn there existed a consistent gap between world trade volume and GDP, in the more recent crisis the spread was significantly bigger: that is why it can be categorized as a peculiarity. Figure 3, taken from an Article of *The Economist*, evidently represents evidence of this phenomenon.



Figure 3, Global trade and GDP, source: The Economist (2013).

As it emerges, the absolute level and the growth rate of trade have always been above the ones of GDP in the last decade¹³⁶. However, as a consequence of the Great Recession, starting from 2008, trade level underwent a sharp decline until it intersected the level of world GDP and then negatively surpassed it, reaching a figure of more than -10% of annual growth. It began the recovery process during the 2009 and it reached, and subsequently exceeded, the growth rate of GDP only at the end of that year.

As Joaquim Oliveira Martins and Sònia Araujo observed in a recent OECD report, «Past crises averaged 13 months and -2% growth, with the worst negative growth rate being registered in October 1982 (at -14%). In comparison, the average rate growth rate between October 2008 (the first month of negative year-on-year growth rate in trade turnover for the

¹³⁵ Freund, C. *The trade response to global downturns*, in Baldwin, R. (2011).

¹³⁶ *Global trade begins 2014 in lacklustre fashion*, July 18th 2014, The Economist [Available online from: <http://country.eiu.com/article.aspx?articleid=552032439&Country=Hong%20Kong&topic=Economy&subtopic=Forecast>]

23 OECD economies) and June 2009 was -25%. Such drops in nominal trade values are considered rare events. Of the 534 months from January 1965 to June 2009, trade growth was negative in only one-sixth of the months»¹³⁷. Figure 4 below unmistakably reflects this reality. As can be depicted from the graph, the Great Recession was deeper and more prolonged than the others.

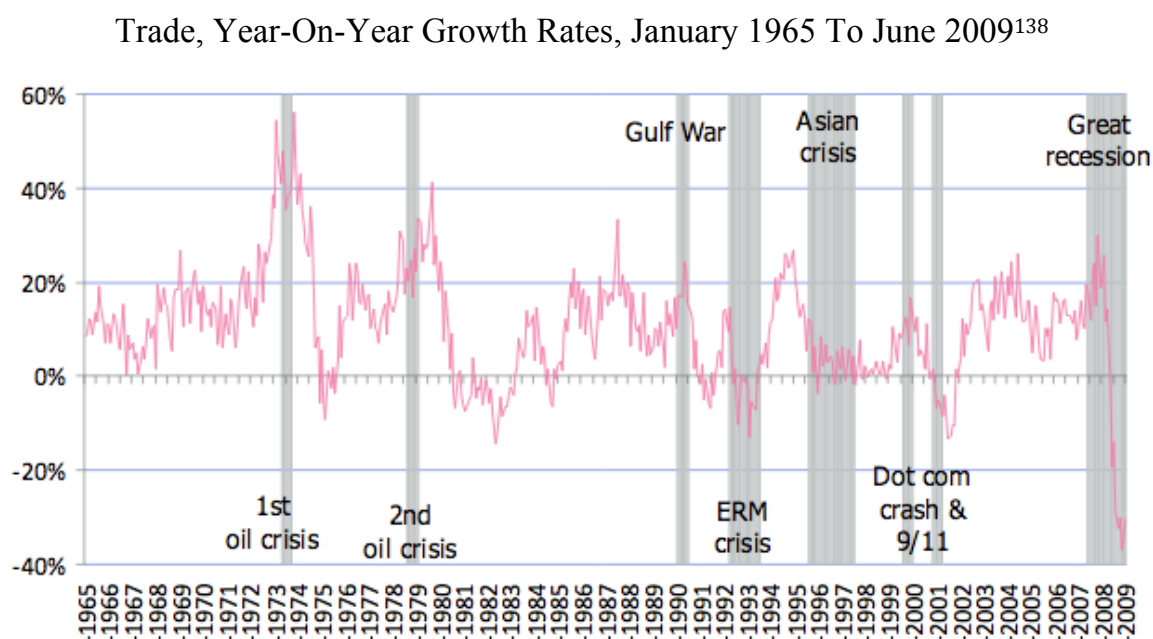


Figure 4, Trade's Growth rate from January 1965 to June 2009. Source: Baldwin (2011) Figure 1, p. 101.

Nevertheless aggregate figures could be misleading because if we take into consideration the data relative to individual countries, we discover that for each economy a collapse of such magnitude was not that unique. What has been *extraordinary* and unprecedented for the world economy as a whole was not completely new for individual countries. Here are some data used by Oliveira Martins and Araujo to support this thesis: «In July 1993 France's total trade decreased by 23% relative to its value in July 1992. In the same year, trade declined by more than 20% in January and in July in Italy, and in Germany, with Italy registering four more months of negative trade growth below 20%. In Japan, trade dropped by approximately 25% relative to the same month in the previous year [...]. In the US, trade dropped by 34% and 24% in January 1965 and 1969, respectively»¹³⁹.

¹³⁷ Martins, J.O. & Araujo, S., *The Great Synchronisation: tracking the trade collapse with high-frequency data*, in Baldwin (2011), p. 102.

¹³⁸ *Ibid.*

¹³⁹ Martins, J.O. & Araujo, S., *The Great Synchronisation: tracking the trade collapse with high-frequency data*, in Baldwin (2011), pp. 102-103.

Figure 5, represents in a graph these figures relative to France, Italy, Germany, Japan and the US.

Trade Downturns For Selected OECD Economies

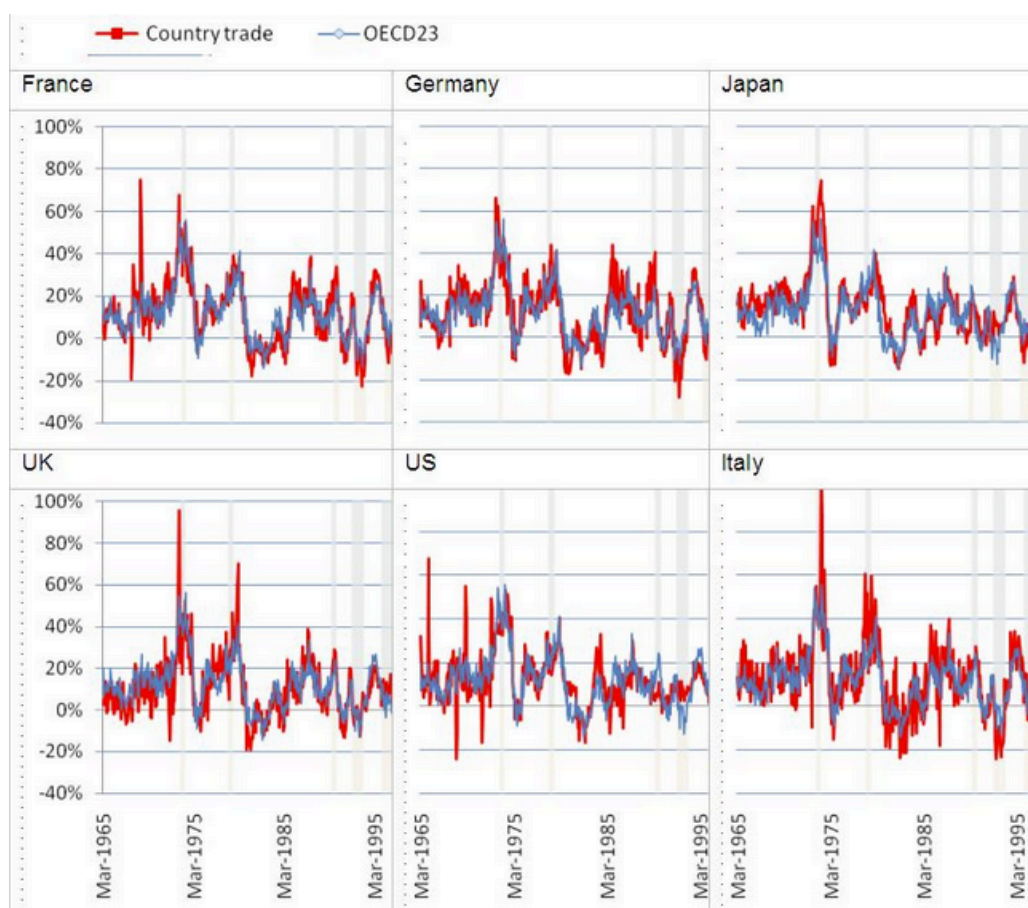


Figure 5, Trade Downturn for selected OECD countries, source: Araujo, S. & Martins O. J. (2009)¹⁴⁰

Thus, as these figures suggest, individual countries experienced, throughout the last decades, a series of economic downturns that are comparable (or even bigger), in a quantitative term, to the aggregate fall of world trade of 2008-2009. Then, why can we define this case as an unprecedented phenomenon? The answer, according to the authors¹⁴¹, is: due to synchronicity.

¹⁴⁰ Araujo, S. & Martins O. J. (2009), *The Great Synchronization: what do high-frequency data statistics tell us about the trade collapse?*, VoxEu.org, 8 July 2009 [Available from: <http://voxeu.org/article/great-synchronisation-trade-crisis-2008-2009>]

¹⁴¹ *Ibid.*

2.1.3 The Synchronicity Effect

What made such an astounding plummet possible was the fact that trade dropped simultaneously in most of the OECD countries: this phenomenon is called the *synchronicity effect*. It was the fact that so many countries experienced a decline in the growth rate of trade at exactly the same time that made the Great Recession so severe and so gigantic. Synchronicity explains the world trade collapse. As Baldwin underlines: «All 104 nations on which the WTO reports data experienced a drop in both import and export during the second half of 2008 and the first half of 2009. [...] World trade in almost every product category was positive in 2008Q2, almost all were negative in 2008 Q4 and all were negative in 2009Q1»¹⁴². Those data are distinctly illustrated in Figure 6 below in which the graph represents the volume of exports and imports (the trade flows) of ten nations and of the European Union (composed by 27 Member States at the time in which this chart was elaborated), a group of States that accounts for about 75% of world trade¹⁴³.

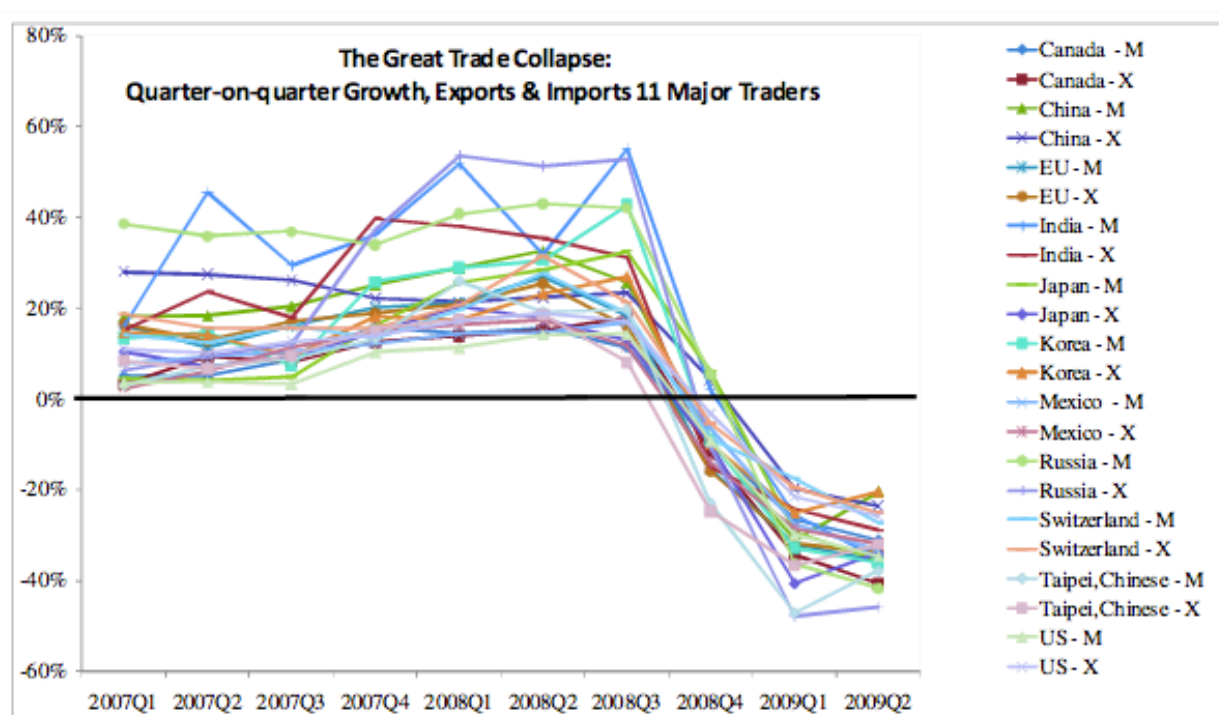


Figure 6, Quarter-on-quarter Growth, Exports & Imports 11 Major Traders, Source: Baldwin (2011) Figure 3, p.3.

¹⁴² Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, cit.

¹⁴³ *Ibid.*

Each country's volume of exports and imports dropped by more than 20% in the period between the end of 2008 and the second quarter of 2009.

Some authors¹⁴⁴ refers to this phenomenon as the *Great Synchronization* since, according to the data «(d)rops in exports growth of more than 10% occurred in more than 90% of the OECD countries in seven out of the nine months since the beginning of the 'trade crisis' (Oct 2008 – June 2009). On the import side, all OECD countries have registered negative growth values of more than 10% since January through to June 2009»¹⁴⁵. Figure 7 and 8 below portrays the *Great Synchronization* in the fall of both exports and imports. Each line represents the percentage of OECD countries that experienced a monthly year-on-year growth rate of trade that is: a) negative; b) under -5%; under 10%, respectively¹⁴⁶.

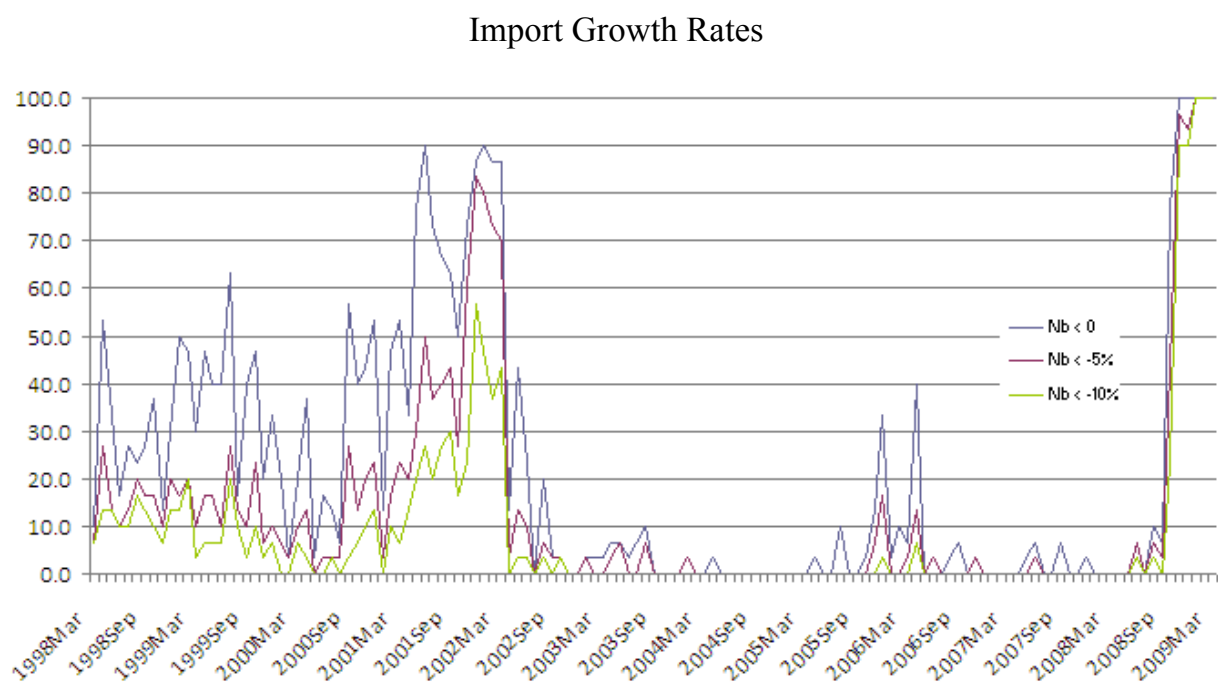


Figure 7, The Great Synchronization: percentage of countries with negative import value growth, source: Araujo, S. & Martins O. J. (2009)

¹⁴⁴ Araujo, S. & Martins O. J. (2009), *The Great Synchronization: what do high-frequency data statistics tell us about the trade collapse?* Cit.

¹⁴⁵ Martins, J.O. & Araujo, S., *The Great Synchronization: tracking the trade collapse with high-frequency data*, in Baldwin (2011), pp. 102-103.

¹⁴⁶ Araujo, S. & Martins O. J. (2009), *The Great Synchronization: what do high-frequency data statistics tell us about the trade collapse?* Cit.

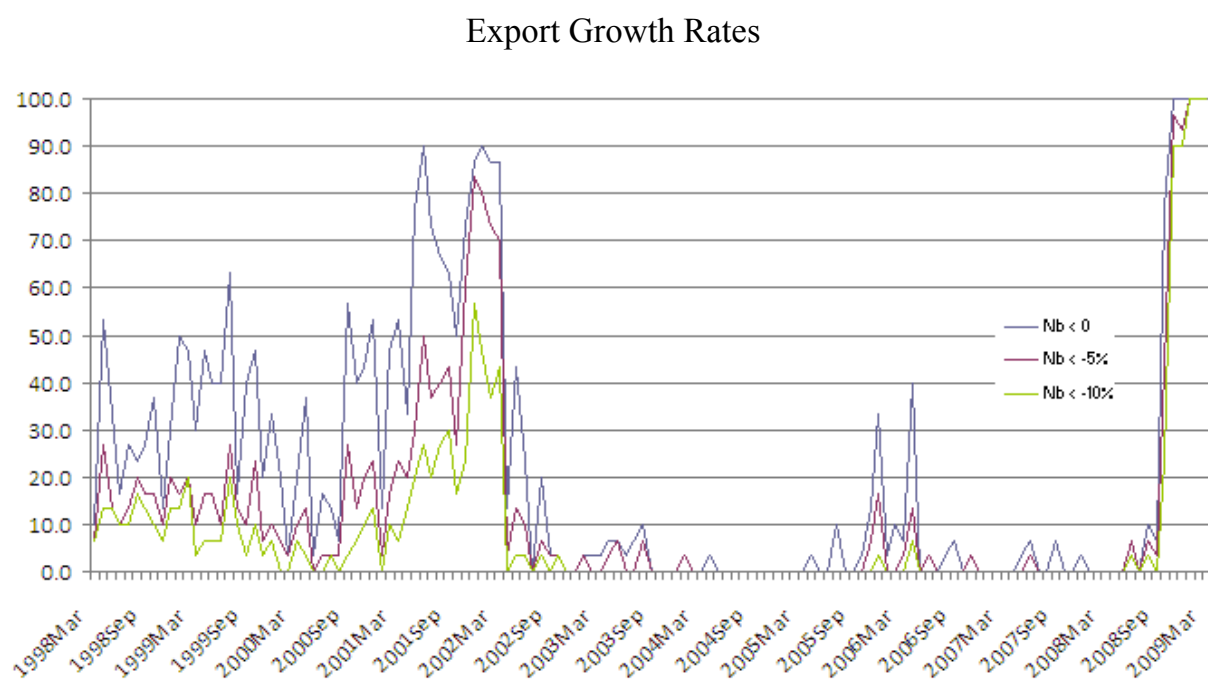


Figure 8, The Great Synchronization: percentage of countries with negative export value growth, source: Araujo, S. & Martins O. J. (2009)

According to Araújo and Martins, the ultimate cause of synchronization is globalization itself¹⁴⁷. As a result of a process that has began centuries ago with the British Industrial Revolution, which radically improved productivity and drastically cut transport costs, the world economy is now fully integrated. Globalization brought countries closer than they were and global trade extraordinarily increased. Nevertheless, the fact that all the major traders of the world economy were highly integrated with each other cause a negative domino effect: the economic recession in one country meant the fall of the volume of consumption and production and, thus, less imports; this, in turn, was translated in a fall in export for its trading partner. Hence, trade flow can be considered one of the most relevant a channel of transmission of the shock.

In addition, there existed a synchronicity not only in terms of volume of trade flows, but also in terms of the kinds of products that experienced a drop¹⁴⁸. Specifically, both the trade and the value of agricultural goods, processed foods, manufacturers, minerals, and oil, experienced a steep fall starting from the third quarter of 2008. Nevertheless, it is important to take into consideration that the trade collapse did not affect the different sectors of

¹⁴⁷ *Ibid.*

¹⁴⁸ *Ibid.*

economy in the same way. Strictly speaking, different products reacted differently to the common shock. There are two possible phenomena that could account for this difference: the price-effect and the level of fragmentation of the value chain required for the production of a certain good. As far as the second phenomenon is concerned, this paragraph offers just an overview of this issue since it will be analyzed extensively in the third chapter.

2.1.4 The Price Effect and the Segmentation of the Value Chain

As Baldwin underlines, it is important to make a distinction between manufactures and commodities. Due to the price-effect, in fact, the absolute value of commodities fell faster than the value of manufactures¹⁴⁹. This was due to the fact that the prices of mineral resources, oil, and food (thus the price of commodities) rose through out 2008, while the manufacturers' prices have not experienced this trend and remained relatively more stable in the period preceding the crisis¹⁵⁰. The fact that the prices of the first groups of good had been pumped up with respect to the second group of products, explains why the former experienced a faster and steeper drop. In addition the price-effect was also magnified by the composition of the total world trade: since oil and food represents a quarter of the whole international trade it is easy to conclude that the plunge of their value affected significantly the aggregate data¹⁵¹. Nevertheless, as far as manufactured products are concerned, this category too had been affected by the Great Recession but the drop in this sector was more related to a decline in terms of quantity. Since, overall, their value remained constant before 2008 the price-effect had not augmented their impact on the aggregate data¹⁵².

Moving to the role played by the fragmentation of the value chain, the data provided by the two authors Oliveira Martins and Araujo clearly show the different impact of the trade downturn on the level of export of various products.

¹⁴⁹ *Ibid.*

¹⁵⁰ *Ibid.*

¹⁵¹ *Ibid.*

¹⁵² Freund, C. , *The trade response to global downturns*, in Baldwin, R. (2011).

Product categories	US	Germany	Japan	OECD total
Machinery and transport equipment	-11,4%	-14,1%	-15,5%	-12,3%
Mineral fuel & related products	-9,4	-3,4%	-9,5%	-6,9%
Manufactured goods	-4,0%	-6,1%	-4,2%	-5,9%
Chemicals & related products, <u>n.e.s</u>	-1,8%	-3,5%	-1,6%	-2,9%
Memo item: all other SITC categories	-4,7%	-6,4%	-3,9%	-5,7%
Total	-31,4%	-33,6%	-34,7%	-33,7%

Table 1, different decline for different product categories of the 4 most important trade contributors, source: Baldwin (2011) Table 1, p. 104.

Table 1 unmistakably displays this disparity. We notice that the machinery transport equipment category experienced a drop that is significantly bigger than the others'; and this is true in all the countries analyzed. If we compare the first sector with the category of Manufactured goods, for instance, and we calculate the differences of declines we found out that the average is about 8,3%¹⁵³, a significant figure if we consider that the trade flow of these categories is measured in billions of dollars. The figures remains high even if we compare the first sector with the other product categories, with the exclusion of the Mineral fuels & related products category, due to the price-effect mentioned above. Thus, we can conclude that the sector of machinery and transport equipment was the one that experienced the biggest drop.

But why there existed this huge difference? According to Oliveira Martins and Araujo, the high level of fragmentation of the international supply chain that characterizes this sector could account for this phenomenon¹⁵⁴. As will be explained in detail in the following chapter, the fact that the various productive steps of the value chains are implemented in different countries works as a channel of transmission of the shocks from one country to another. Lastly, also other factors played a less significant but still important role in causing this disparity, as «the excess supply existing in mature OECD

¹⁵³ This figure is obtained applying the simple operation to found the average: $[(11.4\% - 4\%) + (14.1\% - 6.1\%) + (15.5\% - 4.2\%) + (12.3\% - 5.9\%)]/4 = 8.275\%$.

¹⁵⁴ Araujo, S. & Martins O. J. (2009), *The Great Synchronization: what do high-frequency data statistics tell us about the trade collapse?*, VoxEu.org, 8 July 2009.

automobile markets, as well as the end of a technological product cycle in the automotive industry»¹⁵⁵.

2.2 The causes of Global Trade Collapse: negative demand-shock downturn, trade-credit crunch and high trade costs

This section explores the functional connections between the *credit crunch* that resulted from the financial downturn and the collapse of international trade flows of 2008-2009. As far as the channels of transmission are concerned, today the economic literature is producing an emerging consensus about the causes of this collapse: a negative demand-shock downturn, a trade-credit crunch, and high trade costs. Each of these will be examined in the following lines.

2.2.1 The Negative-demand Shock pt.1: Durable goods

For what concerns the negative demand-shock, according to Richard Baldwin, this international trade downturn «operated through the drop in the production and export of manufactured goods due to a decline in the general level of consumption and demand»¹⁵⁶. According to the author, what made the difference with the previous crises was the Lehman Brothers accident: the fact that one of the five most important investment banks was not bailed out created in the market the belief that the situation was becoming more and more out of control¹⁵⁷. It was the occurrence of this single event that created the so-called «fear factor»¹⁵⁸, that triggered the “wait and see” behavior of consumers and investors that froze the market and thus trade. This was due to the fact that the behavior of consumers depends not only on the actual economic conditions but also on the consumers’ perception of the economic environment. This explains why Baldwin judged the LB disaster as a pivotal moment, because even though there was no structural change in the world economy before and after the collapse of the bank, what this event changed was the perception of markets

¹⁵⁵ Martins, J.O. & Araujo, S., *The Great Synchronization: tracking the trade collapse with high-frequency data*, in Baldwin (2011), p. 105.

¹⁵⁶ *Ibid.*

¹⁵⁷ *Ibid.*

¹⁵⁸ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, cit. p. 10.

and consumers that decided to adopt the “wait and see” strategy¹⁵⁹. Hence, fear and uncertainty froze domestic and international market. More precisely « the crisis has had an heterogeneous effects on traded goods differentiated by quality»¹⁶⁰. In other words, in time of economic downturn, consumers began to postpone the purchase of durable and high quality goods (e.g. cars, refrigerators, machineries). For this reason, and as the chart (Figure 9) below demonstrates, the consumption, and thus demand, of durables is more volatile than demand of non-durable goods (fuel, food, packaging, personal products).

Growth rate of Consumption

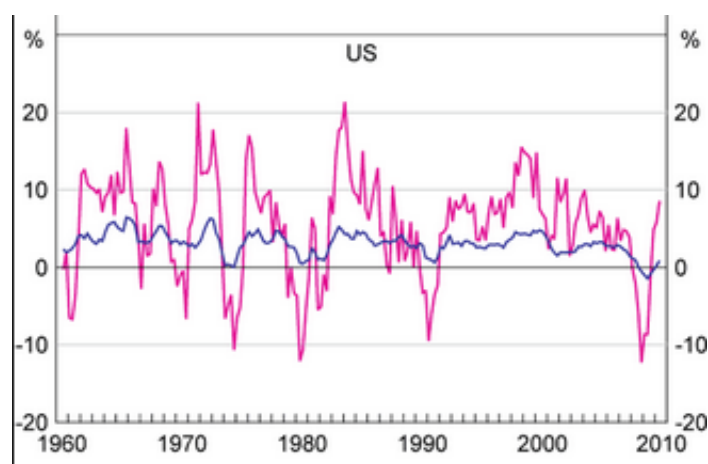


Figure 9, Growth rate of consumption of durables and non-durables. Source: Reserve Bank of Australia¹⁶¹

The darker line represents the growth rate of consumption of non-durable goods and, as it can be easily depicted, it remains relatively stable during time. On contrary, the lighter line denotes the rate of growth of durables/postponeables that, compared with its counterpart, is extremely more volatile. In addition, the sector of high-quality goods has been hit too since these products «are typically more income elastic than lower quality goods [thus] trade in higher quality goods fell to a larger extent during the crisis»¹⁶². This thesis is confirmed by Chen and Juvenal analysis of Argentinian wine trade flows reported

¹⁵⁹ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, cit. p. 10.

¹⁶⁰ Chen, N. & Juvenal, L. (2016), *Quality and the Great Trade Collapse*, cit. p.3

¹⁶¹ Black, S. & Cusbert T., (2010) *Durable Goods and the Business Cycle*, Reserve Bank of Australia [Available from: <http://www.rba.gov.au/publications/bulletin/2010/sep/2.html>]

¹⁶² Chen, N. & Juvenal, L. (2016), *Quality and the Great Trade Collapse*, cit. p.3.

in the IMF working paper *Quality and the Great Trade Collapse*: «Higher quality wine export to the US and the UK fell to a large extent during the crisis. In nominal terms [...], a unit increase in quality reduced export growth from its pre-crisis level by 11.2 percentage points for the US [...], and by 7.3 percentage points fore the UK. »¹⁶³.

The immediate result of the “wait and see” behavior, was a drop in the volume of trade in durables, but the collateral effects that spread from this initial drop was even wider: the fall in the demand, and thus production, of the related intermediate inputs¹⁶⁴. Using an example could be useful to grasp the dynamic behind this process. The standard durable good used in many explanations is the car since it could be defined as an item that produces utility for a prolonged-medium time and that is not fully exhausted in one use. When the economy is stagnating or worse it is declining and there are not buoyant perspectives of growth usually people postpone the purchase of durables. Thus, using the example of the car, even though it could be out of fashion, even though its performance could be lower than before, even though new, more efficient versions are released in the market, the consumer tends to delay the purchase of a new automobile. In addition, a declining demand of cars does not affect only the car industry but also steel, plastic and electronic industries, for instance. And, eventually, even companies producing machineries for the processing of these materials will be hurt. The same logic applies to washing-machines, refrigerators, mobile-phones. Hence, a profound drop in demand of durable goods has a wide-range negative spillover. In fact, as the two authors Francois and Woertz pointed out, «the recession has been hardest on heavy manufacturing – machinery, vehicles, and related raw materials. This has translated into a deep manufacturing recession, and a correspondently deep drop in trade»¹⁶⁵.

The four graphs below (Figure 10) clearly shows the steep decline in automobile production in four different OECD countries in the period of the crisis.

¹⁶³ Chen, N. & Juvenal, L. (2016), *Quality and the Great Trade Collapse*, cit. p.21.

¹⁶⁴ *Ibid.*

¹⁶⁵ Francois, J. F. & Woertz, J., *Follow the bouncing ball – trade and the great recession redux*, in Baldwin (2011).

GDP and Automobiles Production Growth

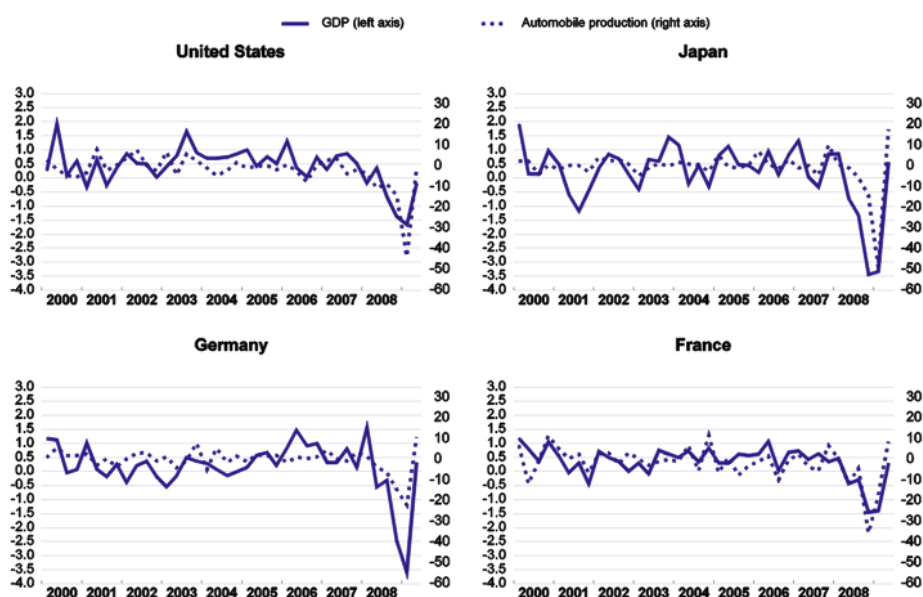


Figure 10, GDP and automobiles production growth, quarter-on-quarter growth rates. Source: OECD¹⁶⁶

Following the Great Recession that started in 2008 the automobile industry was badly hit by the drop in demand of durables. In the U.S. the rate of production growth passed -2.5%, while in Japan it reached -3.5%; the decline was less severe in the two European countries, France and Germany but still production declined by more than 2% and 1.5%, respectively.

Moreover, it is interesting to notice that the negative-demand shock that affected mainly the durable goods category played a pivotal role in explaining why world trade dropped more than GDP. The connection is given by the so-called *compositional effect*: «postponeables make up a narrow slice of world GDP, but a very large slice of world trade. [...] the common cause of GDP and trade collapse – a sudden drop in the demand for postponeables – operated with full force on trade but diminished force on GDP due to the compositional difference. The large demand shock applied to the near-totality of trade while only applying to a thin portion of GDP»¹⁶⁷. In other words, as the chart below shows, international trade is principally based on the movement of durables/manufactured goods.

¹⁶⁶ The Automobile Industry in and Beyond the Crisis, OECD [Available online from: <https://www.oecd.org/eco/outlook/44089863.pdf>]

¹⁶⁷ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, cit. p. 7.

Share of Durables in International Trade

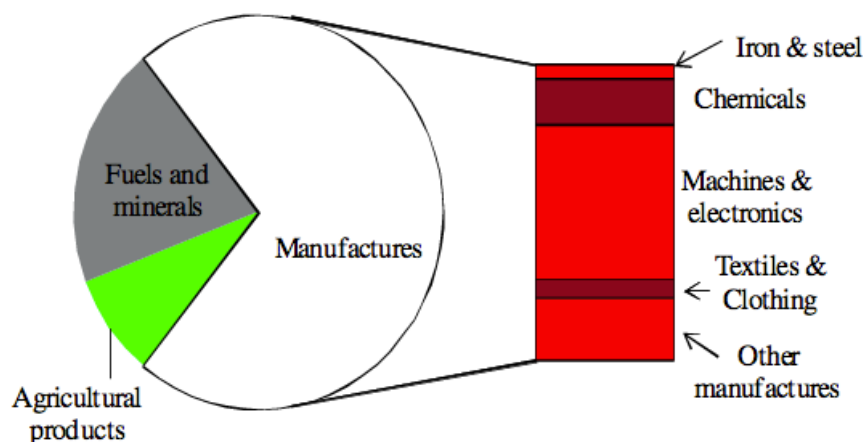


Figure 11, Share of Durables in International Trade, source: Baldwin (2011) Figure 9, p.8.

Figure 11 represents the share of durable goods in the world trade, which are included in the white part of the pie that is made of different kind of manufactured goods. Moreover, if we examine more in detail the American case of motor vehicles production, we will notice that the compositional effect is also reflected in domestic economies. By taking into account the figures relative to the production, export, and import related to this sector, it could be noticed that the decline of American trade precisely followed the fluctuation of international trade in motor vehicles¹⁶⁸. And «because the motor vehicle sector is a large share of US trade, this has also helped drive the collapse in total US trade»¹⁶⁹.

2.2.2 The Negative-demand shock pt. 2: The Service Trade

According to Ingo Borchert and Aaditya Mattoo, even though the world trade crisis is usually associated with the drop of product trade, one of the reasons why it is significant to analyze this sector's trend is that «Services account for over one-fifth of global cross-border trade [and] for countries such as India and the US, it is close to one-third of all exports»¹⁷⁰. Confirming the fact that different sectors reacted differently, we observe that service trade was significantly less affected by the negative-demand shock¹⁷¹.

¹⁶⁸ Francois, J. F. & Woerz, J., *Follow the bouncing ball – trade and the great recession redux*, in Baldwin (2011).

¹⁶⁹ *Ivi* p. 91.

¹⁷⁰ Borchert, I. & Mattoo A., *Service trade –the collapse that wasn't*, p.151.

¹⁷¹ *Ibid*.

The Resilience of Service Trade In The U.S.

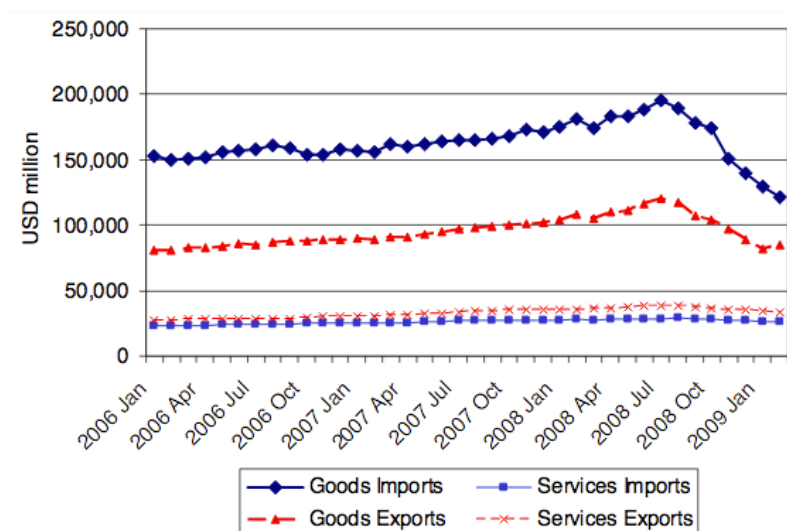


Figure 12, US Monthly Imports and Exports of Goods and Services, January 2006 – February 2009, source: Borchert & Mattoo (2009) Figure 1, p. 2¹⁷².

Figure 12 shows the relative stability of service trade in the United States: the two upper lines correspond to the value of the imports and exports of goods, respectively, while the others represent the value of services imports and exports. As can be depicted from the graph, the absolute level of trade in goods has always been significantly higher than the value of trade in services. However, what is noteworthy is the relative percentage of drop of the two sectors: during the recent crisis the level of trade in goods experienced a steeper and more prolonged decline in comparison with the latter, as the different slope of the curves demonstrate. Starting from July 2008, both the lines of imports and exports presented a negative and steep slope, until at least January 2009. On the other hand, the slope of service trade remained considerably more stable (flat in this case) also during the worst period of the crisis. Moreover, this trend is not just a prerogative of the American scenario: also data relative to the other OECD countries and Indonesia, Brazil, Russia, South African and India «does not contradict the picture of relative resilience of services trade emerging from US data»¹⁷³.

¹⁷² Borchert, I. & Mattoo A (2009) *The crisis Resilience of Service Trade*, World Bank Policy Research Working Paper, No. 4917.

¹⁷³ Borchert, I. & Mattoo A., *Service trade – the collapse that wasn't*, p.153.

Nevertheless, the service sector is not perfectly homogeneous and not all the different sub-categories reacted in the same way to the external shock. As the authors pointed out, «Within services, trade in goods-related transport services and crisis-related financial services shrank, as did expenditure on tourism abroad. But trade in a range of business, professional, and technical services remained largely unscathed»¹⁷⁴. The two following graphs (Figure 13 and 14) represent the heterogeneity of growth rate of imports and exports of different types of services in the United States.

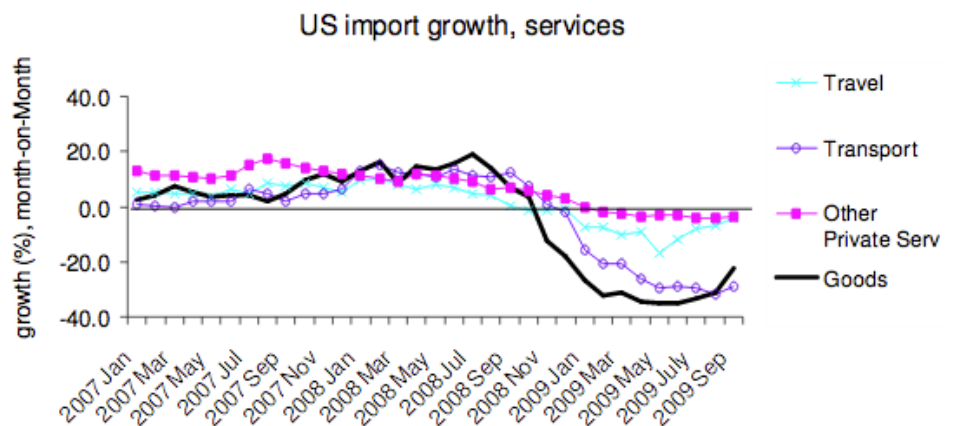


Figure 13, US growth rate of import services, source: Baldwin (2011) Figure 1, p. 152.

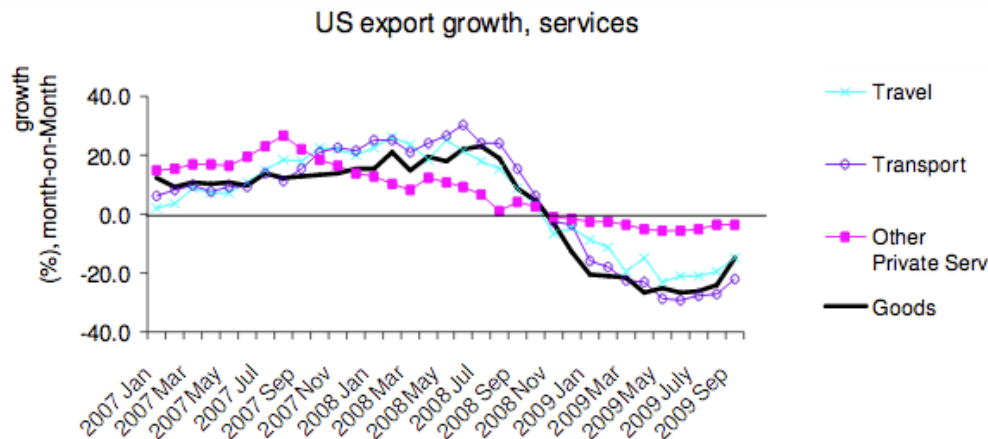


Figure 14, US growth rate of import services, source: Baldwin (2011) Figure 2, p.152.

From these two charts it is possible to see the disparity of percentage declines in the various sub-categories of services. Interestingly, travel and transport services (which are goods-related services) dropped almost as much as trade in goods (both in imports and

¹⁷⁴ Ivi p.151.

exports), and transport service fared the worst, relative to the other categories. More precisely: «international transport shrank by 39% (on an annual basis) between peak and through»¹⁷⁵. It is easy to comprehend the rationale behind this pattern: since a huge share of transport service is strongly connected to the trade of physical products (e.g. shipping service), a decline import and exports of goods resulted in a decline of services related to this sector. Overall, the sub-category of *Other Private Services*, OPS, was the one that suffered the crisis less since it «declined by only 7% on both the import and the export sides»¹⁷⁶. This group includes financial services, Insurance, Telecommunication services, Business and Professional services (with percentage showed by the graph in Figure 15). It was precisely this class of services that made it possible the resilience of services during the crisis balancing the steep drop of goods-related services¹⁷⁷.

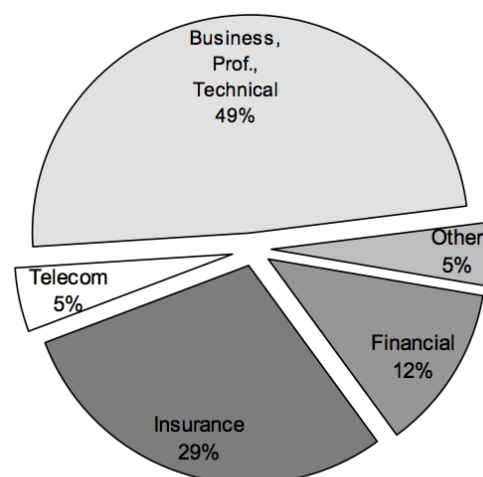


Figure 15, Share of OPS's sub-categories. Source: Borchert & Mattoo (2009, Figure 2 p.6)

There are two prerogatives of the sector that help explaining service trade stability: on the one hand, service are less dependent on external finance; on the other, this sector is less prone to demand-side shocks¹⁷⁸. For what concern the first characteristic, the reason of lower dependence on finance is that «in stark contrast to the manufacturing sector, tightening credit conditions are not constraining the production and export of services»¹⁷⁹ for three reasons:

1. Many services are sold, purchased and distributed via the internet and thus there is no need for trade finance;
2. The fact that usually in this sector payments are made in advance contributes to lower the dependency tie from external finance;

¹⁷⁵ Borchert, I. & Mattoo A., *Service trade – the collapse that wasn't*, p.152.

¹⁷⁶ *Ivi.*

¹⁷⁷ Borchert, I. & Mattoo, A. (2009), *The Crisis-Resilience of Services Trade*, World Bank Policy Research Working Paper, No. 4917, April 2009.

¹⁷⁸ *Ibid.*

¹⁷⁹ *Ibid.*

3. In most instances service sector's industries tend to have a low level of debt because « working capital is predominantly financed by retained earnings or, for start-ups, through venture capital»¹⁸⁰.

On the other hand, as far as vulnerability to demand-side shocks is concerned, there are three main explanations for this peculiarity:

1. In contrast with goods, and especially durable goods, services are not storable and, thus, they are less prone to demand contraction;
2. The use of certain services by firms is less discretionary (a business can postpone the purchase of a new machinery while it can not avoid the processing of claims);
3. Interpersonal business relationships that are behind service trade seem to be particularly long and stable.

2.2.3 The Trade-credit Crunch

The second and the third causes of the Global Trade Collapse are strictly related with each other and are: the *trade-credit crunch* and the rise in trade costs. However it is important to underline that these forces played only a marginal level in the explanation of Global Trade Collapse since the ultimate reason was that «trade fell because firms sold less of products that they were already selling»¹⁸¹. Nevertheless, knowing how the different forces operated is important to deeply understand the steep drop in international trade and the pace of the subsequent recovery. First it is important to establish what it is meant by *trade financing*. Strictly speaking, the term refers to the way in which exporters fund their activity. To have a perception of the magnitude of this flow it is sufficient to say that, in 2008, «(w)orld wide, firms exported about \$16 trillion of goods»¹⁸². As the Figure 16 below shows, the range of different instruments of trade financing goes from the least secure (the riskiest for the exporter) to the safest tool (the least risky to the exporter). By another term, the various instruments of trade finance are nothing more than the different forms of payment.

¹⁸⁰ Bochart, I. & Mattoo, A. (2009), *The Crisis-Resilience of Services Trade*, p. 16.

¹⁸¹ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, cit.

¹⁸² Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* in Baldwin (2011) cit. p.116.

Payment risk diagram

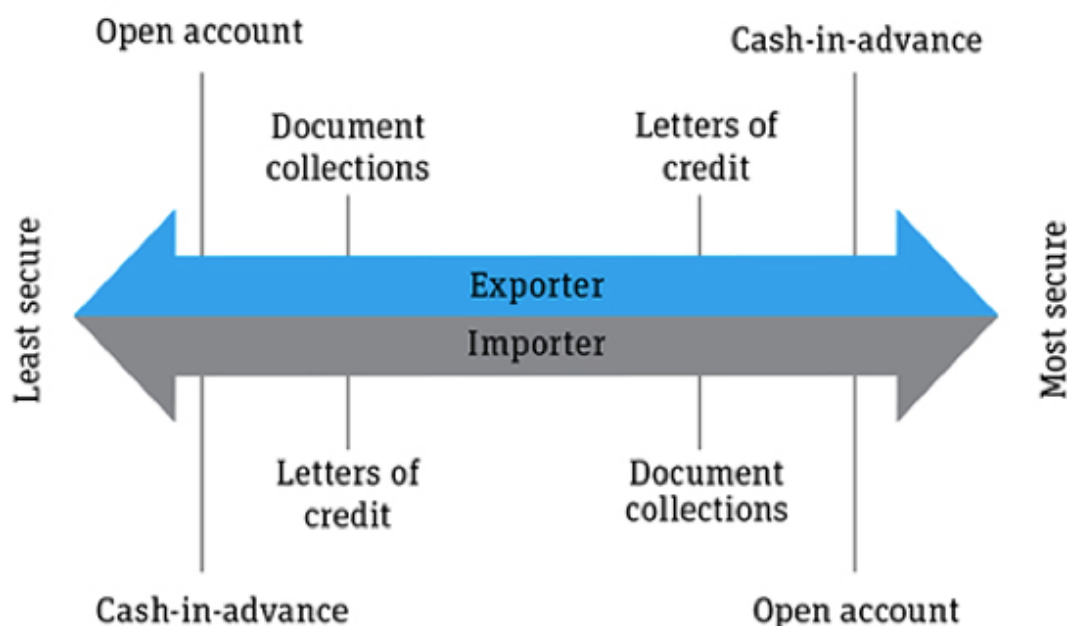


Figure 16, Payment risk diagram, source: Silicon Valley Bank¹⁸³

In this graph (Figure 16) the most common trade financing tools are organized along a continuum starting from the least secure, on the left end, and ending with the most secure on the right. Importers and exporters are placed in a symmetrical position since the most risky form of trade financing for an exporter, the open account (the top-left area), is also the least secure for the importer (the bottom-right area). Paradoxically, the most dangerous instrument of trade financing in terms of risk (on the extreme left of the diagram) is the most common means of payment used by traders since «sources report that open account are used for between 40% and 80% of world trade»¹⁸⁴. Financing through open accounts means that the payment is made by the buyer/importer *after* the products are delivered, meaning that the level of guarantee is relatively low.

On the other hand, the most secure instrument of trade financing, the cash-in-advance, is the least used in international transactions since it accounts for 10% of world

¹⁸³ *Trade Finance Solutions*, Silicon Valley Bank website. Accessed on: April the 20th 2016. [Available from: <http://www.svb.com/trade-finance-solutions/>]

¹⁸⁴ Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* Cit. p.116.

trade¹⁸⁵. When parties decide to use this tool the importer pays for the goods *before* they are delivered. The other intermediates instruments are the letters of credit and its counterpart, the documentary collections, that together represent the remaining share of world trade and that involve banking activities. The former is «a transaction in which a bank assumes the non-payment risk by committing to pay the exporter after goods have been shipped or delivered»¹⁸⁶. This is a stronger form of guarantee for the exporter since in this way he hedge him/herself against the risk of non-payment. In addition, if we consider trade financing from a broader perspective also working-capital loans provided by banks can be considered a form of trade financing. These loans are necessary when a producer/exporters needs funds to buy the intermediate inputs necessary to produce the final products ordered by the importer, since the payment made by the importer is not immediate. Lastly, independently from the form of trade financing used, the exporter could decide to protect its investment by buying an insurance to lower the risk¹⁸⁷.

After having explained what are the most diffused forms of trade financing, it is now important to understand the effects of global credit crunch on them. In order to analyze the impact of limited credit availability on trade flow the authors Mora and Powers started from a simple, logic consideration: since «all exports must be financed, if only by exporter itself»¹⁸⁸ thus «the global reduction in trade financing must match the global reduction in exports»¹⁸⁹. Hence, in order to measure the degree of the impact of credit-crunch on trade financing it is useful to compare the drop in credit available to trade with the global trade collapse. The more they are related the stronger is the causal connection between them. The first data that we have to consider is the level of nominal global merchandise exports, which is represented in Figure 17 below.

¹⁸⁵ *Ibid.*

¹⁸⁶ *Ibid.*

¹⁸⁷ *Ibid.*

¹⁸⁸ Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* Cit. pp.115-116.

¹⁸⁹ *Ivi.*

Global Merchandise Exports

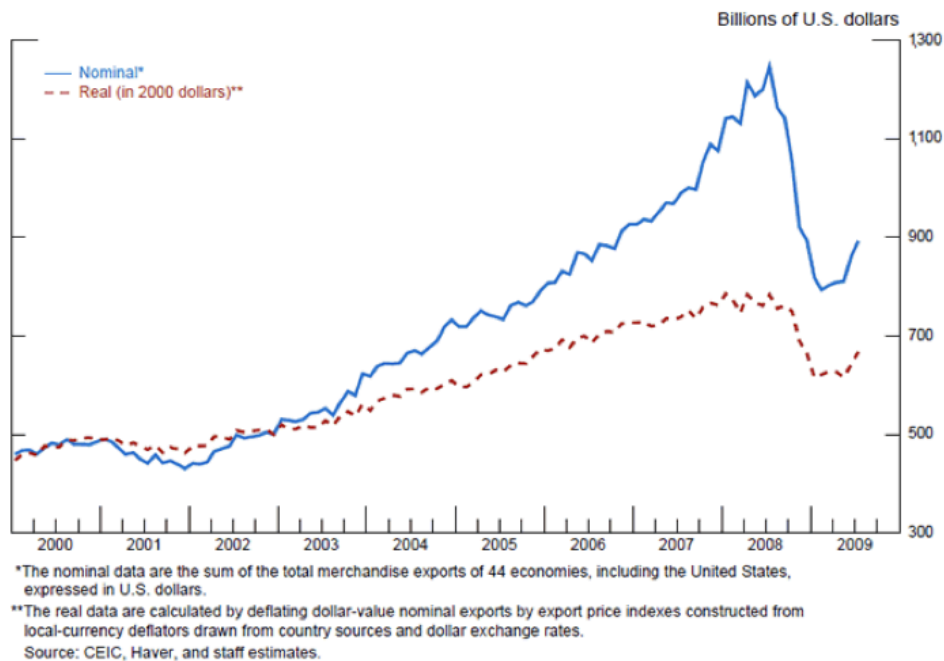


Figure 17, Global Nominal and Real Merchandise Exports. Source: The Federal Reserve¹⁹⁰.

As the graph shows, global nominal merchandise exports started to collapse in the third quarter of 2008 in 44 world economies. It continued falling steeply for the remaining years, it was quite stable in the first and quarters of 2009, and, eventually, it began to recover beginning from the third quarter of the same year. Between 2008 and 2009 «international trade plunged about 20 percent in real terms from its pre-crisis peak to its through in early 2009 (the dashed red line) and about 35 percent in U.S. dollars terms (the solid blue line)»¹⁹¹.

On the other hand, if we turn to consider the data relative to trade financing we discover that there had been a drop in cross-border lending after the default of Lehman Brothers; this plunge resulted in a limited availability of liquidity for trade financing¹⁹². This trend evidently emerges in Figure 18 and 19 below representing the level of loans and short-term financing by the United States, and two other groups of countries, during the worst period of the crisis.

¹⁹⁰ Bernanke, B. S., *Asia and the Global Financial Crisis – Speech*, Board of Governors of the Federal Reserve System, October 19, 2009 [Available from: <http://www.federalreserve.gov/newsevents/speech/bernanke20091019a.htm>]

¹⁹¹ *Ibid.*

¹⁹² Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* Cit.

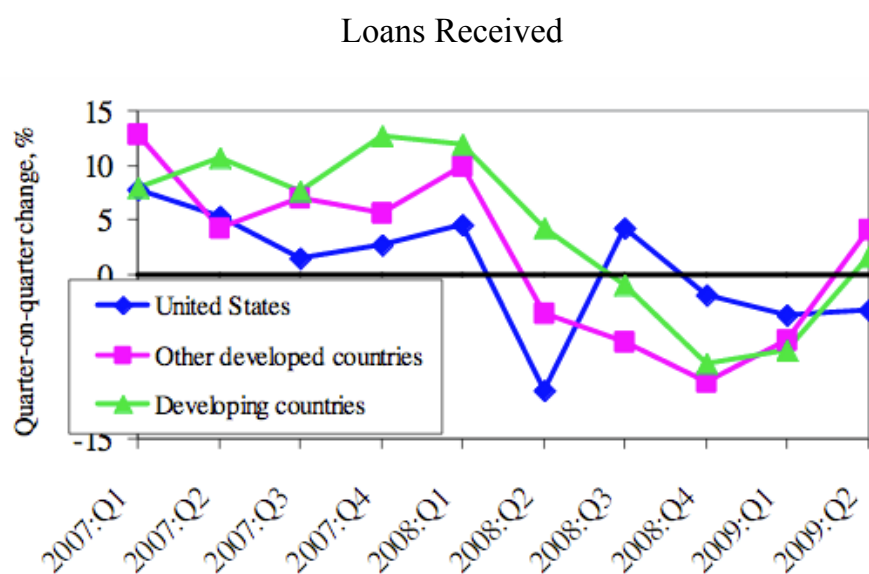


Figure 18, Level of loans received. Source: Baldwin (2011) Figure 3, p. 119.

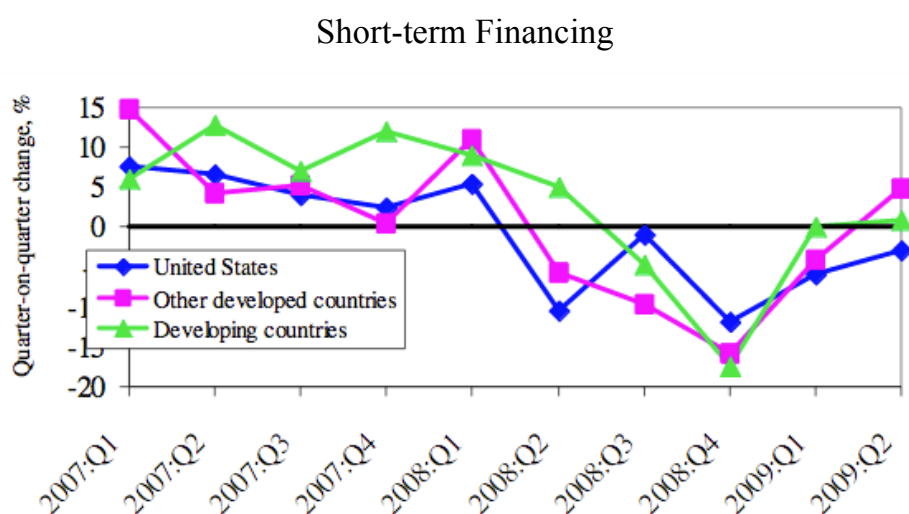


Figure 19, Short-term Financing Received. Source: Baldwin (2011) Figure 4, p.119.

What emerges from these two graphs is that both the levels of loans and of short-term financing received, dropped in the first quarter of 2008. Thus, the fall of credit availability took place earlier than the decline in global merchandise exports. While the first diagram represents the level of working-capital loans that, as mentioned above, is a slightly indirect form of trade financing. On the other hand, short-term financing can be considered more

relevant since «much of trade is dependent on short-term lending (either directly through bank-intermediate export financing, such as letter of credit)»¹⁹³.

If we compare these data with the figures relative to global merchandise export for the same group of countries (United States, Other Developed Countries, and Developing countries) as in Figure 20 below, it emerges that there is a sort of mismatch between the drop in trade financing and the drop in global trade.

Global Merchandise Exports for the U.S and two groups of countries

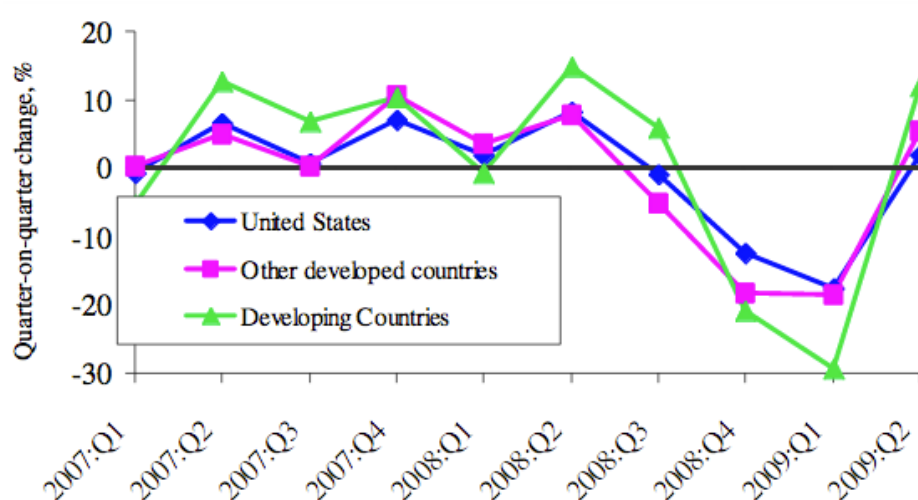


Figure 20, Global Merchandise Export. Source: Baldwin (2011) Figure 1, p. 118.

It comes out that even though cross-border trade financing flows fell sharply, reaching an average of about -13% this figure does not perfectly match with the one relative to the drop in global merchandise exports, an average of -25%. Hence, it is possible to conclude that limited trade financing (caused by the global credit crunch) «played a moderate role in the trade decline» and, in fact «(b)anks and suppliers judge reduced trade financing as the number two contributor to the decline in global exports, after the falling global demand»¹⁹⁴.

¹⁹³ Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* Cit. p. 118.

¹⁹⁴ *Ivi* p. 117.

2.2.4 High Trade Costs

The third, and last, cause of global trade collapse is the increase of trade cost that, as mentioned above, is strictly connected with the scarce availability of trade financing. Strictly speaking, this trend depended on the relation between supply and demand of trade funds: the amount of capital available for trade financing (the supply of capital) was lower than the demand of exporters (demand of capital). Hence, as one of the most basic economic rules teaches, when the demand of a certain good is higher than its supply the price rises. Or, under another perspective, it is possible to consider the price as an index of the scarcity of a certain good. This is precisely what happened as a result of the global credit crunch. As Mora and Powers underlines, in fact, «the cost of trade financing¹⁹⁵ [...] briefly reached several hundred basis point (bp) in some market, reflecting abnormally high financing costs throughout the financial system during the fourth quarter of 2008»¹⁹⁶. According to the authors, in order to measure the shortage of capital available for trade financing it is useful to consider the index of export credit insurance exposure in the short term, which is guaranteed mainly by four country: the United States, Germany, France, and Italy. Figure 21 below shows the trend of this index¹⁹⁷.

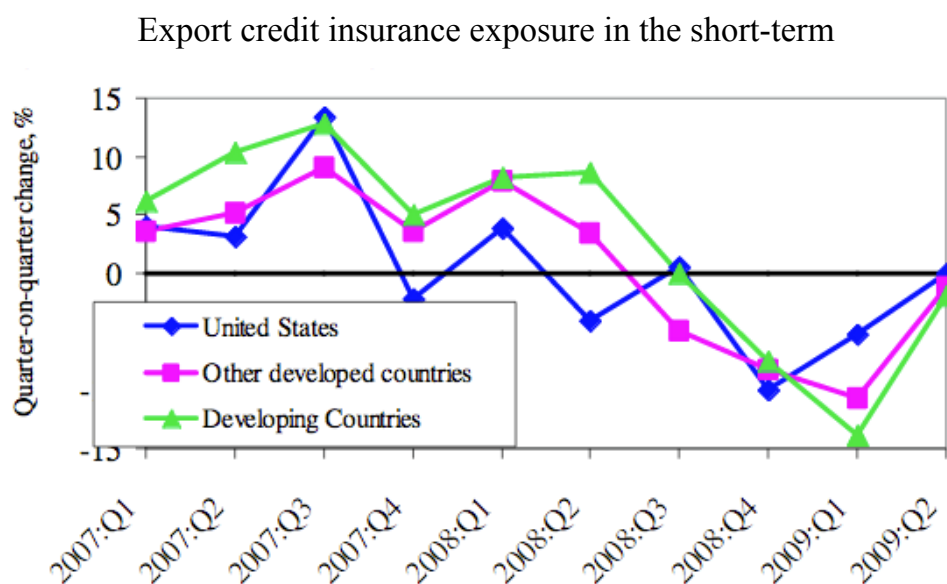


Figure 21, Export credit insurance exposure in the short term. Source: Baldwin (2011) Figure 5, p. 120.

¹⁹⁵ A cost that is conventionally measured as a percentage of the value of the delivered products.

¹⁹⁶ Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* Cit. p. 118.

¹⁹⁷ *Ibid.*

As the graph reflects, different countries' export credit insurance exposure started to decline in the first quarter of 2008, until it reached its limit of -15% at the beginning of 2009. This pattern symbolizes the scarce availability of capital for trade financing. A trend that is confirmed by the results of a survey supported by the International Monetary Fund, and by the World Trade Organization that reveals that «Most surveyed banks (47% to 71% depending on the survey) reduced the supply of trade financing in the last quarter of 2008. For example, the value of letters of credit fell 11% in that quarter as prices on those instruments rose»¹⁹⁸. Moreover, if we add to this phenomenon a decline of exporters' trust in the global market that resulted in an increased demand for insurances, the outcome is higher trade financing cost and thus higher trade costs in general. And, in fact, according to the survey, «Increased demand and reduced supply combined to drive trade financing prices higher during the crisis»¹⁹⁹.

2.3 The link between the banking Crisis and the Great Trade Collapse

In this paragraph is presented a deeper focus on the link between banking crises, exporters, and the negative demand-shock (one of the three causes of the international trade collapse examined above). More specifically, the two authors Leonardo Iacovone and Veronica Zavacka, tried to understand whether the global trade collapse has been the result of a financially-triggered supply shock or it was caused by a general drop in demand²⁰⁰. Since the whole analysis evolves around the export sector, the underlying question is: was the export declined ultimately triggered by the *credit crunch* or by a fall of demand? What is the role played by the dependency on external finance?

2.3.1 Exporters and the Supply-side

As far as the supply-side is concerned, it is important to start from this consideration: even tough financial crises have an overall negative impact on all producers, the category of

¹⁹⁸ Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* Cit. p. 122.

¹⁹⁹ *Ibid.*

²⁰⁰ Iacovone, L. & Zavacka, V., *Banking crises and exports: Lessons from the past for the recent trade collapse*, in Baldwin (2011).

exporters is subjected to more serious reverberations²⁰¹. This is due to the fact that «in addition to production costs, (they) have to face the additional expense of penetrating foreign markets (and) because international transactions normally involve higher working capital requirements and default risks»²⁰². In addition, as it will be examined in the following lines, the export industry is also dependent on import demand of other countries. Hence, when it comes to estimate the impact of a financial and credit crisis on exporters it is fundamental to take into account the degree of the exporter's dependence on external finance to finance its business. A company that could rely on tangible assets and that has a consistent internal cash flow that can support its activity will be less prone to financial shocks²⁰³. The natural consequence is that in case of credit crunch more dependent business will experience a slower growth-rate of exports. As emerged from Figure 22 and Figure 23 below, this is exactly what happened given the data relative to the examined last 23 banking crises from 1980 to 2000²⁰⁴.

Growth Rate and Dependency From External Finance

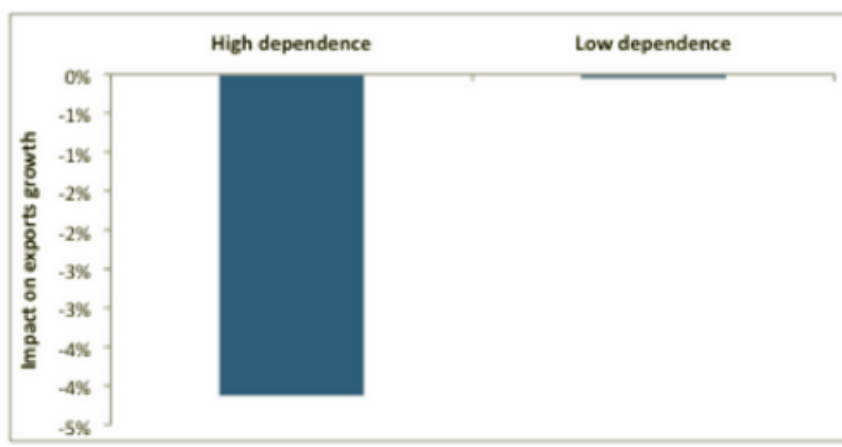


Figure 22, Growth Rate and Dependency From External Finance, source: Iacovone, L. & Zavacka, V. (2009)²⁰⁵

²⁰¹ *Ibid.*

²⁰² Iacovone, L. & Zavacka, V., *Banking crises and exports: Lessons from the past for the recent trade collapse*, in Baldwin (2011), p. 107.

²⁰³ Iacovone, L. & Zavacka, V. (2009) *Banking crises and exports: Lessons from the Past*, Policy Research Working Paper Series 4723, The World Bank, Washington, D.C.

²⁰⁴ *Ibid.*

²⁰⁵ Iacovone, L. & Zavacka, V. (2009) *Banking crises and exports: Lessons from the Past*, Vox.org. [Available from: <http://voxeu.org/article/banking-crises-and-exports-lessons-past>]

This diagram confirms that in the previous banking crisis highly-dependent export companies (e.g. exporter of machineries) experienced a negative growth-rate of export, and that there was a significant difference with the performance of more independent exporters (e.g. exporter of footwear)²⁰⁶.

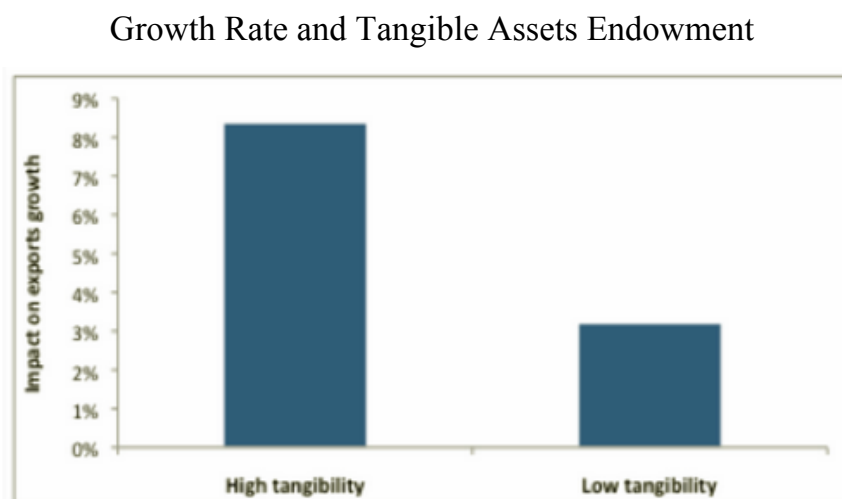


Figure 23, Growth Rate and Tangible assets Endowment, source: Iacovone, L. & Zavacka, V. (2009)²⁰⁷

On the other hand, what emerges examining this second graph is that if a company was well endowed with tangible assets (represented by the left column), it had maintained relatively higher level of export growth in comparison with business characterized by low tangibility. Hence the internal cash flow played an important role in protecting export industries by the most severe effect of banking crisis. Obviously exporters that are heavily-reliant on external finance are the ones that are less endowed with tangible assets and that are thus more prone to external financial shocks. While the opposite is true for companies that can rely on inter-firm finance to sustain their commercial activities.

2.3.2 Exporters and the Demand-side

Turning to the demand-side effects on exports, the analysis of Iacovone and Zavacka confirms the conclusion of the previous paragraphs: the overall impact of a fall of demand is that it magnified the effect of the credit crunch. This is due to the fact that «when a banking

²⁰⁶ *Ibid.*

²⁰⁷ Iacovone, L. & Zavacka, V. (2009) *Banking crises and exports: Lessons from the Past*, Vox.org. [Available from: <http://voxeu.org/article/banking-crises-and-exports-lessons-past>]

crisis is simultaneously accompanied by a drop in demand, the exporters are hit twice»²⁰⁸. This result is crucial because it explains the difference between the previous crisis and the current one that triggered the Global Trade Collapse. More precisely, the past financial downturns were not associated with a general decline in demand of the majority of countries. What happened was that, in general, the level of consumption, and thus demand, fell in the home countries of exporters but remained steady in their import counterparties. This dynamic made it possible for exporter to compensate the negative effect of the crises on their production. On contrary, what happened after the financial crisis of 2007-2008 was that demand dropped across the world and, therefore, export companies could not compensate their losses. In addition, Figure 24 below shows how company's exports reacted to negative-demand shocks depending on the degree of dependency on external finance. The graph confirms that the more a company relies on external finance the more it would suffer a negative demand-shock.

Percentage of Export Drop in Response to Demand Shocks

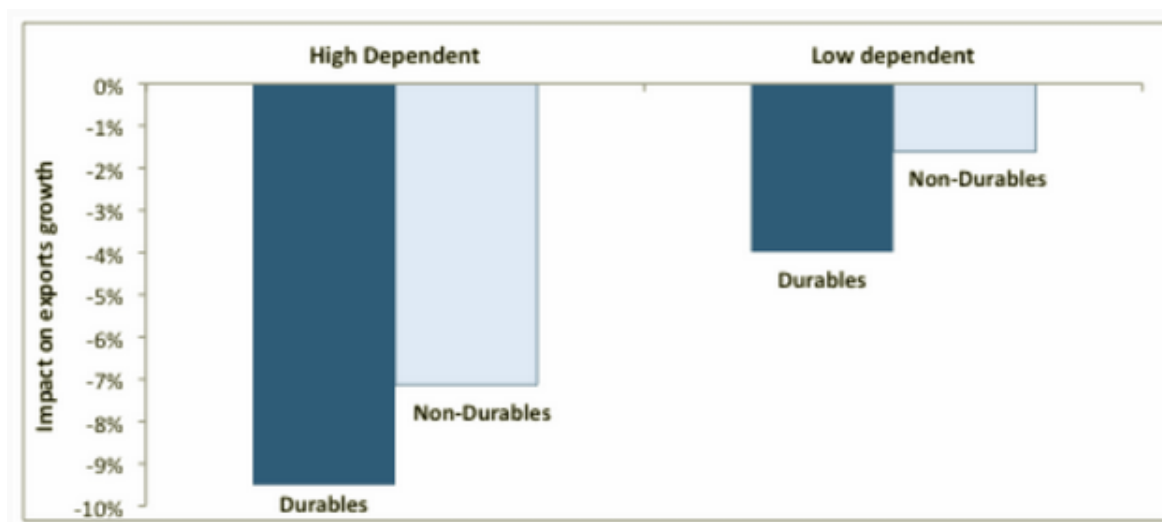


Figure 24, Export collapse in response to demand-shock. Source: Baldwin (2011) Figure 1, p. 109.

To conclude, in common banking crisis exporters that are heavily dependent on external finance are more vulnerable in case of financial crisis, meaning that credit restrictions caused slowly export growth. However, what happened for the first time in the economic history was that there was a simultaneous demand shock across countries that

²⁰⁸ *Ibid.*

subtracted the trade finance channel from exporters and thus magnified the negative effect of the crisis on this sector.

CHAPTER THREE

THE AMPLIFIER OF THE CRISIS: THE ROLE OF THE INTERNATIONAL SUPPLY CHAIN

3.1 Understanding the International Supply Chain

As various authors pointed out²⁰⁹, the International Supply Chain has been one of the main transmission channels of the shock generated by the financial crisis and the Great Recession. Before analyzing the dynamics behind this phenomenon, however, it is important to define what is meant by the term *International Supply Chain*, whose synonyms are also or *Global Value Chain* or, more in general, *Vertical Linkages*.

3.1.1 What is the Value Chain?

First of all, every kind of manufactured good requires a process that involves different activities in order to be produced. The sum of these various “productive steps” is called Value Chain since it is the procedure that leads to the final value of the good²¹⁰. The most common activities of this process that are involved in the production of the great

²⁰⁹ Baldwin (2011), Yi (2009), and Araujo & Martins (2009) among others.

²¹⁰ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, 3rd Edition, Worth Publishers.

majority of goods, are showed in Figure 1 below that represents a simple version of the Value Chain.

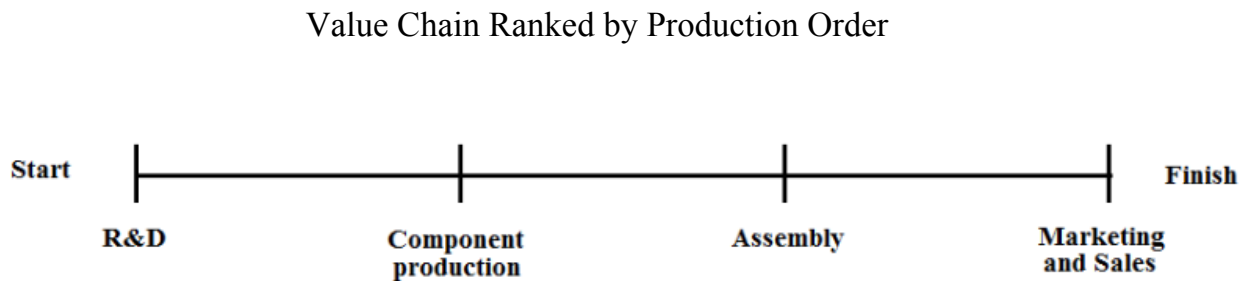


Figure 1, Value Chain ranked by production order. Source: Feenstra & Taylor (2014, Figure 7-1, p. 200)

Here the various steps are ranked by production order. Starting from the left-end, R&D stands for Research and Development of the product and involves inquiries, experiments, tests, and prototypes, for instance. Following the line there is the Component production, and the assembly phase. Finally, there are the marketing and sales activities that include, for instance, the promotion activity, the launch of the product, its placement in the market, and the distribution of the final goods. Those diverse activities could be implemented either domestically, in the home country of the producer, or, conversely, abroad. Usually, if we take into account a manufacturing firm that is placed in a developed, high-income country we will notice that the entrepreneur will decide to carry out certain activities in a foreign country where wages are lower than they are in its home country. Figure 2 below is helpful to explain this dynamic.

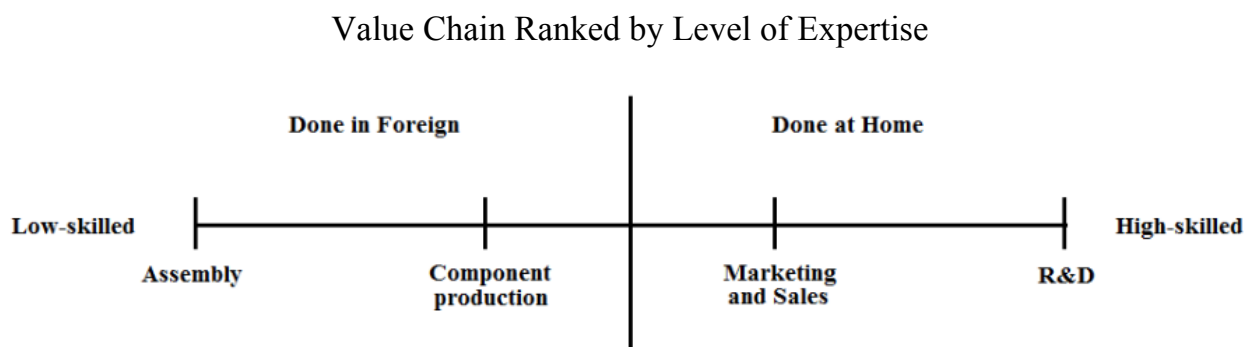


Figure 2, Value Chain ranked by level of expertise. Source: Feenstra & Taylor (2014) Figure 7-1, p. 200.

Here the various productive steps are ranked by the level of skill required for their implementation: from low-skill to high-skill. In addition, the track is divided by a vertical line that separates the kind of activities that are commonly carried out abroad from the ones that are implemented at the domestic level²¹¹. What made it possible the implementation of part of the production process abroad in the first place was precisely the process of globalization that brought about the kind of innovations that ultimately cut transport costs and extremely facilitated long-distance communications²¹². But why should producers slice the production chains and outsource part of the process? The answer is that, as «Economic theory predicts [...] if the production process of a final good can be segmented, then opportunities for economies of scale or scope may exist. In such a case, slicing the value chain into smaller segments leads to more efficient production, especially when done in an international context, due to wider differences in factor endowments and comparative advantages»²¹³.

A firm that offshores part of its activity is *slicing* its value chains²¹⁴, and its decision to offshore part of its productive process is based of three main criteria:

1. The cost of labor: a company considers the relative wages, which, usually, are lower in developing countries.
2. The cost of capital, which is usually higher in Foreign developing countries due to:
 - i. «Higher prices to build a factory or higher prices for utilities such as electricity or fuel
 - ii. Extra costs involved in transportation and communication, which will be especially high if Foreign is still developing roads, ports, and telephone capabilities [...]
 - iii. Extra costs from tariffs if Foreign imposes taxes on goods (such as components parts) when they come into the country»²¹⁵.

²¹¹ Keeping in mind that it is assumed that *home* is a developed, high-income country while *abroad/foreign* is assumed to be a developing, low-income country.

²¹² Findlay R. & H. O'Rourke K. H., 2007, *Power and Plenty: Trade, War, and the World Economy in the Second Millennium*, Princeton University Press.

²¹³ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p. 84.

²¹⁴ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, 3rd Edition, Worth Publishers, cit.

3. Transport/shipment costs, which are related to oil prices, transportation facilities, distance, etc.

Turning to the fragmentation of the supply chain, the procedures placed *before* the vertical line does not require a high level of expertise: starting from the extreme left, in fact, there are the productive steps of assembly and component production. Those activities are commonly carried out abroad, generally in developing or emerging countries not only because they do not require a high level of expertise but also because of lower production costs: since wages are lower²¹⁶ in this category of countries labor force cost less for the producer. Conversely, the activities placed *after* the vertical line requires a higher level of expertise, they are: Marketing/Sales and Research & Development, which necessitates high-skilled workers. Hence, these parts of the productive process are carried out domestically. Furthermore, it is interesting to notice that, together with vertical linkages, there are also important transversal connections since «(s)ome services industries, such as financial services or transport services will be part of almost all value chains. (And e)xtractive and raw material industries are also likely to be at the beginning of most manufacturing GVCs»²¹⁷.

3.1.2 The Determinants of the Global Value Chain

The position of the vertical line can shift leftward or rightward depending on changes of all the relevant factors that have an impact on the production costs²¹⁸. An increase in transportation costs, for instance, could discourage the producer to offshore part of its activities, but also the variation of foreign or domestic supply or labor (thus, the change in the relative wage) plays a crucial role in determining where each part of the chain takes place²¹⁹. Moreover, not only the position of the vertical line can change, but also the length

²¹⁵ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, 3rd Edition, Worth Publishers, cit. p. 201

²¹⁶ According to Krugman, P. R. & Maurice Obstfeld (2008), poorer countries have lower wages in tradables because of lower productivity.

²¹⁷ Miroudot S. & De Backer K., Working Party of the Trade Committee (2012) *Mapping Global Value Chains*, The OECD Conference Centre, Paris.

²¹⁸ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

²¹⁹ *Ibid.*

of the global value chain itself may change depending on industries' characteristics. Figure 3 below shows the various lengths of GVCs.

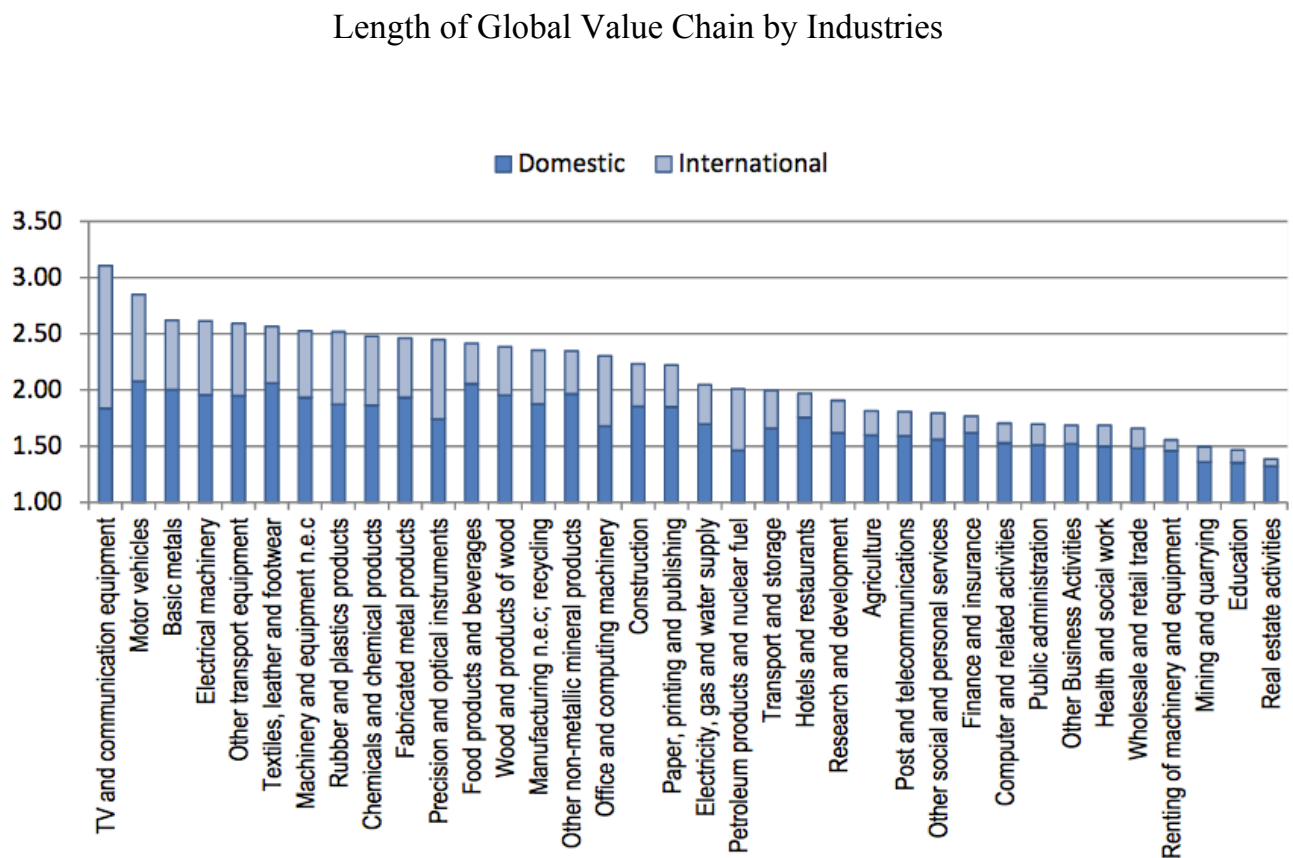


Figure 3, Length of GVC by Industries (2008). Source: Miroudot & De Backer (2012) Figure 1, p. 15.

Broadly speaking, international supply chains in which manufacturing industries are involved are generally longer than others' (like services, for instance). Still, overall, as a general rule «(o)ptimal chain length is [...] determined by the trade-off between the gains to specialization and the higher failure rate associated with longer chain length»²²⁰.

But how much does the Global Value Chain weigh on each country's economy? In order to measure the importance of vertical linkages, the OECD Working Party of the Trade Committee determined the level of OECD and non-OECD countries' involvement in

²²⁰ Escaith, H. & GOnquet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p. 84.

vertically fragmented production by measuring «the share of foreign inputs and domestically produced inputs used in third countries' exports»²²¹. Figure 4 below represents the participation index of OECD countries registered 2008, while Figure 5 reports the same index for non-OECD countries. It is interesting to notice that small open economies as Luxembourg, South Korea, Slovak Republic and Belgium, for instance, are characterized by an high level of vertical integration. Due to the size of their economies «they source more inputs from abroad and produce more inputs used in GVCs than large countries such as the United States or Japan (where due to the size of the economy, a larger share of value chain is domestic [...])»²²².

Participation index – OECD Countries

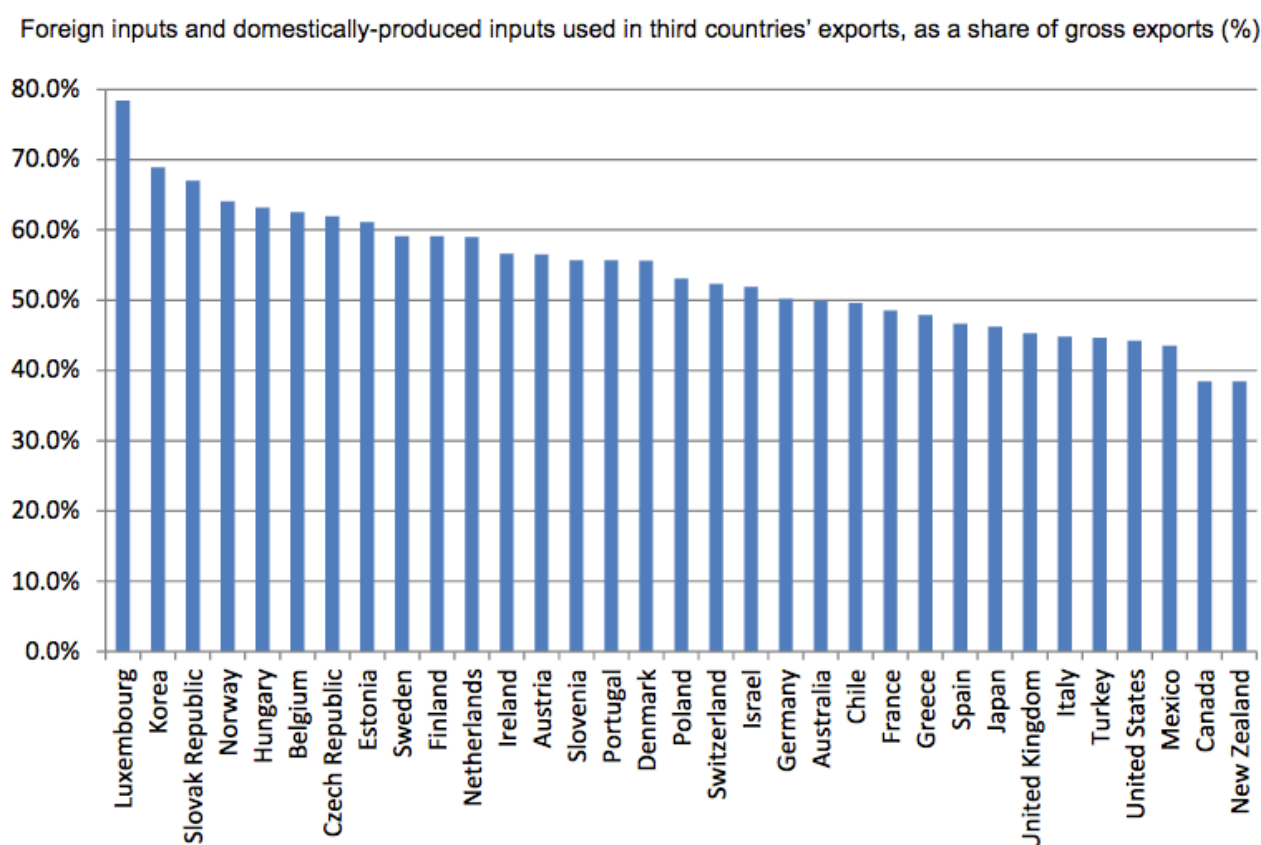


Figure 4, Participation Index in OECD countries (2008). Source: Miroudot & De Backer (2012) Figure 1, p. 12.

²²¹ Miroudot S. & De Backer K., Working Party of the Trade Committee (2012) *Mapping Global Value Chains*, The OECD Conference Centre, Paris, cit. p. 11.

²²² Ivi p. 12.

Participation index – non-OECD Countries

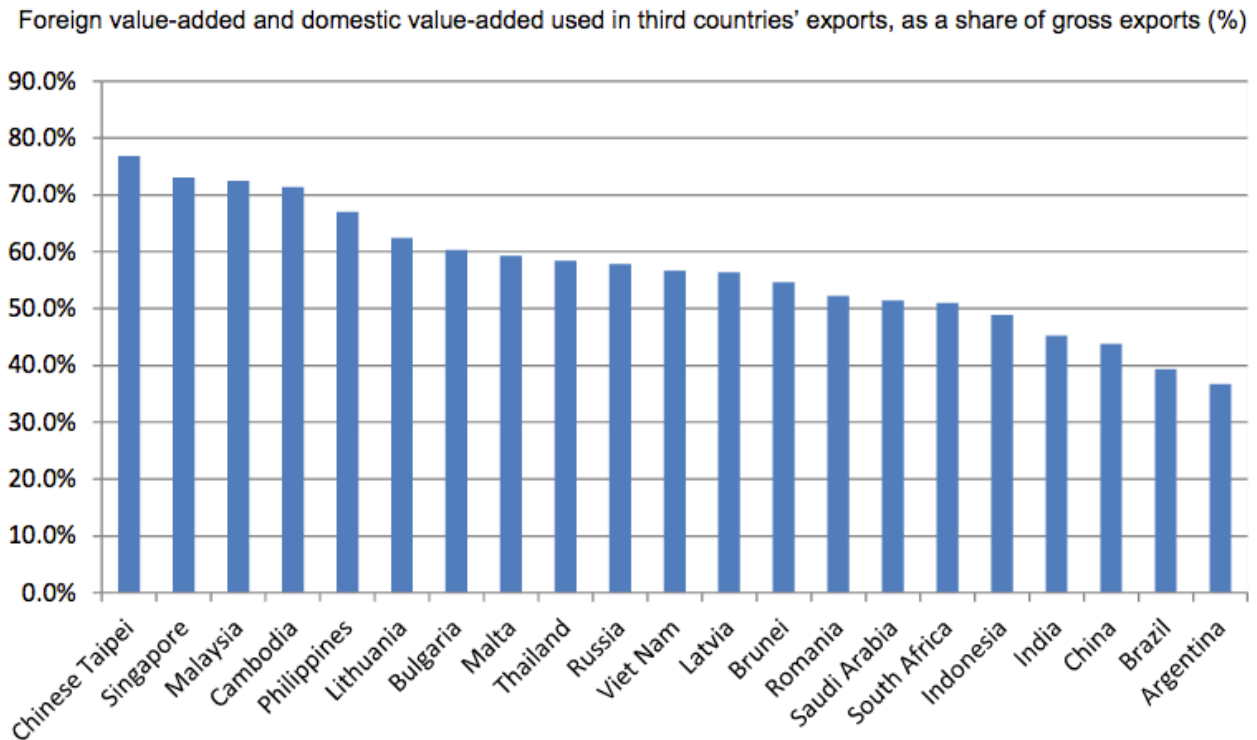


Figure 5, Participation Index in OECD countries (2008). Source: Miroudot & De Backer (2012) Figure 2, p. 13.

Furthermore, beside the level of participation in each single country it is also important to take into consideration *where* a specific economy is placed along the value chain, or, by other terms, its distance to the final demand²²³. Thus, a country can either be:

- Upstream, if it is specialized in the first activities of the production process as research and development, R&D, or if it is the source of raw materials
- Downstream, if its activities are focused on the last stages of the value chain, as assembly, for instance²²⁴.

Figure 6 below represents different OECD and non-OECD countries' distance to final demand in 1995 and in 2008. More specifically, the figures on the vertical axis represent the average value of all the country's industries.

²²³ Miroudot S. & De Backer K., Working Party of the Trade Committee (2012) *Mapping Global Value Chains*, The OECD Conference Centre, Paris, cit.

²²⁴ *Ibid.*

Distance to Final Demand

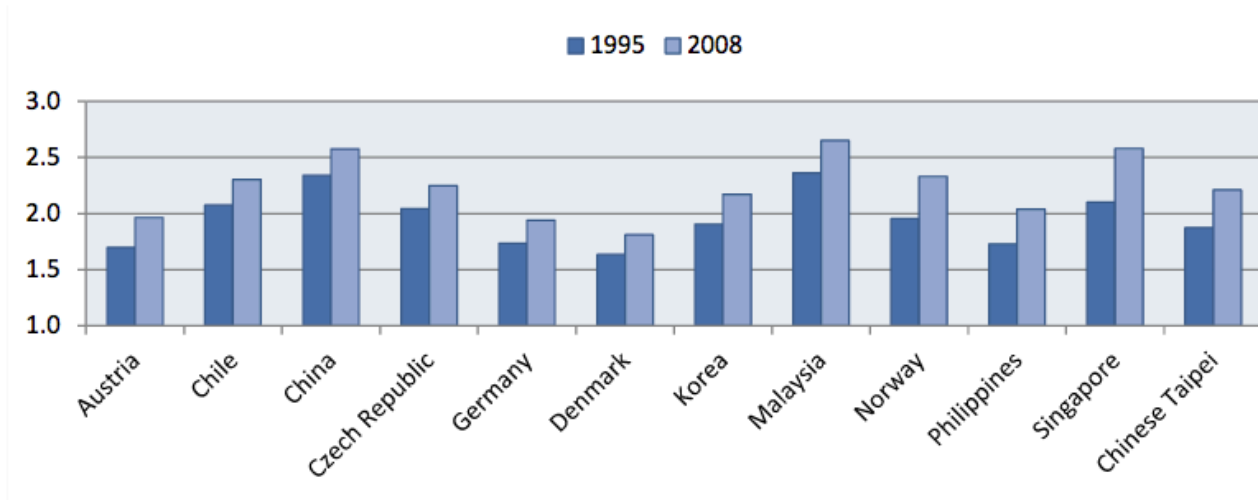


Figure 6, Distance to Final Demand, by economy, 1995 and 2008. Source: Miroudot & De Backer (2012) Figure 2, p. 16.

An increase in the distance to final demand, between 1995 and 2008, means that the country has become increasingly specialized in the first stages of the value chain (see Figure 1). On contrary, if the country has diminished its distance to final demand it means that it has become more specialized in the last steps of the supply chains. Nevertheless, it is interesting to notice that, as can be depicted from the graph the majority of analyzed country has moved towards the first stages of the value chain. This trend «is consistent with the overall increase in the length of GVCs and the outsourcing phenomenon. (Because when the production of some inputs is outsourced, their value-added is moved backward to the industries supplying intermediate inputs and the distance to final demand increases»²²⁵.

3.1.3 The International Supply Chain behind iPhone production

In order to have a clearer idea of the dynamics regulating the global supply chain it could be useful to analyze the international supply chains that lies behind the production of

²²⁵ Miroudot S. & De Backer K., Working Party of the Trade Committee (2012) *Mapping Global Value Chains*, The OECD Conference Centre, Paris, cit. p.15.

one of the most successful Apple’s products: the iPhone²²⁶. This is an interesting example because it perfectly displays the complexity of a widespread value chain. Moreover, it also represents the high degree of globalization reached by the world economy, the level of interconnectedness of different countries and, lastly the extreme level of interdependences that results from these interactions. All of these factors will be crucial in explaining why the international supply chain has been considered a channel of transmission and an amplifier of the Global Recession. Figure 7 below clearly shows how the value chain behind iPhone’s production is spread across different areas of the world.



Figure 7, Location and number of Apple suppliers per country. Source: Hillsberg, A. (2014)²²⁷

²²⁶ The following lines that describe the international supply chain deal with the production of iPhone 6.

²²⁷ Hillsberg, A. *How & Where iPhone is Made: Comparison of Apple’s Manufacturing Process*, September 17, 2014 [Available Online from: <http://comparecamp.com/how-where-iphone-is-made-comparison-of-apples-manufacturing-process/>]

More precisely, there are 31 countries involved in the value chain process that brings to this item. Depending on different factors endowments, each county is specialized in a certain stages of the value chain, as it is schematically expressed in Figure 8 below.

iPhone International Value Chain



Figure 8, iPhone International Supply chain. Source: Hillsberg, A. (2014)

Hence, following the scheme of Figure 1 above it is possible to associate each productive step to the relative group of countries involved:

- **Research and Development:** this first stage of the productive process takes place entirely in the United States.
- **Component production/sourcing** takes places in three different regions (North America, Asia, European Union) but mainly in Asia. The major Asian companies that are involved in the process are, among the others:
 - LG Display (South Korea) which is the large display panel supplier

- Sony (Japan) which supplies front and rear cameras
- Toshiba (Japan) and SK Hynix (South Korea) that supply storages
- NXP (Germany) supplies short-range wireless chip for iPhone 6
- STM Microelectronics (France and Italy) that provides gyroscope
- **Assembly** takes place entirely in China at Guangdong, Henan, Shanxi, and Shanghai
- **Marketing** operations took place in the United States
- **Sales/distribution** operations start from the United States to the rest of the world.

3.2 The International Supply Chain as a Transmission Channel of the Financial Shock

In the aftermath of the crisis, a broad consensus is emerging among economists and scholars about the issue of the International Supply Chain as channel of transmission of systemic shocks. More precisely, both the financial shock and the Great Recession have been magnified by the existence of vertical specialization across countries.

As emerged from the first chapter, one of the effects of the Financial crisis of 2007 – 2008 was the so-called *credit crunch* that lowered credit availability and negatively affected the level of investments, trade financing system and, eventually, aggregate consumption. Furthermore, it is essential to underline that the low availability of credit was even more disruptive due to the existence of vertical linkages. Broadly speaking, the dynamic is the following: «(b)ecause firms rely on suppliers in carrying out part of the production process (outsourcing or off-shoring), and/or because they sell their production to other firms, the smooth realization of production plans from initial investment to final sales depends on the availability of credit at all stages of the production chain. (Hence) the initial financial downturn propagates itself along the chain, affecting all firms in the supply network»²²⁸. The authors Hubert Escaith and Fabien Gonguet focused their research²²⁹ on the functioning of this dynamic. As will be explained in detail in the following paragraphs, this research examines how the interactions between the financial system and the production process amplified the effect of the crisis.

²²⁸ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p.84.

²²⁹ *Ibid.*

3.2.1 The Monetary Circuit in a Closed Economy

First of all it is important to define the basic concept of monetary circuit since it could be defined as the bridge between the financial/bank system and the real economy. The cycle starts with the entrepreneur/producer asking for a loan to the Bank, or another credit institute, in order to start its production process or increase its turnover via an investment. In the manufacturing industry, for instance, the producer will need machineries and raw material, intermediate inputs and services, lastly he/she would need to pay workers. Usually the bank's decision to grant a loan depends on four factors:

1. Case-specific considerations about the firms itself like the quality of its management and its financial situation (microeconomic perspective)
2. «Sectorial specificities, such as the cyclical nature of the business in which the firm operates
3. Macroeconomic considerations, such as the probability of expansion or recession [...]
4. The institutional capacity of the bank to extend new credit within the limit of its loans/assets adequacy ratio»²³⁰.

Once the bank has decided to extend new credit and the final goods is produced and sold through the final market or to other industries (if the company manufactures intermediate inputs) the entrepreneur/producer will repay its initial debt to the bank, and the circuit ends. Hence, the time laps between the creation and the destruction of money is strongly linked with the time required for the production process²³¹. Lastly, the repayment of the initial debt makes it also possible for the bank to concede a new loan in support of another production process. Thus, a central feature of the model proposed by the authors is represented by «the record of debt and its ratio with respect to the bank's assets (since) it

²³⁰ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p.88.

²³¹ *Ibid.*

acts as a bridge between flows and stocks, between real and monetary shocks»²³². Figure 9 below schematizes the money circuit.

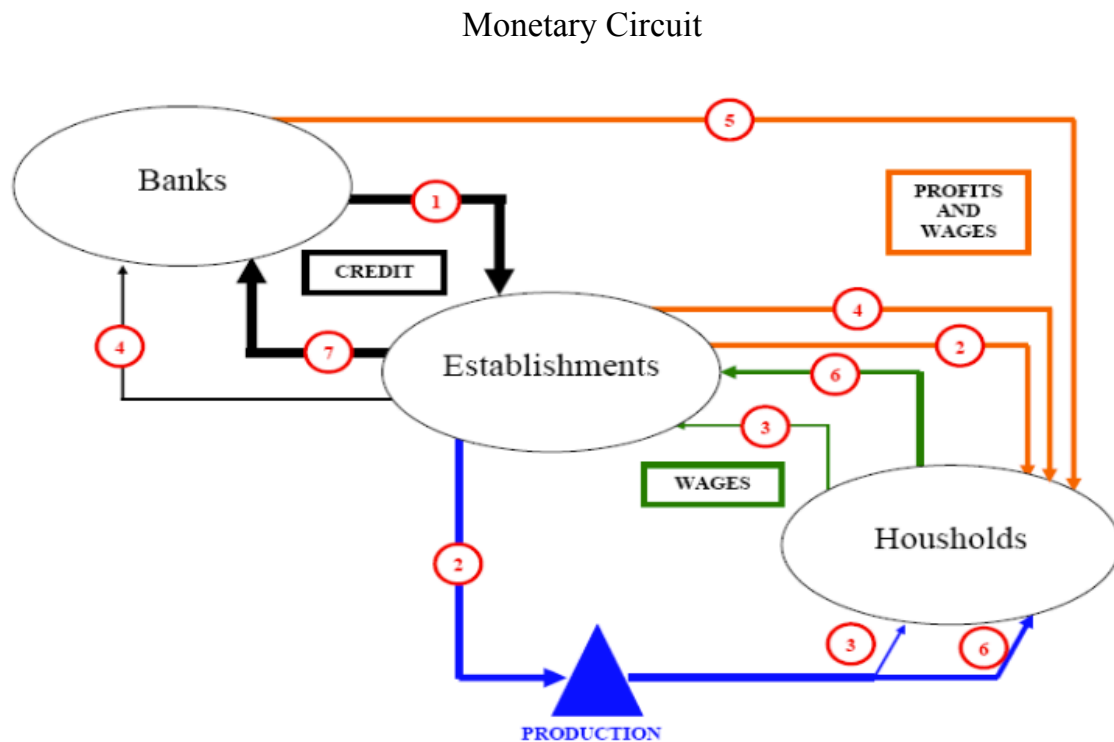


Figure 9, Monetary Circuit. Source: Escaith & Gouguet (2009) Figure 1, p.6.

Notice that the authors assume that, at the end of the circuit, there are no retained earnings, i.e. money earned from the sales is completely redistributed to proprietors. This also means that this model assumes that there are not goods that remains unsold because «any stock of goods remaining in the “real system [...] has a counterpart in outstanding credit money in the financial circuit»²³³. Any quantity of unsold products must be financed, thus the net demand of money will increase too. This is precisely what happened as a result of the negative-demand shock triggered by the financial downturn: an accumulation of inventories matched by an increase in the net demand for credit.

²³² Escaith, H. & Gouguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, cit. p.85.

²³³ *Ivi* p.86.

In order for this system to work two conditions are required: first, the production process must function smoothly and must pay its costs; second the Credit Institute must not exceed its adequacy ratio²³⁴. The capital adequacy ratio (CAR) could be defined as «a measure of bank's capital (and) it is expressed as a percentage of bank's risk weighted credit exposures»²³⁵. This measure is an important indicator of financial stability since it lowers the risk of bank insolvency in case of an external shock.

3.2.2 The Monetary Circuit in an Open Economy

When the model is applied to an open economy characterized by the presence of the international supply chain the number of economic interactions and transactions increases. Once we consider a globalized world in which different countries trade with each other and in which capital can move more or less freely across border we have to take into account that «(t)he funds borrowed to finance production are used to purchase intermediate goods and services from other firms that may be located in different countries. In the same way the production process depends on the capacity of the respective supplier firms to obtain credit from their own banks and deliver in time their inputs»²³⁶. The point is that the existence of vertical linkages across countries increases the number of variables and thus the level of uncertainty. One of the ways in which firms protect themselves from risks is through extended «short-term trade finance to their suppliers and (extended) payment facilities to their customers»²³⁷. However, the collateral effect is the rise of leading's firm financial exposure.

3.2.3 The Monetary Circuit and Vertical Specialization

As mentioned in the previous lines, in order to achieve the objective of financial stability, banks should respect the limit of capital adequacy ratio that, from now on will be referred to as parameter “ α ”. Strictly speaking, α determines the adequate degree of bank's

²³⁴ Ibid.

²³⁵ Definition from Investopedia [Available online from:
<http://www.investopedia.com/terms/c/capitaladequacyratio.asp>]

²³⁶ *Ivi.*

²³⁷ *Ivi.*

exposure, i.e. the quantity of credit it can issue. Under the international standards of Basil II established by the Bank for International Settlements (BIS), α should be 8%²³⁸. Nevertheless, this is not the only parameter that the bank has to take into account when it decides whether to grant a loan to a firm. The credit institute must also evaluate, along with macroeconomic considerations, the stability and the wealth of the company itself. In a global scenario characterized by the existence of international supply chains, the bank will also have to consider the network in which the business operates because any eventual «default of a client can cause distress to its suppliers, and the difficulties of a key supplier can jeopardize the viability of a production plan»²³⁹. Hence, the stability of the firm asking for credit does not depend only on its structure but also on exogenous variables. In times of business cycle downturn, as it happened during the Great Recession, the credit institute's propensity to extend new loans diminishes, mainly because of the fact that the assets' market value is strictly connected to the level of risk associated with them.

Nevertheless, the lower propensity to extend new loans (the credit crunch) can also be considered itself as the cause the Great Recession, whose effect was magnified by the presence of vertical linkages. By other terms the international supply chain can be considered as a channel of transmission and an amplifier of financial shocks. Specifically, if as a consequence of credit crunch «a firm's request for credit is turned down, it must scale down its production [...] (and this) affects in turn its suppliers and even its clients through the supply chain, an influence final demand through lower household income (wages and profits)»²⁴⁰. In other words, an external financial shock reverberates across the real economy through international supply chains. In a vicious circle it will also negatively affect the monetary circuit by increasing firms' default risk, which is taken into account by credit institutes when it comes to extend new credit.

²³⁸ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, cit.

²³⁹ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p.89.

²⁴⁰ *Ibid.*

3.3 The International Supply Chain as a Transmission Channel of the Negative-demand Shock

If on the one hand the international supply chain amplified the effect of credit crunch, on the other hand it had also boost the spread of negative-demand shocks through similar dynamics. In order to understand this phenomenon it could be useful to imagine what would have happened as a consequence of the Financial Crisis of 2007-2008 in absence of vertical specialization.

Counterfactual exercise: If the United States' aggregate income declines as a consequence of the Great Recession, this means a reduction of households' and firms' disposable income and, thus, a reduction in consumption that will affect also the volume of imports. The collateral effect is that exporters of other countries will be negatively affected and will face a decrease in their income. Conversely they would have to reduce their spending and decrease their imports. This is how the simple trade channel works: if all world trade is in value-added (in final goods), trade's drop is exactly equal to the fall in demand for final imported goods, hence the trade effects are *not amplified*²⁴¹.

Now suppose that there exist international supply chains and that, for the same reason, US income declines. The initial effect is the same as in the previous example: the total value of imports decline. However, this time «some of this reduced import spending is on imported vertically specialized goods»²⁴² as cars, for instance. This results in lower foreign demand of American intermediate inputs that are necessary in the cars assembly process. The final outcome is that the US will see a decline in both its imports and exports. Thus «international trade declines in a more synchronized manner than in non-vertically specialized world»²⁴³. The rapidity of the transmission from country A (home) to country B (foreign) is closely related to two factors:

1. Country B final demand for goods and services exported by country A.

²⁴¹ Bems, R, Johnson, R. C., & Yi Kei-Mun (2010), *The Role of Vertical Linkages in the Propagation of the Global Downturn of 2008*, Federal Bank of Philadelphia, cit. pp. 45-47

²⁴² *Ibid.*

²⁴³ *Ibid.*

2. «The volume of trade in intermediate goods linking industries of both countries»²⁴⁴.

While the first factor does not depend on the level of vertical integration, the second element is completely dependent on the pervasiveness of the international supply chain. In addition it is relevant to notice that this effect is further magnified since, as Johnson and Noguera pointed out «Trade in intermediate inputs accounts for as much as two thirds of international trade»²⁴⁵.

3.3.1 O'Rourke's *Collapsing Trade in a Barbie World*

O'Rourke article, *Collapsing Trade in a Barbie World* provides a more detailed, arithmetical example of how the disintegration of the productive process can work as an amplifier of a crisis.²⁴⁶ In his work the author explains why it is possible to state that, today, «(e)very time the US buys one fewer Barbie doll, trade declines not only by the value of the finished doll, but by the value of all the intermediate trade flows that went into creating it»²⁴⁷. He imagines three different scenarios.

In **World A** only one good is traded: Barbie dolls; and this product is created in absence of an international supply chain (the productive process is not disintegrated across countries). At time t , world trade is represented by 100 Barbie dolls. Then, at time $t+1$, income (total world income = world GDP) diminishes by 1% and this drop results in one less unit of Barbie doll being exported/imported²⁴⁸. Thus, in World A, since 1% decline in total income results in 1% decline in trade «(t)he elasticity of trade with respect to GDP is 1»²⁴⁹.

²⁴⁴ Escaith, H. & Gouquet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, cit. p.88.

²⁴⁵ Johnson, R. C. & Noguera, G. (2009) *Accounting for intermediates: Production Sharing and Trade in Value-Added*". Manuscript. Dartmouth College

²⁴⁶ O'Rourke, K. *Collapsing trade in a Barbie world*, The Irish Economy, July 18 2009. [Available online from: <http://www.irisheconomy.ie/index.php/2009/06/18/collapsing-trade-in-a-barbie-world/>]

²⁴⁷ *Ibid.*

²⁴⁸ *Ibid.*

²⁴⁹ *Ibid.*

World Trade t	Income Decline	World Trade t + 1	World Trade Decline
100	-1%	99	-1%

Table 1, Effects of Income Decline on World Trade (only one goods; without vertical specialization)

In **World B**, again, only one good is traded: Barbie dolls. However, in this case, the productive process is disintegrated across countries; this means that «(t)he constituent parts and components of final good crosses borders several times before the final product reaches the consumer; at each border crossing, the full value of the partially assembled good is recorded as trade»²⁵⁰. Hence, there exists an equivalent trade flows for intermediate inputs, thus the total trade, at time t , is now 200. Here, again, at time $t+1$, income diminishes by 1% corresponding to one less Barbie imported/exported. Since «for a given reduction in world income, trade should decline not only by the value of the finished product, but also by the value of all the intermediate flows that went into creating it» trade declines by 2. Hence, there is still a 1% decline in World Trade and the elasticity of trade has remained 1.

World Trade t	Income Decline	World Trade t + 1	World Trade Decline
100 Barbies + 100 Intermediate input = 200	-1%	99 Barbies + 99 Intermediate input = 198	-1%

Table 2, Effects of Income Decline on World Trade (only one goods; with vertical specialization)

Conversely, in **World C**, two different goods are traded: Barbie dolls and Kens. Here, 50 Barbies are manufactured through an international supply chain and create a trade flow of 100 (since we have to consider even the intermediate inputs' flow). In addition there are also 50 Kens that are produced via entirely domestic productive chains, creating a trade flow of 50. Thus, in this case, the total trade is 150. Assuming that world income declines by 1%, one less Barbie is traded and trade diminishes by 2, in this case this fall corresponds to a 1.33% decline in total world trade. Hence trade elasticity to GDP is higher in World C.

²⁵⁰ Altomonte, C. & Ottaviano G. I. P., *Resilient to the crisis? Global supply chains and trade flows*, in Baldwin (2011).

World Trade t	Income Decline	World Trade t + 1	World Trade Decline
50 Barbies + 50 Intermediate input + 50 Kens = 150	-1%	46 Barbies + 49 Intermediate input + 50 Kens = 148	-1,33%

Table 3, Effects of Income Decline on World Trade (two goods; one produced through vertical specialization/one produced completely domestically)

Considering the extreme case in which trade involves only 1 Barbie and 99 Ken, if the 1% income decline results in one less Barbie exported the elasticity would almost double²⁵¹. Furthermore, «if the marginal impact of falling income was to lower trade in Kens rather than in Barbies, the conclusion would be very different» since the elasticity of world trade to GDP would have been significantly lower. Table 4 below synthetizes O'Rourke Barbie's example.

O'Rourke's Barbie doll example

	WORLD A	WORLD B	WORLD C
Number of goods produced	1 (Barbies)	1 (Barbies)	2 (Barbies ; Kens)
Kind of productive process	no international supply chain	international supply chain	international supply chain + domestic supply chain
World trade t	100 (Barbies)	100 (Barbies) + 100 int. inputs = 200	50 (Barbie) + 50 (int. Inputs) + 50 (Ken) = 150
Income decline	1%	1%	1%
World trade t + 1	99 (Barbie dolls)	99 (Barbie dolls) + 99 (int.inputs) = 198	49 (Barbie) + 49 (int. Inputs) + 50 (Ken) = 148
World trade decline	1%	1%	1,33%
Elasticity of Trade to World GDP	1	1	almost 2

Table 4, Elaborated Data from O'Rourke's Barbie doll example

²⁵¹ O'Rourke, K. *Collapsing trade in a Barbie world*, cit.

Broadly speaking, what this example shows is that the impact of a drop in income depends on how the productive processes are organized in the world economy²⁵². More specifically, in a world in which «goods are either vertically disintegrated or not, vertical disintegration can help to explain the higher elasticity of trade with respect to GDP». Thus, if the negative-demand shock is mainly concentrated on goods that are produced via an international supply chain, as it happened during the Great Recession, the volume of trade will be very sensitive to a variation in demand²⁵³. To sum up, « (b)ecause production is internationally diversified, adverse external shocks may affect firms not only through final demand (a sudden decline in exports), but also through a disruption of the flow of inputs received from their suppliers. (Hence), the greater supply interconnection has also provided greater and faster channels of propagation of adverse external shocks»²⁵⁴.

3.3.2 Indirect Effects of Vertical Linkages

Lastly, in order to have a full perspective of the phenomenon it necessary underline that there are also other, more indirect, ways in which international supply chains magnify the effect of the Great Recession. Even though they are not as relevant as the transmission of negative-demand shock via import/export of intermediate inputs it is important to enumerate them:

1. **Re-nationalization of the global value chain:** broadly speaking, in period of crisis multinationals generally lower their real activity abroad. More specifically, companies that are facing losses in their own market, usually reduce labor demand and/or investment abroad²⁵⁵. On the other hand, the same dynamic could be triggered by an increase in the level of protectionism: if the government of the host country decides to adopt protective policies to safeguard domestic producers, foreign-owned companies could be hit and decide to lower or stop its investment in that country.

²⁵² *Ibid.*

²⁵³ Bems, R., Johnson, R. & Yi, K. *The Collapse of Global Trade: Update on the role of vertical linkages*, in Baldwin (2011) cit.

²⁵⁴ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p. 84.

²⁵⁵ Krugman, P. R. & Maurice Obstfeld, 2008, *International Economics: Theory and Policy*, cit.

2. The effects of low elasticity of substitution of vertically specialized products.

Most of the intermediate goods used in the value chain are not commodities (like oil, for instance) but, conversely they are client or industry specific, thus, in case of default of suppliers, it is very difficult and costly to find another adequate alternative. In other words, many authors underlined the relevance of the «(t)he technological dimension of complexity related with the imperfect substitutability of inputs and the associated search costs on international market»²⁵⁶. Hence, «Firms dealing with very specific, low-substitutability goods that require particular production processes or specialized channels face higher trade complexity. As a corollary, the failure of any single supplier will affect the entire production chain in the short and medium-term»²⁵⁷. Considering the example of the Italian business Intermac (the top player in the international scenario of glass processing machineries), this company produces highly client-specific machineries, which, in some cases, introduce a complete new technology in the market. Even though those machineries are not real intermediate inputs themselves, they are used by other business to produce intermediates (like auto vehicles glass) or final goods. If such a specialized and specific industry interrupt its production it would be extremely difficult, if not impossible, for a glass producer to find another supplier that can guarantee the same standard of quality and level of technology.

3.3.3 How to measure the effect of the International Supply Chain

In order to quantify the effects of the International Supply Chain as a channel of transmission of the negative-demand shock, Rudolf Bems, Robert Jonson and Kei-Mu Yi measured «bilateral imported intermediate goods linkages using trade data combined with national input-output table»²⁵⁸. These linkages emerge each time an imported input is used in a production process; vertical linkages arise if the final good is consequently exported²⁵⁹. As mentioned above, a negative-demand shock in one country (or in a group of countries) that involves vertical specialized goods could be easily transferred to other country. In

²⁵⁶ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, cit. p. 87.

²⁵⁷ *Ibid.*

²⁵⁸ Bems, R., Johnson, R. & Yi, K. *The Collapse of Global Trade: Update on the role of vertical linkages*, cit. p. 80.

²⁵⁹ *Ibid.*

addition, the higher is the volume of trade in intermediate inputs between two countries, the stronger is the impact of the international supply chain spillover.

In order to estimate these linkages the two scholars Johnson and Noguera have realized a global input-out system «(u)sing input-output and trade data for 69 countries plus 18 composite regions [...] to construct a data set that tracks the value added produced in each country to the final destination at which that value added is consumed»²⁶⁰. The authors Bems, Johnson and Yi, propose three applications of this model that shed light on the role played by the international supply chain.

In the first example the authors simulates a -1% symmetric shock, i.e. a negative-demand shock hitting all the different sectors, in the US and European economies. The effect of this drop in demand on the US and EU themselves, and in other countries that have commercial link with them, are illustrated in Table 5 and 6 below. The results showed in the Tables are calculated through the application of Johnson and Noguera model.

	In USA		
Change in (percent): Country Region	Exports	GDP	Imports
China	-0.28	-0,09	-0,07
Japan	-0,25	-0,03	-0,02
USA	-0,06	-0,92	-0,95
South America	-0,32	-0,06	-0,04
Emerging Asia	-0,23	-0,09	-0,07
Emerging Europe	-0,08	-0,02	-0,02
EU (as of 2003)	-0,24	-0,03	-0,02
NAFTA (excl. US)	-0,76	-0,22	-0,14
The Rest of the World	-0,21	-0,05	-0,03

Table 5, Impact of a -1% demand-shock in the US. Source: Baldwin (2011) Table 1, p.83.

²⁶⁰ Johnson, R. C. & Noguera, G. (2009) *Accounting for intermediates: Production Sharing and Trade in Value-Added*", cit. p.2.

On the one hand, it emerges that US GDP (third line in Table 4) drops by -0,92% while the import's decline is -0,95%, confirming that a decline in final demand results in less imports. Conversely, it is interesting to notice that exports decrease only by -0,06% «reflecting the fact the US are not, in the aggregate, tightly integrated into cross-borders production networks»²⁶¹. On the other hand, as far as the effect on other countries are concerned it is interesting to notice the similarity between Chinese and Japanese drops in export: -0,28% and -0,25 respectively. This data are somehow surprising since US import from China is 60% higher than its imports from Japan²⁶². Nevertheless, the presence of the international value chain is the key to explain this outcome since a significant part «of Japanese value added is exported to the US through China and other countries»²⁶³.

	In Eu		
Change in (percent): Country Region	Exports	GDP	Imports
China	-0,24	-0,08	-0,06
Japan	-0,20	-0,03	-0,02
USA	-0,27	0,02	0,01
South America	-0,27	-0,05	-0,03
Emerging Asia	-0,23	-0,09	-0,07
Emerging Europe	-0,63	-0,18	-0,12
EU (as of 2003)	0,05	-0,88	-0,92
NAFTA (excl. US)	0,09	-0,03	-0,02
The Rest of the World	-0,41	0,10	-0,05

Table 6, Impact of a -1% demand-shock in the EU. Source: Baldwin (2011) Table 1, p.83.

On the other hand, as far as the European scenario is concerned it is interesting to notice what would happen to Emerging Europe in case of a similar shock. This area's import would fall only by -0,12% but, nevertheless, this drop is considerably higher than other regions' (with the exclusion of the European Union itself). This, again, is due to the

²⁶¹ Bems, R., Johnson, R. & Yi, K. *The Collapse of Global Trade: Update on the role of vertical linkages*, cit. p. 82.

²⁶² Bems, R., Johnson, R. & Yi, K. *The Collapse of Global Trade: Update on the role of vertical linkages*, cit.

²⁶³ *Ivi* p.82.

fact that intermediate goods linkages are relatively stronger²⁶⁴. However, this example is a bit unrealistic since, in general, demand shock are not symmetric.

Thus, moving to the second exercise, in this case the authors suppose that there is a sector-specific shock, i.e. a negative-demand shock that hits specific sector of the economy. As a consequence of the Great Recession, in fact, some industrial segments suffered more than other: manufacturing companies producing durable goods, for instance, were the most affected by drop in consumption and more vertically integrated than other sectors (like services). Also in this exercise the authors consider «a shock calibrated to generate a 1% decline in aggregate final demand»²⁶⁵ in the manufacturing, constructions and utilities sectors. Hence, as far as US exports are concerned, what emerges by comparing Table 7 below (asymmetric shock), with Table 5 (symmetric shock), is the huge difference in exports decline (-0,06% in the first exercise vs. -0.29% in this one). Furthermore this disparity emerges also if we compare other countries' export: the drop is from three to four time larger in this second exercise²⁶⁶.

	In USA		
Change in (percent): Country Region	Exports	GDP	Imports
China	-0.95	-0,27	-0,31
Japan	-0,87	-0,10	-0,14
USA	-0,29	-0,70	-2,71
South America	-0,90	-0,17	-0,17
Emerging Asia	-0,69	-0,24	-0,29
Emerging Europe	-0,23	-0,06	-0,06
EU (as of 2003)	-0,63	-0,08	-0,08
NAFTA (excl. US)	-2,34	-0,58	-0,66
The Rest of the World	-0,61	-0,14	-0,10

Table 7, Decline in industry equivalent to a -1% demand-shock in the US. Source: Baldwin (2011) Table 2, p.84.

²⁶⁴ Bems, R., Johnson, R. & Yi, K. *The Collapse of Global Trade: Update on the role of vertical linkages*, cit.

²⁶⁵ Bems, R., Johnson, R. & Yi, K. *The Collapse of Global Trade: Update on the role of vertical linkages*, cit. p. 83.

²⁶⁶ Bems, R., Johnson, R. & Yi, K. *The Collapse of Global Trade: Update on the role of vertical linkages*, cit.

Turning to Table 8 reporting what would have happened if the same negative-demand shock took place in Europe, we notice the same dynamic: exports' declines are significantly bigger. Chines exports' drop is -0,53% vs -0,24% in the previous exercise; Emerging Europe exports' plunge -1,30% vs. -0,63%; South America exports' fall -0,47% vs. -0,27%. As the authors point out «(t)his magnified effect stems, by and large, from the fact that industrial goods tend to be more widely traded than non-industrial goods and services»²⁶⁷. Moreover, the impact on imports is amplified due to the role played by the international supply chain since, as mentioned before, due to the existence of vertical linkages within industries, the huge decline in exports means also a drop in imports of intermediate goods that used in the production process of products destined to export.

Change in (percent): Country Region	In Eu		
	Exports	GDP	Imports
China	-0,53	-0,15	-0,17
Japan	-0,44	-0,05	-0,07
USA	-0,45	0,04	0,04
South America	-0,47	-0,09	-0,08
Emerging Asia	-0,45	-0,16	-0,18
Emerging Europe	-1,30	-0,34	-0,32
EU (as of 2003)	0,13	-0,77	-1,69
NAFTA (excl. US)	0,16	-0,04	-0,04
The Rest of the World	-0,77	0,17	-0,13

Table 8, Decline in industry equivalent to a -1% demand-shock in the EU. Source: Baldwin (2011) Table 2, p.84.

The third and last case represents a counterfactual that confirms the role of the international supply chain as an amplifier of the crisis. Here the authors assume that all final goods are produced without cross-borders transfers²⁶⁸. In other words, only final goods are

²⁶⁷ Bems, R., Johnson, R. & Yi, K. *The Collapse of Global Trade: Update on the role of vertical linkages*, cit. p. 84.

²⁶⁸ *Ivi.*

traded. The second assumption is that, as in the second example, there is a industry-specific negative-demand shock of -1%. Table 9 below show what would happen if this shock took place in the American market.

	In USA	
Change in (percent): Country Region	Exports	Imports
China	-0.64	-0,00
Japan	-0,55	-0,00
USA	-0,00	-1,82
South America	-0,29	-0,00
Emerging Asia	-0,40	-0,00
Emerging Europe	-0,09	-0,00
EU (as of 2003)	-0,36	-0,00
NAFTA (excl. US)	-1,56	-0,00
The Rest of the World	-0,23	-0,00

Table 9, Decline in industry sectors equivalent to a -1% demand-shock in the US with no vertical linkages. Source: Baldwin (2011) Table 2, p.85.

Obviously imports decline, by -1,92%, only in the US market, since demand for final goods is unchanged in the other countries. Conversely, what do change are other countries' exports that diminish as a result of a lower demand for their exported goods.

As demonstrated by figures in Table 10, the same would happen if the negative-demand shock took place in Europe: only European imports and other countries' exports will be negatively affected²⁶⁹. Thus, thanks to this counterfactual exercise, it is possible to conclude that «we can interpret the declines in imports in the previous exercise as the effect of vertical specialization»²⁷⁰.

²⁶⁹ *Ivi*

²⁷⁰ *Ivi* p. 85.

	In Eu	
Change in (percent): Country Region	Exports	Imports
China	-0,30	-0,00
Japan	-0,21	-0,00
USA	-0,20	-0,00
South America	-0,16	-0,00
Emerging Asia	-0,21	-0,00
Emerging Europe	-0,76	-0,00
EU (as of 2003)	0,00	-0,86
NAFTA (excl. US)	0,05	-0,00
The Rest of the World	-0,25	-0,00

Table 10, Decline in industry sectors equivalent to a -1% demand-shock in the EU with no vertical linkages. Source:
Baldwin (2011) Table 2, p.85.

To conclude, what emerges from the numerous researches examined in this chapter is that the existence of vertical linkages across countries amplified both:

- The effects of the financial crisis via the monetary circuit that links the banking system to the real economy
- The impact of the negative-demand shock through a fall in both the level of import and export of intermediate inputs.

CHAPTER FOUR

THE RECOVERY AND THE EFFECTS OF GLOBAL TRADE COLLAPSE ON THE INTERNATIONAL ECONOMY

4.1 The Effects of the Crisis on the International Economy

4.1.1 The Reprise of Global Trade

Overall, the recovery of global trade was relatively rapid, according to the European Commission data, in fact, the volume of world trade reached its pre-crisis level already in the mid of 2010²⁷¹ even though, the reprise has slow down in the second quarter of 2011 for three main reasons:

1. The outbreak sovereign-debt crisis in the European Union.
2. The fall of the level of production in Japan as a consequence of the Tōhoku earthquake of March the 11th 2011, which caused severe damages to many infrastructures (among them the Fukushima nuclear plant)

²⁷¹ European Commission, Economic and Financial Affairs (2012) Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012. [Available online from:
http://ec.europa.eu/economy_finance/publications/qr_euro_area/2012/pdf/qrea2_section_1_en.pdf]

3. «The increasing uncertainty concerning US fiscal policies»²⁷².

It is interesting to notice that while global trade collapse was extremely synchronized, the path of reprise was characterized by a significant asymmetry both in regional and sectorial terms. On the one hand, as far as regional diversity is concerned, different areas of the world reacted differently to trade collapse depending on the way in which the crisis hit their own economies²⁷³. Some countries, as the US, or regions, as the European Union, has been hit by both the financial crisis and the real/trade crisis, hence these countries experienced a relatively slow recovery. Conversely, many emerging countries were affected *only* by the negative-demand shock via a sharp decrease in the demand for their exports, thus these areas saw a relatively rapid reprise. Figure 1 below clearly shows the different paces of reprise among countries/regions.

Real Imports Developments Across Regions (1991 = 100)

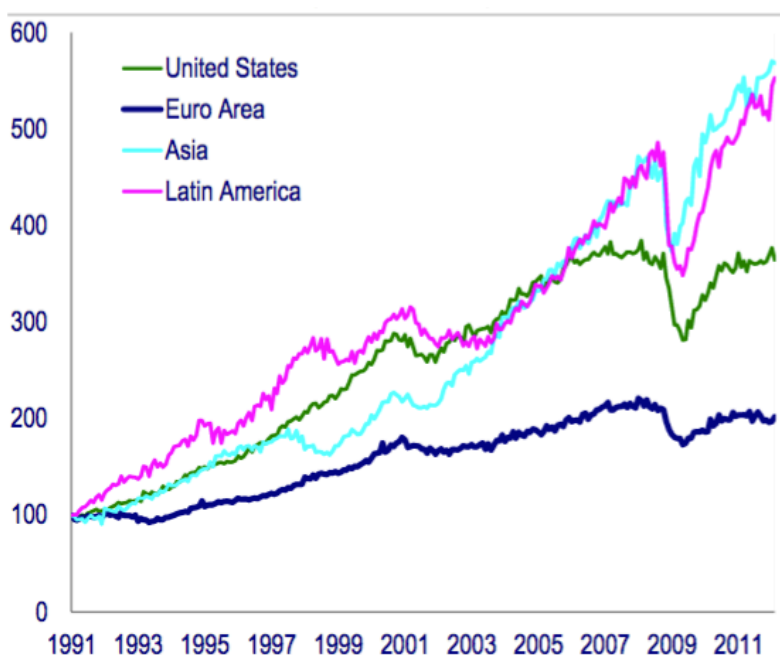


Figure 1, Real Imports Developments Across Regions (1991 = 100). Source: European Commission, Quarterly Report on the Euro area (2012) p. 10, Graph 1.2.

²⁷² European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area*, July 2012, cit. p. 9.

²⁷³ *Ibid.*

Starting from the bottom of the graph, the lower line that represents the Euro Area evidently illustrates the rather slow recovery process of this region. After the negative peak of the second quarter of 2009, in fact, even though, on average, the slope is positive, the line is almost flat. This means that the real imports development is relatively low in these countries. However, it is essential to take into account two considerations: first, as mentioned in the previous lines, Europe suffered the consequences of the sovereign-debt crisis; second, the import growth rate was already relatively sluggish before the outbreak of the financial crisis, this is even more evident if we consider the huge gap between Europe and Asia import growth from 2001 to 2007. Moving on to the United States (dark green line) they were characterized, as the European Union, by a slothful growth rate even before 2007 and, moreover, even if imports rose faster than they did in the EU after 2009, they reached pre-crisis level only after 2013. This is a common feature of advanced economy whose markets have become relatively stagnant. On the other hand, if we take into account the import pattern of developing/emerging regions as Asia and Latin America, we notice that their growth rate was greater both before and after 2009. More precisely those regions reached their pre-crisis level already in 2012. This is mainly due to the fact that the effects of the crisis on their economies were less severe, or better, less prolonged principally because they were «less burdened by the repercussions of the global financial crisis in terms of deleveraging needs»²⁷⁴.

As far as disparity at the sectorial level is concerned, in this case the pace of recovery was different depending on product categories. This phenomenon is principally due to the price effect discussed in chapter two of this dissertation. More in detail, «(i)n nominal terms, exports of crude materials, which are subject to large price fluctuations, had exceed their pre-crisis peak by 30% in 2011, while fuel exports were 23% below levels seen in 2007»²⁷⁵. The latter trend was conditioned by the fact that oil prices were significantly high before the outbreak of the crisis (price effect). Figure 2 below illustrates the different sectors' recovery rates.

²⁷⁴ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit. p. 10.

²⁷⁵ *Ivi* p. 12.

Global Export Recovery of Different Product Categories (Exports in 2011, 5 of 2008 level)

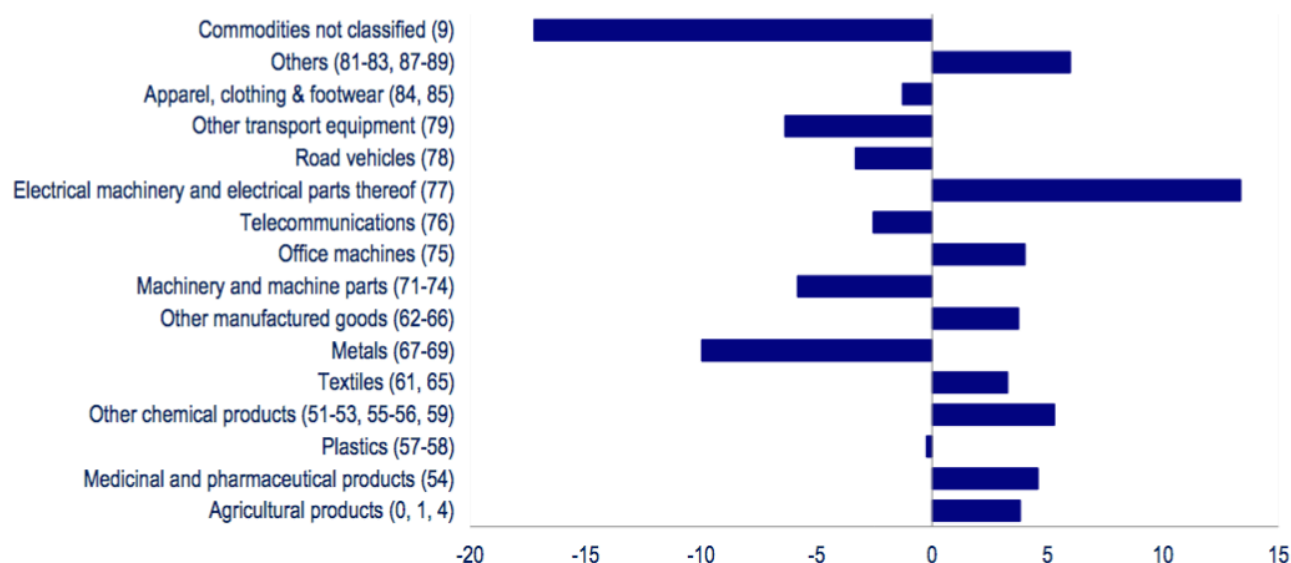


Figure 2, Global Exports Recovery of Different Product Categories. Source: European Commission, Quarterly Report on the Euro area (2012) p. 12, Graph 1.7.

Moreover, beside fuel exports also other sectors, especially those involving a higher level of technology, took more time to reach their pre-crisis standard. For instance the category of «machinery and machine parts, telecommunication equipment, road vehicles and other transport equipment [...] (were) still between 2.5% and 8% below previous peak levels»²⁷⁶ in 2012 (see Appendix 1). In addition, this trend can account for the slow recovery of high-income, developed country for the following reason: since the production of these kind of goods involving high technology takes place mainly in advanced countries, the sluggish export recovery of these category can be one of the reasons why these regions are experiencing a slowly reprise.

To conclude, it is possible to argue that the growth rate of global trade is today far below the level it would have been in absence of the Great Recession²⁷⁷. Nevertheless, it is crucial to remember that the high-growth rate experienced by world trade between 2002 and 2008 was also the outcome of a, *extra-ordinary* buoyant context which was characterized

²⁷⁶ *Ibid*

²⁷⁷ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

«by a global liquidity glut and excessive consumption in several advanced countries»²⁷⁸. Thus, it is unlikely that global trade will return to its previous growth rate levels, at least in the short-run and medium-run.

4.1.2 The International Economy after Global Trade Collapse

Regardless of the recovery process, the deep world trade downturn caused by the Great Recession inevitably impacted international trade dynamics. Broadly speaking, there has been three main changes which are the following:

- On the demand-side there has been a regional shift in favor of emerging markets in terms of income growth and, thus, import demand²⁷⁹.
- On the supply-side it is possible to argue that both trade elasticities and the international production structures (international supply chains) are changing as a result of the shock²⁸⁰.
- On the financial side, bank intermediate trade financing is still suffering the effect of the crisis²⁸¹.

As far demand-side is concerned, under a more long-time perspective, «(s)ince the 1990s, emerging markets economies have gradually increased their share of global output, accounting for half of the world GDP in 2011 (based on purchasing-power parity valuation)»²⁸². Figure 3 below represents this trend.

²⁷⁸ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit. p. 9.

²⁷⁹ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

²⁸⁰ *Ibid.*

²⁸¹ *Ibid.*

²⁸² European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit. p.10.

Decreasing Regional Concentrations of World GDP (Gini coefficient)

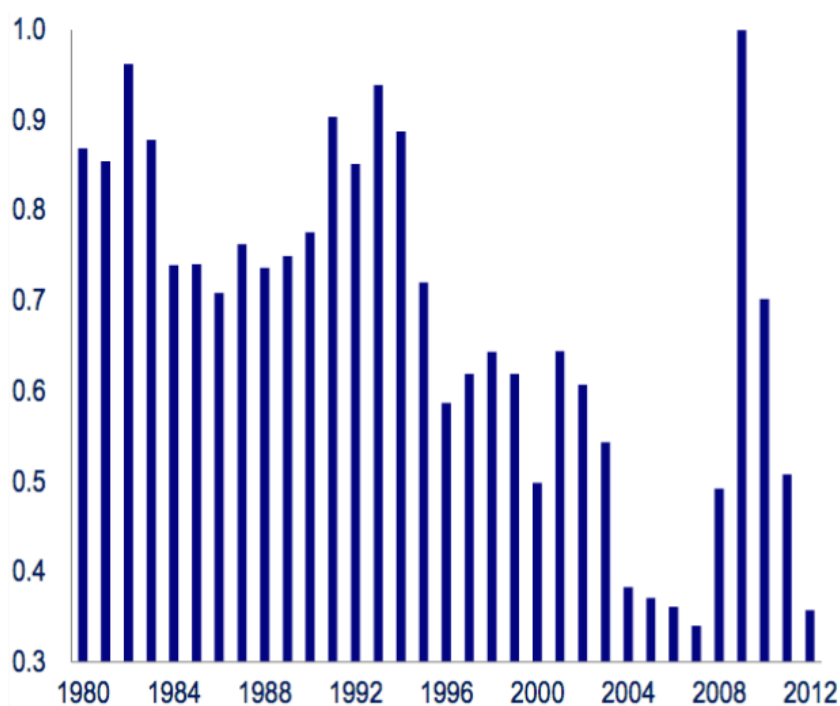


Figure 3, Decreasing Regional Concentrations of World GDP. Source: IMF

This means that, nowadays, the growth of international trade is more widespread across countries in comparison to the last decades of the 21th century when the main contributors of world GDP were few advanced countries. Even though the rise of emerging countries has been slowed down by the outbreak of the crisis, they have experienced a relatively quickly recovery in comparison with developed countries. Moreover, as already mentioned in the second chapter, one of the consequences of the Great Recession was the drop of the level of consumption (aggregate demand) of the high-income countries most hit by the crisis, this, in fact, was precisely the channel through which the crisis was transmitted to developing/emerging countries that saw their level of export abruptly declining in 2008-2009. Furthermore, even after trade recovery the level of imports of developed country remained relatively stagnant due to their rather slow recovery. On the other hand, developing countries' demand for import started increasing after 2010 due to their prompt reprise. Thus, «income growth in emerging markets has [...] translated into a rising share of

emerging market in import demand»²⁸³ This phenomenon is clearly illustrated in Figure 4 below.

Changes in Imports Across Product Categories and Countries, Values
(2008 = 100: pre-crisis level)

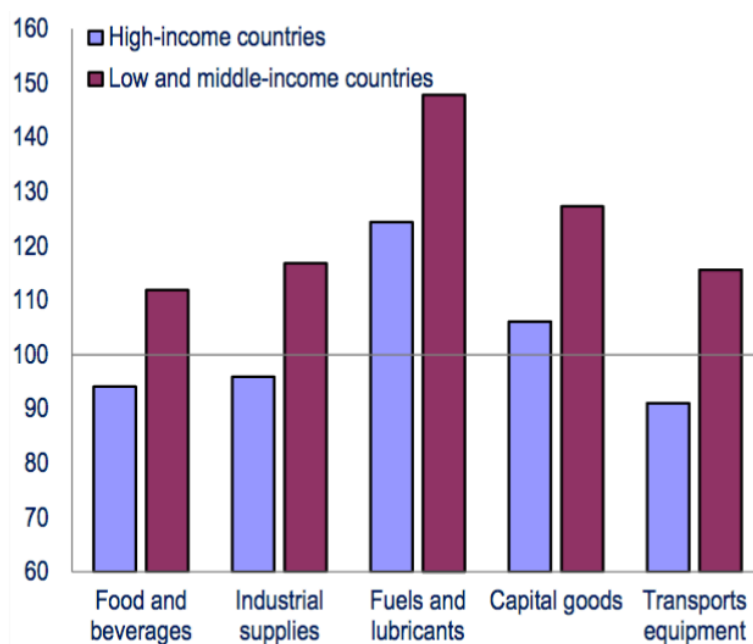


Figure 4, Changes in Imports Across Product Categories and Countries, Values (2008 = 100: pre-crisis level). Source: European Commission, Quarterly Report on the Euro area (2012) p. 11, Graph 1.4.

As it can be easily depicted from the chart, aggregate demand/import growth of emerging countries for many good categories (food and beverages; industrial supplies; fuels and lubricant; capital goods; transport equipment) represented by the red columns, has experienced a faster reprise in comparison with those of the most advanced countries (represented by the lighter columns). In addition it is interesting to notice that this trend involved not only intermediate goods used in the production process but also final goods²⁸⁴.

²⁸³ *Ivi.*

²⁸⁴ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

As far the supply-side is concerned, one the effects of the Great Recession on international economy was a change in countries' export shares and product composition²⁸⁵. This dynamic is strictly correlated to the transformations in the demand-side: due to the fall and stagnation of developed countries' demand there have been an increase in south-south trade. Hence, not only emerging countries saw their import level growing in the last years but, in addition, their export's share augmented too. Hence, as a result of the Great Recession, developing countries are less dependent on high-income regions imports. Even though it is important to take into consideration the fact that today high-income advanced countries still accounts «for two thirds of emerging markets' exports»²⁸⁶ (see Figure 5). This means that, at least in the medium term, emerging market dependency on advanced countries' markets will persist.

Destinations for Emerging Markets' Merchandise Exports
(in % of total exports)

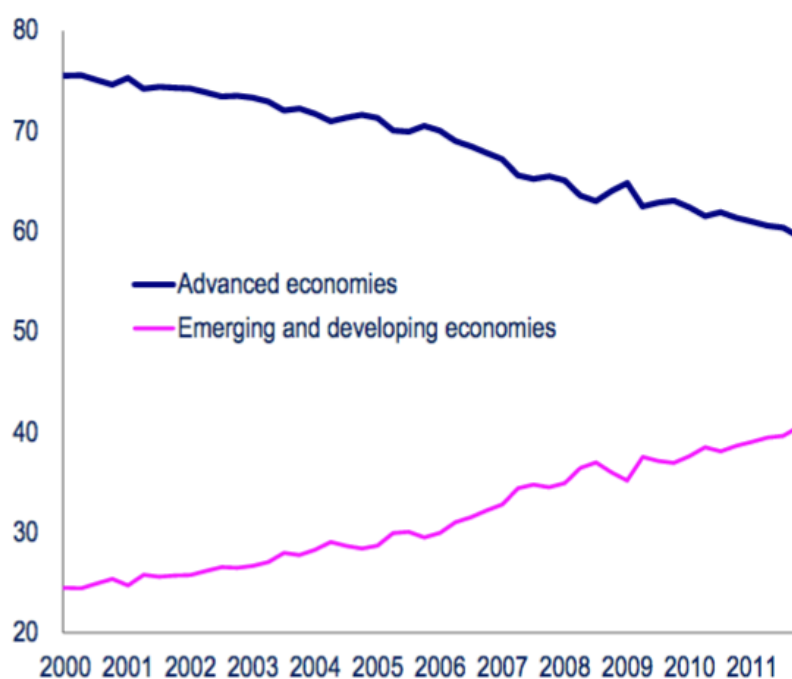


Figure 5, Destinations for Emerging Markets' Merchandise Exports (in % of total exports). Source: IMF

²⁸⁵ *Ibid.*

²⁸⁶ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit. p.11.

In addition, there is another supply-side feature that has been affected by the global trade disruption: the international supply chain. As mentioned in the previous chapter, global value chains played a crucial role as one of the amplifiers of the trade downturn by transmitting both the financial and the negative-demand shocks through the various stages of the production process. Even though, as demonstrated by the data represented in Figure 6, international trade in intermediates goods' reprise has been rather quick, meaning that vertical linkages have been restored.

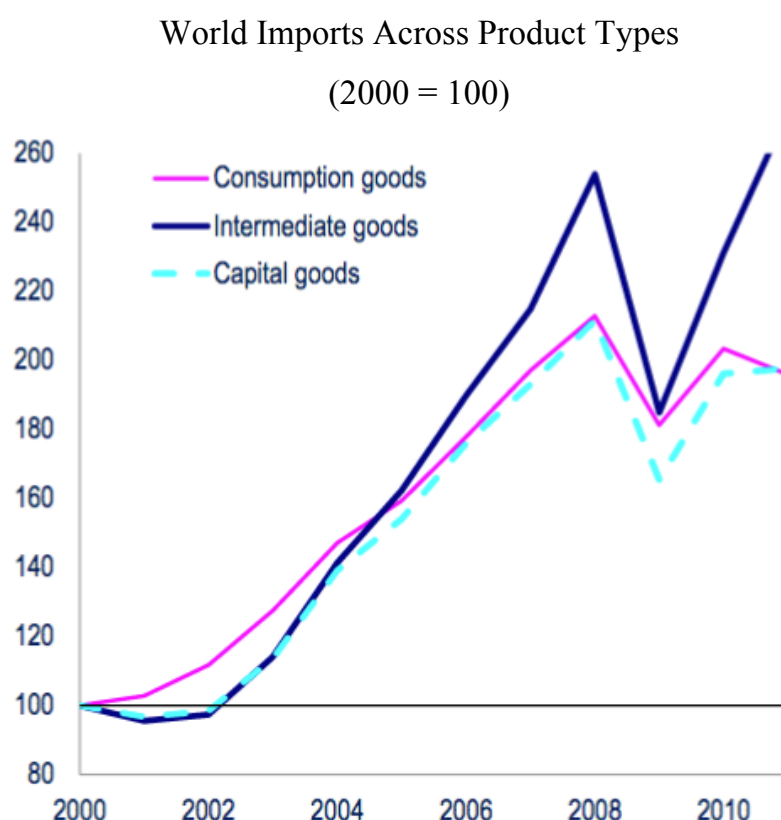


Figure 6, World Imports Across Product Types. Source: European Commission, Quarterly Report on the Euro area (2012) p. 13, Graph 1.9.

The darker, upper line represents the level of trade in intermediates' imports and, by observing the graph, it is possible to notice that, after the sharp decline of 2009 there has been a subsequent sharp reprise in intermediate inputs' trade, up to the point that the pre-crisis level had been exceeded in 2010. Hence, since this flow is strictly dependent on the functioning of vertical linkages, it is possible to conclude that, already in 2010, the majority of supply chains had been re-established. On contrary, if we take into account consumption

goods' and capital goods' level of imports we notice that, even though after the severe decline of 2009 there had been a process of recovery, pre-crisis levels have not been reached in the following years. Moreover, if we consider the trade pattern of consumption goods we discover that there has been a decline after 2010. However, even though the crisis has not triggered a process of *dis*-integration and vertical linkages have been quickly restored, there has been a change in terms of international supply chains consolidation. If global value chains of certain sectors undertake a process of consolidation it means that the number of stages in the production process diminishes together with trans-border transaction²⁸⁷, i.e. the dispersion of the production process declines. More precisely, it is important to take into account the fact that some sectors had already begun a process of consolidation even before the outbreak of the financial crisis of 2007. According to recent empirical studies the global trade collapse has somehow accelerated these processes of consolidation²⁸⁸. There are two main hypotheses that can account for this trend:

1. The negative-demand shock caused by the Great Recession could have caused a move towards domestic production
2. In the aftermath of the crisis some companies that have succeeded in escaping the collapse may have increase the scale of their capacity and subsequently created entry barriers²⁸⁹

More in detail, this shift does not depend on the specific characteristics of the product involved in the global value chain. On contrary, this dynamic is more linked to the economic environment in which the production process took place: Asian countries, and particularly China, have significantly augmented their market share in the sense that there has been an increase in the number of production stages that are implemented in these countries²⁹⁰. Another country that is massively increasing its share in global value chain networks is India. As will be explained in detail in the following paragraph, in fact, the State-led *Make in India* policy's objective is to foster the manufacturing sector and to *invite* and incentive international producers to move parts of their production chains in India.

²⁸⁷ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

²⁸⁸ *Ibid.*

²⁸⁹ *Ibid.*

²⁹⁰ *Ibid.*

Should this package of policies being successful, more and more business will augment vertical connections with this country. Nevertheless it is important to take into consideration the fact that this shift, however, happened, and happens, at the expense of smaller and less competitive economies whose share in the global production network is diminishing.

Lastly, as far as financial aspects of the crisis are concerned, broadly speaking economic history has taught that financial crises usually have deeper and long lasting effects than mere real economy crises on the most directly affected countries. This is primarily do to the fact that scarce credit availability constraints aggregate investments and thus reduces gross national output; moreover also aggregate income, and hence imports will be negatively affected²⁹¹. In addition, another long-term consequence of financial crises is the increase in capital out-flow and the decrease in foreign investment due to investors' adversity to risk and instability and, as empirical studies have demonstrated, these dynamics durably affects imports²⁹². Nevertheless, it is also relevant to consider that, in case of a floating exchange rate system, massive capital outflow can also trigger currency depreciation. This in turn will result in an improved competitiveness of exporters, which could be helpful for the recovery process.

Figure 7 below compares the different import's adjustments trends of countries that had been hit by the recent crisis with the import recovery of Sweden and Finland. These Baltic countries, in fact, experienced a similar crisis in the early 1990s: after the burst of a credit-fuelled real-estate bubble and a stock-market downturn Finland and Sweden saw the collapse of investments and consumption²⁹³. «As a result, imports decreased by 8% in Sweden and plummeted by more than 21% in Finland in the first year after the crisis»²⁹⁴ and it took four years for their economies to reach pre-crisis level, in these specific cases recovery was helped by structural reforms and exporters' increased competitiveness due to currency depreciation.

²⁹¹ *Ibid.*

²⁹² *Ibid.*

²⁹³ *Ibid.*

²⁹⁴ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit. p. 16.

Real Import Recovery in Countries Hit by Banking Crises, Goods and Services (pre-crisis peak = 100)

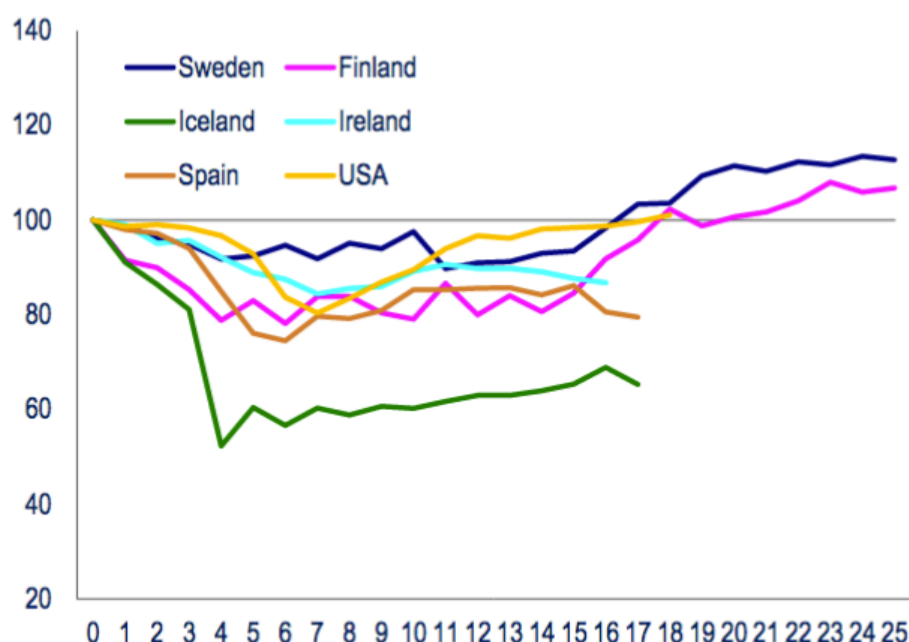


Figure 7 Real Import Recovery in Countries Hit by Banking Crises, Goods and Services. Source: Source: European Commission, Quarterly Report on the Euro area (2012) p. 17, Graph 1.10.

NOTES: Peaks dates are: 1990 Q1 (FI); 1990 Q2 (SW); 2007 Q3 (US), 2007 Q4 (ES, IR, IS).

However, it is important to take into consideration the fact that the economic scenario was rather different in the recent crisis, with way more countries involved. In other words, it was more synchronized and for this reason the effects of the 2007 financial crisis have been more prolonged. Furthermore, the outbreak of the sovereign-debt crisis in Europe significantly worsened the economic environment. In addition, «liquidity contractions and the tightening of financial conditions are likely to have restricted trade finance and thus reduced demand in trade-intensive sectors that are most credit-dependent»²⁹⁵. However, as mentioned in the second chapter, this phenomenon played only a marginal role since the greatest part of «merchandise trade is financed on an open account basis or by cash-in-advance arrangements»²⁹⁶.

²⁹⁵ Ivi p. 17.

²⁹⁶ Ivi.

4.2 Lessons from the Global Trade Collapse: the Threat of Trade Imbalances

Even before the outbreak of the financial crisis in 2007, the world economy was characterized by huge trade imbalances²⁹⁷. In order to grasp the relevance this feature had on international economy it is useful to briefly recall what is meant by the term *trade imbalance* and to recall what are the consequences of the existence of this disequilibrium.

4.2.1 The Implications of Trade Imbalances

Strictly speaking, this term refers to both the cases in which a country runs a current account surplus or a current account deficit. On his part, the current account includes the difference between exports and imports (trade balance, TB) but also represents national (governmental + private) savings minus investments. This second CA's form derives from the open-economy national income identity (1) according to which national income (Y) equals aggregate consumption (C) plus investments (I) plus public spending (G) plus the current account (CA). Since $Y - C - G$, (2) represents national savings it is possible to represent the current account as the result saving minus investments (3)²⁹⁸.

$$(1) Y = C + I + G + CA \text{ open economy national income identity}$$

$$(2) CA = (Y - C - G) - I \text{ national savings minus investments}$$

$$(3) CA = S - I \text{ current account identity}$$

Hence if a country runs a current account surplus ($CA > 0$) it means also its populations saves more than it invests ($S > I$). This scenario is typical of ageing countries characterized by low expected growth in future²⁹⁹. On the other hand, a country that is running a CA deficit invests more than it saves³⁰⁰. This, conversely, could be the case of an emerging country that is catching up in term of productivity. Both a great CA deficit and a huge CA surplus could be, for instance, the outcome of either domestic or systemic

²⁹⁷ Krugman, P. R. & Maurice Obstfeld, 2008, *International Economics: Theory and Policy*, cit.

²⁹⁸ Feenstra, R. C. & Taylor, A. M., 2014, *International Economics*, cit.

²⁹⁹ Krugman, P. R. & Maurice Obstfeld, 2008, *International Economics: Theory and Policy*, cit.

³⁰⁰ *Ibid.*

distortions³⁰¹. As far as domestic distortions are concerned, too high private savings can be caused by the lack of social insurance or of financial repression; conversely to low private saving can trigger asset bubbles as in the case of the real estate sector in the US³⁰². On the other hand, as far as systemic distortions are concerned, emerging countries running huge current account surplus, for instance, accumulates large FOREX reserves which are partly insurance against speculative attacks but are also causes of global imbalances³⁰³. The point is that trade imbalances are dangerous for international economy's stability. According to the Balance of Payment Theory, BoP, in fact, since every credit should be matched by a debit the sum of Current Account plus the Financial Account, FA, plus the Capital Account, KA³⁰⁴, must equal zero (4).

$$(4) CA + FA + KA = 0$$

Where:

- i. CA: could be defined as a register of all international transactions linked to the movements of goods, services and income. Hence, it equals: $EXP - IMP + NFIA^{305} + NUT^{306}$
- ii. FA: records the transactions between residents and non residents that involves financial assets; thus it measures how the country accumulates or *decumulates* assets through financial transactions. Hence it equals the Exports of assets minus the Import of assets: $EXP_{asset} - IMP_{asset}$
- iii. KA: covers two minor areas as the acquisition and disposal of non financial/non produced assets and the transfers as gifts of assets. Hence, it equals capital received minus capital transferred: $K_{in} - K_{out}$

Since the KA plays a marginal role it is possible to consider only the current account and the financial account. Hence, following the BoP Theory, it emerges the fact that each negative current account must be matched by a positive financial account, and *vice versa*. In

³⁰¹ *Ibid.*

³⁰² *Ibid.*

³⁰³ *Ibid.*

³⁰⁴ It records the flows of non-financial assets, e.g. debt forgiveness or royal rights.

³⁰⁵ Net Factor Income from Abroad; the value of factor services exports minus the value of factor services imports.

³⁰⁶ Net Unilateral Transfer: the value of unilateral transfers the country receives from the rest of the world minus those it gives to the rest of the world.

other words, surpluses or deficits in the current account side must be offset on the assets side. Here emerges the crucial concept of external wealth that represents the country's net worth with respect to the rest of the world. This measure is also called net international position and it is a stock measure. This value (5) is obtained by subtracting from the assets held by the rest of the world (external assets = credit) all the home assets owned by the rest of the world (external liabilities = debt).

(5) External wealth, $W = \text{RoW assets owned by home} - \text{Home assets owned by RoW}$

Hence, if the External Wealth is positive it means that the Home country is a net creditor: it has more external assets than external liabilities. Thus, a country that runs a current account surplus must be a net buyer of assets (a creditor/lender) and, *vice versa*, a country with a current account deficit must be a net seller of assets (debtor/borrower). The point is that, even before the crisis the world economy was characterized by severe imbalances in the sense that there were countries that were running huge current account surpluses, as China, and other that had massive deficit, the United States. Both kind of country were extremely exposed and vulnerable to external shocks as, for instance, exchange rate fluctuations. This made the international economic system's stability extremely volatile.

4.2.2 Trade Imbalances in the Aftermath of the Crisis

The outbreak of the financial crisis of 2007 was, under certain aspect, the consequence of those wide *dis-equilibrium* but, interestingly, with the occurrence of the Great Recession, «the resulting collapse of imports and exports rapidly improved global imbalances since the gap between exports and imports ineluctably falls at the same pace as underlying export and import flows»³⁰⁷ (see Figure 8 below).

³⁰⁷ Baldwin, R. & Taglioni, D., *The Great Trade Collapse and Trade Imbalances*, in Baldwin (2011).

Post-crisis Improvements in Global Imbalances

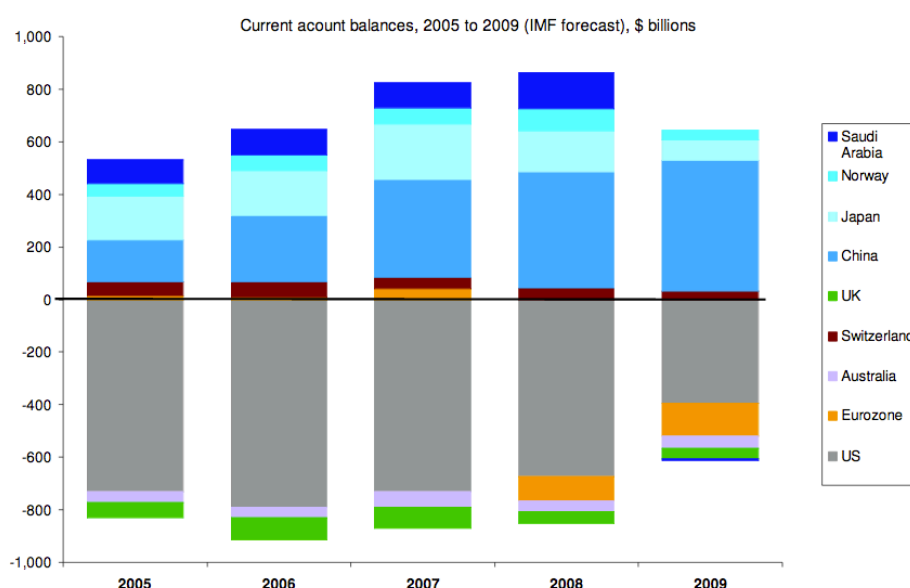


Figure 8, Post-crisis Improvements in Global Imbalances. Source: Baldwin (2011) Figure 1, p. 49.

This chart based on IMF data represents the somehow positive effects of the crisis, in the sense that it lowered global imbalances. In other words, due to global trade collapse, most countries' balance of payments were improved. By examining the US trends in the chart represented in Figure 8, it emerges that their current account deficit raised between 2005 and 2006 but, after the outbreak of the crisis in 2007 it started to decline. Figure 9 below represents a detailed focus on the United States' economy.

US Trade Balance

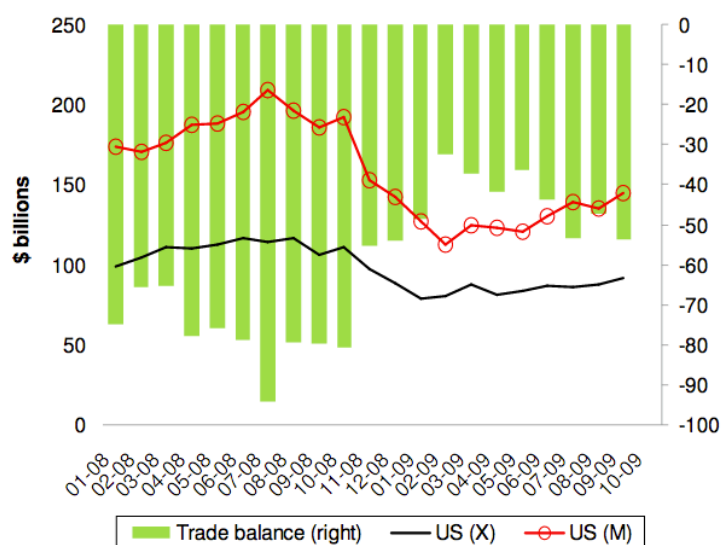


Figure 9, US Trade Balance. Source: Baldwin (2011), Figure 2, p. 50.

The reduction of US current account deficit was principally the outcome of a fall in imports triggered by a decline in aggregate consumption. As a consequence of the negative-demand shock, in fact, both exports and imports declined but, however, imports dropped significantly faster than exports³⁰⁸. This phenomenon caused an improvement in trade deficit: «(f)rom a pea of \$100 billion in July 2008 (shown as 07-08 in the chart), the monthly deficit dropped to just \$30 billion in February 2009»³⁰⁹. Nevertheless, since 2009 the current account deficit is rising again: already in August 2009 it reached \$50 billion, i.e. half of its pre-crisis level, this is mainly due to the fact that even though imports fell faster than export, they also recover more rapidly³¹⁰. Furthermore, as can be notice by observing Figure 8 other important deficit nations as the United Kingdom and Japan saw the decline on their current account deficit.

On the other hand, as far as China (which is the second largest imbalance nation, but on the surplus side) is concerned, the two authors Baldwin and Taglioni examine its trade balance together with the one of Honk Kong. Their choice to consider these two States together is linked to the fact that a huge share of China's export and imports is channeled through Hong Kong³¹¹. Figure 10 below denotes those countries' trade balance trends.

China and Hong Kong Trade Balance

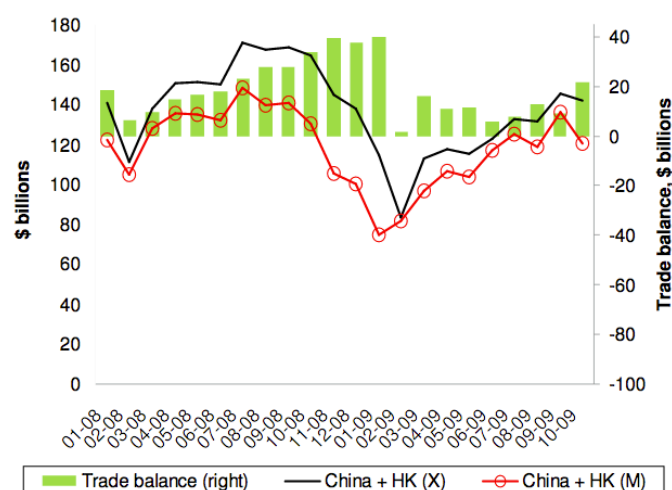


Figure 10, China and Hog Kong Trade Balance. Source: Baldwin (2011), Figure 2, p. 50.

³⁰⁸ *Ibid.*

³⁰⁹ Baldwin, R. & Taglioni, D., *The Great Trade Collapse and Trade Imbalances*, in Baldwin (2011), cit. p.50.

³¹⁰ Baldwin, R. & Taglioni, D., *The Great Trade Collapse and Trade Imbalances*, in Baldwin (2011), cit.

³¹¹ *Ibid.*

As the graph demonstrates, global trade collapse caused both import and export to fall, in this case, however, export dropped faster than imports due to the decline in other nations', and especially US, imports. However, with trade revival exports rose faster than imports, thus, « (t)his has turned the monthly balance from approximately zero in February 2009 to about \$20 billion in October 2009 – about half way back to its pre-crisis high, as in the US case»³¹². Hence it is possible to argue that global trade collapse had a positive effect in the sense that it improved the trade balances of the most imbalance nations as the US and China. Nonetheless, since trade flows' drop was caused by a negative-demand shock and not by supply-side shock that might have hindered a fast reprise, with aggregate demand recovery the old imbalances emerged again, threatening international stability³¹³. Hence, international economy's stability being the objective, it would be desirable that «governments should use the transition to install policies that will ensure that imbalances do not (permanently) revert to pre-crisis trends – policies that encourage saving in the US and prevent an overvalued dollar, and policies to stimulate spending in China and other parts of Asia and prevent undervalued currencies»³¹⁴.

4.3 The Importance of Trade Policies and of Governments' Behavior: prospects

Today as before Governments' behavior and policies do matter for international economy. The existences of tariffs, quotas, and other non-tariff barriers, for instance, greatly influence trade costs and thus trade flows. Usually policy makers decide to adopt one measure or another for ideological reasons but, most of the times, governments uses these tools for strategic objectives. Hence, economic history is full of episodes in which, in times of crises policy makers adopted protectionist measures in order to safeguard the national economy. This is why the decade after the Great Depression is defined as a moment of globalization backlash, a period in which many nations retreated from free trade in order to protect domestic interests³¹⁵. As far as governments' reactions are concerned, this crisis

³¹² Baldwin, R. & Taglioni, D., *The Great Trade Collapse and Trade Imbalances*, in Baldwin (2011), cit. p. 51.

³¹³ *Ibid.*

³¹⁴ Freund, C. *The Trade Response to Global Downturns*, in Baldwin (2011).

³¹⁵ Findlay R. & H. O'Rourke K. H., 2007, *Power and Plenty: Trade, War, and the World Economy in the Second Millennium*, cit.

does not completely break the historical pattern even though the shift toward protectionism was not as harsh as the one following the Great Depression³¹⁶.

4.3.1 The Threat of Murky Protectionism

«On 15 November 2008, world leaders gathered in Washington DC for the first of a series of G20 summits on the global financial crisis and its economic fallout. At that meeting, G20 leaders pledged to eschew protectionism for 12 months»³¹⁷. However, when in the next month world trade was hit by one of the heaviest shock of the last century, world leaders faced strong pressures against their promises not to harm foreign commercial interests³¹⁸. Thus, concerns emerged in the economic and academic communities about the negative effects of defensive policies in the field of international trade. In order to monitor the State's behavior and the implementations of protectionist policies the Global Trade Alert (GTA) database was updated and kept under control, what emerged was that «(o)f the 606 state measures investigated, 402 have already been implemented (one year after the summit»³¹⁹. Nevertheless, it is essential to take into account the fact that not all the policies implemented actually harmed foreign commercial interest since 51 of them, for instance, actually benefited importers (by freeing up foreign direct investments)³²⁰. The ten most used discrimination policies are represented in Figure 11 below.

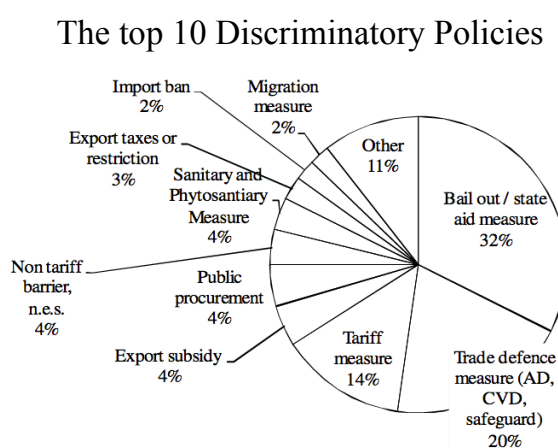


Figure 11, The top 10 Discriminatory Policies. Source: Baldwin (2011) Figure 1, p. 39.

³¹⁶ Evenett, S., *Crisis Era Protectionism One Year After the Washington G20 Meeting*, in Baldwin (2011)

³¹⁷ *Ivi* p. 37.

³¹⁸ Evenett, S., *Crisis Era Protectionism One Year After the Washington G20 Meeting*, cit.

³¹⁹ Evenett, S., *Crisis Era Protectionism One Year After the Washington G20 Meeting*, cit. p. 38.

³²⁰ Evenett, S., *Crisis Era Protectionism One Year After the Washington G20 Meeting*, cit.

What emerges is that the bail outs and state aid measures (i.e. financial assistance packages) has been the most used forms of discrimination (32%), «followed by anti-dumping, countervailing duty, and safeguard actions which collectively account for 20% of harmful measures implemented»³²¹ while tariff measures accounts for 14% of total measures. Table 1 below represents the ranking of countries which have inflicted the most harm in the first year after the G20 meeting.

Table 1 Which countries has inflicted the most harm?

Rankings (worst offender is #1)				
	Ranking by number of discriminatory measures implemented	Ranking by likely adverse harm done by discriminatory measures, various metrics		
		% tariff lines affected	% sectors affected	% trading partners affected
1	Russian Federation (37)	Russian Federation (39%)	Algeria (68%)	China (71%)
2	Argentina (20)	China (27%)	Ecuador (38%)	India (61%)
3	Germany (16)	Indonesia, Ecuador (25%)	Indonesia (31%)	Russian Federation (57%)
4	China, Indonesia, India, UK (11)		Russian Federation (30%)	Indonesia (53%)
5		India (17%)	China, Belarus, Mexico (29%)	UK (52%)
6		Japan, UK (11%)		USA (52%)
7				France (51%)
8	Brazil (10)	USA (10%)	Germany (26%)	Germany (50%)
9	Italy, Spain (9)	Argentina (7%)	USA (25%)	Argentina (49%)
10		France (6%)	Argentina (24%)	Spain (46%)

Table 1, Which countries have inflicted the most harm? Source: Baldwin (2011) Table 1, p. 40.

Nevertheless it is necessary to take into account the fact that governments' reactions in the aftermath of the crisis cannot be defined a repeat of the 1930s³²². In fact « (f)or only 4

³²¹ Ivi p. 39.

³²² Evenett, S., *Crisis Era Protectionism One Year After the Washington G20 Meeting*, cit.

nations is the percentage of tariff lines affected by their state's discrimination equal, or in excess of, 25% (as during the Great Depression). (Moreover a)cross-the-board tariff increases were not a general feature»³²³ of the years following the crisis.

4.3.2 The Crucial Role Played by Governments: Make in India

In the aftermath of the Crisis new connections and networks are emerging, linking different parts of the world and their economies even tighter together. These new linkages are growing not only spontaneously as the result of individual initiative but, on contrary, this process is somehow driven from the top, through governmental policies. One of the case that best embodies the importance of governments' behavior is the Make in India project that was devised after the crisis in order to increase the Indian participation index in the international supply chain. In other words, this plan represents a new step toward globalization which is even more important if we take into account the stagnation that followed the Great Recession. Hence, the following part of this section tries to shed light on this new, ambitious initiative.

Make In India policy is an initiative of the Indian Government announced by the Prime Minister Narendra Modi, the leader of BJP (Bharatiya Janata Party), on September the twenty-fifth, 2015, in New Delhi, during a function at the Vigyan Bhavan (the convention center of the Indian Government). The final objective of this ambitious project is to foster multinational, but also domestic, companies' manufacturing activities in India. Particularly, this is not just a political economic project but also a well-structured marketing campaign which was introduced to attract physical-human capital and technology (mainly through FDI) in India.

The core of this package of policies «includes major new initiatives designed to facilitate investment, foster innovation protect intellectual property, and build best-in-class manufacturing infrastructure»³²⁴. Specifically, the rationale behind this project is to attract resources, every kind of resources (financial, human and intangibles as knowledge and

³²³ Evenett, S., *Crisis Era Protectionism One Year After the Washington G20 Meeting*, cit. p.41.

³²⁴ Make In India, Official Website [Available from: www.makeinindia.com]

know-how), in order to boost the Indian economy mainly, but not only, through the manufacturing sectors. In facts, this is the literal meaning of the initiative, the key word being *make*: today, the majority of the items we use in everyday life (mobile phones, televisions, radios, cloths, kitchen tools, shoes, toys) are produced in other South Asian economies, namely China, Taiwan, Vietnam³²⁵. The aim of this set of policies is to create a business-friendly environment in order to attract foreign investors and entrepreneurs and to make them able to manufacture their products in India.

More precisely this program, as it is presented, will involve three kinds of broad initiatives: new processes, new infrastructure and new sectors³²⁶. First, the new process initiative encompasses a series of simplification of administrative scheme and a project of skill development; second, the focus on infrastructures evolves around industrial corridors, smart cities and the creation of National Industrial Manufacturing Zones (NIMZs); lastly the opening up of new sectors to foreign investment represent one of the most important novelties of *Make in India*.

As far as new processes are concerned, as a consequence of the implementation of these policies, de-licensing and deregulation measures have been adopted, meaning that, nowadays doing business in India has become more easy, both for domestic and foreign firms, due to a significant increase in speed and transparency. For instance, the process of applying for *Industrial License & Industrial Entrepreneur Memorandum* and of attaining environmental clearances, have been made completely available online through the new eBiz portal (a single-window IT platform) and the validity of Industrial license has been extended to three years. State Governments will play a crucial and active role in the implementation of this program: they «would have to simplify and rationalize (the) regulatory environment» starting from the low local level³²⁷. In order to do this, they should place on Ministry's and Department's web portal a check-list of required compliances so that every entrepreneurs willing to start a new business or to invest in an Indian firms would know clearly and in advance all the necessary requirements. Predictability and transparency are two of the most

³²⁵ QUORA (2014), *What is the Make in India project?* [Online] December 2014. Available from: <https://www.quora.com/What-is-the-Make-in-India-project>

³²⁶ All the following technical information about the program explained in the next paragraphs are based on the Make in India website: <http://www.makeinindia.com/policy/new-initiatives>

³²⁷ *Ibid.*

important attributes for any business-friendly environment and they both have to be enhanced to attract foreign investors.

Finally, a completely new mechanism of auto-certification has been introduced for activities that fall in the categories of «non-risk, non-hazardous business»³²⁸. This is one of the great accomplishments of this policy since it enables a relatively fast and simple beginning of new initiative by avoiding a long bureaucratic process. Broadly speaking, all these new processes' changes work in the same direction: overcoming *red tape* restrictions. In economics the terms *red tape* refers to disproportionate bureaucratic regulation and the excessive adherence to formal rules: this type of restrictions is of the main factors that prevent foreign and domestic firms to create their plants and activities. The overall effect on the economic environment is a scarcely competitive system and a slow GDP growth pace. Thus, less restrictions and less administrative barriers support the creation of a more attractive scenario for investments.

As far as new infrastructures are concerned, *Make in India*'s proponents argue that «India's manufacturing infrastructure and capacity for innovation is poised for phenomenal growth: new smart cities and industrial clusters, (are) being developed in identified industrial corridors having connectivity, (and) new youth-focused programs and institutions (are being) dedicated to [...] develop specialized skills»³²⁹. The creation of these industrial clusters should foster advanced practice in manufacturing, by helping the spread of new technologies through all the country. For instance, the Delhi-Mumbai Industrial Corridor (DMIC) is one of the most ambitious projects with international perspective (since it has been developed in collaboration and partnership with the Government of Japan) and it should represent a model for the other developing Industrial Corridor. Moreover, a specific body has been established in order to manage this development project: DMICDC – the Delhi-Mumbai Industrial Corridor Development Corporation have to facilitate the creation of all the necessary technology and infrastructures (DMICDC, 2015).

One of the most important features of *Make in India* is the creation of National

³²⁸ *Ibid.*

³²⁹ *Ibid.*

Industrial Manufacturing Zones (NIMZ). In order to appreciate the novelty of this policy it is necessary to compare it with the pre-existing scheme of Special Economic Zones: this policy has already been established by the previous government under the broader project of National Manufacturing Policy. SEZs (Special Economic Zones) were deemed as foreign territories and were subjected to a lighter taxes regime in comparison with zones that did not fall under this categorization: manufacturing within a SEZ was meant to be way easier and less expensive than elsewhere³³⁰. For this reason SEZs were mainly devised for export-oriented industries: less taxes means lower production costs and thus lower final price so, as a consequences, this scheme was meant to boost the international competitiveness of manufacturing industries and, more in general, industrialization. It was devised as a «[g]raduated sovereignty in the form of various special economic zones [...] as a state strategy to create spaces where liberalization and deregulation could take place in the face of significant resistance»³³¹.

On the other hand, NIMZs regulation will encompass all support systems like electricity, water, roads, shopping malls, service centers, schools, hospitals and residences. They are usually made as a model town and, thus, they will be given township status under the respective municipalities, the reason being they should have some independence to grow as manufacturing hubs. Furthermore, under the NIMZ scheme, a blanket clearance will be enough for the entire zone in most of the cases. In contrast with the SEZs scheme, part of energy required for those areas to be effective will be procured from renewable resources and by state government subsidies to NIMZs. Strikingly, Government would pay 50% fees for international patent application³³². This is a very crucial feature of this scheme: as far as innovation is concerned, one of the biggest problem facing India is that the rate of investment in innovation and technological developments is very low due to a lack of capital and purchasing new and advanced technology is very expensive. For these reasons, governmental aid is fundamental to enable the development of new manufacturing industries: by paying 50% of the international patent application and by providing for tax

³³⁰ Jenkins, R., Kennedy, L., & Mukhopadhyay, P. (2014). Introduction. Power, Protest, and India's Special Economic Zones. In R. Jenkins, L. Kennedy & P. Mukhopadhyay (Eds.), *Power, Policy, and Protest: The Politics of India's Special Economic Zones*. New Delhi: Oxford University Press, pp. 1-38.

³³¹ *Ivi* p. 12.

³³² Make in India, Official Website [Available from: www.makeinindia.com]

exemptions on money spent in the acquisition of ISO (International Standards Organization) certificates it foster the development manufacturing industries.

Lastly, one of the greatest changes, in comparison to the pre-existing policies regulating the industrial and trade environment, concerns the opening up of different sectors to foreign investors, in other words, the opening up to FDI (Foreign Direct Investment). Even though India experienced a process of economic liberalization in the 1990s and some sectors were opened up to foreign investments, those were possible only to a limited extent and for specific sectors. Thus, the entry into force of *Make in India* policies has dramatically modified the foreign direct investment regulation by easing the control over capital and investments in high-value industrial sectors such as defense and railroads, for instance³³³. Here are some of the most important changes:

- Policy in Defense sector was liberalized and FDI cap raised from 26% to 49%
- Portfolio investment in Defense sector has been permitted up to 24% under the automatic route
- 100% of FDI under automatic route has been permitted in construction, operation and maintenance in specified Rail Infrastructure projects such as:
 - Suburban corridor projects
 - High speed train projects
 - Dedicated freight lines
 - Rolling stock including train sets and locomotives/coaches manufacturing and maintenance facilities
 - Railway electrification
 - Signaling systems
 - Freight terminals
 - Passenger terminals
 - Infrastructures in industrial park penetrating to railway line/sidings including electrified railway lines and connectivity to main railway line
 - 10 Mass Rapid Transport Systems³³⁴

³³³ Ibid.

³³⁴ Ibid.

Make in India policies will have an impact of twenty-five sectors of the economy, which includes: information technologies, electronics pharmaceuticals, chemicals, biotechnologies, automobiles, wellness, railways, renewable energies, tourism and hospitality, leather, design manufacturing, ports, mining, textiles, and aviation.

Appendix 1: Case study, Intermac

Intermac is a multinational company part of Biesse Group that is specialized in the production of glass, stone and metal processing machineries. Moreover, as far as the glass division is concerned Intermac is the international leader, being the company the first producer of the world. As the majority of industry producing durable goods it was severely hit by the Great Recession and by the Global Trade Collapse. Nevertheless, starting from 2010 it began a process of recovery and growth, up to the point that it outreached its pre-crisis turnover. Thus, this case study focuses on an Italian business which perfectly embodies the recovery experienced by world trade in the last years. Hence, this paragraph examines the development of Intermac's business with special attention to the period of trade recovery that started in 2010. The main objective of this analysis is to demonstrate

whether the performance of an export-oriented company confirms the general trends discussed in this dissertation.

Starting from a broader perspective, the sectorial data concerning the heavy industry's machineries confirm the global trends discussed in the previous chapters. First of all trade flows linked to this field experienced a sharp drop in 2009. In addition, it is possible to argue that this decline was the result of a fall in consumption of the goods they produce, i.e. a negative-demand shock. Figure 12 and 13 below represent the trends of the metal processing machineries sector.

Processing Machinery's Global Production

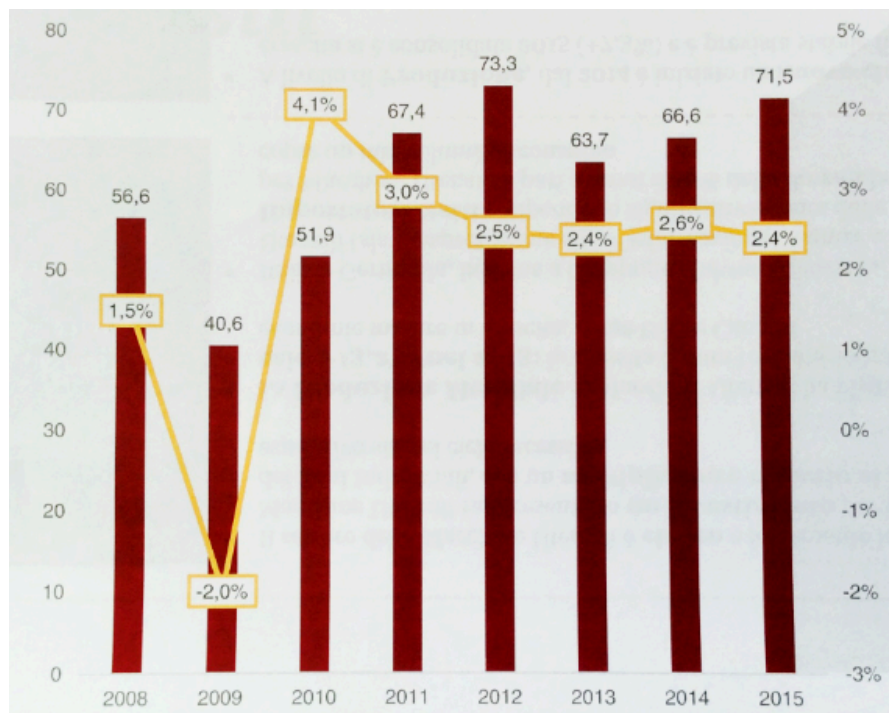


Figure 12, Metal Processing Machinery's Global Production. Source: UCIMU data and World Bank (2016) Figure 1, p. 5.

NOTES: The Y axis represent billion of euros and the variation percentages. The red columns represent the level of production while the yellow line stays for GDP growth rate.

As it can be easily depicted from Figure 12, metal processing machinery's production experienced a sharp droop of -3.5% (from 1.5% growth rate in 2008 to -2% in 2009), which corresponded to almost 2 billions of euros.

Metal Processing Machinery's Global Production

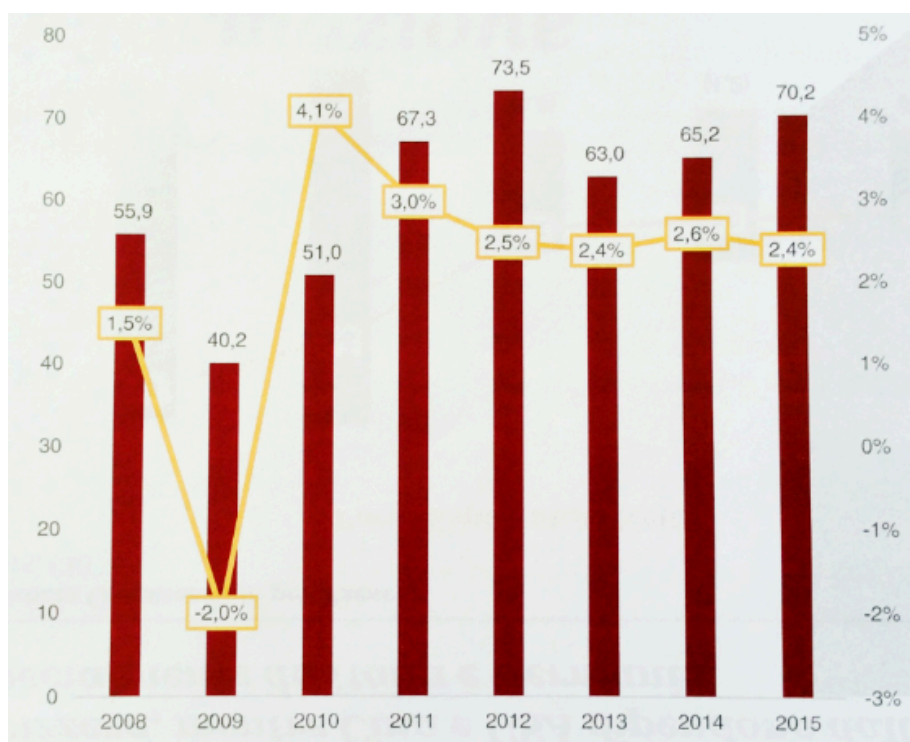


Figure 13, Metal Processing Machinery's Global Production. Source: UCIMU data and World Bank (2016) Figure 2, p. 5.

NOTES: The Y axis represent billion of euros and the variation percentages. The red columns represent the level of aggregate consumption while the yellow line stays for GDP growth rate.

On the other hand, Figure 13, represents the consumptions trends that are strikingly similar to the data represented in the previous graph. This demonstrates that there is a strict connection within the level of consumption and the level of production.

Moving on to the specific case of Intermac, its business is based on the production of technologically advanced machineries that are used, as mentioned above in the processing of glass, stone and metal. Hence, Intermac's business is strictly connected to the broader general sector of durable goods that was the most heavily hit by the Great Recession started in 2008. Strictly speaking, among the company's customers are producers of furniture, building components, constructions, and auto vehicles. Those are precisely the kind of goods that have been defined as postponeables: consumers that have adopted the wait and see strategy as a response to economic shocks thus, delayed the purchase of these items.

More precisely, suppose that a kitchen producer has outdated machinery with which it produces kitchen's top. If, in times of crisis, the demand for new kitchens, drops the producers' turnover will diminish too. Moreover, if in addition the general trends concerning all of the other sectors are negative too, he will be induced to adapt his expectations about the market. Thus, even though his machineries are outdated he would probably decided to *wait and see* the market's trend in order to decide whether to invest. Hence, the immediate outcome was a fall in the demand Intermac's machineries that, consequently, triggered a drop in Intermac's production, exports and, thus turnover. Nevertheless, starting from the second quarter of 2009 it began a process of recovery. Table 2 and Figure 14 below shows Intermac's trends from 2006 to 2015.

Intermac's Exports Data

Time	Sold Machineries	NET SALE	Growth Rate
2006	390	31.926.122	X
2007	533	39.629.969	+ 24,13%
2008	625	44.457.685	+12,18%
2009	336	24.893.306	- 44,00%
2010	453	31.622.181	+ 27,03%
2011	559	37.848.788	+ 19,70%
2012	492	34.044.178	- 10,05%
2013	521	37.401.667	+ 9,86%
2014	500	38.562.564	+ 3,10%
2015	569	45.924.030	+ 19,09%
Total value	4978	366.310.489	

Table 2, Intermac's Data. Source: Intermac

As can be easily depicted observing Table 2, Intermac's turnover throughout the years confirms the general trend of the manufacturing industries. More precisely, before the outbreak of the crisis Intermac's net exports were increasing: from 2006 to 2007 there has been an increase of +24,13%. Conversely after the burst of the financial crisis, the growth rate diminished and reached +12.18% in the 2008. Hence, even though it was still positive it

was half of the growth rate of the previous year. At the end of 2008, i.e. before the financial crisis spread to the real economy, Intermac's net sale (to the rest of the world) was 39.629.969 billion of euros. Then, as a consequence of the Great Depression, net exports' growth rate abruptly collapsed in 2009 reaching - 44%. Nevertheless, starting from the second quarter of 2009 export's level started increasing again: 2010 registered +27%. Figure 14 below show the trends described in the previous lines.



Figure 14, Intermac's Export Trend. Source: Intermac.

NOTES: Y-axis unit of measure is billion of euros.

It is interesting to notice that Intermac's performance followed the trends described in Figure 2 above, according to which the reprise of the machinery and machine parts category was slower than the others. As the graph in Figure XX demonstrates, in fact, this business' export levels, in fact, reached its pre-crisis level only at the beginning of 2015.

CONCLUSION

This dissertation tried to examine one of the most important phenomena of contemporary economy. Even though there are many differences, the recent crisis has been often compared to the Great Depression: an event that is considered a watershed in the economic and historical literature. Almost eighty years later another catastrophic event shook the international stability. In a world characterized by huge imbalances, the key players (e.g. the United States and China) ran either current account deficit or current account surplus, being respectively a net debtor or a net creditor. These are only two sides of the same coin since both the cases involve a high degree of vulnerability. However, the huge worldwide imbalances were not the only causes of instability: starting from the eighties in fact finance had undertaken a process of liberalization and deregulation, the banking system itself has been deeply modified and changed its real nature, and leverage became excessively high. The free movement of capital and the financial liberalization created the scenario in which all the most important commercial and investment banks were strictly connected to each other. Regardless of these huge causes of instability, however, the world economy was growing at an increasing pace in the first years of 2000, only few knew that this growth was under certain perspective *artificial*, based on excessive leverage, a massive flow of liquidity and fragile real economy basis. The outburst of the real estate bubble in the United States brought these imbalances and fragilities to light. Due to the strong connection between the real estate sector and the banking system based on the newly

created assets of derivatives, the general insolvency was rapidly transformed in a banking crisis and then in a financial crisis. It was just a matter of time and, through various transmission channels, the most important of which was the so-called *credit crunch*, the financial crisis became an economic crisis. The sudden stop of capital flow to Europe, moreover, triggered the sovereign-debt country in this region.

The crisis was synchronized, severe, and sudden and world trade collapsed. According to the economic literature, the main explanation for trade flows drop is linked to the negative-demand shock: after the Lehman Brother default a feeling of uncertainty about the next future began to affect not only economists but also the common consumer. People adopted the wait and see strategy and aggregate consumption, and thus demand froze. Less consumption means also lower imports, and, in a globalized world characterized by the existence of vertical linkages, a falling demand for final goods doubles its effect through the collapse of trade in intermediate inputs. This helps explaining why world trade fell more than world GDP. In other words, the international supply chains amplified the effect of the crisis: the fact that the production process is fragmented across the world meant that the negative-demand shock moved even more rapidly across border. In addition, due to scarce credit availability also the level of investment dropped and many firms were forced to scale down their production, thus negatively affecting their suppliers and clients. World trade began its recovery process already in 2010, even if it slowed down in 2011 due to the European sovereign-debt crisis. The reprise was faster in emerging countries since these areas experienced the crisis mainly as an external shock linked to a fall of their exports due to the drop in other countries' imports. In other words, they did not have the same structural fragilities that affected the most developed countries, nor were their national banks as involved as the most important western banks.

Nonetheless, the Global Trade Collapse has left its marks on international economy. Economic history has taught that financial crises usually have deeper and long lasting effects than mere real economy crises on the most directly affected countries. Trade patterns are changing, with an increase of the share of South-South trade, emerging countries' income growth and thus demand (both in intermediates and in final goods) is rising in comparison with developed countries'. Hence, as a result of the Great Recession,

developing countries are less dependent on high-income regions imports. On the other hand, international production structures are moving towards consolidation, in the sense that the dispersion of the global value chain is declining. One of the reasons that can account for this trend is the fact that in case of crises government tend to protect domestic interest through protectionist policies that generally harm international trade. The appeal to protectionism, in fact, characterized also this crisis. Nevertheless, together with recovery, governments' attitude is changing toward world economic integration as the *Make in India* case demonstrates.

To conclude, it is undeniable that today global trade's growth rate is far below the level it would have been in absence of the Great Recession. Nevertheless, it is crucial to remember that the high-growth rate experienced by world trade between 2002 and 2008 was also the outcome of a, *extra*-ordinary buoyant context which was characterized by excessive liquidity and consumption in many developed regions. The recent crisis has demonstrated how global imbalances and excessive leverage represent a threat for international stability. Solving these structural problems will be essential to the development of a stable international environment.

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ABSTRACT

The main objective of this dissertation is to shed light on one of the most relevant phenomenon that affected contemporary economy: the Global Trade Collapse. The magnitude of this event is such that, even though there are many differences, the recent crisis has been often compared to the Great Depression of the thirties: an event that is considered a watershed in the economic and historical literature.

After a period of impressive and *extra*-ordinary growth rate, as a consequence of the financial crisis of 2007-2008, in 2009 world GDP and international trade flows dropped sharply, and continued falling for at least one year. Concealed under the quiet surface of increasing growth, in fact, the world economy was characterized by both real economy and financial severe imbalances. The aim of this dissertation is to shed light on the dynamics that stand behind these macro economic movements: where did the Global Trade Collapse originate? And what are its effects on the international economy?

Since the Great Recession that produced the international trade collapse was ultimately triggered by the financial crisis of 2007-2008, the first chapter focuses on this topic. Broadly speaking, the international financial system presented a series of structural fragilities that made it vulnerable to either exogenous or endogenous shocks. Starting from

le last decades of the twentieth century four different but connected processes began undermining the basis of the international finance structure and contributed to the outbreak of the Subprime crisis. First, starting from the first years of the eighties a wave of financial liberalization and deregulation, strictly connected to the mounting political-economic doctrine of new-liberalism, spread all over the world, starting from the United Kingdom and the United States. Second, the banking system itself undertook a process of transformation. As Martin Wolf pointed out, in fact: funding, banking and holdings of the new assets, started a process of globalization³³⁵. One of the consequences of this process was that the current account deficit of most of the countries was funded, and thus sustained, through international bank financing, extremely increasing the level of interdependency across the world. Moreover, starting from 2000, with the creation of the new financial instrument of derivatives most of the commercial banks stopped holding the instruments of credit they issued, lowering the quality of mortgages. In the meanwhile, a series of legal, technical and organizational innovations, as the establishment of the shadow banking system and the creation of derivatives resulted in faster but less transparent transnational transactions over which national or supranational authorities had almost no control. Lastly, overall «leverage of non-financial borrowers, such as house buyers, who borrowed more relative to the value of houses; leverage embedded in new instruments, particularly derivatives; and leverage inside the financial sector itself, [...] became extraordinarily high in many institutions»³³⁶.

After a period of rising inflation in the first years of 2000, the outburst of subprime bubble in the United States, via a phenomenon of general mortgage insolvency, triggered the great financial crisis in the 2007. Due to the strict connection between two of the most important financial centers, Wall Street and the City (the London Stock Exchange) the shock was easily transmitted in Europe. The transmission happened through two main channels: first, via the newly created financial instruments (as CBO and CDS) that were held by many of the most important European banks; second, the turmoil of the financial and banking system caused the so called *sudden stop* or credit crunch. When the movement of capital was frozen and liquidity dried-up, those European countries that were heavily reliant on capital inflow in order to finance their huge current account deficits found

³³⁵ M. Wolf, *The Shifts and the Shocks*, Penguin, Great Britain, 2015.

³³⁶ M. Wolf, *The Shifts and the Shocks*, cit. p. 131.

themselves on the brink of bankruptcy. The outcome of both the financial and sovereign-debt crisis was the Great Recession: world GDP impressively dropped by almost 30% in 2009³³⁷ reflecting a sharp fall in investment and consumption and causing a huge depression in the most-hit economies, reflected by an extremely high level of unemployment.

The second chapter sheds light on the phenomenon of the Global Trade Collapse itself and on the channel of transmission that made it possible for the financial crisis to trigger the drop of trade flows. Through data and figures it shows how the Great Recession ruthlessly hit international trade flows: each country's volume of exports and imports, in fact, dropped by more than 20% in the period between the end of 2008 and the second quarter of 2009³³⁸. Even though the world economy had already experienced various severe crises (e.g. the Great Depression, the Oil Crises) none of them was so sudden, so severe and so synchronized as the one of 2008³³⁹. More in detail, what made such an astounding plummet possible was the fact that trade dropped simultaneously in most of the OECD countries. As Baldwin underlines: «All 104 nations on which the WTO reports data experienced a drop in both import and export during the second half of 2008 and the first half of 2009. [...] World trade in almost every product category was positive in 2008Q2, almost all were negative in 2008 Q4 and all were negative in 2009Q1»³⁴⁰. The principal cause of international trade collapse was a massive negative-demand shock that affected primarily durable/manufactured goods. The Lehman Brothers accident, i.e. the fact that one of the five most important investment banks was not bailed out, created in the market the belief that the situation was becoming more and more out of control³⁴¹. It was the occurrence of this single event that created the so-called «fear factor»³⁴², that triggered the “wait and see” behavior of consumers and investors that froze the market and thus trade. Strictly speaking, consumers began to postpone the purchase of durable and high quality goods (e.g. cars, refrigerators, machineries). The collateral effects were even wider: a fall in

³³⁷ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, A VoxEU.org Publication.

³³⁸ Ibid.

³³⁹ Ibid.

³⁴⁰ Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, cit.

³⁴¹ Ibid.

³⁴² Baldwin, R., 2011, *The Great Trade Collapse: Causes, Consequences and Prospects*, cit. p. 10.

the demand, and thus production, of the related intermediate inputs³⁴³ via the international supply chains.

In addition, a trade-specific credit crunch and a rise in trade cost deeply undermined international trade. If we consider the data relative to trade financing we discover that there had been a drop in cross-border lending after the default of Lehman Brothers and this plunge resulted in a limited availability of liquidity for trade financing³⁴⁴. Nevertheless, it is important to remind that «(b)anks and suppliers judge reduced trade financing as the number two contributor to the decline in global exports, after the falling global demand»³⁴⁵. On the other hand, the increase of trade cost is obviously strictly connected with the scarce availability of trade financing.

Moreover, as the theses exposed in third chapter demonstrate, the existence of international supply chains significantly amplified the effect of both the financial crisis and of the Great Recession. The fragmentation of the various stages of the production chains across the world, in fact, means that trade flows are based not only of final goods but also on intermediates. Hence, on the one hand, low availability of credit was extremely disruptive due to the existence of vertical linkages. Broadly speaking, in fact, the dynamic is the following: «(b)ecause firms rely on suppliers in carrying out part of the production process (outsourcing or off-shoring), and/or because they sell their production to other firms, the smooth realization of production plans from initial investment to final sales depends on the availability of credit at all stages of the production chain»³⁴⁶. Strictly speaking, if as a result of the credit crunch, a firm's request for credit is denied, the company will be forced to scale down its production, adversely affecting both its suppliers and clients across the world. On the other hand, the existence of vertical linkages magnified also the effect of the negative-demand shock. As the O'Rourke Barbie doll example brilliantly explains, «(e)very time the US buys one fewer Barbie doll, trade declines not only by the value of the finished doll, but by the value of all the intermediate trade flows

³⁴³ Ibid.

³⁴⁴ Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* Cit.

³⁴⁵ Mora, J. & Powers, W., *Did trade credit problems deepen the great trade collapse?* Cit. p. 117.

³⁴⁶ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p.84.

that went into creating it»³⁴⁷. Hence, an «adverse external shocks may affect firms not only through final demand (a sudden decline in exports), but also through a disruption of the flow of inputs received from their suppliers»³⁴⁸.

To conclude, the last chapter describes the recovery process and the effects of the Global Trade Collapse on the structures of international economy. Broadly speaking, the recovery of global trade was relatively rapid, according to the European Commission data, in fact, the volume of world trade reached its pre-crisis level already in the mid of 2010³⁴⁹ even though, the reprise has slow down in the second quarter of 2011 as a consequence of the European sovereign-debt crisis, of the Japanese Tōhoku earthquake of March the 11th 2011 that caused a drop in the level of production of that country, and of the uncertainty concerning US fiscal policy.

Overall, it is interesting to notice that while global trade collapse was extremely synchronized, the path of reprise was characterized by a significant asymmetry both in regional and sectorial terms. On the one hand, as far as regional diversity is concerned, different areas of the world reacted differently to trade collapse depending on the way in which the crisis hit their own economies³⁵⁰. Some countries, as the US, or regions, as the European Union, has been hit by both the financial crisis and the real/trade crisis, hence these countries experienced a relatively slow recovery. Conversely, many emerging countries were affected *only* by the negative-demand shock via a sharp decrease in the demand for their exports, thus these areas saw a relatively rapid reprise. As far as disparity at the sectorial level is concerned, in this case the pace of recovery was different depending on product categories. This phenomenon is principally due to the price effect discussed in chapter two of this dissertation. More in detail, «(i)n nominal terms, exports of crude materials, which are subject to large price fluctuations, had exceed their pre-crisis peak by

³⁴⁷ O'Rourke, K. *Collapsing trade in a Barbie world*, The Irish Economy, July 18 2009. [Available online from: <http://www.irisheconomy.ie/index.php/2009/06/18/collapsing-trade-in-a-barbie-world/>]

³⁴⁸ Escaith, H. & Gonguet, F., (2011) *International Supply Chains as Real Transmission Channels of Financial Shocks*, The Capco Institute Journal of Financial Transformation, cit. p. 84.

³⁴⁹ European Commission, Economic and Financial Affairs (2012) Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012. [Available online from: http://ec.europa.eu/economy_finance/publications/qr_euro_area/2012/pdf/qrea2_section_1_en.pdf]

³⁵⁰ Ibid.

30% in 2011, while fuel exports were 23% below levels seen in 2007»³⁵¹. The latter trend was conditioned by the fact that oil prices were significantly high before the outbreak of the crisis (price effect).

However, Global Trade Collapse has left lasting marks on the international economy. First of all, on the demand-side there has been a regional shift in favor of emerging markets in terms of income growth and, thus, import demand³⁵². In fact, «(s)ince the 1990s, emerging markets economies have gradually increased their share of global output, accounting for half of the world GDP in 2011 (based on purchasing-power parity valuation)»³⁵³. This means that, nowadays, the growth of international trade is more widespread across countries in comparison to the last decades of the 21th century when the main contributors of world GDP were few advanced countries. Conversely, on the supply-side one of the effects of the Great Recession on international economy was a change in countries' export shares and product composition³⁵⁴. This dynamic is strictly correlated to the transformations in the demand-side: due to the fall and stagnation of developed countries' demand there have been an increase in south-south trade. Hence, not only emerging countries saw their import level growing in the last years but, in addition, their export's share augmented too. Hence, as a result of the Great Recession, developing countries are less dependent on high-income regions imports. Even though it is important to take into consideration the fact that today high-income advanced countries still accounts «for two thirds of emerging markets' exports»³⁵⁵ Moreover, even though the crisis has not triggered a process of *dis*-integration and vertical linkages have been quickly restored, there has been a change in terms of international supply chains consolidation. If global value chains of certain sectors undertake a process of consolidation it means that the number of stages in the production process diminishes together with trans-border transaction³⁵⁶, i.e. the dispersion of the production process declines. Lastly, as far as financial aspects of the crisis

³⁵¹ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit. p. 12.

³⁵² European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

³⁵³ *Ivi* p.10.

³⁵⁴ *Ibid.*

³⁵⁵ *Ivi* p.11.

³⁵⁶ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

are concerned, broadly speaking economic history has taught that financial crises usually have deeper and long lasting effects than mere real economy crises on the most directly affected countries. This is primarily do to the fact that scarce credit availability constraints aggregate investments and thus reduces gross national output; moreover also aggregate income, and hence imports will be negatively affected³⁵⁷ for a longer period. In addition, on the financial side, bank intermediate trade financing is still suffering the effect of the crisis³⁵⁸ thus slowing the recovery process.

Nevertheless, it is interesting to notice that, even though the outbreak of the financial crisis of 2007 was, under certain aspect, the consequence of those wide *dis-equilibrium*, interestingly, with the occurrence of the Great Recession, «the resulting collapse of imports and exports rapidly improved global imbalances since the gap between exports and imports ineluctably falls at the same pace as underlying export and import flows»³⁵⁹. In other words, due to global trade collapse, most countries' balance of payments had been improved. The reduction of US current account deficit, for instance, was principally the outcome of a fall in imports triggered by a decline in aggregate consumption. As a consequence of the negative-demand shock, in fact, both exports and imports declined but, however, imports dropped significantly faster than exports³⁶⁰. This phenomenon caused an improvement in trade deficit: «(f)rom a pea of \$100 billion in July 2008 (shown as 07-08 in the chart), the monthly deficit dropped to just \$30 billion in February 2009»³⁶¹. Nevertheless, since 2009 the current account deficit is rising again: already in August 2009 it reached \$50 billion, i.e. half of its pre-crisis level, this is mainly due to the fact that even though imports fell faster than export, they also recover more rapidly³⁶². Hence, international economy's stability being the objective, it would be desirable that «governments should use the transition to install policies that will ensure that imbalances do not (permanently) revert to pre-crisis trends»³⁶³.

³⁵⁷ *Ibid.*

³⁵⁸ *Ibid.*

³⁵⁹ Baldwin, R. & Taglioni, D., *The Great Trade Collapse and Trade Imbalances*, in Baldwin (2011).

³⁶⁰ *Ibid.*

³⁶¹ Baldwin, R. & Taglioni, D., *The Great Trade Collapse and Trade Imbalances*, in Baldwin (2011), cit. p.50.

³⁶² *Ibid.*

³⁶³ Freund, C. *The Trade Response to Global Downturns*, in Baldwin (2011).

Lastly, it is important to underline that the Global Trade Collapse had affected also the sphere of international trade policies. The economic history is full of episodes in which, in times of crises policy makers adopted protectionist measures in order to safeguard the national economy. This is why the decade after the Great Depression is defined as a moment of globalization backlash, a period in which many nations retreated from free trade in order to protect domestic interests³⁶⁴. As far as governments' reactions are concerned, this crisis does not completely break the historical pattern even though the shift toward protectionism was not as harsh as the one following the Great Depression³⁶⁵. When world trade was hit by one of the heaviest shock of the last century, world leaders faced strong pressures in favor of protectionism. Thus, concerns emerged in the economic and academic communities about the negative effects of defensive policies in the field of international trade. To monitor the State's behavior and the implementations of protectionist policies the Global Trade Alert (GTA) database was updated and kept under control, what emerged was that «(o)f the 606 state measures investigated, 402 have already been implemented (one year after the summit)»³⁶⁶. Nevertheless, it is essential to take into account the fact that not all the policies implemented actually harmed foreign commercial interest since 51 of them, for instance, actually benefited importers (by freeing up foreign direct investments)³⁶⁷. With trade recovery not only the majority of these measures are being dismantled, but there are also important emerging countries as India (with its Make in India project) that are further opening up their economies.

To conclude, global trade's growth rate is today far below the level it would have been in absence of the Great Recession³⁶⁸. Nevertheless, it is crucial to take into account that the high growth rate experienced by world trade and world GDP between 2002 and 2008 was also the outcome of a, *extra-ordinary* buoyant context which was characterized «by a global liquidity glut and excessive consumption in several advanced countries»³⁶⁹.

³⁶⁴ Findlay R. & H. O'Rourke K. H., 2007, *Power and Plenty: Trade, War, and the World Economy in the Second Millennium*, cit.

³⁶⁵ Evenett, S., *Crisis Era Protectionism One Year After the Washington G20 Meeting*, in Baldwin (2011)

³⁶⁶ *Ivi* p. 38.

³⁶⁷ Evenett, S., *Crisis Era Protectionism One Year After the Washington G20 Meeting*, cit.

³⁶⁸ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit.

³⁶⁹ European Commission, Economic and Financial Affairs (2012) *Volume 11 – Issue 2 Quarterly Report on the euro area, July 2012*, cit. p. 9.

Hence, it is likely that, at least in the medium term, trade will grow with the trend growth observed in the 90s³⁷⁰.

³⁷⁰ *Ibid.*