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The housing bubble boom and burst in Ireland and Spain: an historical perspective.

Sara Gil Gallen

Grado en Economía, 4th al226836@uji.es

Universidad Jaime I

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Abstract

In this work we will analyse the real state bubble, in the case of Spain and Ireland (Celtic Tiger). In the first place, we will explain the historical background of both countries. In the case of Spain, from the dictatorship of Primo de Rivera, Second Republic, Civil War, Franco's Dictatorship, Transition and nowadays Democracy. In the case of Ireland, we will talk about the independence from Great Britain in 1922 until nowadays. Therefore, we could observe the differences and similarities: political, historical, economic and cultural, among both countries. We will analyse Spanish and Irish real state bubble, using as indicators: the evolution of prices, the financial system, its financing, and supply and demand of houses. Once observed both countries real state bubbles, we will continue with its comparison. Finally, we will summarize the most relevant conclusions we have reach to about this topic.

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1. Introduction

Due to the serious economic recession we are nowadays suffering, we ask ourselves what has happened and especially, how we can solve it. We must not forget that economy is a social science which tries to understand the behaviour of the different parts that are part of it with the objective of being able to regulate, understand, solve and foresee the different phenomena that happen in society. It has as objective to regulate, understand, and foresee the different phenomenon that happen in the society and therefore, it uses statistics and econometric as a tool, analysing data and creating models. Due to this, it is necessary to understand the behaviour of these parts in the past, present and future, and the best source of information we have is history.

One of the main phenomena of this economic crisis in Spain is the real state bubble, in order to know what solutions we can apply to this problem we must understand how its weaknesses and strengths have been produced. But the bubble that appeared in Spain between 1996 and 2007 was not an isolated act. It is very interesting that a country so economic, social and politically different as Ireland is, lived a really similar situation between 1993 and 2006.

This fact offers a real scenario for studying the real state bubble, with the purpose of understanding how it is produced and what consequences they might have. It is reasonable to think that there are similarities as they share monetary policy and the growth due to the adherence to the European Union, what was predictable as they start to share monetary policy, but it is curious that in both economies, they focused this growth towards the main construction activities. For this, we have decided to analyse this phenomena in the same moment of time in two different countries, using as tools to understand it an economic of how this situation took place and an analysis of history and economic data.

Both countries are more competitive after the entrance of the EU, but promoters of the economy growth and construction activity act in a different way in each country. In Spain, low interest rates attract plenty of foreign flights of capital that are directed into construction. Whereas in Ireland they use Foreign Direct Investment (FDI) as a measure for the economic growth by means of fiscal facilities among other facilities which act as a tax haven. This produces an increase of Irish productivity with distortions between GDP and GNP.

Due to the union between banks and enterprises, and the accumulated imbalances in growth periods, this crisis has not been as severe. Real estate bubble is done by the

supply (construction enterprises) and demand (families) where the bank's agent produces speculation, acting together banks and construction enterprises. Houses are taxed more than their real price, therefore banks give higher mortgages and real estate businesses have higher benefits. This speculative game is produced in the same way in both countries, but banking financing is produced in a different way in order to do it. In Spain it is financed by means of clients' bank deposits whereas in Ireland they issue bank bonds.

After the burst of real estate bubble in 2008, it is produced a bank crisis in both countries as its consequence. In Spain, it is produced in all bank sectors, in saving banks as well as banks. At the beginning, governments interfere in order to guarantee the bank debt in the case of Spain through FROB or SAREB, and in Ireland they created NAMA in 2010. These organisms are not enough in order to face the crisis, so in 2012 Spain requested the bailout to ECB and IMF. Meanwhile, Irish asked for it in 2010 but for all its economy since it also suffers from a fiscal crisis due to lack of financing because there were low taxes stated during the economic growth.

We must highlight the consequences of real estate bubble after the burst, which derives into repression of the economies in both countries through the growth of unemployment, increase of government debts, precarious social conditions and made worse by austerity measures which sank Ireland and Spain in a deep economic crisis whose prospect of recuperation to get back to the previous welfare is still far away.

When analysing the data, we observe that there is a positive and quite high correlation between important variables such as GDP, unemployment, nominal prices of houses and permits issued for construction among both countries. This shows why they have reached so similar situations, as their cycles follow the same trend.

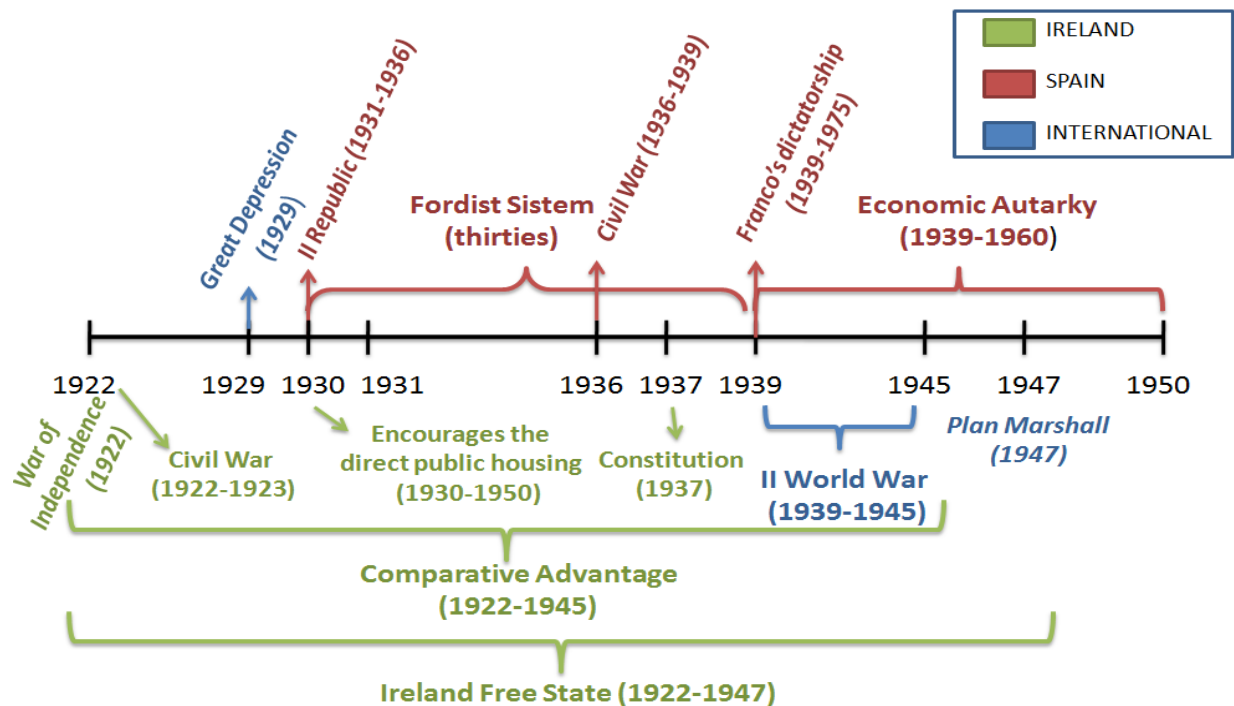
The structure of our work will consist first, in a compilation of history focused on the real state bubble of Spain and Ireland divided into three periods from 1922 to 2012. Then, we will analyse the real state bubbles, first in Spain and after in Ireland, talking at the end about its similarities and differences. On the other hand, we will compare through empirical analysis the macroeconomic indicators and other relevant variables in order to explain this phenomenon in both countries. Finally, we will expose the conclusions we have reach to.

2. Historical and economic background

2.1.1. 1º Period (1922-1950)

Below we will explain in detail the most relevant facts from 1922 to 1950 that appear in the following time axis.

Figure 1: Time axis of Ireland and Spain from 1922 to 1950:



Source: Prepared by the author.

At the beginning of the period, Ireland suffered the Independence War (1922) followed by a Civil War (1922-1923) due to the differences between the north and the south areas of Ireland. From 1922 to 1945, Ireland applies an economic strategy based on the comparative advantage and free trade, that is, the market determines resource allocation. It was based on a little intervention from the government and in an economy mainly based on the primary sector (agriculture and livestock farming) which was the main source of exportation with Great Britain. Besides, this strategy saw industrialization as an anathema (Battel, 2003).

With the arrival of the Great Depression (1929) and with the Second World War when Irish economy, together with the rest of the world, was pushed down into a great economic recession. This caused an increase in the unemployment rate and high migration flows mainly towards Great Britain and the USA. As the repercussion of this recession was global, the USA and Great Britain took actions in order to limit the

exports and Irish migrations by means of tariffs, which aggravated even more the situation in the country (Battel, 2003).

In relation to houses patterns, they follow the normative origin of Great Britain that start after the Independence War in 1922. In Great Britain, social housing is promoted especially after the Second World War (1939-1945) when it became a key element. But Ireland was a poorer country, with better residential quality and ideologically, less incentive towards direct public housing. Even though, they took large-scale measures in favour of public housing from 1930 to 1950. (Heras, 2013).

During this period, Spain was through the Second Republic (1931-1936), the Civil War (1936-1939) and the beginning of the dictatorship (1939-1975). The economic policy after the Civil War follow the fascist trend of self-sustaining with bases of imperialist character. It was an economy, as it happened in Ireland, that had as a main economic activity the agriculture (Comín et al. 2002; Martínez Ruiz 2006; Biescas n.d.).

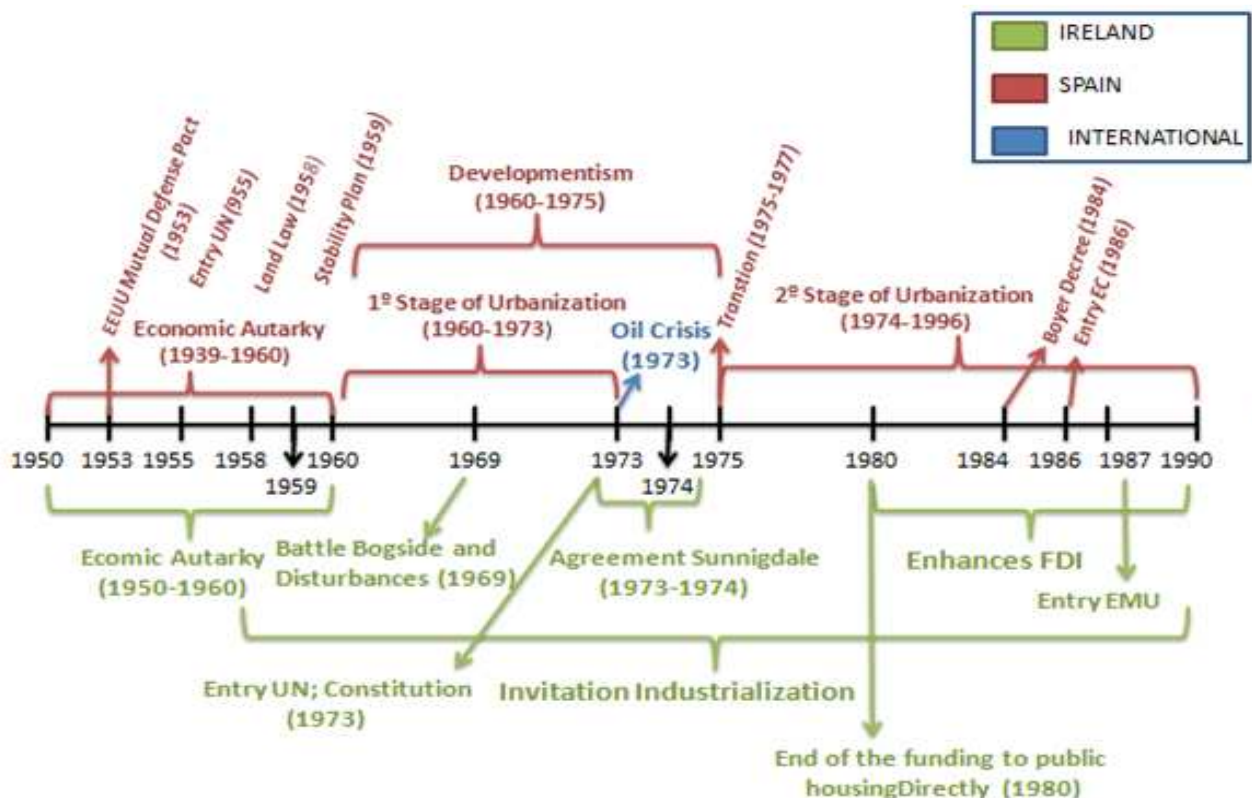
During and after the Second World War (1939-1945), Spain did not take advantage of the international division of work and did not benefit from the operations of Marshall Plan (1947). This would have avoided the problem of delay in the economic deployment in several years and improved the economic possibilities avoiding the economic delay. Autarky crashed into economic rationality, trying to protect the national production by spacing from the competence with the foreign capital. Due to this, Spain has taken long to join international organizations, such as UN in which it entered in 1955 (Comín et al. 2002; Biescas n.d.).

Due to the late industrialization, until the thirties there were urban problems. Those start to reverse by means of expansion districts, internal reforms, among others, more in the area of infrastructure. Between the thirties and the crisis of 1973, it is when the financing system is generalised together with a process of rural exodus (Biescas n.d.; Comín et al. 2002; Martínez Ruiz 2006).

2.1.2. 2º Period (1950-1990)

Below we will explain in detail the most relevant facts from 1950 to 1990 that appear in the following time axis.

Figure 2: Time axis of Ireland and Spain from 1950 to 1990:



Source: Prepared by the author.

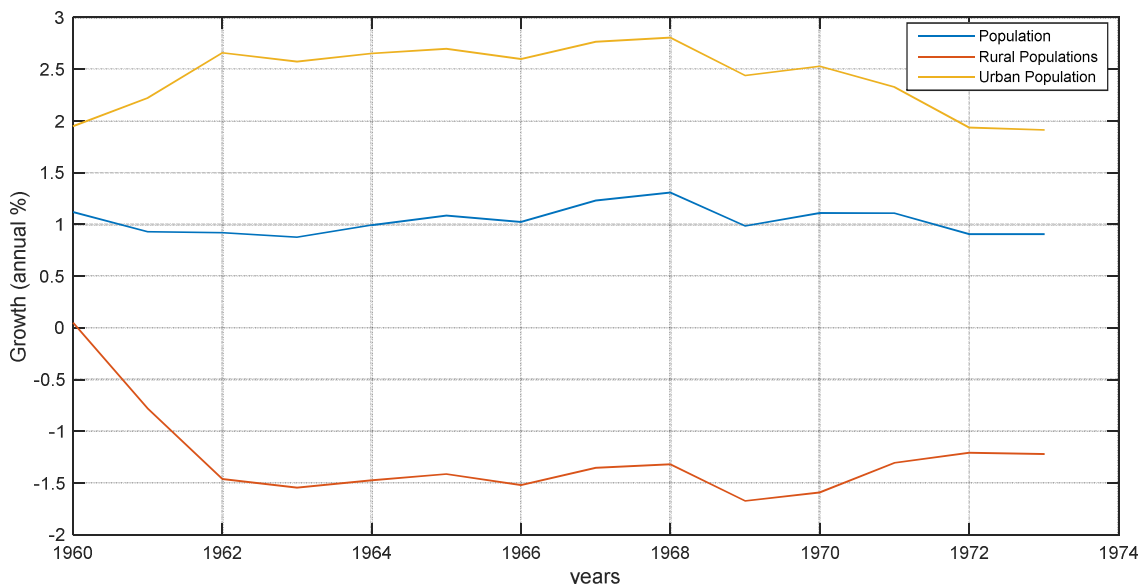
As we can see in Jesús González' article (2010), Spain was delayed in the process of urbanization in relation to other countries, since this happened in the sixties. The reasons for this delay were the political and economic situation.

In the time of the dictatorship, economic strategies were divided in two parts: economic autarky (1939-1960) and development period (1960-1975). For this reason, it is from the development period when there are changes in the national economy such as the Stabilization Plan (1959). Besides, the economic strategy changes with the exterior: the incorporation to the ON in 1955, the agreement of mutual defence with the USA in 1953, etc. All this shows an opening to the exterior. Furthermore, a policy focused on the modernization was done in which the tourism sector was highlighted (González 2010).

In 1960 the process of metropolitanization starts, which in comparison to other Western countries, it is the moment when the economic changes in the dictatorship and foreign policies took place. In demographic and territorial terms, we can consider the first period of urbanization (1960-1973) that is characterized by a growth in population and concentration.

The density of the population grew a lot during this period due to the rural exodus; the population in rural areas diminishes and grows in big cities. In Graphic 1, we can see this behaviour how the growth of the urban and rural population behave in the opposite direction and give rise to the growth population. Besides, this goes hand in hand with childbearing increase which can be observed in the growth of population, where there is a quite high positive growth rate between 1966 and 1969. The areas with more population are the ones which have better economic situation in which we can highlight the north areas and the big cities (González 2010) .

Graphic 1: Percentage of annual growth of population, urban population and rural population in Spain from 1960 to 1973.



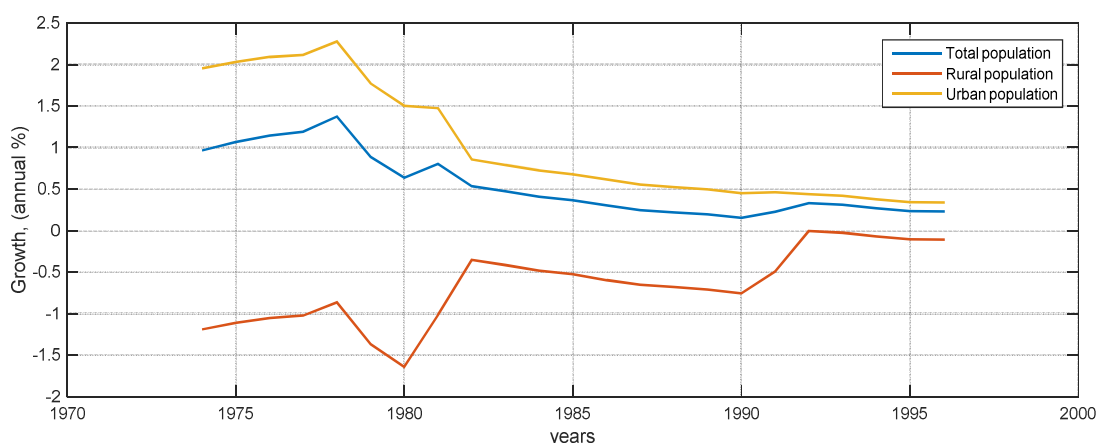
Source: Prepared by the author on the basis of data supplied by INE.

There were initiatives aimed to the construction of residential and industrial infrastructure. At the same time, communication and public services were improved whereas the private area focused on the urban development of city centres. These shifts were led to city centres of Barcelona and Madrid. But there were exceptions in the south, since it was a territory with little industrialization and an economy linked to agriculture and stockbreeding, part of the first sector.

The arrival of the post industrial productivity system has coincided with Urban Planning General Plans, based on the urban model of the Land Law in 1958 and its successive reforms during the nineties have consolidated it, reaching the objective of liberating the land (Rullan 1999; González 2010).

After the worldwide crisis of the petroleum in 1973, a new capitalist cycle is produced where we find a great economic growth and gives rise to a new period of metropolization. In the second period from 1974 to 1996, there were modifications in the patterns of land use in the cities, first in the big cities and later it expanded to seaside areas of the Mediterranean Sea. This period is different to the previous one due to the slow population growth, except in the small rural areas where the density of the population increased. In Graphic 2, we can see how rural population decreases, and the total population follows the same trend as the urban since, although they have positive growth rates, it grows more slowly (González 2010).

Graphic 2: Percentage of annual growth of population, urban population and rural population in Spain from 1974 to 1996.



Source: Prepared by the author on the basis of data supplied by INE.

During the eighties, in Spain there was a process urbanisation, together with a rural exodus, as we can observe in Graphic 2, there is rate of growth. These shifts towards the city centres started with the rehabilitation policies of city centres. This period was characterized by a spatial growth, where rural areas increase their density. There are several reasons: economic growth, consolidation of the urban process, revolution of communications, transport systems and an increase in tourism (González 2010).

After transition (1975-1977), Spanish economy suffered a period of internal crisis with zero growth, inflation rate of two digits, high unemployment, and deficit in public administrations. Whereas from 1985 until 1989, it started a period of economic recovery which coincided with joining of Spain to the EEC in 1986. During this period inflation moderates, employment is created, public deficit improves and Spanish industry starts to behave more dynamical (Comín et al. 2002; Fernández 1993).

In relation to the demographic area, the expectations of increasing the property started in the democratic period of Spain stimulated by Decree Boyer (1984) which was focused on liberating the market and protecting the vulnerable groups. It had tax incentives for house property but repressing even more the renting market (Heras 2013).

With regard to Ireland, the government interfered in order to decrease unemployment rate by means of subsidies to agriculture activities, and at the same time, to slow down emigration. Besides, as we have claimed before, from 1950 to 1960 they applied an economic strategy based on economic autarky (Battel 2003).

On the other hand, there is a strong dependence from Ireland to Great Britain. Therefore, one of the objectives of the Irish government during this period is to weaken or end up this dependency. The measures that they took in order to achieve it were by means of tariffs and other non-tariff barriers such as import licences to foreign trade in order to protect national enterprises by raising the prices in foreign products. The purpose was to increase economic activity in Ireland and therefore, increase employment (Battel, 2003).

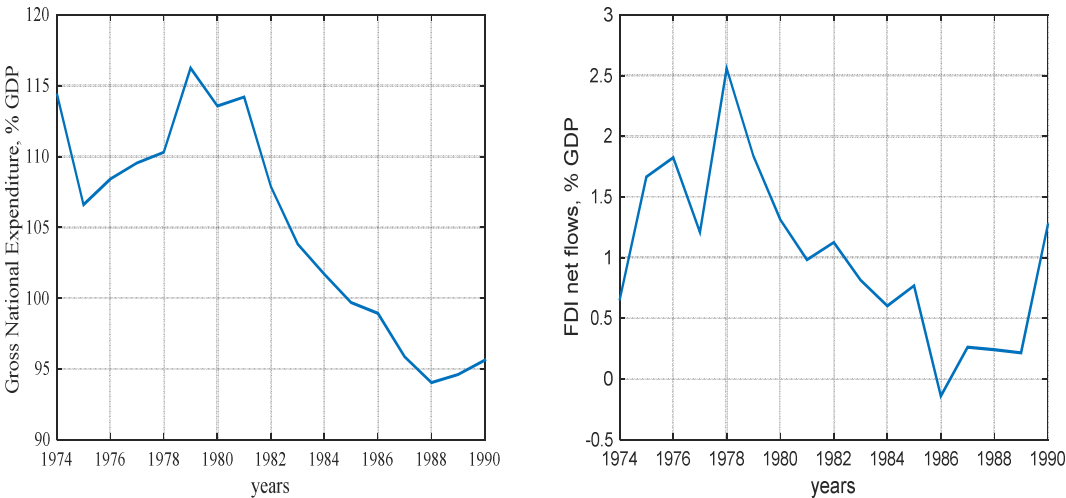
Between 1958 and 1973, there was a change in the economic strategy in the country through industrialization by invitation considering wrong the previous invitation. As Report of the Economic and Social Commission shows, Irish economy needed foreign private investment in order to end up with unemployment and emigration. For this, during this period Industrial Development Industry (IDI) is used as a tool to attract the attention of foreign direct investment by means of subsidies, secured loans, tax incentives, tax free import allowances, repatriation of benefits or sharing the property of national enterprises, as main measures. National enterprises got a third of the financing given by IDI (Battel, 2003).

In 1973, Ireland joins the European Economic Community (EEC) where it would become part of a unique market being an Irish economy without productivity capacity, capital and technical knowledge, in order to take advantage of the opportunity that the broadening the market gives. For this, in 1977 it eliminated the protective tariffs that still existed. This meant that in 1980, 40% of national enterprises had closed down since they were not competitive enough and IED was increased.

Ireland saw its economic future linked to international multinationals. In 1973, Irish property and foreign enterprises represented 67.8% and 32.2% respectively. Whereas in 1994, Irish property was 56%, decreasing 11.8% percentage points in this period. While in 1994, foreign property enterprises were 44% increasing the same quantity as the Irish properties diminished during this period (Battel 2003).

This made that the country had to continue with the foreign dependency mainly with Great Britain and the USA as a consequence of industrialization practically non-existent. The percentage of public expense in relation to GDP contradicts the government participation in the development: in 1960 it was 27.9%, whereas in 1975 it rose to 47.3%. These data show an increase in the public expense promoted by the entrance to IED and that are not produced by internal activity. Graphic 3 shows that Gross National Expenditure and IED follow the same trend, since the first one attracts the other (Battel, 2003).

Graphic 3: Gross National Expenditure and Foreign Direct Investment expressed as % of GDP in Ireland from 1974 to 1990.



Source: Prepared by the author on the basis of data supplied by OECD.

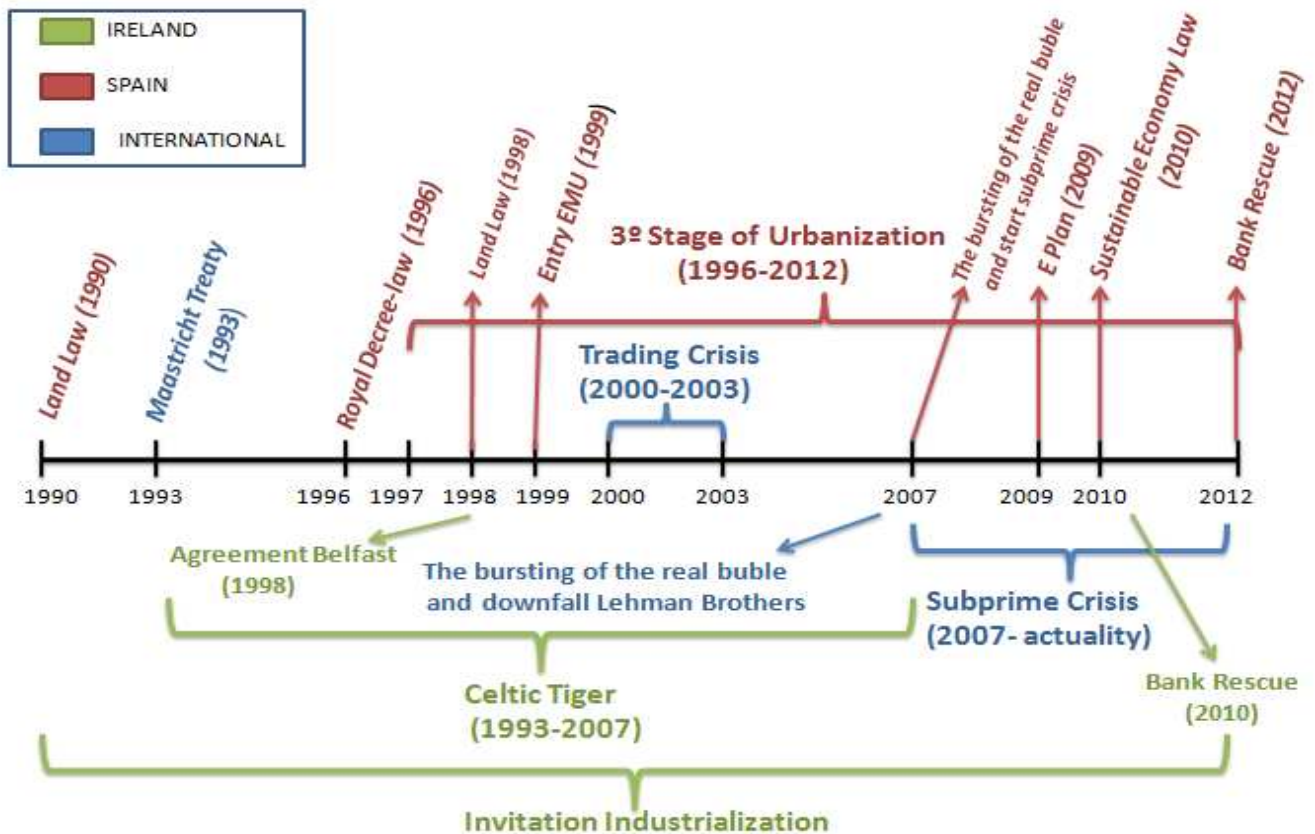
During the eighties, Ireland had as strategy to attract foreign investment through liberating the banking system by means of eliminating the capital control and tax allowances. This followed the previous trend and meant an increase of Foreign Direct Investment (FDI) and the foreign commercial services. It also followed a regulatory position based on the one from Great Britain which stimulated risky activities (Heras, 2013).

In 1980 in Ireland, direct financing of houses is eliminated and replaced by other indirect techniques. This produced a strong and continuous demand on private property which linked the bonds between local governments and developers, which promoted corrupt financial transactions for rezoning on land, permits and building contracts (Heras, 2013).

2.1.3. 3º Period (1990-2012)

Below we will explain in detail the most relevant historical facts about Ireland and Spain from 1990 to 2012 that appear in the following time axis.

Figure 3: Time axis of Ireland and Spain from 1990 to 2012:



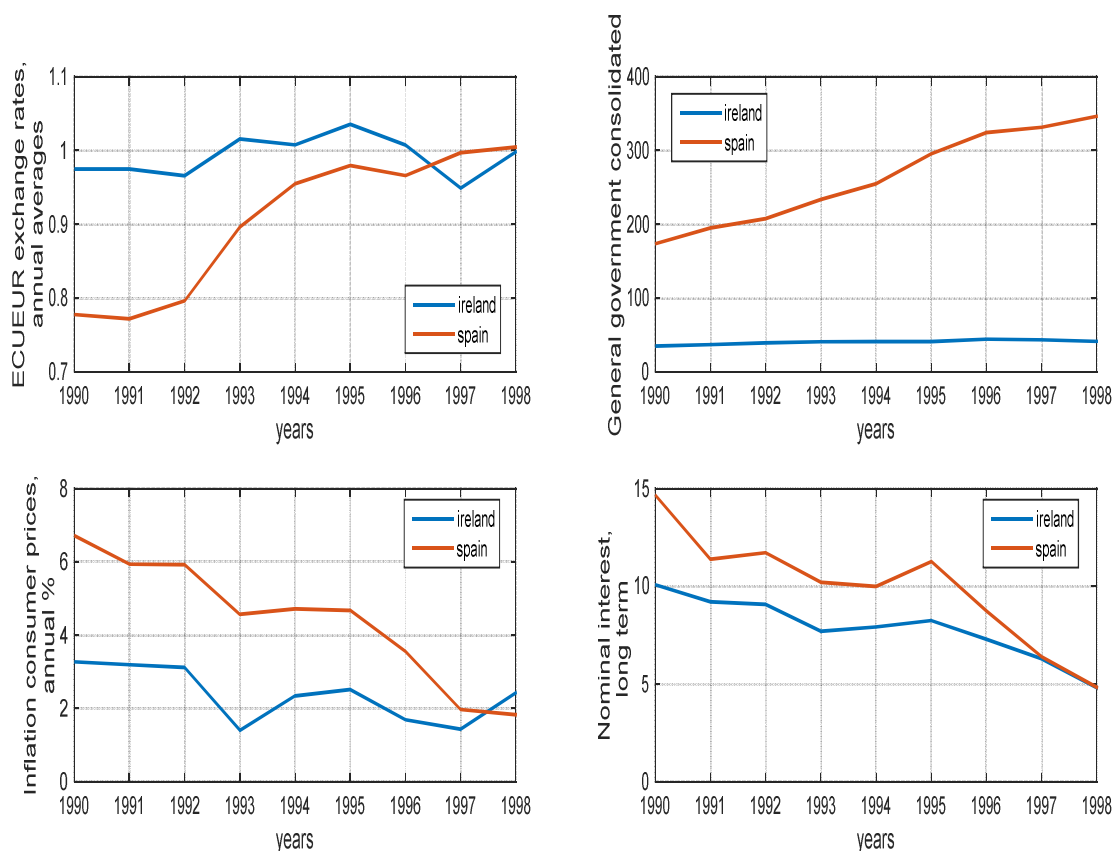
Source: Prepared by the author on the basis of data supplied by Battel R. and Gonzalez J.

In 1993, Maastricht Treaty came into force which indicated the criteria to follow and the beginning of the political integration and the start-up of the Economic and Monetary Union (EMU). Ireland as well as Spain are part of EMU and of the Euro area since 1999, which was a key point for the meeting trend of these economies, since both of them had to accomplish the same convergence criteria (Hamann & Kelly, 2007).

Those convergence criteria to take part of the EMU are the following: prices stability controlling inflation, public deficit cannot exceed 3% GDP, exchange rate with scarce fluctuations during two consecutive years, and long-term nominal interest rate cannot exceed 2%. This meant a unification process of monetary policies in member countries (Hamann & Kelly, 2007).

In Graphic 4 below, we observe the convergence indicators in Spain and Ireland during the period from 1990 to 1998. In it we can see that both countries follow the same trend to converge in convergence indicators of Maastricht Treaty, except public debts. In this one, Ireland has stable levels during all the period whereas in Spain, it increases over the years and has values that double the ones in Ireland.

Graphic 4: Macroeconomic indicators of Maastricht treaty in Spain and Ireland from 1990 to 1998.



Source: Prepared by the author on the basis of data supplied by World Bank.

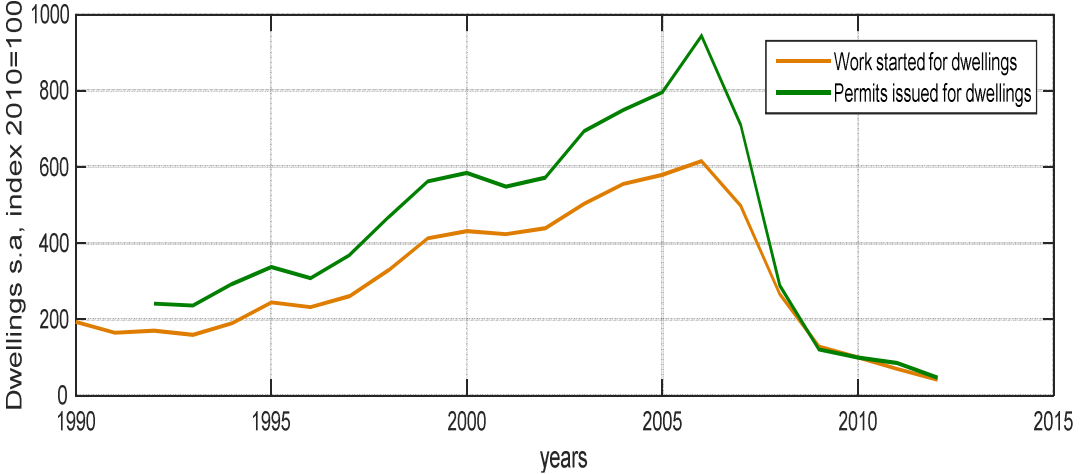
Estas Those had consequences, such as low interest rates fixed by the European Central Bank which has as objective the growth of the biggest economies. But, this had an unexpected effect: the growth of peripheral economies as it is the case of Spain and Ireland whose low interest rate opened the entrance of capitals, increasing the domestic demand and at the same time, external inflation. Also, this improvement in the competitive meant an increase of international loans which was mainly led towards construction by means of national loans (Heras, 2013).

At the beginning of the nineties, several international projects were put into operation in Spain. Among them we must highlight the International Geosphere-Biosphere Programme (IGBO) in 1993 which dealt about the land use. Although the most important programme was Information System about Spanish Land Use (ISSLU) whose objective was to incorporate the information of Autonomous Communities and the information of General Administration of the State through a data base about the cover and land use (González, 2010; Rodríguez & Bustillo, 2010).

Furthermore, foreign real estate investment has grown during the nineties representing 40% of the foreign direct investment. This contribute to the real state bubble as well as to finance the deficit by bank account (González, 2010; Rodríguez & Bustillo, 2010).

In 1997 in Spain, the third period of metropolization starts. It is characterized by the increase of construction activity as we can observe in Graphic 5, where there is a growing trend towards the burst of real state bubble (2008) when it plummeted in the case of jobs as well as in the case of permissions granted for building houses having the base the year 2010. Besides, the increase in land prices is also a key element, as we will deeply see in the section of Spain. The real price of the house has the price of the land, it is an unavoidable cost, and it starts increasing until the burst of the real estate bubble (2008) after which it drops dramatically. One of the key factors of this period is that urbanization is not just restricted to big cities, which led to the creation of the real estate bubble from 1998 to 2006 (González, 2010).

Graphic 5: Work and permits for dwellings in Spain regarding year 2010 as base (2010=100), during the third period of metropolization (1990-2012).



Source: Prepared by the author on the basis of data supplied by OECD.

The bubble was supported by legal framework, by means of laws and decrees with neoliberal character that promoted construction. When *Partido Popular* formed government in 1996, a decree law is instituted with the objective of liberating and reducing the price of lands due to the large range of lands for construction. Those were measures concerning land ownership and trade associations. The following year, another decree law was instituted with the objective of increasing the land offer and facilitating the process of urbanization (Gonzalez, 2010).

Land Laws of 1990 and 1998 took over autonomous communities when taking urban decisions, which follow a post industrial trend with neoliberal character towards the

liberation of the land changing the methodology of classification of land, following government tendency (Rullan, 1999).

Besides, the south area became one of the most dynamic areas in terms of population, motivated by the real estate boom due to tourism in these areas. We have to bear in mind that it recreates again a growth in population until the burst of the real estate bubble (2008), but this time caused by the increase of immigration which changes urban tendencies (González, 2010).

In the period (2000-2003) there was a stock market crisis. The house transformation was a shelter for assets and produced the following cuts in interest rates. The reason for this were the cheap prices of houses and due to the abundant liquidity, real estate investment was very attractive for capital profits, together with its favourable fiscal conditions. The benefits over GDP and employment made governments not stop the bubble (González, 2010).

In 2000, a decree law was approved where they pretended to solve the problema of inflation which was happening in house prices but on the other hand, it followed the same direction as the previous laws. With this decree, real estate and transport sectors are liberated, which are not included in previous laws although it is related mainly with the real estate sector. The argument for this measure pretends to correct the inflexibility of the market in order to promote the offer of lands in a more flexible market (González, 2010).

Between 2000 and 2003 there was a flight of capitals that was mainly funnelled to real estate sector, which absorbed disproportionately international financial assets. Spain attracted international speculators due to its potential in residential tourism. It became the European Union country with more houses per on thousand inhabitants, most of them were empty and the majority were holiday homes. The expectative in relation to land, house and dizzy rise of prices give rise to speculation (González, 2010).

In 2004, socialist party reached the government and took measures to stop inflation in construction prices, acting over the offer through the construction of public houses. But, as the prices problem came from market, the effect was barely noticed. As we can see in Graphic 6, on the side of loan demand of construction companies as well as homes, these measures did not have any effect since they continued increasing until the burst of the bubble (2008). The law applied for this government in 2007 tries to eliminate previous laws key aspects, diminishing the land offer, valuation of the land in base of real terms impeding the effect of speculation in the price, increasing the offer of public house, as main objectives (González, 2010).

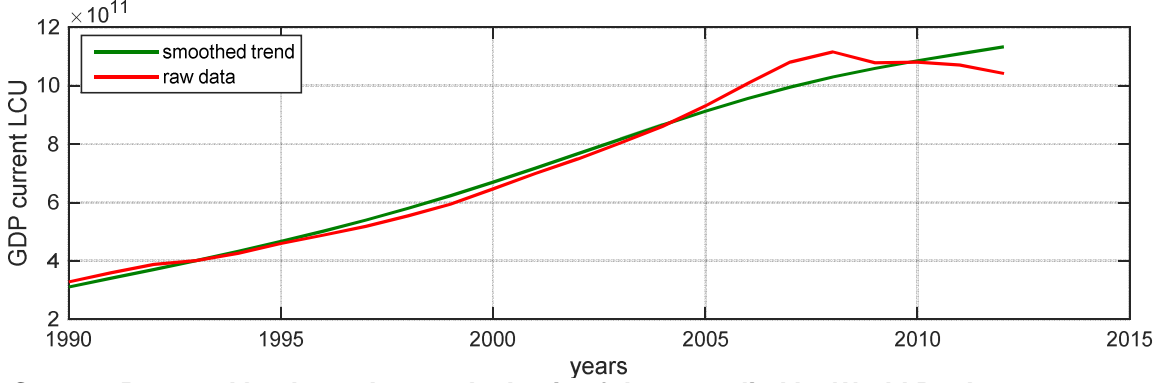
Graphic 6: Lending for house purchases (AAR) and loans to private entities of construction stock according to ECB in million €, in Spain from 2003 until 2015.



Source: Prepared by the author on the basis of data supplied by World Bank.

In Spain, the crisis of subprime and the fall of Lehman Brothers marked the collapsed of the real estate bubble which drove the housing market into the longest and deepest recession. In Graphic 7, we can observe the real data and economic trend of GDP in Spain, as we can see how from 2008 the countries gets into a great recession. From the beginning of the crisis, it has been remarked the necessity of change of Spanish economic model in order to stop the leadership of the real estate sector. This provided support towards the enterprises in serious breakdown after the construction crisis (Gonzalez, 2010).

Graphic 7: Trend and real data of GDP calculated by Hodrick-Prescott in Spain from 1990 until 2012.



Source: Prepared by the author on the basis of data supplied by World Bank.

The main measure has been to apply the Plan E (Spanish Plan to stimulate economy and employment) which was approved in 2009 in order to cope with the situation and financed with the public deficit. The objective of this measure is to support enterprises and families,

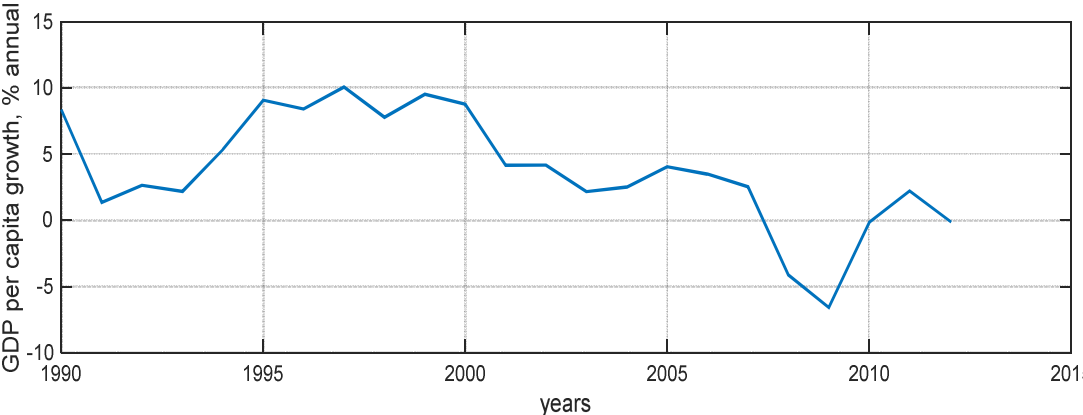
promote employment, financing and budget allocations, and modernise Spanish economy (Gonzalez, 2010).

In 2010 the government applied the Sustainable Economy Act in order to make structural changes in Spanish economy. This pretends to stimulate the economic growth by constructing infrastructure and globalization of Spanish economy, fact that shows inconsistencies, tendency that usually happens in Spanish laws. It is still based on real estate sector as a tool since they use tax deduction in order to increase the rent. In 2012 they ask for the bank bailout amounting to 100 million €, so the government nationalises the bank debt (Gonzalez, 2010).

As Kitchin .R, Hearne .R, and O’Callaghan .C claimed, in Ireland at the beginning of the nineties, the main indicators of Irish economy were how GDP and employment start to increase. This means the beginning of the formation of Celtic Tiger (1990-2008). Between 1991 and 2006 the population grew in 704.129 inhabitants that is 20%, whereas the number of houses was 440.437 corresponding to 43%. This caused an increase in the intern demand which was canalized mainly to construction as we can see in graphic 19, generating an inflation in their prices (Gottheil 2003; Battel 2003).

During the second half of the nineties, Ireland experienced a growth rate equal or higher to “Asian tigers” around 10% annual, as we can observe in Graphic 20. Furthermore, net emigration is reduced a lot and at the same time, immigration flows are increased as the economy grows (Kitchin .R, Hearne .R n.d. 2015; Battel 2003).

Graphic 8: Percentage of annual per capita GDP growth in Ireland from 1990 until 2012.



Source: Prepared by the author on the basis of data supplied by World Bank.

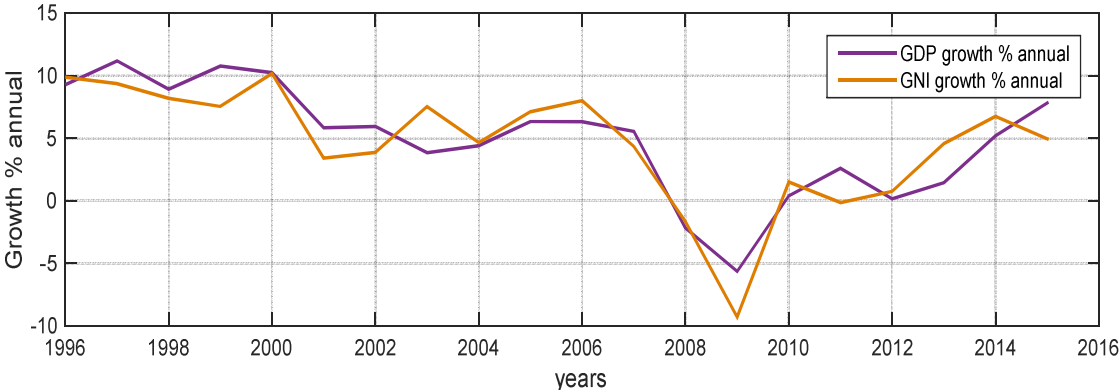
incentives in order to promote the rise of property. This, together with cut measures in popular taxes, stimulated construction. Besides, incomes were strengthened. But, once the crisis burst, incomes fell down and these previous tax reductions led to 40% of employees did not pay taxes over the rent as an example of the serious financing problems of the

state. Those facts had as a consequence an increase of government debt as we will see in depth in the section of Ireland (Heras, 2013).

Foreign direct investment (FDI) which Ireland received has played an important role in industrialization but it has also been a statistic mirage. Mainly, the industries that took part of this investment were computer industries, chemists and pharmaceutical products' enterprises, what we will develop in the section of Ireland and in the comparative. FDI is increasing as years pass by, it even increases more, although with many fluctuations, from the crisis (2008 until nowadays) (Battel, 2003).

The added value of Irish GDP was generated by the multinationals, mainly American, that inflated the added value by internal prices using taxes differentials. As we can see in Graphic 9, GDP is always with growth-stock values superior to GNP due to distortions discussed before. In 1999, Foreign direct investment (FDI) represent 88% of its capital formation and 20% of GNP (Battel, 2003).

Graphic 9: Percentage of annual GDP and GNP growth in Ireland from 1996 until 2015.



Source: Prepared by the author on the basis of data supplied by World Bank.

As we have mentioned before, in 2007 with the fall of Lehman Brothers, the subprime crisis starts that is produced in the USA but it spreads worldwide, and it specially started a bank crisis in Spain as well as in Ireland. For both countries it meant the burst of the real estate bubble and the collapse of the banking system. In 2010, Ireland asked for a bailout of 85,000 million € and in 2012, Spain asked for a bailout of 100,000 million €, in both cases to cover the debts of their respective national banks, but in Ireland it was not only in this sector but also to government level (Kitchin .R, Hearne .R n.d. 2015; Akin et al. 2014).

Although the crisis of subprime loans was decisive in the banking crisis, none of the countries was exposed to those loans. The economy of both countries was exposed to massive loans about property due to the bubble of their markets, which were focused on

the attractive of construction and the speculation that was formed during Celtic Tiger (1993-2007). We must underline that not only inflation on the prices was the problem but also the excess of offer (on construction enterprises) and demand (on families), and the demographic area (Kitchin .R, Hearne .R n.d. 2015; Akin et al. 2014).

In Ireland, the factors that explain the recession were: impetus of construction market, its deregulation, low taxation to enterprises, and corruption as the most prominent. Irish politics was uncoordinated and fragmented and it encourage the development of interests with little control which allowed the bubble impetus (Kitchin .R, Hearne .R n.d. 2015).

The fall of Irish economy due to the crisis has had serious effects over the population between 2007 and 2011, unemployment rate increased significantly from 4.6% until 15.1% respectively, while the families suffered from salary cuts and tax collection increased in million € (Kitchin .R, Hearne .R n.d. 2015).

This meant an increase of the debts to local authorities, towns and municipal counties of 32.8 million in 2008, and 58.8 million € in 2011. Besides, the expense in social houses promoted by Plan for Urban Regeneration was reduced 80% between 2008 until 2013, from 1,300 million € until 275 million € respectively, what supposed a decrease of the expense an 80% in this period (Kitchin .R, Hearne .R n.d. 2015).

Irish politics in relation to the crisis followed the same line of performance that produced it, a neoliberal economic strategy protecting the interests of the banks and the development sector by means of banking bailout (2010) and National Agency for the Management of Assets (NAMA 2010) which was created to absorb the “toxic” assets and “garbage” loan, as well as to manage the confiscated goods. They diminished the resource endowment and did not produce almost any change in the urban and house normative, following an economic policy of austerity (Kitchin .R, Hearne .R n.d. 2015).

2.1.4. Historical comparative between Spain and Ireland

Below we will analyse the similarities and inconsistencies we have observed in the historical background we have discussed before.

During the first period (1922-1950) Irish economy as well as Spanish economy had their main activities related to the primary sector. Besides, both economies had a late

industrialization in comparison to the rest of Europe, since in Spain and Ireland it starts in the sixties.

This is due to the economic strategies focused on self-sufficiency that both economies had during this period. During 1939 until 1960, Spain applied an autarky economic strategy in Franco's dictatorship. Whereas, Ireland applied autarky when it ended the comparative advantage strategy which was from Second World War (1939-1945) until the sixties.

During the second period (1950-1990), both economies change its economic strategies focused on an international openness, but in a different way. In Spain, it starts the period of development in Franco's dictatorship (1960-1975), tourism is promoted as main activity for the economy and the country enters in international institutions as UN (1955). In Ireland from 1958 to 1973, they applied the economic strategy of industrialization by invitation, with the objective of attracting foreign direct investment what increased a lot the activity of foreign enterprises, contradicting the objective of the previous strategy, incrementing foreign dependency.

In relation to the urban plan in this period, both countries promote private property. In Ireland, direct financing of the houses is eliminated and they keep it in an indirect way. At the same time, from the eighties the links between promoters and local governments are increased, which are in charge of stimulating the private property. In the case of Spain, there are two periods of metropolization from 1960 to 1973 and from 1974 to 1996. The first one is characterized by a population growth and concentration in big cities, which came together with land reforms. Whereas in the second period, the population growth is slow, but it promotes the regulations on liberated land and gives tax incentives to private house.

During the third period(1990-2012), both countries took part in European Union, that is why in 1993 they must accomplish the convergence measures about inflation, public deficit, exchange rate and interest rate, for subsequently having the same monetary policy and common currency.

Furthermore, in both countries they suffer the real estate bubble. In Spain it was formed from 1998 to 2006 and in Ireland from 1991 to 2006. The factors that produce them in both cases are inflation in construction prices, tax incentives to construction and the difference between loans that offer the bank to the petitioners and providers of house. Besides, in both cases there are low interest rates, cheap investment together with an excess of liquidity which leads to construction.

In 2007, with the subprime crisis the burst of the real state bubble is produced in both countries in which they start a big economic recession. Both countries apply measures in order to come out of the crisis, in Spain the Financial Sustainability Law (2010) and in Ireland, National Agency of Management of Assets (NAMA) as the most important. Besides, they both ask for a bank bailout in 2010 Ireland and 2012 Spain, topic that we will deal about in detail in the following sections. Nevertheless, we must bear in mind that, since they have the same monetary policy, the differences will be in fiscal policies.

We can conclude that both economies have very different historical, economic and political situations, but over time and due to globalization, its tendency to converge increases over the years. For these reasons, we will analyze in detail the case of real estate bubble in each country in the following sections.

3. The housing bubble boom and trust, origin and development

3.1.1. Spain

Real state bubble is the greatest speculative phenomena of capitalism. As we have discussed in the previous section, its formation was produced from 1998 to 2007. Spain was an attractive country for this inversion due to tourism which caused that it absorbed international financial actives in a disproportionate way. The real state sector became a main factor in the growth of GDP, since in 1992 it represents the 76% of the total home actives and in 2002 it reached the 80% (González, 2010).

Spain was living beyond their means and was financed from the exterior due to its low interest rates, which was motivated with its entrance to the European Union. If we separate the sectors during the period 1995 and 2008, the variation rate of building in GDP in current prices was 268.07%, in comparison to agriculture 38.16%, energy 63.67%, industry 99.62%, and services sector 152.22%. During this period Spanish real state bubble was created, motivated by a macro economically favourable economy, in a comfort country of foreign financial actives, with legislation about the land focused on its exoneration, and with interest rate cuts (Gonzalez, 2010).

It is affected by economical aspects as well as demographical, although the main factor for the creation of real state bubble was the use of the housing as a speculative inversion. Besides, the real needs of housing demand have neither been covered by residential property. This speculative game has caused an increase of the prices and has not covered the traditional housing deficit in relation to Spanish population. This situation is aggravated when taking into account the little investment in social housing and the regulations about property and land (González, 2010).

The causes behind the unequal distribution of real estate activity in the territory were the growth of the cities and the process of becoming metropolis which have been previously discussed (1996-2012). Besides, other causes were the shifting population to the seaside, the importance of second housing and residential tourism (González, 2010).

The houses building and prices follow a pro-cyclical pattern as we can observe in Graphic 10 in both of them fall in a vertiginous way from 2006. The impact of real state crisis had awful effects on employment, since not only the unemployment rate rose to levels of 1993 or 1994, but also, one in four belonged to housing sector. In the Graphic 10, we can see the evolution of unemployment and the building workers who are a very

significant factor in Spanish unemployment due to the burst of real state bubble (González, 2010).

Graphic 10: *Gross Formation of Capital construction in LCU, RPPIs, people employed in construction and unemployment Spain from 2006 to 2015.*



Source: *Prepared by the author on the basis of data supplied by World Bank and ECB.*

Between 2002 and 2006, a 20% of the GDP growth in Spain was due to construction which shows the positive relation between economic growth and construction in the country in this last third of century. On the other hand, the effect over the housing prices during the formation of the bubble had an increase of 212.41% from 1995 to 2007. During the real state bubble period, the prices doubled in relation to families' acquisitive power (González, 2010; Akin et al., 2014). According to the economist J. García, this evolution on the prices is due a 60-65% to common factors (population, incomes, interest rates, occupation rate, etc) and a 40-35% to speculative factors of the real state bubble during the growing phases of the cycle.

The fact that the families could buy properties with these prices is on account of the available loans and average incomes. Both variables follow a similar trend, besides the pro-cyclical behaviour. Although the reasons to buy a property were just to live in it until 2011, it is since then that they are used as investment properties with speculative

means, fact which makes the prices dependable on the expectations they have on them. This demonstrates that the increase on the properties' prices and the construction activity is not due to the shortage of housing supply as it is normally the main argument, but this is merely speculative ((Fernández-Kranz & Hon 2006; González 2010).

In the data from Land Cover 2000, the artificial surfaces (urban and other types of artificial surfaces) represent 29.24% more than 10 years ago. This means a third part of the surface which had been urbanised through the story of Spain. Together with Ireland and Portugal, Spain took part of the European countries with a higher growth in artificial surfaces at a rate of 1.9%. From the burst of the real state bubble in 2007, measures to fight against the excess of urbanization and urban planning of speculation control the prices of properties and lands are taken (González, 2010).

As we have seen in the previous section, there are contradictions with the economical policy. Although construction is considered as the cause of the current economical crisis, it is used as a rehabilitation component; we regret the increase of artificial land and the extensive urban models, but we focus our governmental policy on building infrastructures; we criticise the economical dependency of the residential construction sector, and in 2008 we eliminate the taxes on capital profits; a law in relation to land's valuations is approved, and its implementation is immediately delayed due to the influences of enterprises of real estate sector using territorial, urban and environmental policies, as corrective of the economical González, 2010).

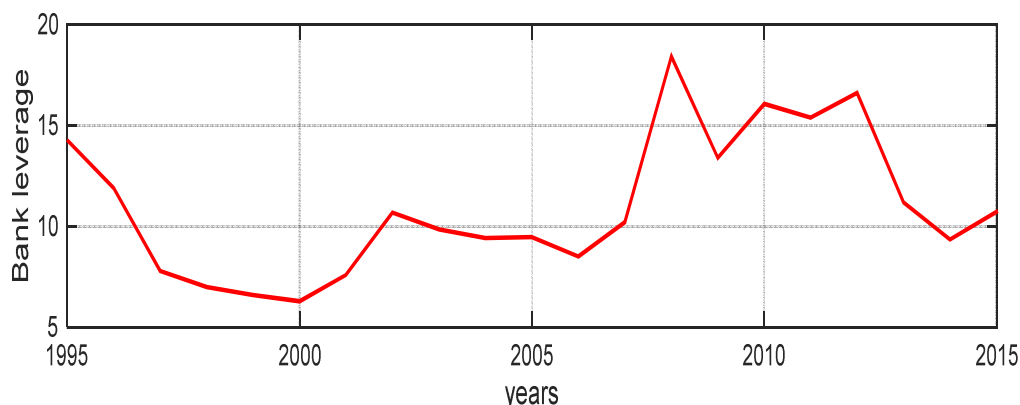
The burst of the real estate bubble did not come alone but accompanied by a banking crisis. As Akin O., Montalvo J., Villar J., Peydró J., and Raya J. discuss in their article "*The real estate and the credit bubbles: evidence from Spain*" (2014), the banking crisis are not a random phenomenon but they normally come with an overvaluation of actives and an excess in offers of credits.

As it happens in the case of Spain, it adjusts perfectly to this profile, where this banking crisis was mainly produced due to two main reasons. On the one hand, the over indebtedness of the non-financial borrowers, as well as families as enterprises, that over-exploit the banking system due to its weak banking regulations and to the credit facilities.

On the other hand, commercial banking exploited too much the leverage operations. as we can see in Graphic 11, those operations were incremented during the formation of the bubble and with its burst (2008) they begin to decrease. Through obtaining

European Central Bank funds, they financed their credit activity, without worrying about the payment of the just got debt. They just solved it getting again into debt, which led to a great debt in banking balances. We must bear in mind the savings bank, which lose their acts of charity, and they started to behave as commercial banks. This led to the reduction from 46, which were in 2005, to only 2 saving banks in Spain, administered by FROB.

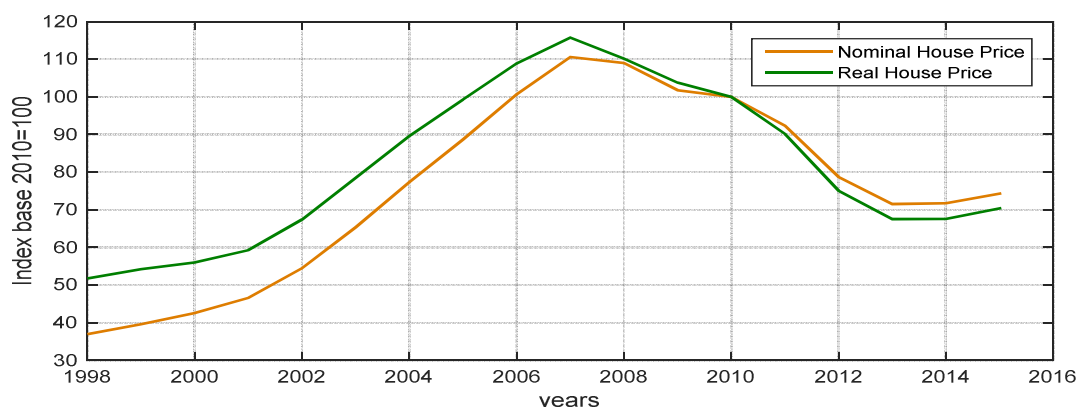
Graphic 11: Bank leverage expressed as percentage of net value from 1995 to 2015.



Source: Prepared by the author on the basis of data supplied by World OECD.

One of the reasons of the production of the real state bubble was the close relation between enterprises and financial institutions. Banks had much capital from enterprises especially of construction sector, since they were the ones who financed them which causes that the enterprises act in benefit of the bank and vice versa. The Bank of Spain advised not to give loans over 80% of the property. So, in order to get greater benefits, in properties' -taxations the prices were inflated by the assessors in order to both of them get benefits. Banks could lend more money and charge more in interests and commissions. On the other hand, construction enterprises saw an increase of the value of their actives and they had a greater range of benefit. While prices were getting inflated, the credit also increased and the real state bubble was formed, through the inflation of the house prices. In Graphic 12 we can observe this inflation through the differential of prices in nominal and real terms (Akin et al. 2014).

Graphic 12: House prices in nominal and real terms, expressed in base (2010=100) from 1998 until 2015.



Source: Prepared by the author on the basis of data supplied by OECD.

The ones who lost more were the families who asked for mortgages in order to purchase a house, especially in the case of Spain. Due to the difference of other countries such as the USA, the Mortgage Law of 1999 claims that if you cannot face the mortgage payments, the mortgaged property and the possible guarantees are expropriated. Besides, if the debt is still not paid off, you must continue paying it until settling the debt. In comparison with the framework policy of other countries, abusive laws are applied which suppose serious consequences in Spanish society and economy, as we have checked in the current crisis. (Akin et al. 2014).

From August 2007, with the fall of Lehman Brothers, the problems of bank liquidity in Spain started, being the beginning of the world economical crisis and the burst of the real state bubble. Due to the problems of bank liquidity, the European Central Bank had to invest more than 90 thousand million of Euros to the interbank market; even so, there was a tightening in the conditions of credit. From 2008, this produced a decrease in the housing price, that is, they were deflated due to the limitations in the credit that produced the burst of the real state bubble (Akin et al. 2014).

For all this, Spain was immersed in a deep recession, many families were not able to face the debts, the banks observed that due to the disinflation of the prices, their actives lose value and their sales were increased whereas the credit got complicated. But, the same commercial banks saw themselves at the edge of bankruptcy as they could not face the payment of the interbank loans neither the increase on the delay in payment. Therefore, a Spanish Rescue Fund (FROB in Spanish) or SAREB in 2008

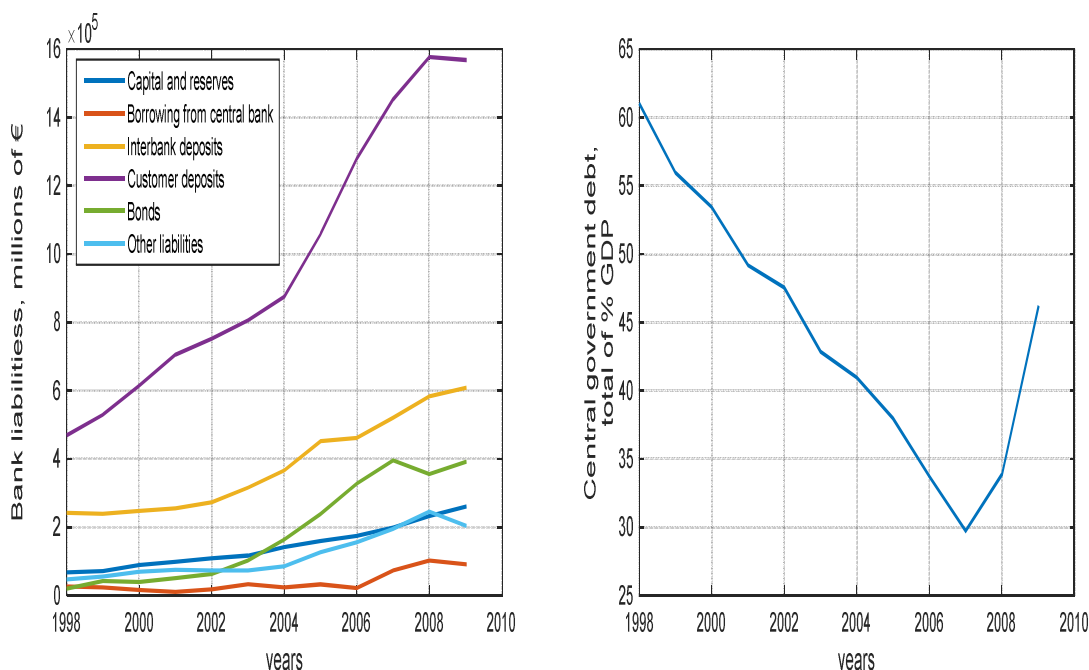
was created, which has as objective to reinforce and restructure credit entities. As we can observe in Graphic 32, Spanish banking entities are financed through leverage operations during the crisis (Akin et al. 2014).

The intensity of the crisis as well as the difficulty of recovery are caused by instabilities accumulated in growth periods, besides the great crisis of sovereign debt in euro zone, together with the previously mentioned difficulties. All these produced not only the reduction of housing prices but also the fall of GDP of a growth of 3.6% in 2007 and -0.1% in 2009, increasing the unemployment from 8.6% in 2007 to 24.6% in 2012, disposable income and wealth, sinking Spanish economy in a deep recession (Ortega 2012; Secretarial communication of the State 2012).

Spain, as it takes part of the Economic and Monetary Union (EMU), does not manage its monetary policy, then it loses its means to face the crisis, being left to taxation policies. The applied taxation policy starts as having an expansive nature through the increase of public spending, but from the crisis of sovereign debt in 2010 in which Spain is affected due to having a very high risk premium, a contractive political policy is applied, using the austerity policy in order to get a growth. This is applied through the increase of taxes and cuts in health, education and pensions. Besides, a labour market reform is done which empowers temporary jobs, facilitates firing and potentiates unstable jobs (Ortega, 2012).

Monetary policy applied by ECB was at the beginning through conventional ways but also, others non-conventional. Also, non-conventional ways intervened in the lending market, in a first moment expanding the expirations, providing liquidity in the interbank market. In 2012, ECB gave to Spain a bank bailout of 100,000 million of Euros, which was supposed to settle the banking debt, that is, it is nationalized. The objective was to restructure the bank system using Spanish Rescue Fund. In the Graphic 13, we can see the evolution of the bank liabilities and we observe that they have the opposite direction of public debt, since with the bailout, the bank debt is nationalised (Novales, 2010).

Graphic 13: Bank liability itemised in million of €, debt of main government as percentage of GDP from 1998 to 2009.



Source: Prepared by the author on the basis of data supplied by World Bank and OECD.

As we have discussed in the historical context, in 2009 Plan E was approved, in which 11,000 million € are invested and they are financed by means of public debt. This law has four objectives: modernize Spanish economy, help enterprises and families, promote employment, and financial and budgetary measures. Employment is promoted, as it has been previously stated, by means of public work, contradicting the strategy of modernising the economy since, it is still based on construction (González, 2010).

We have also talked in the historical context that the government, in 2010, applied the Law on Financial Sustainability as a measure of structural change, focuses on the economical rehabilitation and using the renting as an important key of the economic recovery. This law has been hardly criticised due to the contradictions it has. It is still being used in construction as a way for growing, although it is considered as a negative effect in the economy due to the current crisis. In 2009, renting in Spain represented 13.18% of the market, tax shifts are produced in order to boost it, but in comparison to the purchase of main housing, those are practically insignificant (González, 2010).

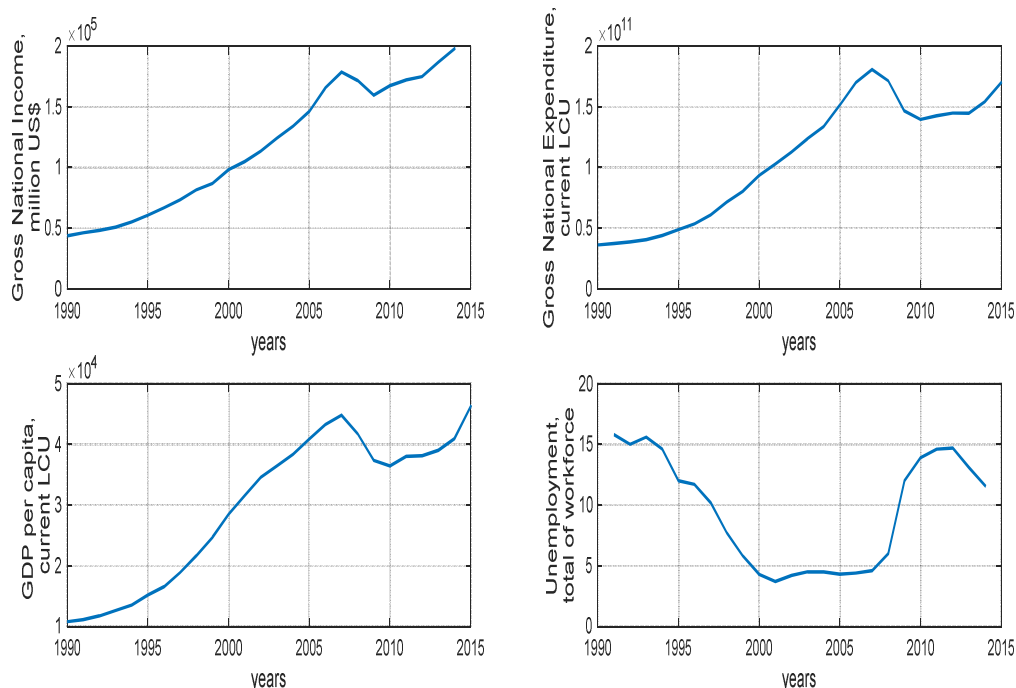
In 2011, a reform in the Constitution took place in order to include deficit and indebtedness limits. The following year, the bank bailout we have previously discussed was asked for, which led to a more serious second recession. Besides, the Stability and Growth Path was approved with the purpose of improving and controlling the

public debt. This decreased public debt by means of health, education and labour market reforms. This was followed by cuts in autonomous budgets and taxes increase, following a trend influenced by the euro zone of having an austerity policy towards growth. The ones with sovereign debt were strongly penalised for the low expectations in the country, having in the black week (1st June 2012) a risk premium of 536 points in relation to the German one. In 2013, Spanish external debt represented 159.7% of GDP, Pension Funds were used in order to face the payments of the debt (Ortega, 2012).

3.1.2. Ireland

In the last decades, Ireland has experienced a great growth in its economy, budget surpluses, gross debt over the GDP of 25%, sovereign wealth fund of 5,000€ per inhabitant and low unemployment. It was considered a model economy but, during the economic crisis and the burst of real state bubble in 2008, all those accumulated imbalances were highlighted in the growing cycle. As we can observe in the following graphic 14, all the macroeconomic indicators follow a positive trend until the beginning of the economic crisis.

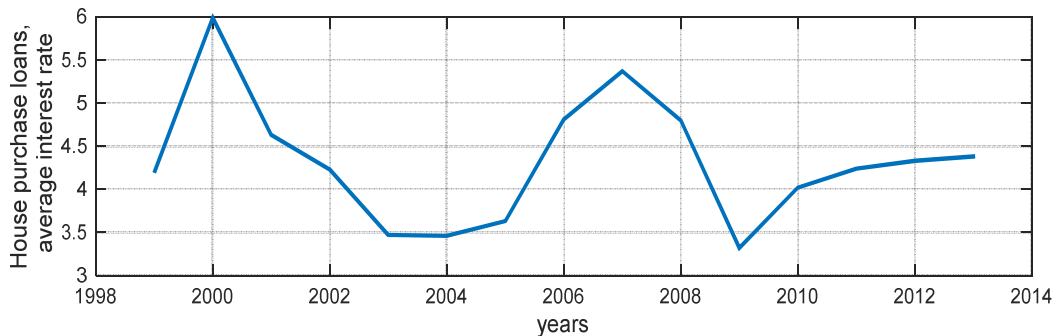
Graphic 14: Gross national income in the current currency, gross national expenditure in million of US\$, GDP per capita in the current currency, and unemployment as percentage of the workforce from 1990 to 2015.



Source: Prepared by the author on the basis of data supplied by World Bank.

In the property field, Ireland is the European country with the lowest housing stock per inhabitant. Besides, the growth of the population and the increase of the disposable income of the families is clearly an incentive towards the dedication of the resource growth to construction. Furthermore, mortgage loans are facilitated by means of reducing the mortgage rates from 10% to a historical minimum of 5%, as we have seen in graphic 15 (Whelan 2013).

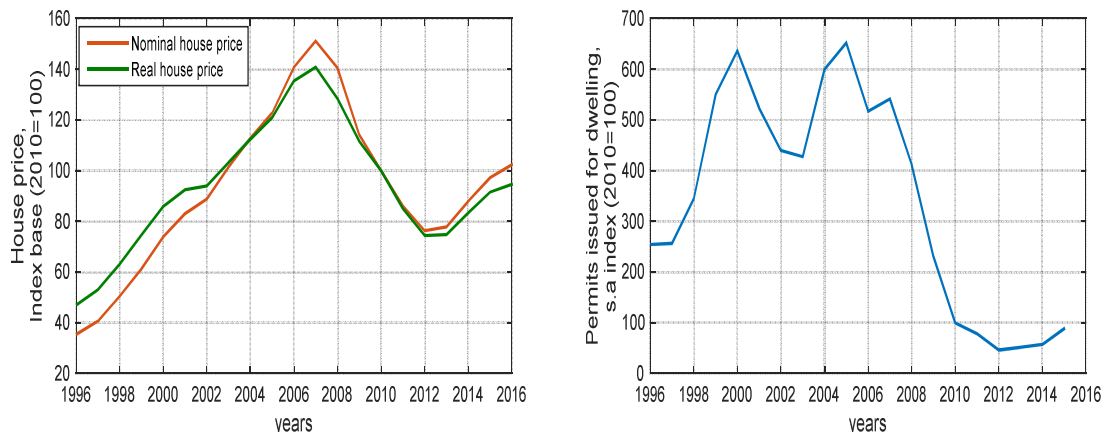
Graphic 15: Loans for house purchase at average interest rate from 1999 to 2013.



Source: Prepared by the author on the basis of data supplied by World Bank.

Between 1996 and 2007, house prices were fourfold as we can see in graphic 16 which compare the house prices in real and nominal terms, and the economic activity was focused on construction. It was strengthened by the improvements of macroeconomic indicators as important as GDP, and unemployment which produced a growth in the population. In 2007, before the economic crisis, the prices started to fall and it vertiginously reduced the activity in construction (Whelan, 2013).

Graphic 16: House price in nominal and real terms, and permits issued for dwelling as index base (2010=100) from 1996 to 2016.



Source: Prepared by the author on the basis of data supplied by OECD.

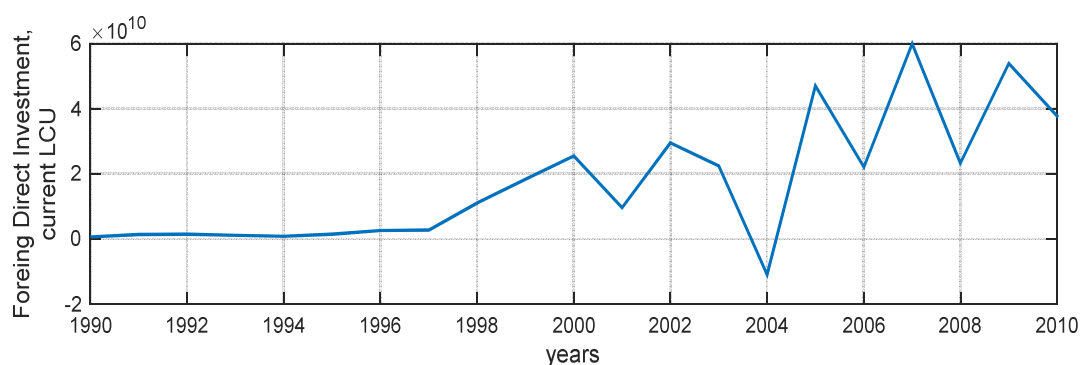
Despite the good expectations of a health economy, it showed many deficiencies in recession. In a growth period, a fiscal crisis happened where taxes were reduced and the public expense increased, but due to the crisis the dependence to the real state sector was apparent. There was a great loss in tax receipt and it led to an increase of the payments which had to be done in the social security with a high rate of unemployment, leading the country to a high fiscal deficit in 2009 which was 20% of GDP (Whelan, 2013).

Owing to this, a contractive fiscal policy was applied, there was a rise in income tax or VAT, together with a decrease of public expenses in 28.8 million €. Those adjustments were equivalent to about 6.270€ per inhabitant or 18% of GDP in 2012. It was one of the hardest contractive policies applied in nowadays period (Whelan, 2013).

The phenomenon Celtic Tiger was formed between 1993 and 2007, as we have previously discussed, and it gets its name as in Ireland they reached growing rates close to “Asian tigers” with maximums of 10% in annual growing. This growth was led to construction creating at the same time the real state bubble. This was motivated by the easiness of loans, financial deregulation and financial incentives (Gottheil, 2003).

During this period, it existed the economic strategy of industrialization by invitation which, by means of fiscal facilities such as the reduction of taxes, pretended to increase foreign direction investment as a tool of economic development, as we can see in graphic 17, which has a pro cyclical tendency with several fluctuations at the end of the nineties. This led to a “cluster effect” focusing on multinational activities which took place in Ireland, especially multinationals of pharmaceutical products, chemical industry and high technology in computer industry (Gottheil, 2003).

Graphic 17: Foreign direct investment in current local currency from 1990 to 2010



Source: Prepared by the author on the basis of data supplied by World Bank.

In 1997, software enterprises which were foreigners represented 88% of the industry and 91% of software exportation. Just 12% of the capital was from Irish enterprises,

88% belonged to foreign direct investment. Most of the multinationals that invested in Ireland were from the USA, which have got an increase of their production by manipulating the prices. It is inflated in added value as a way of growing, when it is a game of price speculation which is observed when we differentiate between GDP and GNP. Domestic prices do not have to do with market prices due to the differential corporative taxes between national and foreign enterprises (Gottheil, 2003).

For example, American multinationals got greater capital profits in Ireland than in their local country (the USA), they subcontracted in Ireland in order to fix lower prices in relation to their sales in the United States when they kept the benefits. It is in the taxes differential where prices are manipulated (Gottheil, 2003). Owing to this, the ECB imposed the highest fine in history to the multinational Apple, an American enterprise located in Ireland, which took advantage of a reduction of 11 percentage points in corporative tax payments, from 12% of national taxes that had to pay 1%, it finally paid 0.5%. It is a good example of how Ireland has used as a growing strategy the behaviour of tax haven.

All this was accompanied by a banking crisis which focused its lending activity on mortgages through high risk activities. Mortgage loans in Ireland went from 16 million € of balance in 2003, to 106 million € in 2008. This expansion took place by means of risky operations that could only be maintained if house prices continue being inflated (Whelan, 2013).

These activities focused on the six main Irish banks, especially in two of them. Anglo Iris Bank with an asset portfolio rose from 26 to 97 billion € from 2003 to 2007, respectively. On the other hand, Allied Irish Bank had an asset portfolio of 16 billion € in 2004 which rose to 47 billion € in 2007. Besides increasing substantively their mortgages with quite risk in their assets, they stopped financing their loans through their clients' deposits. From 2003, they financed themselves by means of bonds for foreigner investors worth 100 billion € in 2007, which was more than the half of GDP (Whelan, 2013).

At the beginning of the world economic crisis with the fall of Lehman Brothers, the foreign investors reduced their activity which made it more difficult to the Irish banks to finance themselves. At the end of 2008, the situation gets worse and the government decides to interfere guaranteeing the actual and future banking assets. In 2009, National Assets Management Agency (NAMA) was created in order to get the previous objective. It is from 2010 when they stopped getting financing by the guarantee bonds and it was the moment when the financial system collapsed. They turned to the ECB in

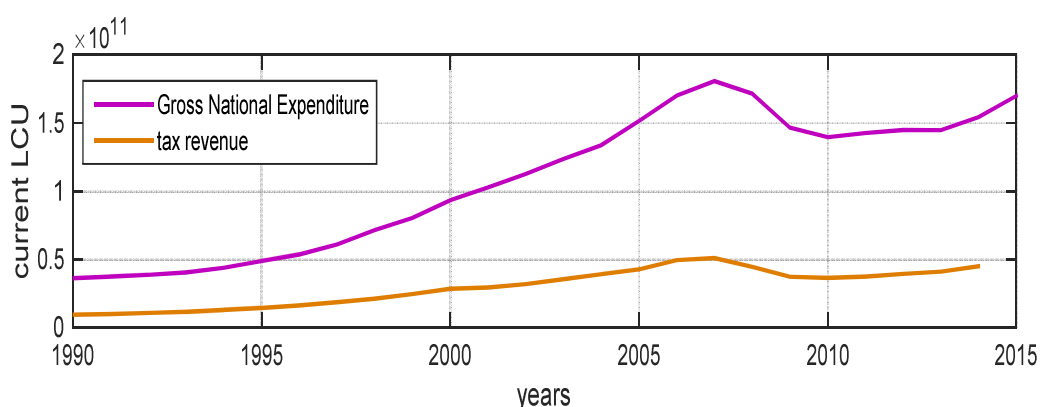
order to get financing, but the result was meaningless and led to the request and grant of the bailout to Irish economy in 2010, from which the situation got aggravated (Whelan, 2013).

Funds needed to recapitalise Irish banking sector were 63 billion € which corresponded approximately to 40% GDP. If we compare the deficit and public debt, we can see that the bailout effect has increases the public debts at least half the deficit. For this reason, fiscal austerity was not a banking rescue, since ECB programme was necessary together with IMF unconcernedly of the banking recapitalization (Whelan, 2013).

Through the sale of assets of foreign banks, some objectives towards banking stability have been fulfilled although there still are many problems. Mortgage delinquencies is still growing up, approximately one out of five main houses was in default during 2012 (Whelan, 2013).

Following the agreement which was accepted during Fianna Fai governemet with the troika, an austerity fiscal policy reducing pubic expense (cutting on health and social welfare), together with tax increase was applied, as we can see in Graphic 18. All this has as objective to reduce the fiscal deficit and pay 5.7 billion € debt (3% GDP) which was received in the bailout programme by ECB and IMF (Whelan, 2013).

Graphic 18: Gross national expenditure and tax revenue in current currency from 1990 to 2014.



Source: Prepared by the author on the basis of data supplied by OECD.

4. Comparative analysis of economic indicators

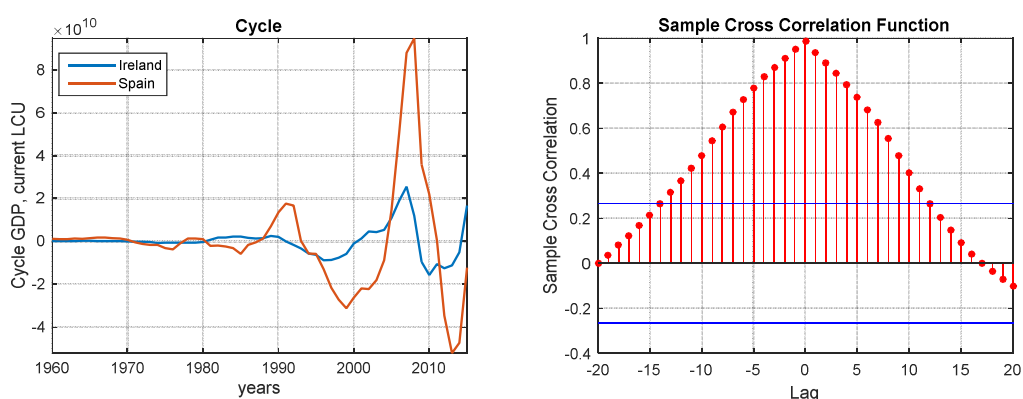
4.1.1. Business cycles analysis

After doing an analysis in detail of the real estate bubbles, we find many similarities but also inconsistencies that we will expose in detail by means of a cycle analysis and comparison among variables.

In the first place we will analyse the GDP of both countries, as we can see in Graphic 19 the GDP cycles in both countries have a similar behaviour especially during 1960 until 1990, although in Spain it exists a little bit more of volatility but practically insignificant. From the nineties, fluctuations among countries increase and the cycles begin to be more abrupt by means of a dynamic of booms and recessions, but not persistent. But, it is clearly observed that its breadth is much bigger in Spain.

Besides, by observing the point clouds of Graphic 19, we can confirm with a level of significance of 5% that there is a positive correlation among both variables amounting to 0,9886, that is really close. As we can observe, this confirms the idea of work of a similar behaviour, especially in relation to real estate bubble. We should also observe that the cross-correlation between the GDP of both countries is significant since the delay -14 to 12, it has maximum at the present time with the value 1, so they are narrowly correlated.

Graphic 19: GDP cycle and cross-correlation in nowadays currency in Ireland and Spain from 1960 to 2010. Correlation coefficient 0.9886 $\alpha = 5\%$



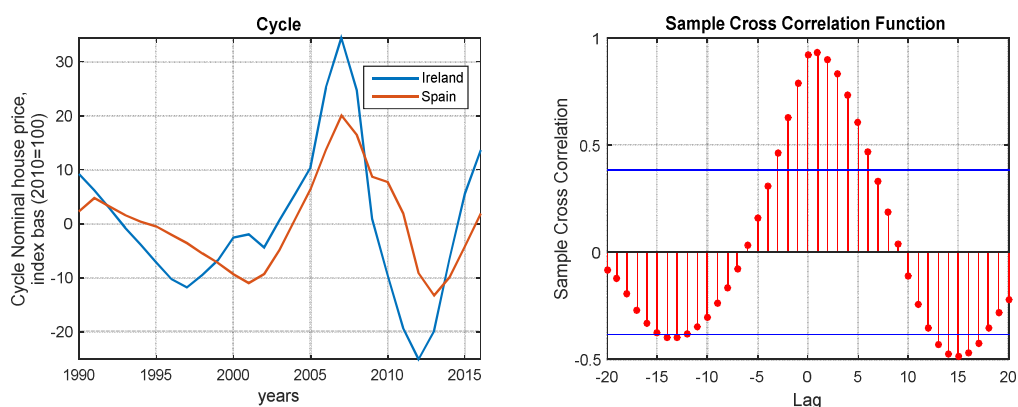
Source: Prepared by the author on the basis of data supplied by World Bank.

For this reason, we compare house prices in nominal terms in order to see how they are different or similar when forming the bubble and its later burst in both countries. Both countries variable is pro cyclical as we can see in the point clouds in Graphic 20,

since there is a positive correlation amounting to 0.9218, with a significance level of 5%.

There is a bigger range between the cycles of house prices in Ireland than in Spain. But both of them grown sharply during the formation of the bubble and they fall from the burst of the bubble and the worldwide financial crisis in 2008. It must be stressed that even with GDP cycles as well as house price, quiet times are found from the request of the Bailout to ECB, in Ireland in 2010 and in Spain in 2012. Cross-correlation has a symmetric bell. As show in the Graph 20, the cross correlation between house prices in nominal terms of both countries. They have a significant correlation from the delay -4 to the 6, their maximum is at the present time with a value very close to 1 approximately 0.98 for these variable are narrowly correlated.

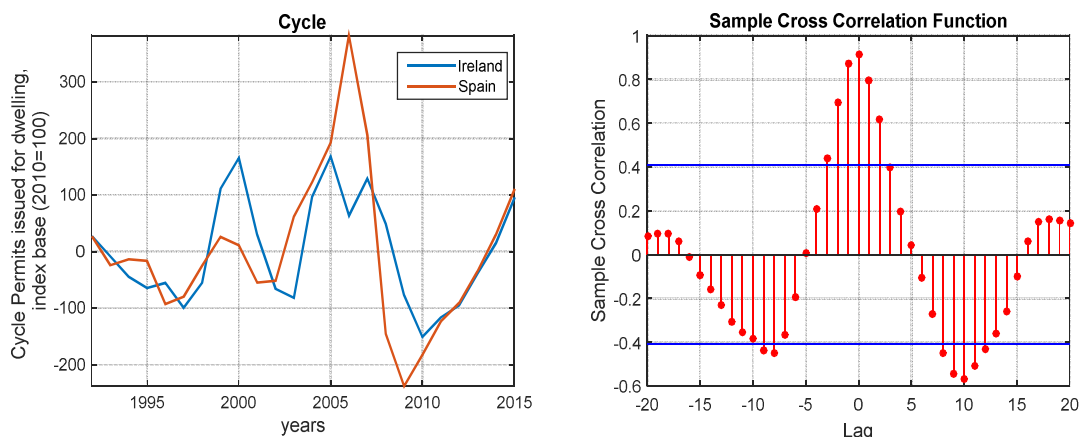
Graphic 20: Cycle and dispersion cloud about house price in nominal terms in Spain and Ireland from 1990 until 2016. Correlation coefficient 0.9218, $\alpha = 5\%$.



Source: Prepared by the author on the basis of data supplied by OECD.

In order to analyse and compare real estate bubbles, we must take into consideration house prices as well as construction activity. To measure this activity in Graphic 21 we have used permits for the construction of residential houses. This variable is quite abrupt, especially in the case of Spain that has a bigger range than in the case of Ireland. In the point cloud we can see that there is a positive correlation amounting to 0.912 with a significant level of 5%, which is a pro cycles variable. As it was expected, values are very high and increase during the formation of the real estate bubble and fall down when they burst. As we have seen in previous sections, in Spain it is from 1996 to 2007 and in Ireland from 1996 to 2006 the Celtic Tiger. Besides, it follows a symmetric frequency and distribution. We have noted in cross correlation between the permits issued for the construction of both countries is significant from the delay -4 to 2, has its maximum at the present time with the value 0.95, so they are narrowly correlated.

Graphic 21: Cycle and point cloud about the permits for residential house with rate index (2010=1000) in Ireland and Spain from 1992 to 2015. Correlation coefficient 0.9120 $\alpha=5\%$.

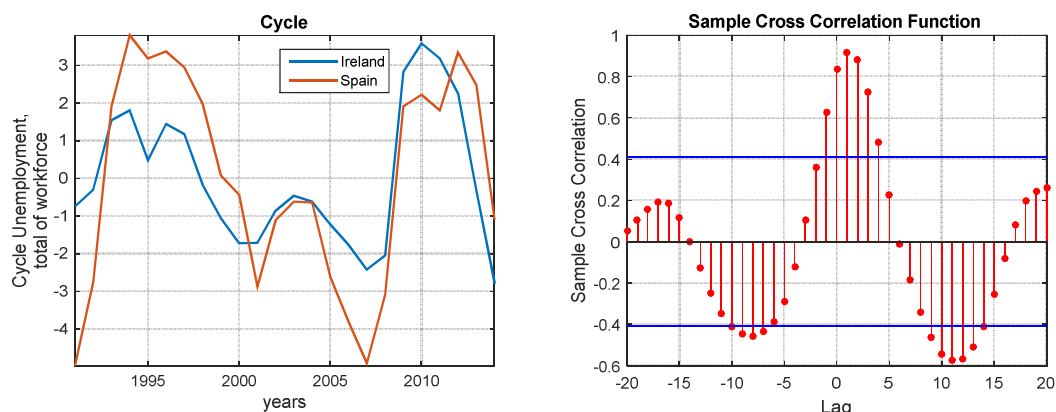


Source: Prepared by the author on the basis of data supplied by OECD.

One of the most serious consequences of the economic crisis and the burst of the real estate bubble is the increase of unemployment rates. As we can see in Graphic 22, during the nineties until the burst of the bubble, both countries got to diminish considerably unemployment. But from this great recession, it is quickly incremented reaching historical highs in both countries.

This variable is quite abrupt for both countries and has several fluctuations although not very persistent. Besides, it is a cyclical variable since there is a negative relation between this one and economic growth. When we are in peak periods, unemployment rate diminishes and during recessions we suffer the opposite effect. Meanwhile, as we can see in the dispersion cloud, the relation among unemployment rates in both countries follow the same trend since they have a positive correlation coefficient of 0.8367, which affirms a signification level of 5%. As the graph 22 show the cross-correlation between the unemployment of both countries, the delay -1 to 4 is significant, it has its maximum in delay 1 with the value 0.97, so they are narrowly correlated.

Graphic 22: Unemployment cycle and point cloud about the total workforce in Ireland and Spain from 1991 to 2014. Correlation coefficient 0.8367, $\alpha=5\%$

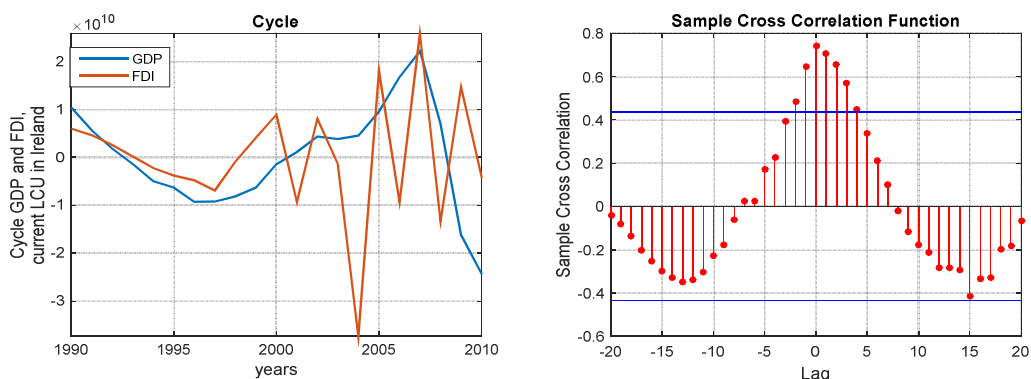


Source: Prepared by the author on the basis of data supplied by World Bank.

4.1.2. Business financing

In the case of Ireland, during the period of industrialization by invitation, we can see how activators and basic components in its economy are Foreign Direct Investment (FDI) since, as we discussed in Historical Background, they see the foreign capital as a means of growing. As we can see in Graphic 23, although FDI is a very abrupt variable with continuing fluctuations, we can affirm that it acts over GDP as a predictive variable. FDI is a pro cyclical variable that, as our dispersion cloud shows, we can confirm, with a significance of 5%, that there is a positive correlation among both variables amounting to 0.743. As we see in the cross correlation between Irish GDP and FDI are significant from delay -2 to 4, it has its maximum at the present time with the value 0.78, so they are narrowly correlated. In addition, the FDI is predicted to predict Irish GDP by a positive cross-correlation.

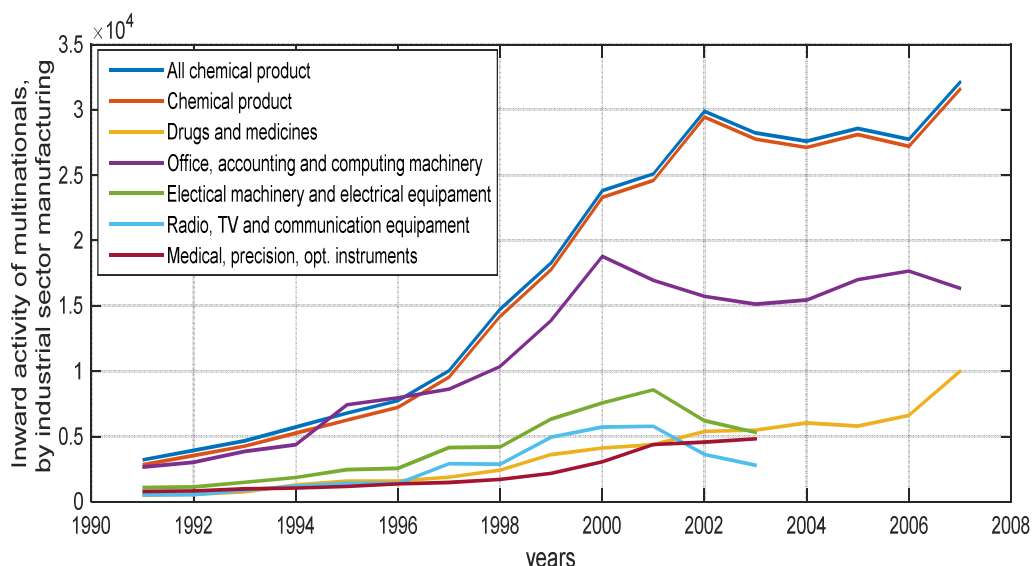
Graphic 23: Cycle and cloud points over GDP and net Foreign Direct Investment in current currency in Ireland from 1990 to 2010. Correlation coefficient 0.7430, $\alpha=5\%$.



Source: Prepared by the author on the basis of data supplied by World Bank and OECD.

This strategy of attracting FDI brought many multinationals to relocate in Ireland since it acted as tax haven offering fiscal facilities to these entities. As we can see in Graphic 24, the activity of foreign multinationals in Ireland was growing until 2007, especially chemical industry. These multinationals acts as promoters of Irish economic growth by FDI, do an speculative activity with the prices using taxes differentials. As we can see in this last boom cycle they have gain importance, which creates the increase of Iris productivity, due to GDP and GNP distortions. Although we have not found any data, according to Battel R. And Gottheil, F. telecommunication, computer and software industries are very important in Irish economy, especially the last two.

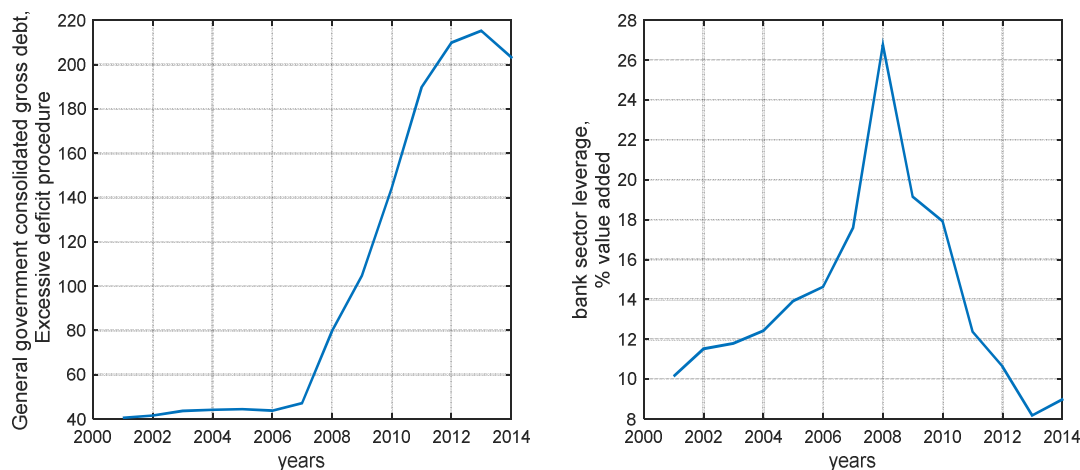
Graphic 24: Internal activity of multinationals by industrial sector (manufacturing), in Ireland from 1991 to 2007.



Source: Prepared by the author on the basis of data supplied by OECD.

In Ireland, when bailout is requested in 2010, although it is requested in order to finance the debt of its economy, among them there is a very relevant factor that is the banking system. Although, unlike Spain, banking system affects only to the six main Irish banks, the government also assumes the banking debt. In Graphic 25 we can clearly observe how from 2010 with bailout banking debt is nationalized since as the debt is from the government, it is considerably incremented and Irish banks activity diminishes significantly.

Graphic 25: Consolidated government gross debt by means of the excessive deficit procedure and banking leverage as a percentage of value added in Spain from 1995 to 2015.



Source: Prepared by the author on the basis of data supplied by World Bank and OECD.

Table 1: Bank debt disaggregated as percentage of total Irish bank debts from 1995 to 2009.

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Capital and reserves | 6,70 | 6,68 | 5,69 | 6,01 | 6,06 | 6,30 | 6,58 | 5,71 | 5,18 | 4,98 | 3,98 | 4,26 | 4,20 | 3,34 | 4,72 |
| Interbank deposits | 22,55 | 24,16 | 26,61 | 30,33 | 29,35 | 30,55 | 31,24 | 27,59 | 31,55 | 29,27 | 26,18 | 22,75 | 22,84 | 24,27 | 27,05 |
| Customer deposits | 56,23 | 51,87 | 48,67 | 43,62 | 40,17 | 39,21 | 38,72 | 32,76 | 29,47 | 28,25 | 24,15 | 27,08 | 26,17 | 21,04 | 23,49 |
| Bonds | 7,61 | 9,83 | 11,50 | 11,49 | 11,45 | 12,23 | 12,79 | 24,28 | 23,97 | 28,63 | 26,51 | 28,64 | 25,29 | 16,12 | 17,06 |
| Other liabilities | 6,91 | 7,45 | 7,53 | 8,54 | 12,97 | 11,70 | 10,67 | 9,66 | 9,82 | 8,86 | 19,18 | 17,26 | 21,51 | 35,23 | 27,69 |

Source: Prepared by the author on the basis of data supplied by OECD.

In Table 1, we observe how there are differences among the diverse debts from 1995 to 2009. Capital and reserves is the less relevant debts during all the period, although it decreases a little bit from the crisis, it is always around 5%. In relation to interbank deposits, they usually represent a fourth of the debts, trend that does not vary a lot unconcernedly of the economic cycle.

In 1995, the importance of clients' deposits is 56.23% is so relevant, since Irish banks do their activities by financing through clients' deposits. But in this period of economic growth, it changes its tendency of financing, diminishing the importance of clients'

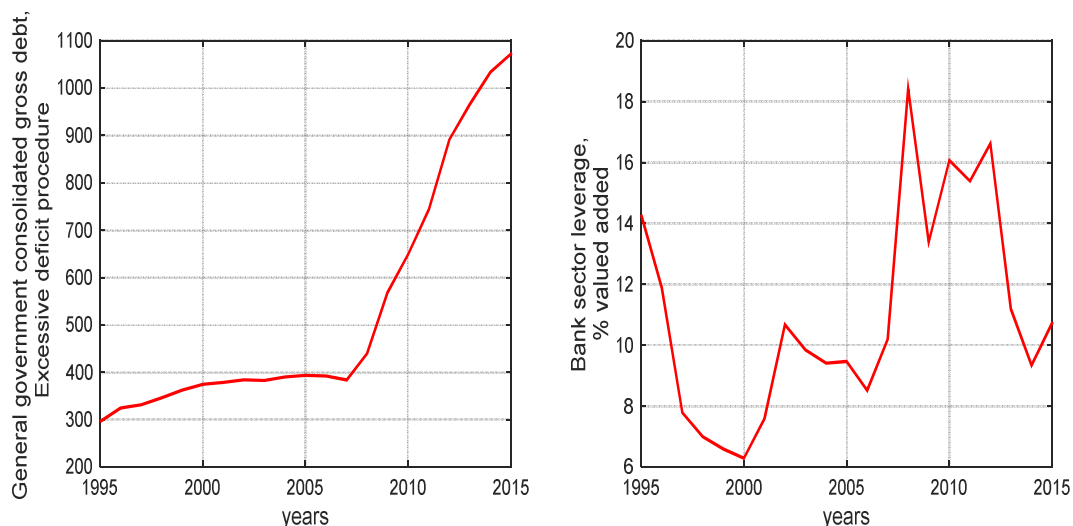
deposits in its debts and they start to increase to issue bond as a way of financing, which are incremented from 1995 to 2006 in 21.3 percentage points.

After the burst of real estate bubble (2008), clients' deposits continue diminishing but this time is because families resources also decrease. Besides, bank issued bonds lose confidence and therefore, diminish from 2007 to 2008 in 9.17 percentage points. This lack of financing is covered by other debts which vary from 6.91% of bank debts in 1995 to 35.23% in 2008, and they are mainly formed by government financing.

Spain requestes bailout in 2012 and almost all the banks and savings banks have big debts and get benefit of this economic benefit.

In contrast to Irish banks that in the peak perdioid they were financed by issuing bonds, Spanish banks were financed by leverage operations asking for loans to European banks. In Graphic 26, we can see how the situation is from 2012 when they requested the bailout and how banking debt is nationalized, diminishing its leverage operations substituting this financing by the government one.

Graphic 26: Governement consolidated gross debt throught the procedure of excessive deficit., and banking leverage as percentage of added value, in Spain from 1995 to 2015.



Source: Prepared by the author on the basis of data supplied by World Bank and OECD.

Table 2: Bank debts disaggregated as percentage of total of Spanish bank debt in total from 1995 to 2009.

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 19. Capital and reserves | 8,01 | 7,90 | 7,80 | 7,72 | 7,41 | 8,26 | 8,28 | 8,47 | 8,07 | 8,54 | 7,71 | 7,20 | 7,02 | 7,52 | 8,32 |
| 20. Borrowing from Central bank | 5,53 | 3,52 | 1,68 | 3,07 | 2,47 | 1,50 | 0,88 | 1,41 | 2,29 | 1,42 | 1,57 | 0,91 | 2,59 | 3,30 | 2,92 |
| 21. Interbank deposits | 22,96 | 24,66 | 27,53 | 27,75 | 24,88 | 22,98 | 21,32 | 21,19 | 21,80 | 22,13 | 21,86 | 19,05 | 18,34 | 18,83 | 19,48 |
| 22. Customer deposits | 56,11 | 56,54 | 55,81 | 53,81 | 55,07 | 57,12 | 59,03 | 58,39 | 55,68 | 52,89 | 51,20 | 52,88 | 51,22 | 50,93 | 50,23 |
| 23. Bonds | 2,27 | 2,16 | 2,20 | 2,28 | 4,43 | 3,71 | 4,22 | 4,86 | 7,06 | 9,88 | 11,52 | 13,54 | 13,96 | 11,49 | 12,51 |
| 24. Other liabilities | 5,12 | 5,21 | 4,98 | 5,37 | 5,75 | 6,43 | 6,27 | 5,68 | 5,09 | 5,15 | 6,14 | 6,42 | 6,88 | 7,93 | 6,54 |

Source: Prepared by the author on the basis of data supplied by World Bank and OECD.

In Table 2, we can see the importance of the different bank debts over the total of the debts of Spanish banks. The capital and reserves are not very significant among bank debts around 8% although it decreases during the growth and falls from the crisis but they are not very significant since variations do not represent even a two percentage points. In relation to Central Bank loans, they diminish during the growth period and grow during depression, but they do not have very significant values being its peak time in 1995 with a 5.53%. It must be highlighted that from 2012 these values are considerably incremented by the request of the bailout.

Interbank deposits represent around 20% with very few fluctuations. In relation to clients' deposits they are the main source of bank financing since they represent 50% of the debt. After the burst of real estate bubble in 2008, it is not very affected and it diminished around 2 percentage points. The bonds issued by Spanish banks start growing, representing 2.27% in 1995 and 12.51% in 2009. Other debts represent a small part although they grow inside the bank debts, reaching its peak in 2008 with the burst of the bubble, an increase which is caused by government financing.

5. Conclusions

Following the analysis of real estate bubbles of so similar countries as Spain and Ireland that, at the same time, they are so different in economic, politic and social structures, we reach the following conclusions.

In the historical analysis, we see that they have a similar behaviour, although by different ways. For the period between 1939 and 1960 Spanish economic strategy was autarky, while in Ireland was applied from 1950 until 1960. Following the two countries a same economic strategy. In addition, Spain was applied the strategy of developmentalism from 1960 to 1975, however in Ireland was applied industrialization by invitation strategy, through increasing the IDF since 1960 until today. Both strategies were yielded their industrialization and their opening to the outside, that is to say, even before were member of the EMU has a converge tendency. Since the Treaty of Maastricht (1993), was it began to converge to a single monetary policy. In addition, continue to maintain the same behaviour they were coming to similar situations by means very different.

Both countries had economic growth since the 1990s. In Ireland was produced attraction of the IDF, the foreign multinationals were offshored due to fiscal incentives. On the other hand in Spain, this growth was derived that it is an attractive country for investment because the low interest rates and was produced a flight of capital. Both states allocated this growth mainly to the construction sector.

The best phenomenon that shows this theory is real estate bubble in Spain (1996-2007) and in Ireland (1993-2006). In both cases, it should be a speculative game between banks and companies, and the government legislation on the ground to facilitate the situation. The inflated housing prices, through the overvaluation for builders and appraisers, but also their business benefits increased and banking revenues improved for raised bank interest these derived from the mortgage loans.

The bank financing was differed depending on the country. As we have seen in the comparison section, the case of Spain was financed by the customer deposits. Nevertheless, in Ireland has been produced the trend change of funding with the

creation of the bubble. Previously, the funds were trained with the customer deposits and after, there were changing financed through the bond issuance.

In both cases, the effect of the bursting of the real estate bubble (2008) and the economical global crisis have had devastating effects. Both countries have requested the rescue, Spain (2012) and Ireland (2010). In addition, both states applied the austerity policies negotiated by the troika and they have high rates of unemployment that they were plunged into a deep recession.

Result disturbing as these similarities should be given these similarities among countries, which in other respects are so different. In this thesis highlights the tendency to converge over time between both countries, given that in a globalized economy we are affected by common indicators, which they should have affected us in a similar way. After this analysis, we can better understand as will produce the real estate bubbles and we make a good base to be able to find solutions and ways to counteract them.

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