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A Critical Analysis of Minsky Moments in a Property Bubble

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Abstract¹

According to Minsky, capitalism has an inherent tendency to financial instability: periods of boom are followed by financial crash. Thus, economic policies have to be proactive. For any economy, it is necessary at each point in time to assess the degree of potential instability, and the particular role played by monetary and fiscal policy. The particular purpose of this paper is to draw on Minsky's theory and examine economic policy's role in the formulation of a real estate bubble. With the help of a historical case study, this paper explores how exogenous factors such as economic policies exacerbate endogenous factors such as the credit creation mechanism. The case study chosen is that of Spain prior to 2007, where rising financial instability culminated in the eventual bursting of a pronounced housing bubble. It combines quantitative descriptive analysis supported by a qualitative document review. The paper shows that exogenous policy factors contributed to the crisis trigger and helped to exacerbate the boom. After introduction of the Euro single currency, profit opportunities arose, based on interest rate and growth differentials, leading to capital inflows from the European centre and rising fragility. Pro-cyclical fiscal and monetary policy amplified positive expectations and further fuelled the housing bubble.

¹ This paper is a draft based on my MRes dissertation which will be followed by a PhD project. I would like to express my sincere gratitude to Andrew Trigg and Dimitris Sotiropoulos for their support and great comments throughout the MRes study programme.

1. Introduction

“There is no possibility that we can ever set things right once and for all; Instability, put to rest by one set of reforms, will, after time, emerge in new guise.”
(Minsky, 1986a, p.370)

According to Minsky, capitalism has an inherent tendency to financial instability: periods of boom are followed by financial crash (called the Minsky moment). He recognized early that the recent development of global capitalism would lead to rising financial fragility. The deregulation process in connection with a monetary policy controlling inflation deepened financial instability and shifted power to the markets (Minsky, 1986a). The Global Financial Crisis clearly showed the risks and limitations of neoliberal policies, promoting deregulated markets and economic growth.

Minsky (1964) emphasized that pro-growth policies supporting the supply side and investment are misleading policy objectives. A proper policy discussion should accept an economic theory which incorporates the inherent instability of capitalism and examine how institutions and policies exacerbate it (Minsky and Whalen, 1997; Minsky 1986a). This Minsky approach has profound implications for the types of economic policy that need to be developed in order to promote financial stability. Previous research has developed Minsky’s view into a more sophisticated hypothesis by adapting it to the household sector and to the global environment providing valuable insights (Arestis and Glickman, 2002; Dymksi, 2010; Tymoigne, 2014). Nevertheless, few systematic attempts have been made to analyse monetary policy and fiscal policy in an integrated fashion. Literature on Minsky’s policy suggestions seems to be centred around measures to resolve crisis situations without an in-depth analysis of how economic policies influence the development of an asset bubble (Frenkel and Rapetti, 2009; Tropeano, 2010; Zalweski, 2012). Moreover, a large part of the Minskian literature is based on a largely closed economy: the US (Papadimitriou and Minsky, 1994; Tymoigne and Wray, 2014; Wray, 2012). Hence, the particular purpose of this paper is to draw on Minsky’s theory and examine economic policy’s role in the formulation of a real estate bubble. For this purpose, Minsky’s argument is revitalized in an open economy taking into consideration the role of financial flows and economic policies.

Davidson (2008) argues that to experience a ‘Minsky moment’ the defined characteristics by Minsky have to appear during the bubble phase including rising financial fragility based on a higher level of Ponzi finance. Thus, this paper employs a wider definition of Minsky moments by including Minskian elements in the bubble development. It shows how exogenous factors

such as economic policies and endogenous factors such as credit creation based on optimistic expectations contribute to the transition towards a financially fragile economy in Spain. Contrary to a wide range of literature seeing the current account imbalances as the underlying cause of the European crisis, this paper argues for a reversed causality between financial flows and current account development putting, as Minsky frames it, portfolio flows and not trade flows into focus (Minsky, 1990). This aspect is also discussed by Bellofiore et al. (2014, p. 14):

“Behind the view underlying both heterodox and mainstream approaches that trade deficits are the origin of their financial imbalances, however, looms a causal relationship between the trade and capital accounts which seems unlikely in a world where trade transactions capture only a small fraction of transactions across jurisdictions, all of which requiring financing.”

With the help of some preliminary evidence, it is argued that after experiencing a policy-induced financial integration in 1999, cross-national capital inflows into Spain rose due to profit opportunities, based on interest rate and growth differentials, attracting capital. The subsequent increase in credit availability stimulated housing investment. Rising house prices validated past decisions and positive expectations developed endogenously. This fed back into declining risk perceptions and further property investment growth resulting in financial fragility. Pro-growth fiscal and expansionary monetary policies reinforced the bubble development.

The paper is divided in six sections. Section 2 briefly presents the current state of policy debate in the Minskian literature. In Section 3 the main results of a case study analysis based on an open economy (Spain) experiencing a real estate bubble are discussed. In the subsequent section (Section 4), the capital inflows and rising indebtedness levels are positioned within a broader context of changes in fiscal and monetary policies. As an outcome, a macroeconomic framework (including fiscal and monetary policy) is presented describing the causal chain towards fragility (Section 5), followed by some conclusions (Section 6).

2. Policy Debate in the Minskian Literature

Minsky (1985) emphasizes in his financial instability hypothesis the tendency of stable economies to move towards instability due to excessive optimism resulting in high debt levels. Essential to this hypothesis is that finance lies at the centre of the business cycle model, with financial and real markets interrelated. Supplying the economy with credit, banks can generate spending power, thus, aggregate demand (Minsky, 1986a). Hence, money supply is

endogenously determined by the finance demand of the private sector: described in the Post-Keynesian literature as “loans create deposits” (Lavoie, 2006, p.57).

Minsky’s insights can be combined with phases of a bubble identified by Kindleberger. Kindleberger defines a bubble as “a non-sustainable pattern of price changes or cash flows [...] an upward price movement over an extended period of fifteen to forty months that then implodes.” (Kindleberger and Aliber, 2005, pp.1, 29). Hence, there needs to be a rapid increase of prices which in the end results in a crash. The Minsky-Kindleberger crisis model starts with a *displacement* such as a change in monetary policy leading to a profit increase in one sector of the economy. The expanding economy increases the optimism of the market resulting in extensive credit availability, thus, in a *boom*. Due to expectations of increasing profits and speculation, investment rises leading to higher asset prices. This results in a significant rise of debt levels (especially short-term debt) and an increase in speculative and Ponzi² units in the *euphoria* phase. Financial innovation and riskier practices are introduced and money is created endogenously. In the next phase, called *profit taking*, some investors reduce their investment positions. Since market fragility is high a surprise event such as a well-known firm default can lead to *panic* followed by crisis (Kindleberger and Aliber, 2005).

Besides having discussed the endogenous fragility of financial markets, Minsky (1986a) also recognized the essential role of the institutional environment and policy expectations in the development of a bubble and the resulting financial crisis. If in a fragile economy key interest rates are raised, a reversal of present-value calculations can take place resulting in panic. Taking this argumentation further, low interest rates contribute to decreasing debt servicing costs and rising finance demand which will only come forth if optimistic expectations exist. Hence, he integrated endogenous and exogenous factors. The business cycle is influenced by the inherent tendency to instability based on the behaviour of economic agents; but institutional settings and economic policies play a central role in the development of expectations and the resulting credit creation (Minsky, 1986a). Even though policy changes might be the trigger for the boom and bust, expectations and a pro-cyclical credit creation process are inherent factors of the system (Kregel 1998).

² The firm must borrow to meet current payments and has increasing outstanding debt (Minsky, 1986a).

Wolfson (2002) and Arestis and Glickman (2002) show how Minsky's model can be extended to the Asian Crisis of 1997/1998. A displacement effect is the opening up of the banking sector to the global market and the emerging importance of interest rate differentials. By borrowing in low interest rate countries and lending to high interest rate countries, profits are generated. This profit rise leads to optimistic expectations of future asset prices, fuelling an asset price boom. In addition, Kregel (1998) discusses the influence of a stable exchange rate policy, which increases optimism and leads to rising foreign debt.

“Thus, a period of prolonged exchange rate stability may lead to over optimistic assessments of the stability of the domestic currency values of foreign commitments and similar reduction in margins of safety relating to foreign cash commitments or inflows. This endogenous change in margins makes the passage from a fragile to an unstable system that much more rapid in the event of an exogenous shock.” (Kregel, 1998, p.6)

Hence, Minsky's model is extended by adding two exogenous shocks: changes in exchange rates and in the monetary policy of the largest international lenders (Kregel, 1998). However, in a monetary union exchange rate and monetary policy is the same for a diverse set of countries which have different economic stages.

Frenkel and Rapetti (2009) combined an analysis of the recent Global Financial Crisis with developing country's events such as the Asian Crisis 1997/1998. These authors claim that the difference between developing and developed countries lies in the trigger of the displacement, being an exogenous one in the developing countries and an endogenous movement in the developed countries. However, in 2013, Frenkel states that peripheral Eurozone countries experienced the same exogenous trigger as emerging countries. Nevertheless, he does not provide empirical evidence for this claim and refers to a paper written by Bagnai (2012). Bagnai (2012) shows with the help of Frenkel and Rapetti's (2009) interpretation of Minsky's framework how the European crisis was caused by private and not public debt. Despite giving an overview of the European crisis and its exogenous trigger, a discussion of fiscal policy is not provided. Even though the studies above provide an empirical and theoretical discussion of the displacement, they are not taking into consideration a combination of fiscal and monetary policy during the bubble development. The main focus lies on monetary policy, including interest rates, financial deregulation and policy responses in crisis situations.

In an international context, Minsky (1990) argues that portfolio movements (defined as flows not related to trade) rather than the role of multinational corporations and trade are the determining factors in modern capitalism. By analysing balance of payments statistics, Minsky

(1990) points out that a country needs to run a trade surplus in order to be able to pay debt denominated in a foreign currency. Furthermore, he shows that the loss in competitiveness of the US was not due to a sudden rise in production costs but due to portfolio movements into the US dollar. Borio (2014) also emphasizes the main aspect in the recent financial crisis was not net capital flows, thus current account development, but increasing financial flows leading to unsustainable credit booms. So far this argumentation line has been taken up only by a few authors such as Bellofiore et al., 2014 and Milios and Sotiropoulos, 2010 and is incorporated here into the analysis. It can be argued that higher profits attract capital leading to growing capital inflows. Those higher profit opportunities can be due to financial aspects such as being possible to ‘make on the carry’³ because of interest rate differentials (Arestis and Glickman, 2002). This point of view supports the aforementioned argument of financial flows being the determining factor and current account being a result of the capital flow direction based on growth and return differentials.

Moreover, Minsky (1986a) considered fiscal policy to be the most important policy tool due to being able to directly stimulate final demand - in contrast to monetary policy which can only indirectly stimulate aggregate demand. Minsky (1986a) shows that in a closed economy business investment and government spending are determining factors of taxes and profits. A focus on austerity policy while the economy is experiencing falling investment results in decreasing profits. The lack of profits to repay debt leads to increasing indebtedness and financial fragility. He criticized pro-growth strategies (e.g. tax credits for investment) which favour capital incomes and tax benefits for top income earners (Minsky, 1964; 1967). Papadimitriou and Wray (1997) provide a theoretical discussion of Minsky’s big government proposal and reform agenda. Recently, De Santana Vasconcelos (2014) and Tcherneva (2011) examined the importance of big government and Minsky’s call for directing policies towards full employment. Those papers give more insights into Minsky’s views on the scope of big government. Nevertheless, they are mainly theoretical discussions in relation to the US. Even though Kregel (2015) sheds light on the impact of a Maastricht Treaty compliant fiscal policy on the external and/or private sector of the Eurozone, a detailed country analysis is missing.

³ Minsky (1986a, p.281) defines ‘make on the carry’ as borrowing low and lending high. This means interest rates on debt need to be lower than interest rates on assets.

Even though the literature on Minsky's proposals for big bank and big government has increased in recent years, analyses of the influence of policies prior to crisis situations in an open economy are limited. Surprisingly, aspects such as fiscal policy, including quantity and quality of taxes and expenditures, in connection with monetary policy during the bubble development are not discussed. The case can be made that it is essential to not only examine fiscal policy after the burst of a bubble but also in the development of the bubble; since pro-growth policies and an expansionary monetary policy can support asset price bubbles and amplify positive expectations. Hence, this paper attempts a systematic analysis of the role of policy in a Minsky framework in the formation of bubbles in an open economy.

3. Trends and Sources of Financial Fragility

Spain experienced an impressive housing bubble with soaring household and non-financial corporate sector debt. Residential property prices rose by 140% from 2000 up until 2006. The average annual growth rate of property prices nearly doubled, from 7.5% in the five years prior to the boom (1997-2001) to 15% between 2002 and 2006 (BIS, 2015). This development can be partly explained by changes in exogenous factors such as rising number of households in Spain due to high birth rates, growing divorces and positive net migration (BdE, 2008). Nevertheless, those factors are not sufficient to account for the extreme rise in property prices. Thus, in the following discussion exogenous factors are combined with Minsky's endogenous factors.

In extending Minsky's model, Arestis and Glickman (2002) argue that a displacement in form of financial deregulation and a fixed exchange rate lead to profit opportunities due to interest rate differentials. Economic agents take on cheap short-term foreign debt to finance domestic long-term investment. Bagnai (2012) takes it a step further and states that this is based on nominal interest rates. However, in the case of Spain, this hypothesis cannot be confirmed since the Eurozone has one nominal key interest rate and nominal long-term interest rates converged. Nevertheless, the reference interest rate for mortgages fell from 9.75% in 1995 to 2.25% in 2004 (OECD, 2015). Real interest rates fell by 4 percentage points after the Euro introduction, thus, leading to declining borrowing costs (De Lis and Herrero, 2008). Even though Spanish banks could have 'made on the carry' domestically due to the spread between real short-term and long-term interest rates, they borrowed expensive short-term debt whose real interest rate was on average 2 percentage points higher than the domestic ones (see Appendix 1). Gross

capital inflows into Spain show a strong upward trend after the Euro introduction; an increase by 64.4% between 1999 and 2006 (OECD, 2015). In a study by the European Commission (2012), rising capital inflows were shown to be the main driver in business investment up until 2003 followed by easing of financing conditions. This aspect is shown in Table 1 which shows the first stage of the Minsky-Kindleberger anatomy of a bubble in a closed and open economy in comparison to the Spanish case.

Table 1 Overview of Displacement Stage

Features	Closed Economy	Open Economy	Spanish Economy
Displacement (1999-2001)			
Profit increase in one sector	Private sector (main focus on corporations)	Private or external sector (corporations and households) Interest rate differentials: low foreign interest rates, high domestic interest rates	Huge capital inflows Rising gross capital formation in household/construction sector Interest rate differentials: high foreign interest rates, low domestic interest rates

Sources: Arestis and Glickman (2002), AMECO (2015), OECD (2015), Kindleberger and Aliber (2005), Minsky (1986a)

The inflows mainly came from Germany and France whose banks went through a period of international expansion, leading to German and French banks increasing their claims on Spain from 15% up to 20% - 25% of total external claims (Forster et al., 2011). Hence, this paper argues that due to interest rate and growth differentials as well as elimination of currency risks after the Euro introduction, profit opportunities arose and attracted capital from Germany. In the beginning of the 2000s, Germany experienced a relatively sluggish economic growth while Spain's economic growth was significantly higher than the Eurozone average (OECD, 2015). Furthermore, huge differences between average bank profitability could be seen between Spain and Germany. Germany's bank's return on equity lay on average at 3.70% between 2000 and 2006 compared to 12.49% in Spain and to 12.09% Eurozone average (Goddard et al, 2010). At the same time, Germany had the second highest real short-term interest rates (OECD, 2015). It can be argued that German banks followed profit opportunities based on higher economic growth and credit demand in Spain. The growing financial flows were not directly provided for the companies and households but channelled through the banking sector which is shown below. Thus, Spanish capital flows are caused by interest rate differentials but the causality is reversed. It was not due to borrowing low in foreign countries and lending high in domestic

country but due to profit search by the European centre countries such as Germany and France. Spain offered high returns due to a catching up process with other European countries. Hence, financial flows from the European centre were the driving force in the rising fragility in Spain and lifted the external financial constraint (EC, 2012).

During the subsequent boom and euphoria phase, credit availability increased and profit expectations were rising. Economic growth and employment were growing significantly while Spain ran a nearly balanced budget after 2000. From 2000 until 2007, real GDP grew on average by 3.8% per year, being 1 to 1.5 percentage points higher than the Eurozone average, and the unemployment rate fell in just four years by more than 2 percentage points (between 2002 and 2005). Furthermore, Spanish inflation rates were quite low compared to before the Euro (OECD, 2015). In a closed economy, rising liquidity needs of the economy would be met with the help of domestic banks creating money. However, since Spain is an open economy and a member of a monetary union, capital inflows were used to finance rising private sector deficits. The rising capital inflows and growing liquidity further reduced interest rates and borrowing costs (see Appendix 2). Therefore, the external sector not only played an essential role in the displacement but also in the rising credit availability in Spain. Moreover, after having examined capital flows in light of Minsky's tiers (1986b), it became clear that capital inflows consisted mainly of short-term capital (see Figure 1). Minsky (1986b) analysed the balance of payments statistics separating it into four tiers of cash flows:

Tier 1: Trade (Goods and Services)

Tier 2: Income from foreign lending (factor service balance)

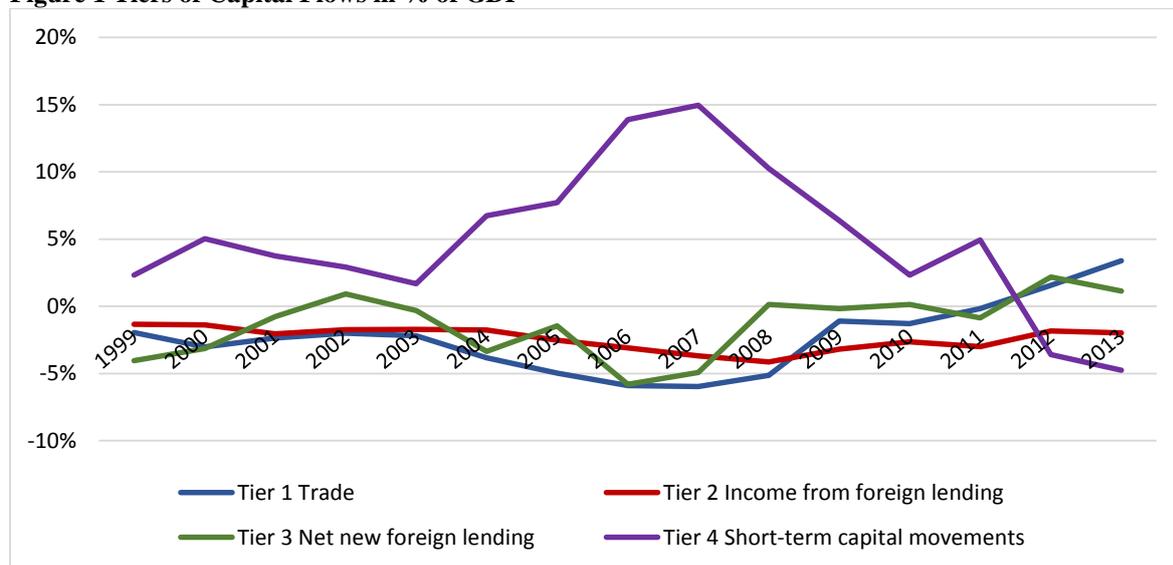
Tier 3: Net new foreign lending (long-term capital account)

Tier 4: Short-term capital movements

In order to apply Minsky's classification to Spain, Tier 3 is defined as foreign direct investment and Tier 4 includes portfolio investment, financial derivatives and other investment. Even though portfolio includes long-term and short-term investment, it is usually done with respect to financial yields and is easier to dispose of. Other investment mostly includes loans, currency and deposits (Cabrero et al., 2007). When looking at Spain, the first three tiers were financed with the help of short-term capital movements (see Figure 1). Short-term financing in form of international currencies and deposits, a highly volatile source of finance, has accounted for a large part (42%) of this rise in short-term finance (OECD, 2015). Banks used inter-bank

markets and long-term debt instruments to transmit short-term capital inflows to non-financial corporations and households (Suarez, 2010).

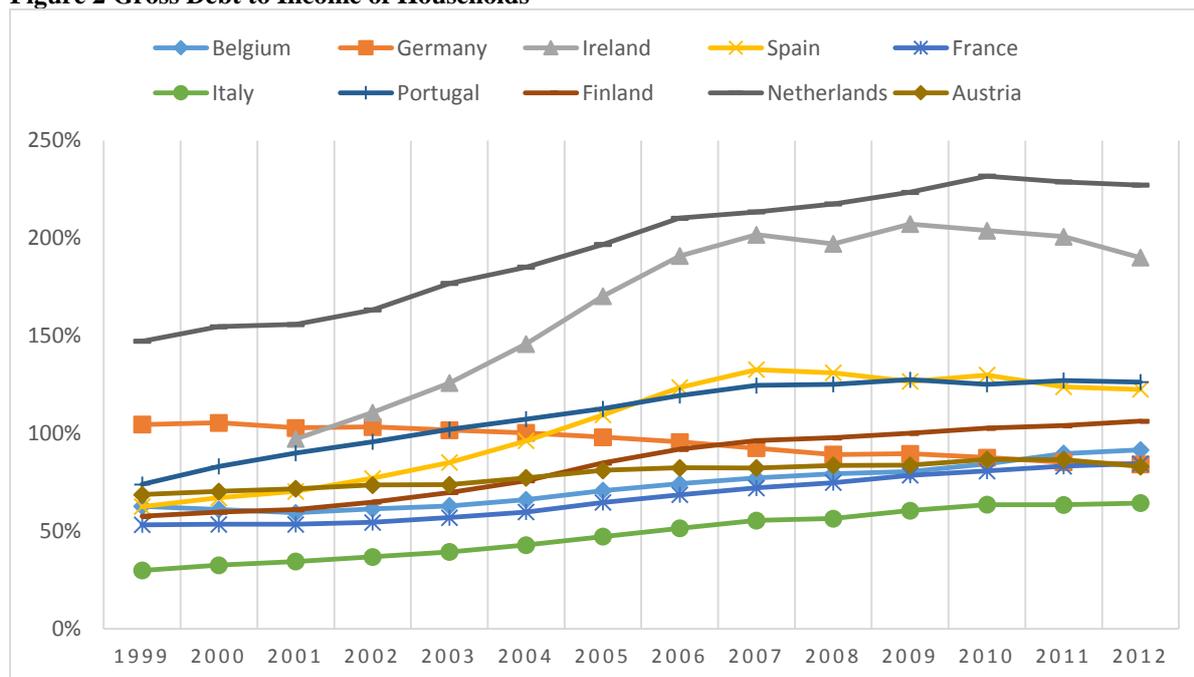
Figure 1 Tiers of Capital Flows in % of GDP



Source: Author's calculations based on OECD (2015)

The rise in credit was absorbed by the real estate related sector and households. At the peak of the housing boom in 2006, Spain was developing as many dwellings as the whole of the European Union (Suarez, 2010). Even though real income per capita grew between 2002 and 2005, this exuberant growth was financed with increasing debt, becoming unsustainable in the process. In only five years, debt in relation to gross disposable income (GDI) grew by 46 percentage points, even reaching 124% of GDI in 2006 (see Figure 2).

Figure 2 Gross Debt to Income of Households



Source: Eurostat (2015)

In 2006, 19.1% of Spanish households had three times as much debt as GDI. This constitutes the third highest rise in household debt in the Eurozone. Furthermore, 11.7% of the indebted households were financially distressed and used more than 40% of the gross income to pay debts which is an increase of 5% compared to 2002 (BdE, 2008). Not only households went into high debt but also non-financial corporations had rising debt levels. The share of debt by non-financial corporations reached 132% of GDP in 2007 (see Appendix 3). The debt-to-gross operating profit ratio of the real estate industry even rose by 650 percentage points between 2000 and 2007 whereas the construction sector only rose by 80 percentage points due to the rising profits. The only sector which did not experience an increase in debt-to-gross operating profit ratio was transport, storage and communications (BdE, 2010).

Besides the removal of the external financial constraint, the increase in credit was possible due to a prior deregulation process starting in the 1970s which led to longer loan maturities (from 10 to 28 years between 1990 and 2007) and commercial banks entering the mortgage market (De Lis and Herrero, 2008). Furthermore, market share of savings banks grew rapidly and Spain had “*more bank branches per capita than any in the world*” (Burnett, 2006). Moreover, debt was structured in a particular way in the Spanish housing market. Spanish mortgages consist of variable rates or rate fixation of less than a year, accounting for 98% of the total amount of mortgages (IMF, 2012). Hence, a monetary policy change is quickly transmitted to the mortgage sector, transferring the risk from the financial to the household sector and in connection with rising external short-term debt added to the vulnerability of the Spanish economy. According to Minsky (1986b), the above shown developments are indicators for financial fragility and highly speculative behaviour.

However, contrary to Minsky’s (1985) line of argumentation this rise in credit availability took place in a rather conservative way with a low degree of financial innovation. In Spain, the main provider of debt is still the banking sector. In 2000, a counter-cyclical measure of dynamic provisioning was constructed with the goal to smooth pro-cyclical credit behaviour. It forced the originator of, e.g. mortgage debt, to put capital aside as a provisioning (De Lis and Herrero, 2008). Even though a restriction of credit growth was not achieved due to the endogenous character of money creation, dynamic provisioning provided banks with a relatively good capital buffer (Suarez, 2010). Furthermore, off-balance sheet items accounted only for 6-7% of all securities in 2008 and the main securitization device to date is mortgage backed securities. Thus, securitisation is less used for transferring risk but rather to provide funding. Moreover,

home equity withdrawals play only a minor role (De Lis and Herrero, 2008). Furthermore, Minsky argued that short-term debt increases during a bubble (Minsky, 1986a). However, short-term debt as a portion of overall household loans was low and moved between 4.55% and 5.24% during the period 2002 to 2006, while non-financial corporations' short-term loan share also stayed constant (OECD, 2015).

For a summary of the main characteristics of the boom and euphoria phase see Table 2. By extending the Minsky-Kindleberger crisis model, it shows how the Spanish case is similar or different to the closed and open economy case described by the Minskian literature. The main difference is the lack of a high degree of financial innovation while at the same time experiencing an exuberant credit growth. Thus, the asset price rise and subsequent rise in debt levels was not supported with the help of financial innovation and growing domestic short-term debt but by rising capital inflows and foreign short-term debt. This was supported by a significant fall in domestic and foreign interest rates.

Table 2 Overview of Boom and Euphoria Stage

Features	Closed Economy	Open Economy	Spanish Economy
Boom Phase (2000-2007) and Euphoria Phase (2002-2006)			
Extensive credit availability	Credit creation by domestic banks	Credit creation by domestic banks and foreign banks	Credit creation with the help of foreign capital inflows
Investment and asset price	Asset prices and investment go up (focus on corporations)	Asset prices and investment supported by gross capital inflows	Huge gross capital inflows used in non-tradable sector, rising house prices
Low short-term interest rates	Low domestic short-term interest rates	Domestic interest rates fall relative to foreign interest rates	Domestic and foreign interest rates fall
Financial innovation	Domestic financial institutions invent new financial products	Financial products are extended to external sector with the help of securitisation	Main focus on banking sector (hardly no off-balance sheet items)
Margins of Safety go down			
Debt levels go up	Domestic debt rises	Domestic and foreign debt rises	Domestic and foreign debt levels rise with focus on real estate
Short-term rises	Short-term domestic debt	Short-term domestic and external debt	Short-term external debt

Sources: Arestis and Glickman (2002), Frenkel and Rapetti (2009), Minsky (1986a), Minsky (1990), Kindleberger and Aliber, (2005), Conducted Analysis

Growing financial fragility of Spanish households and non-financial corporations was accompanied by an unprecedented rise of asset prices leading to a positive feedback

mechanism. Spanish households' net wealth, mainly due to ownership property assets, increased significantly between 2002 and 2005 (median household net wealth by 68%; BdE, 2008). A high proportion of households own their main residence (85%) which is significantly higher than the Eurozone Union (64%) and around 21% of households own a second home (EC, 2012; BdE 2008). Despite significantly rising financial liabilities the household financial leverage ratio stayed relatively stable at 92% between 2002 and 2006 (Eurostat, 2015). Hence, not only households' liabilities, but also assets rose considerably, showing an overall rise in households' balance sheets. Rising debt-to-income and median debt levels for other real estate properties⁴ in connection with rising house prices are indicators for greater reliance on collateral-based debt and speculative behaviour of the household sector. Even though the debt-to-asset ratio does not show a significant increase, there is a risk of deteriorating remarkably as soon as the house prices fall. Thus, households' economic risks increased due to being susceptible to financial market and house price changes (Sotiropoulos et al., 2013).

Despite this increasing risk, Spain was considered to be an “economic miracle” which “even puzzled economists” based on strong economic growth and rising household wealth (Atkins and Crawford, 2005). Since positive expectations played a major role in rising liquidity demand, a qualitative document analysis of policy documents and newspapers was conducted. It became clear that the focus of policy documents lay on financial market flexibility and supply-side reforms to promote economic growth. The Eurozone entry is related to positive aspects. Newspaper coverage also hints towards a positive picture of the Spanish economy up until mid-2004. An overview of the document analysis is shown in Appendix 4. Besides this overview, the results are given as illustrative quotes in the following discussion. According to a European Commission survey at the beginning of the 2000s, consumer confidence was the highest since 1990s:

“[...] decline in joblessness had impressed both consumers and executives with the result that consumers are more upbeat than the economists, who had warned of inflation and the weakened currency.” (United Press, 2000)

A noticeable fact was that Spain was seen as an example how ‘sound’ public finances and economic reforms contribute to sustainable economic growth:

“This **marks a break with the performance pattern** of the Spanish economy in past cycles, when it would outgrow the European average at times of expansion only to sink further in the contraction phase [...]”(Kingdom of Spain, 2002, p.6; emphasis added)

⁴ The median debt levels for other real estate properties rose by 44.9% between 2002 and 2005 (BdE, 2008).

“This reform process, which now has been ongoing for the last three decades, has put Spain’s public finances on a sound footing and it represents one of the most identifiable key factors behind the ‘**Spanish economic miracle**’.” (Martinez-Vazquez, 2007, p.532; emphasis added)

Moreover, even though first warning signals of a property bubble were evident and published since 2004, optimism spread further due to sustained high economic growth and rising income:

“The idea (housing bubble) has been raised in Spain, but most people in the financial sector and the government do not believe it really exists. Unlike the rest of Europe, Spain's economy has continued to grow by around 2%-3% per year, so the housing market has fairly solid foundations.” (Head of Capital Markets, Caja Madrid, The Banker, 2004).

According to the Minsky-Kindleberger model, optimism rises during the boom and euphoria phase in expectation of higher profits. A key factor of bubbles is that the involved economic agents believe the fundamentals have changed and it will be lasting (Kindleberger and Aliber, 2005). The quote shown above as well as comments made by the Bank of Spain Governor clearly show this feature.

Besides high domestic housing demand, purchase of secondary homes by other European citizens also played a role. Annual net foreign investment in housing moved between 0.5 and 1% of GDP between 1999 and 2007 (De Lis and Herrero, 2008). Martinez et al. (2006) showed that Spain experienced an investment of 164 holiday homes per 1,000 inhabitants which is double than the European average. This led to 100,000 houses per year being acquired by foreign investors and altogether 700,000 new dwellings started only in 2004 (Igal, 2006). In sum, due to rising optimism after the Euro introduction, growing house demand contributed considerably to household debt. Rising house prices further fuelled the bubble and led to a positive feedback mechanism between house prices and debt.

With the housing market slowing down in 2006, property developers and banks searched for new profit opportunities. New aspects included immigrants (supported by a legalisation of 600,000 immigrants in 2006). BBVA, one of the two biggest banks in Spain, tapped the immigrant market by offering loans with numerous co-signatories:

“They are an incredibly powerful market [...] Nobody wants to miss a slice of the cake.” (Professor of Finance, Burnett, 2006)

Not only banks but also construction companies found new profit opportunities such as merger and acquisitions supported by credit money:

“There is more money than ever before to invest – and it needs to go somewhere [...]. There is now a culture of ‘We have to grow’.” (Elkin, 2006)

This development shows remarkably the profit-seeking behaviour of financial institutions and their endogenous money creation.

Table 3 Overview of Profit Taking Stage

Features	Closed Economy	Open Economy	Spanish Economy
Profit Taking (2004-2006)			
Well informed investors leave the market	Investment in different domestic sector	Investment in different domestic sector/external sector	Mergers and acquisitions

Sources: Arestis and Glickman (2002), Frenkel and Rapetti (2009), Minsky (1986a), Kindleberger and Aliber, (2005), Conducted Analysis

4. Role of Fiscal and Monetary Policy

Before showing the influence of fiscal and monetary policy on the bubble development, it is essential to briefly outline the Spanish housing policy. Up until 2002, the Spanish government focussed on promoting housing instead of the rental market. With the help of the Mortgage Market Regulation in 1981, a loan to value ratio of up to 80% (previously 50%) was allowed for mortgages, leading to middle and low income families entering the market (Belsky and Retsina, 2004). Before lifting the restrictions on the rental sector in 1985, owner occupation was promoted through freezing rents and allowing transfer of rental agreements to family members. Housing development was further supported by introducing taxes in land sales from regional and local governments leading to a rise in land sales to the private sector. The government advocated low-cost homeownership with the help of subsidies for suppliers rather than increasing spending on social housing. In 1994, the Spanish government attempted to liberalize the housing finance market by making it easier to refinance. Thus, notary and registration fees were reduced and refinancing costs could be exempted from tax (Belsky and Retsina, 2004). In 2002, the Spanish government introduced a new housing programme. It subsidized firms if they bought houses for letting and households to recover repair and insurance costs for 10 years if they let apartments (Ball, 2009). Despite these policy changes, the rental market stayed underdeveloped in comparison to other European countries (15% compared to 36% EU average, EC, 2012).

Furthermore, the promotion of home ownership was underlined by tax incentives such as reduced value added taxes for residential construction and subsidies for lower income

households (OECD, 2005). Large families (defined as having three or more children) were allowed to reduce the property tax burden by 90% (Kingdom of Spain, 2002). Even though wealth tax on housing and inheritance tax existed in Spain, capital gains and imputed rent were exempted from taxation. 15% of the overall mortgage payments were deductible (Debelle, 2004; EC, 2012). Such favourable credit terms affect the attractiveness of owning a house which is comparable to the effect of favourable treatment of interest payments for corporations, hence, exacerbated the rising housing bubble (Debelle, 2004).

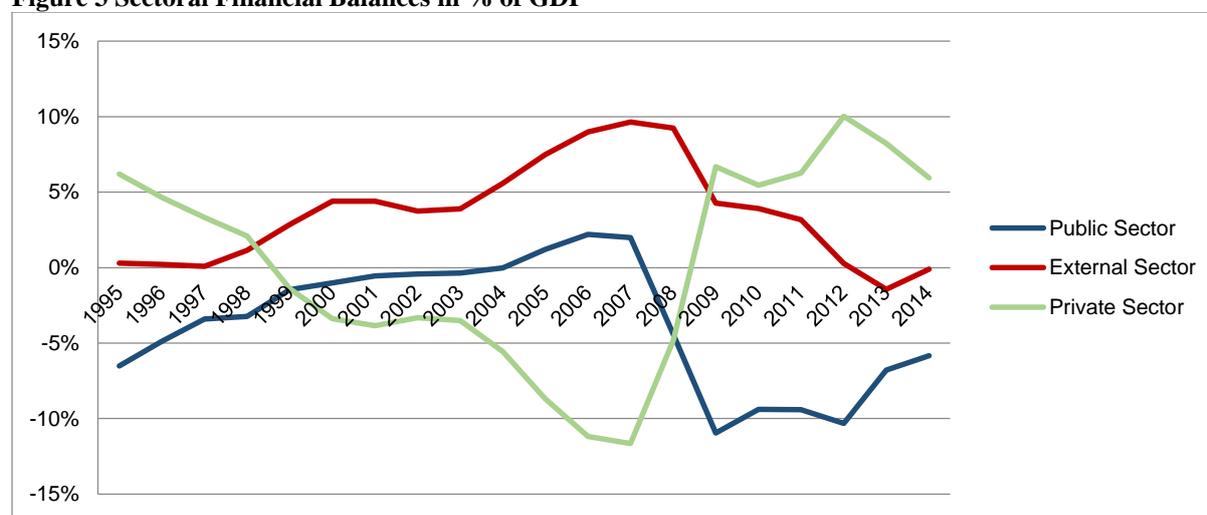
Concerning fiscal policy, Spain adopted a neoliberal approach with the belief that discretionary fiscal policy could only do harm.

“[...] fiscal policy cannot serve as a fine-tuning instrument of demand-side adjustment when used by the authorities in a discretionary manner, divorced from the perceptions and expectations of economic agents. Not only is it inefficient in such cases, it can actually disturb economic activity [...] unpredictable measures sows confusion among economic agents, and engenders distrust of market signs and signals.” (Kingdom of Spain, 2001, pp.19-20)

However, since it has no control over its monetary policy, it had to coordinate fiscal policy in such a way that the pro-cyclicality of financial markets was counterbalanced (Ferreiro et al., 2013). Thus, the impact of economic policies is discussed subsequently.

Up to 2002, Spain’s surplus and deficit behaviour was quite moderate (see Figure 3). In 2002, Spain started to run huge private sector deficits, even rising up to 11.9% of GDP in 2007. In contrast, the public sector reduced its fiscal deficits from -6.50% of GDP in 1995 to -0.03% of GDP in 2004 (see Figure 3). Running a surplus in the case of a current account deficit added to the rising fragility of the private sector.

Figure 3 Sectoral Financial Balances in % of GDP



Source: Author’s calculations based on OECD (2015)

For a more detailed analysis, Kalecki's profit equation is analysed. Since fragility can increase due to not achieving targeted profits, Minsky (1985) uses Kalecki's profit equation to critically assess the impact of economic policy on private sector's profits. Kalecki reformulates the above shown identity and assumes that the economy consists of two classes, workers and capitalists (Kalecki, 1971). The profit (π) equation includes public deficit (Df), balance of trade deficit defined as current account deficit (BDf), savings by workers (Sw) and consumption out of profits ($C\pi$) (Kalecki, 1971, p.82):

$$\pi = I + Df - BDf - Sw + C\pi$$

According to Kalecki (1971), profits depend, amongst others, on changes in investment, government and current account deficit. Falling profits can be offset with an increase of government spending. Since the European System of National Accounts does not present corporate profits, gross operating surplus is taken as a proxy. It is the cost of intermediate goods and services and compensation of employees subtracted from gross output, hence, it does not take into consideration depreciation. Since Minsky's (1986a) analysis is conducted out of a cash flow point of view and depreciation reflects no cash outflows, gross operating surplus seems to be an appropriate proxy. Furthermore, due to missing data concerning savings out of wages and consumption out of profits, Kalecki's profit equation is simplified. Toporowski (1993) shows that it is suitable to replace savings out of wages and consumption out of profits with household's net savings (SDf equals household sector deficit). Corporate profits can rise due to rising investment, increasing budget deficit, rising household sector deficits and increasing current account deficits:

$$\pi = I + Df - BDf + SDf$$

Table 4 Profit Equation Illustrated in % of GDP 1999-2010

	Gross Fixed Capital Formation	Household Savings	Public Sector Deficit	Current Account Deficit	Corporate Profits	Gross Operating Surplus
1999	24.9%	3.8%	-1.5%	-3.3%	19.3%	19.8%
2000	26.1%	4.1%	-1.0%	-4.4%	18.7%	19.9%
2001	26.2%	3.9%	-0.6%	-4.4%	18.5%	19.9%
2002	26.6%	3.7%	-0.4%	-3.7%	19.6%	19.9%
2003	27.7%	4.6%	-0.4%	-3.9%	19.5%	19.5%
2004	28.5%	3.5%	0.0%	-5.6%	19.4%	19.5%
2005	29.9%	2.4%	1.2%	-7.5%	18.8%	19.5%
2006	31.1%	1.3%	2.2%	-9.0%	18.5%	19.7%
2007	31.1%	0.0%	2.0%	-9.7%	19.3%	21.3%
2008	29.2%	1.5%	-4.4%	-9.3%	22.9%	23.2%
2009	24.3%	5.9%	-11.0%	-4.3%	25.1%	23.4%
2010	23.0%	2.8%	-9.4%	-3.9%	25.7%	23.0%

Source: Author's calculation based on AMECO (2015) and OECD (2015)

During an expansionary period, corporate profits are generally expected to rise. However, as shown above, gross operating surplus in relation to GDP and calculated profits show a slight decline during the boom period and belonged to the lowest levels in the Eurozone (see Table 4). Only France and Portugal corporations' profits were lower. In contrast, Germany's corporations' profits rose up to 27% in 2006 (Eurostat, 2015). The downward pressure of improving government sector balance and rising current account deficit slightly outweighed the upward pressure by investment and household savings (by around 1 percentage points). Thus, running a balanced budget added to the depressing effects on corporate profits since it could not be used to level off the downward pressures of increasing current account deficits. However, this profit equation does not depict if the balance was achieved due to qualitative or quantitative changes such as rising revenues. Hence, changes in taxation need to be traced and the discourses in press as well as political documents assessed.

The public budget was nearly balanced during the boom period which was praised in the European press and by public officials:

“Budgetary stability has shown itself to be a key driver of a stable and credible macro-economic environment conducive to the general welfare, in which economic agents can make decisions with greater confidence of success [...] A change which has equipped the Spanish economy with greater resilience to external disturbances.” (Kingdom of Spain, 2003, pp. 5,7)

"It's the best result among the big European Union countries [...] which shows the success and efficiency of an economic policy at the service of growth and job creation." (Spanish Finance Minister, Agence Presse France, 2004)

Nevertheless, it is questionable if it was due to a restrictive fiscal policy stance. There were no expenditure cuts and both revenues and expenditures rose (AMECO, 2015). Moreover, a deficit appears as soon as housing boom related aspects are subtracted from the deficit. Suarez (2010) discounts fiscal deficits by taking out tax revenues related to construction and real estate. In his estimation, those sectors have driven up public revenues at the peak of the boom by 2.9% of GDP in 2006. The European Commission (2012) also points out that 75% of tax increases between 1995 and 2006 were due to the housing boom, thus, transitory. Hence, contrary to the public opinion, a balanced budget was not achieved due to following a restrictive stance but due to rising construction and real estate sector income. Since the tax revenues generated out of the housing market were high and the housing bubble helped to further promote economic growth, it can be argued that the government did not pursue to stop this expansionary phase (Igal, 2007)

As mentioned above, Spain has to coordinate fiscal policy in such a way that the pro-cyclicality of financial markets is counterbalanced. By using real GDP growth as indicators for pro-cyclical or counter-cyclical fiscal policy, different phases can be identified (Ferreiro et al., 2013). To assess discretionary policy and adjust for automatic stabilizers, the structural public balance is examined (Bornhorst et al., 2011). As can be seen in Table 5, Spain followed an expansionary, pro-cyclical stance up until 2004. Before house prices started to decline and investors were leaving the market, the Spanish government adopted a clear restrictive, counter-cyclical policy stance in 2005. This can be seen in the fact that the structural budget was positive while at the same time having a positive economic growth in those years.

Table 5 Overview of Fiscal Policy Stance

Year	Real Economic Growth in %	Public Balance in % of GDP	Structural Public Balance in % of GDP	Fiscal Policy Stance	Cyclicality of Fiscal Policy Stance
1999	4.48	-1.46	-	Restrictive	Counter-cyclical
2000	5.29	-1.02	-0.94	Expansionary	Pro-cyclical
2001	4.00	-0.55	-0.77	Expansionary	Pro-cyclical
2002	2.88	-0.42	-0.37	Expansionary	Pro-cyclical
2003	3.19	-0.37	-0.21	Expansionary	Pro-cyclical
2004	3.17	-0.03	0.04	Expansionary	Pro-cyclical
2005	3.72	1.21	0.97	Restrictive	Counter-cyclical
2006	4.17	2.19	1.23	Restrictive	Counter-cyclical
2007	3.77	2.00	0.46	Restrictive	Counter-cyclical
2008	1.12	-4.42	-5.60	Expansionary	Pro-cyclical

Source: Author's calculation based on OECD (2015), AMECO (2015), IMF (2015)

The above shown expansionary phase was based on a pro-growth strategy incorporating pro-market policies. The goal was to catch up with other European economies:

“The strategy employed seeks, firstly, to boost the growth potential of the Spanish economy and, secondly, to continue laying the groundwork for the upkeep of a positive growth differential with respect to the EU's most developed countries. The aim, in essence, is for the Spanish economy to grow faster than its main European partners through both expansion and contraction phases.” (Kingdom of Spain, 2002, p.8)

In 2000, a corporate tax reform was introduced which was to benefit businesses in general and to support small and medium sized enterprises. The definition for small and medium sized enterprises was widened to include more companies (up to 5 million euros turnover). Tax changes included, amongst others, tax deductible goodwill and carryforwards of tax losses (Kingdom of Spain, 2001). In 2002, a personal income tax reform was introduced with the goal to:

“[...] lower the tax burden weighing on citizens, as a means to favour economic activity, [...] to mitigate the future pressure of pension liabilities on public finances, and to encourage more people into the labour market.” (Kingdom of Spain, 2002, p.20)

The tax reform reduced the lower income group taxes by around 38% and the highest income tax rate from 48% to 45%. The average tax cut lay at 11% (Kingdom of Spain, 2002). Additionally, taxes on economic activities were revised. Besides the tax incentives in the household sector, withholding tax was reduced to the lowest tax rate and excise taxes were frozen for two years leading to a reduction in real terms (Kingdom of Spain, 2002). Furthermore, the capital gains tax rate was reduced from 18% to 15% and the ceiling for tax deduction of capital income for capital held more than two years was raised by 10% (OECD, 2003).

On the expenditure side, the focus also lay on pro-growth economic policies:

“[...] adjustment measures must ring-fence investment [...] the government will continue the strategy which has yielded such good results in the past few years, namely, the prioritisation of those spending items conducive to supply-side growth.” (Kingdom of Spain, 2001, pp. 9, 20)

The goal was to develop a knowledge-based society and supporting small and medium sized enterprises since this area was considered ‘deficitary’. Expenditures were undertaken in the fields of job creation, infrastructure, research and development. The goal was to double research and development spending in order to converge with the European average (Kingdom of Spain, 2004). The economic policy changes were seen as great accomplishment which could lead Spain into full employment:

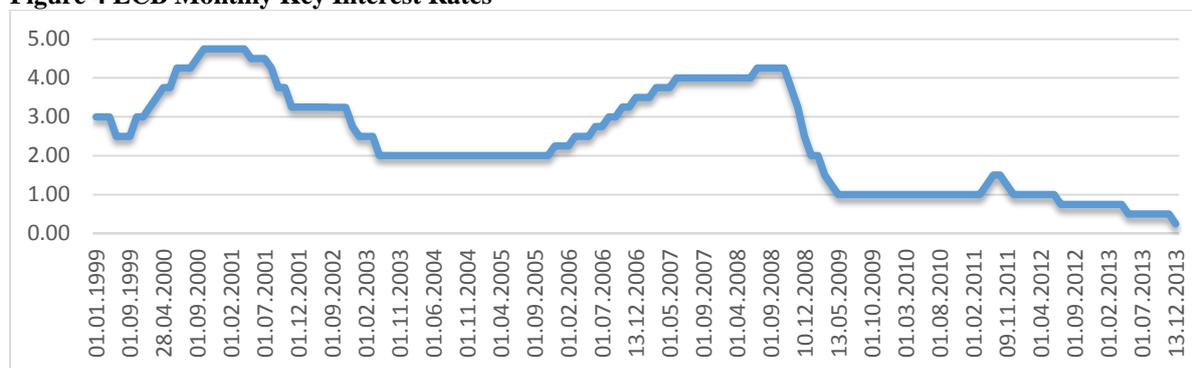
“We know we are not condemned to live with a high unemployment rate,” [...] Today, we know from experience what policies help to create jobs and those which do not.” (Spanish Prime Minister, Agence France Presse, 2003)

Furthermore, as mentioned above, a housing deficit was recognized and housing expenditures were increased by 32.5% in 2005. The budget for 2006 saw a further increase in housing expenditures by 20.6% (Kingdom of Spain, 2005). To summarise, it can be seen that Spain did use discretionary policy such as adjusting tax laws, thus, weakening automatic stabilizers. However, due to the strong economic growth, this did not lead to a decline in the government balance.

As a Eurozone member, Spain lost its monetary sovereignty and real interest and exchange rates depend on a common monetary policy as well as price and wage differentials. The focus of the monetary policy stance lay on price stability. As shown in Section 3, Spain experienced

low or even negative real interest rates during its boom years due to high inflation. It was on average 1 percentage point higher than the Eurozone average (OECD, 2015). However, since other European countries grew only moderately at the same time, the ECB did not have a clear direction as would have been the case when looking at only one country and adopted a stance fitting to core economies' needs by lowering the interest rates (see Figure 4).

Figure 4 ECB Monthly Key Interest Rates



Source: ECB (2015)

Nevertheless, the Euro introduction was seen as beneficial for Spain.

"For the Spanish economy, the advantages of being in a monetary union clearly outweigh the disadvantages" (Director for research at Bank of Spain, Landler, 2005)

"We have always supported the elimination of European barriers and all measures that contribute to financial markets becoming more liquid and more efficient." (Caruana, Governor of Bank of Spain, The Banker, 2006)

In 2002, Borio and Lowe warned of endogenous responses to monetary policy. If monetary policy is considered credible, it might change the behaviour of the financial markets leading to financial imbalances. As can be seen in the development above and in the appraisal of the Euro in the press up until 2004, not only monetary but also fiscal policy were considered to be credible leading to positive expectations. Additionally, during the period of expansionary monetary policy, the Spanish government ran an expansionary fiscal policy, hence, both behaving pro-cyclical as shown in the highlighted box in Table 6. Even though the fiscal policy deficit was quite moderate, tax cuts in favour of mortgages and capital gains in connection with an expansionary monetary policy amplified positive expectations. Due to overheating, Spain should have focused on a counter-cyclical approach to offset the expansionary monetary policy and avoid internal and external imbalances (De Lis and Herrero, 2008). This aspect was also recognized by the Bank of Spain Governor Caruana:

"If in future -- in a framework in which European monetary conditions continue to be relatively loose for the needs of the Spanish economy -- demand pressures contribute to an inflation differential which is not justified by the process of real convergence, it may be advisable to move towards a budget surplus" (Jones, 2003)

Table 6 Fiscal and Monetary Policy Stance

Year	Fiscal Policy Stance	Cyclicality of Fiscal Policy	Change in the average ECB interest rate (%)	Monetary Policy Stance	Cyclicality of Monetary Policy
1999	Restrictive	Counter-cyclical	0	Restrictive	Counter-cyclical
2000	Expansionary	Pro-cyclical	1.14	Restrictive	Counter-cyclical
2001	Expansionary	Pro-cyclical	-0.1	Expansionary	Pro-cyclical
2002	Expansionary	Pro-cyclical	-1.19	Expansionary	Pro-cyclical
2003	Expansionary	Pro-cyclical	-0.5	Expansionary	Pro-cyclical
2004	Expansionary	Pro-cyclical	-0.25	Expansionary	Pro-cyclical
2005	Restrictive	Counter-cyclical	0.25	Restrictive	Counter-cyclical
2006	Restrictive	Counter-cyclical	0.75	Restrictive	Counter-cyclical
2007	Restrictive	Counter-cyclical	0.88	Restrictive	Counter-cyclical
2008	Expansionary	Pro-cyclical	-0.44	Expansionary	Pro-cyclical

Source: Author's calculation based on Eurostat (2015) and ECB (2015)

In 2004, Trichet stated that excess liquidity was prevalent in the Eurozone:

“[...] there is currently more liquidity than is needed to finance non-inflationary growth [...] should excess liquidity persist, it could lead to inflationary pressures over the medium term.”
(ECB, 2004)

Hence, the key interest rate was raised at the end of 2005. With the increases in interest rates, Spanish investment first stagnated before it started to decline in 2008. As soon as the ECB raised the key interest rate, real-estate related investment declined (see Appendix 5). Furthermore, it led to an increase of the debt service burden of households and non-financial corporations. Households' debt service burden rose significantly after 2005, reaching its highest level since 1993 in 2006 (Jamieson, 2006). This is due to the fact that Spain's mortgage rates are based on variable rates. Thus, by switching the policy stance in 2006 in a financially fragile environment, the financial distress was exacerbated.

5. Macroeconomic Framework

“Unless we understand what it is that leads to economic and financial instability, we cannot prescribe-make policy-to modify or eliminate it.”
(Minsky, 1986a, p. 111)

Before being able to make policies, it is essential to understand the mechanisms leading to financial fragility. The above discussed causal chain can be summarized as followed:



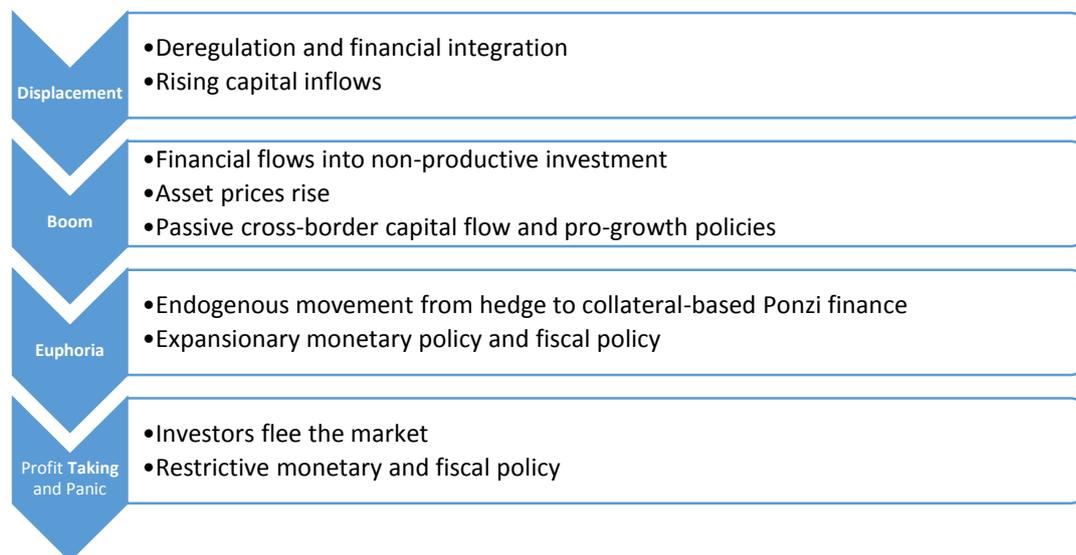
Capital inflows, should be regarded as the root cause of the Spanish financial crisis of 2007. Due to lifting the external financial constraint and low interest rates after the Euro introduction, those capital inflows resulted in exceptional housing investment. By a Minskian validation process more housing investment was generated, asset prices rose and financial fragility grew. However, in the case of Spain, this was not due to financial innovation or nominal interest rate differentials, but due to the search for profit opportunities by the European centre. Thus, financial flows play an essential role during the rising fragility which is a prerequisite for a Minsky moment to take place. The housing boom was based on positive expectations which were, amongst others, dependent on factors such as interest rate levels or preferential tax laws. Hence, it is important to examine fiscal and monetary policy.

In the boom years, Spain's government adopted a pro-cyclical fiscal policy stance. The focus lay on pro-growth strategies with beneficial tax laws for capital gains and home ownership. This took place while the Eurozone adopted an expansionary monetary policy. Short-term interest rates decreased leading to rising credit availability and declining long-term interest rates. Hence, the boom was reinforced with the help of low debt service costs and an easy access to finance, thus, lifting financial constraints and leading to an underestimation of risk. Pro-cyclical monetary and fiscal policy amplified positive expectations, thus, need to be included into the characteristics of Minsky moments. It was shown that not only exogenous factors contributed to the trigger but also helped to fuel the boom by raising positive expectations and supporting the credit creation mechanism. Even though the government was aware of the increasing private and external sector deficit, the boom was supported prior to 2005, instead of reducing attractiveness of capital inflows with less favourable tax laws.

In 2005, fiscal and monetary policy changed to a restrictive stance. As soon as the ECB changed the monetary policy, real-estate related investment went down resulting in the profit taking phase. The special case in Spain is that changes in key interest rates are immediately transmitted into mortgage rates. Thus, debt service burdens rose, leading to a deepening of financial fragility. Furthermore, a restrictive fiscal policy increased the pressure on profits. As shown with the help of sectoral balances, it became clear that increasing budget surpluses drove the private sector further into financial fragility because of having to run a deficit in the case of a current account deficit. Thus, not only could a balanced budget not be used to counter-balance but it reinforced the rising fragility in the private sector by switching policy direction in an environment with high financial fragility. Thus, economic policy plays an essential role in the

development of increasing fragility and has to be added to the Minsky-Kindleberger framework. This approach is shown in Figure 5 which gives an overview of the causal factors for the Spanish pre-2007 bubble.

Figure 5 Adjusted Crisis Model



Source: Adapted from Kindleberger & Aliber (2005)

6. Conclusion

This paper has investigated the role of economic policies in the formulation of real estate bubbles. The descriptive analysis was useful in offering insights into the application of Minsky's financial instability hypothesis in an open economy. This was supported by a qualitative review of documents in order to explore reasons of policies and development of expectations. It contributes to the existing literature by embedding qualitative into quantitative methods to describe the influence of economic policies on financial fragility development.

As shown in the literature review, the discussion of the trigger of an asset bubble has increased in recent years. However, it is surprisingly difficult to find a systematic discussion of fiscal and monetary policy in the bubble development. It was shown that Spain experienced an exogenous trigger in form of the Euro introduction which through endogenous factors including positive expectations and capital inflows led to financial fragility. The case was made that due to a search for profits by the European centre, financial profit opportunities determined endogenously capital flows' direction. Those rising capital inflows were followed by a rise in demand and growing current account deficits. Due to a prior deregulation process in the

financial sector and a housing policy promoting ownership, credit demand and housing investment increased. Because of having variable mortgages, the Spanish mortgage market shows a high sensitivity to short-term interest rates. Thus, the declining short-term interest rates further exacerbated the housing bubble. An appraisal of ‘sound’ Spanish economic policies and pro-growth fiscal policy and expansionary monetary policy were amplifying positive expectations.

Further research on the causes and consequences of wider economic crises and the influence of macro-economic policies needs to be conducted. It would be interesting to see how the financial instability hypothesis applies in different institutional settings since events might be contingent. Furthermore, the question remains why despite lifting restrictions Spain continued to have a relatively conservative financial system. Thus, a comparative case study approach could be helpful. Moreover, cross-sectional differences in age and income need to be captured since it plays an important role in assessing households’ ability to deal with shocks such as unemployment, interest rate and house price changes. The disaggregated numbers might differ significantly from the aggregated numbers.

One major contribution of Minsky (1986a) is the endogenous movement of an economy towards fragility based on positive expectations of future profits. In this context, motivational factors influencing risk perceptions need to be investigated. Due to this endogeneity of economic expectations, it is essential to explore how risk-taking increases depending on changing perceptions of economic uncertainty and positive attitudes towards government policies. What role did institutional incentives such as taxation changes, new mortgage instruments and housing policies in connection with monetary policy play? Did it change the perception of a house as a means of wealth? How do households deal with risks?

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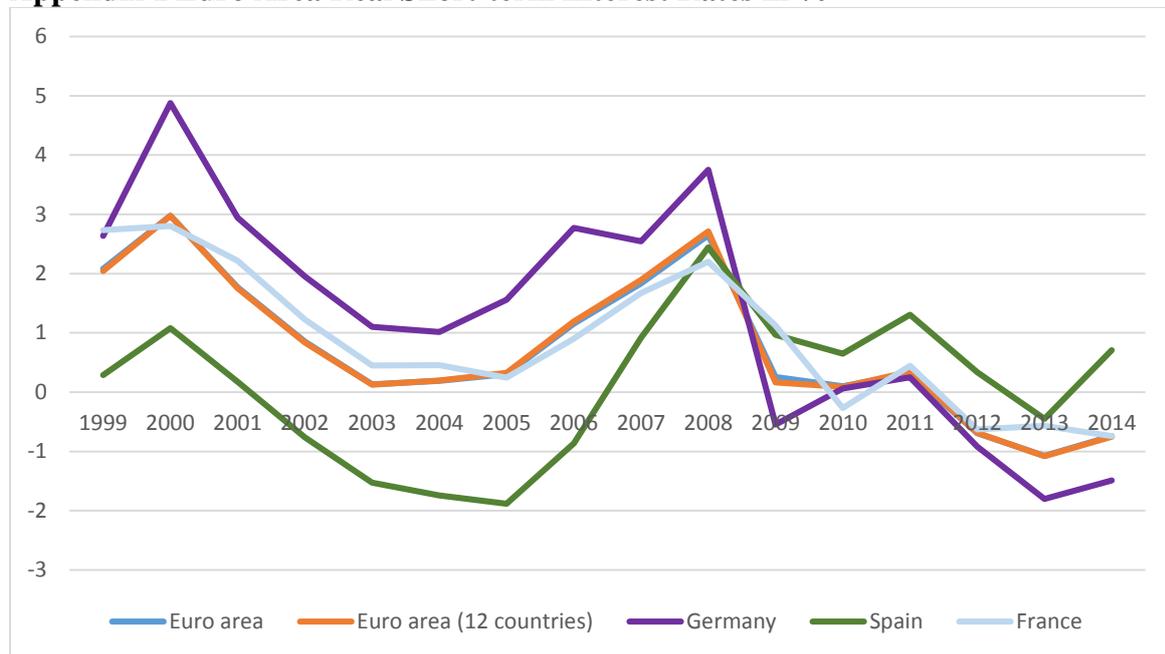
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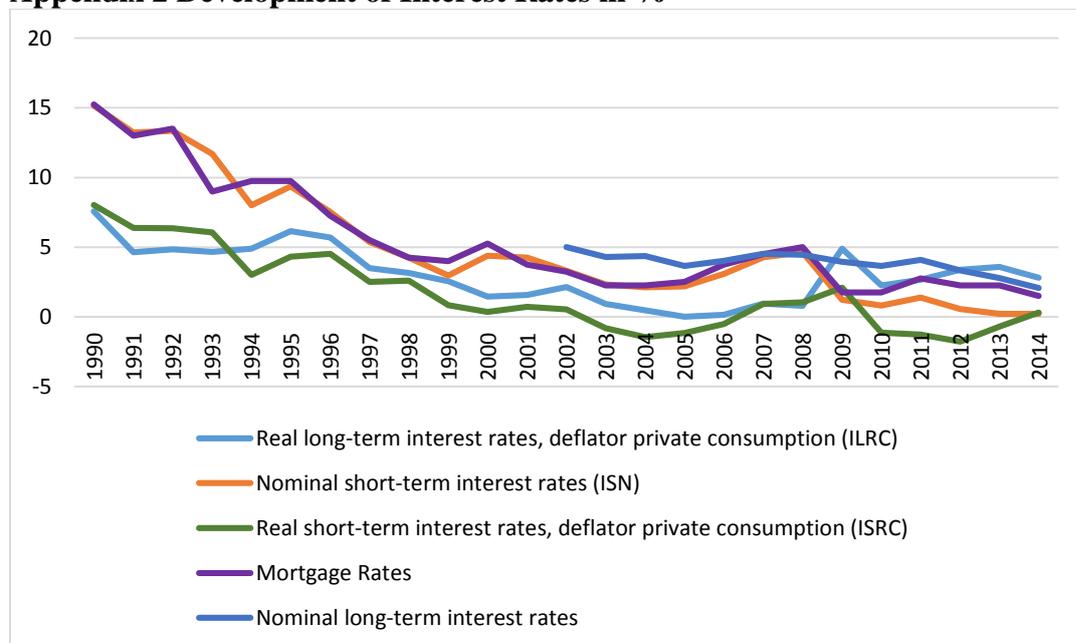
Appendix

Appendix 1 Euro Area Real Short-term Interest Rates in %



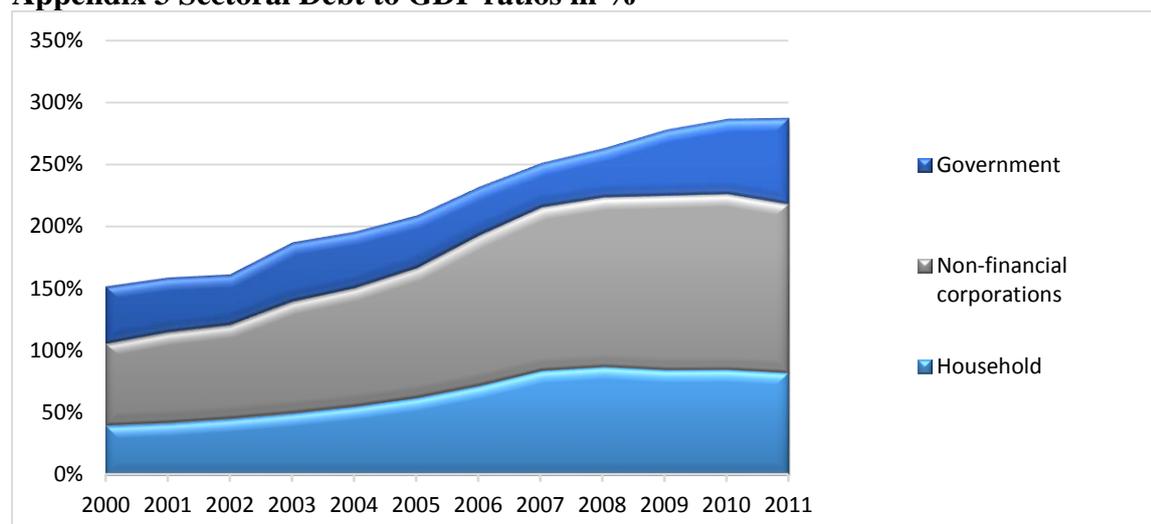
Source: AMECO (2015)

Appendix 2 Development of Interest Rates in %



Source: OECD (2015)

Appendix 3 Sectoral Debt to GDP ratios in %



Source: Author's calculation based on Eurostat (2015)

Appendix 4 Report on Documents' Analysis

Documents Analysed	Amount	Years	Key Search Themes
Stability Programmes of Spain – Bank of Spain	6	2001, 2002, 2003, 2004, 2005, 2006	Fiscal Policies, Strategy, Economic Growth
ECB documents published online	20	ECB press releases online 2002-2006 (search by activity)	Monetary Policy, Strategy, Banking Structure, Financial Stability
Financial Times	10	25/09/2002, 07/03/2003, 29/03/2003, 17/04/2003, 07/07/2004, 26/05/2005, 16/01/2006, 23/10/2006, 25/10/2006, 11/11/2006	Spanish Economic Policy, Spanish Housing Boom/Real Estate Sector, Economic Growth
The Banker	2	01/01/2004, 01/06/2006	
The Main Wire	14	23/03/2004, 05/04/2004, 29/06/2004, 05/07/2004, 22/03/2005, 11/05/2005, 13/05/2005, 22/06/2005, 06/07/2005, 22/10/2005, 15/11/2005, 05/01/2006	Governor of the Bank of Spain, ECB, Governing Council, Economic Growth, Housing
Additional Newspapers included: Agence France Presse, Associated Press, Daily Mail, Daily Telegraph, Irish Times, New York Times, Newsweek, Sunday Times, Sunday Tribune, The Scotsman, United Press International, Washington Post	25	2002-2006	Spanish Economic Policy, Spanish Housing Bubble/Real Estate Sector, Economic Growth

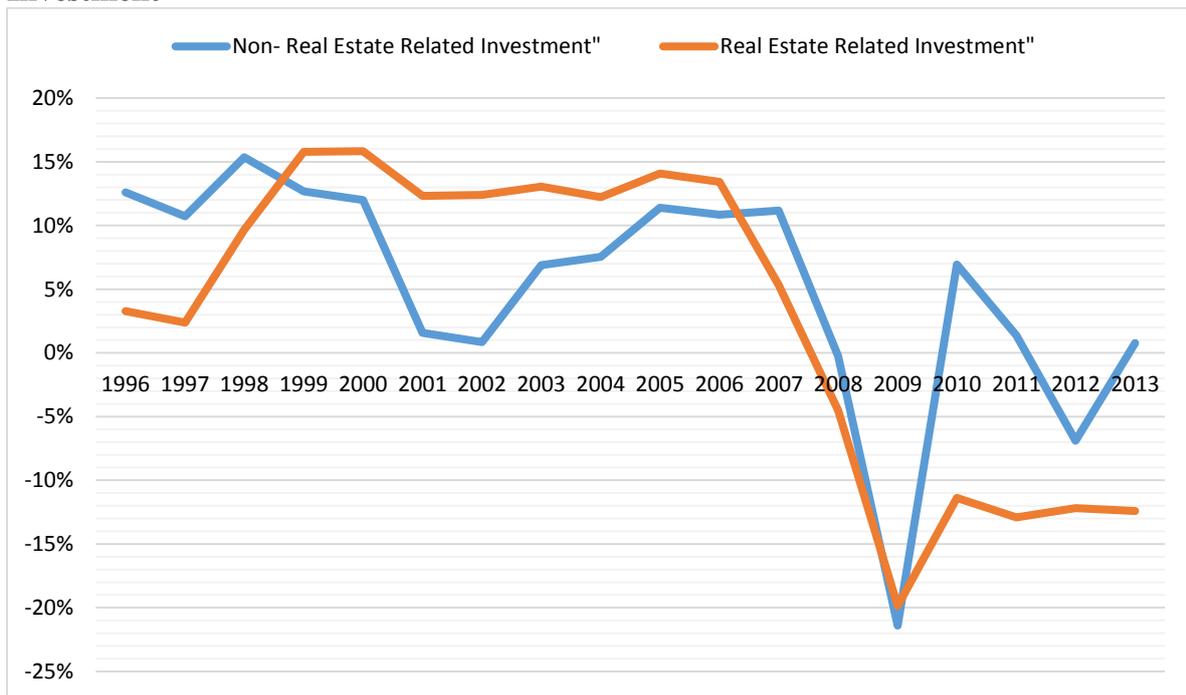
Overview of Main Themes

<i>Selected Documents</i>	<i>Amount</i>	<i>Years</i>	<i>Themes Detected</i>
<i>Policy Reasoning</i>			
<i>Stability Programmes of Spain</i>	4	2001 -2005	Focus on economic growth and balanced budget Avoidance of discretionary fiscal policy and promoting supply-side growth; structural reforms (market openness and rising competition) Construction negatively related to interest rates
<i>ECB documents published online</i>	4	2002-2004 2005	Focus on the price stability and flexibility of financial markets, benefits of large cross-border provision of financial services Banks do not purely mediate but transfer risks to other sectors Excess liquidity in Eurozone – possibility of inflation
<i>News reports focused on Bank of Spain Governor</i>			
<i>The Main Wire</i>	5	2003-2004 2005	Call for wage moderation and structural reforms Monetary policy should not target asset prices; Spain's housing boom not a bubble, low probability of disorderly adjustment
<i>The Banker</i>	1	2006	Monetary policy should target asset prices Support of financial market flexibility and advantages of being part of the monetary union Mortgage growth and household spending negatively related to interest rates

Newspapers

<i>Years</i>	<i>Newspaper Examples</i>	<i>Dates</i>	<i>Themes Detected</i>
2000	United Press Int.	13/06/2000	Public Approval of the Euro
	New York Times	22/06/2000	Spanish consumers confident
2002	Agence France Presse	19/04/2002	European economy stronger than US
	Financial Times	25/09/2002	Peculiarity of Spanish housing market
2003	Agence France Presse	27/05/2003	Spanish economy one of the strongest of EU
	Agence France Presse	11/11/2003	Prime minister targets full employment by 2010
2004	The Banker	01/01/2004	Dismissal of property bubble
	Financial Times	07/07/2004	Unsustainable property bubble
2005	Daily Mail	18/03/2005	Sudden stop of Spain's investment boom
	New York Times	20/05/2005	Spanish housing boom connected to monetary policy
	Sunday Times	09/10/2005	Spanish property investment by non-residents falling
2006	Financial Times	11/11/2006	Economic culture of having to grow; mergers and acquisitions rise
	Financial Times The Scotsman	25/10/2006 29/11/2006	New profit opportunities: immigrants Spain's economy turned vulnerable

Appendix 5 Annual Growth Rates of Real Estate Related/Non-Real Estate Related Investment



Source: Author's calculation based on OECD (2015)