Housing price bubbles and credit crunches: recent country evidence

Bolle immobiliari e credit crunch: evidenze da alcuni paesi

The recent financial turbulences, which started in the Us in August 2007, have affected the credit market in many countries around the world. We have chosen some countries with and without a previous housing price bubble so as to check if the presence of a former real asset price hike matters in the magnitude of the subsequent credit crunch that followed after.

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La recente turbolenza finanziaria, iniziata nell'agosto 2007, ha interessato i mercati creditizi di molti paesi a livello mondiale. In alcuni paesi, in particolare, è stata ravvisata una elevata corrispondenza tra bolle immobiliari, crisi di liquidità e restrizione del credito.

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1 Introduction

For almost two years international financial markets have been under great pressure, originating with the subprime mortgage episode. This, in turn, was triggered by the downturn of the Us housing cycle and spread quickly into third countries under the form of severe losses and an increasing lack of confidence. Market liquidity dried up almost instantly and the banking sectors around the world suffered great financial distress. It became increasingly difficult for many financial intermediaries to refinance operations as overall loanable funds shied off. This process originated a chain reaction in which bankers reduced the exposure to loans. As a result, getting loans became more difficult for consumers and businesses, with lenders preferring to hold a very liquid position rather than risk facing a wave of bankruptcies and mortgage defaults. Consequently, interest rates skyrocketed and clear signs of an imminent severe credit crunch spread throughout the economy[1].

Banks had been very active in raising mortgages which were then sold to secondary investors. Since the risk was transferred to the new holders, banks were not very cautious in limiting the risk involved in these loans. Other investors, looking for higher rates of return, relied on the role of rating companies to evaluate risk and insurance companies to diversify it. In fact, mortgage backed assets were much riskier than they had initially thought, as was made explicit in August 2007.

Commercial and Savings banks, which had previously shown very high activity in mortgage lending that forced them to get funds from international lenders, faced the need either to renew their short-medium term financial requirements or to stop the automatic renewals of their own loans. The need to down size their loan portfolio originated a credit crunch in the banking sector. Banks were afraid of not being repaid their loans by other banks even in the very short term of the money market. Given that they did not know the borrowing partners' risk exposure, they preferred to stay liquid and deposited their excess reserves at the central bank. Consequently, a much higher risk premium in interbank loans reduced the volume of transactions in the market[2].

The need to refinance their operations in a very hostile market led banks to reduce the refinancing of many regular loans made to customers. It was not long before safe businesses and consumers with stable banking relations started to perceive a radical change of attitude on the part of banks, which were much less prone to keep the easy loan policy followed until only a few months earlier. Banks rejected many of the loans that they used to accept

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Jel codes: G01, R20, E44

1 The economics profession is unclear as to what constitutes a credit crunch. In simple terms, credit crunch is a situation in which lenders will not lend, borrowers cannot borrow, builders cannot build and buyers cannot buy. Essentially a credit crunch is a sudden cut in the availability of credit or loans, including mortgages, credit cards and interbank lending as banks worry about a lack of liquidity. If there is a significant reduction in the supply of loans, the economic outlook quickly becomes depressed. The crucial differences in definition depend on the cause of the contraction and whether credit is rationed by means other than price. Bernanke and Lown (1991) define a credit crunch as a decline in the supply of credit that is abnormally large for a given stage of the business cycle. While credit normally contracts during a recession, an unusually large contraction could be seen as a credit crunch.

2 In order to borrow from the central bank, an anonymous procedure was introduced in many countries to avoid the negative signalling effect on borrowing banks.

before and when accepted, they were charged a much higher interest rate. Thus many households and businesses, who previously would have been able to borrow from banks, were now turned down. The credit market dried up.

With much less credit available, consumers and businesses facing expectations of an immediate recession of unknown severity, reduced their effective demand bringing the economy to a complete stall. This paper analyzes whether the tightening of the credit market has been more severe in those countries that had formerly experienced a housing price bubble[3]. We claim that in those countries with a higher presence of mortgage lending in the balance sheets of their commercial and savings banks we should expect a more severe credit tightening after the housing prices stopped rising and started moving down.

Section 2 shows the pattern of housing prices and credit aggregates over the expansionary period 2003-2008, previous to the credit crunch. We classify the countries into bubble, non-bubble and deflationary economies. Section 3 analyzes the evolution of housing prices, credit aggregates and some indicators of the real side of the economy. Finally, section 4 concludes.

2 The pre-crunch period

Real estate price dynamics are significantly heterogeneous worldwide and it is possible to point out difference also among countries included in the Emu area. Figure 1 shows how Ireland is the most inflationary country in housing prices, followed by the Uk and Spain. We see that Netherlands started its inflationary period at about the same time as Ireland but its much shorter bubble was over by 2001.

According to the accumulated housing price inflation rates, we classify these countries into three different groups: bubble, non-bubble and deflationary countries (table 1).

Spain, Ireland, Uk and the Netherlands belong to the first group with annual sustained price hikes above 7 %. Italy, France and Usa form the second group of non-bubble economies with positive annual inflation rates under 7%. Germany and Japan belong to the group of deflationary economies.

Reclassifying countries previously indentified on the basis

Figure 1

House Price Indexes by country (Q1 1996=100)

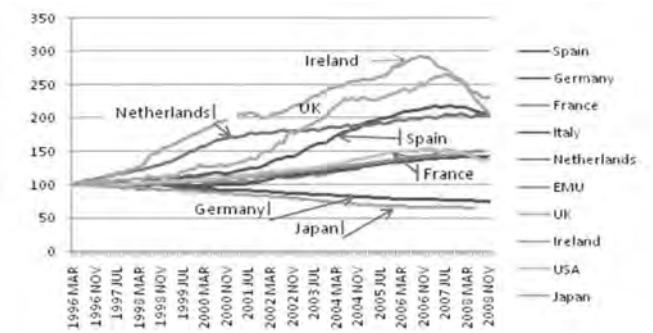


Table 1

Annual rate of inflation in housing prices (computed monthly)

	Bubble countries				*Non-bubble countries*				*Deflationary countries*	
	Ireland	Netherlands*	UK	Spain	USA	EMU	France	Italy	Japan**	Germany
Inflation in housing prices (%)	12,01	10,71	9,92	7,07	3,95	3,05	2,96	2,55	-3,24	-2,00
Period	March 96 - Jan 07	March 96 - Sep 02	March 96 - Aug 07	March 96 - March 07	March 96 - Dec 06	March 96 - Dec 07	March 96 - Sep 08	March 96 - Dec 08	March 96 - Jun 08	March 96 - Dec 08

* The Netherlands will not appear as a bubble country below when we concentrate on the 2003-2008 period, see figure 1 below.
** Japan experienced a real estate bubble in the 1985-1990 period when an index of land prices tripled in real terms. See Barsky (2009).

of the rate of inflation, some interesting differences could be identified among countries with high and low inflation price dynamics (figure 2).

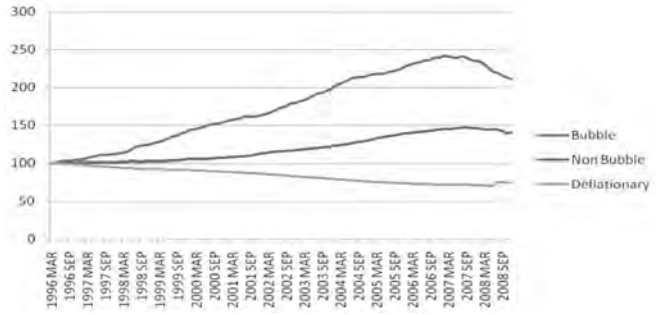
We can see that on average the group of bubble economies saw housing prices rise by a factor of 2.5 over 11 years. Similarly, this factor was 1.5 for the group of non bubble economies.

Housing inflation can also be very unsteady over time. figure 3 shows the Financial Times Housing Price index for the Uk. Over the seventies and eighties, inflation in housing prices was quite high in this country, with three peaks and

3 Kindleberger's definition of bubble is «an upward price movement oven an extended range that then implodes», see Kindleberger (1996).

Figure 2

House Price Indexes by country (Q1 1996=100)



more than ten years of annual rates above 10%. Except for the first half of the nineties, housing price inflation was high again until the burst of the bubble in 2007.

In the case of the Us, we have double checked the housing inflation index with that of Standard & Poors-Schiller. Figure 4 shows for this latter one an accumulated price hike that exceeds that given by the alternative data set by a factor of six.

As for the credit market conditions, we consider two different sources for interest rates. figure 5 shows typical mortgage interest rates over the period 1998-2008. There is a clear path of convergence of interest rates for all countries considered. Excluding Greece, the geographical maximum spread of interest rates between countries was 2.4 pp in 1998 and only 1.2 pp ten years later.

Figure 3

Financial Times Housing Price annual rate of change

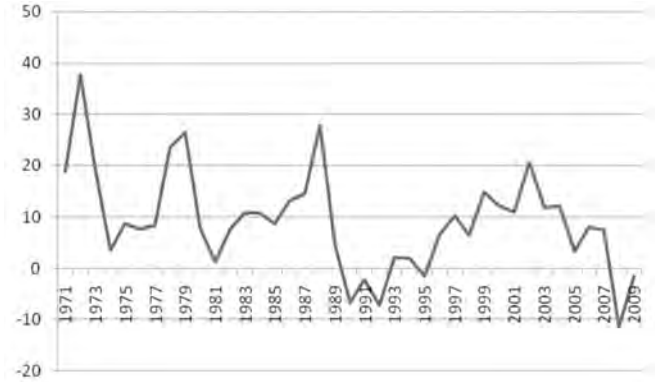


Figure 4

Us Housing prices

The evolution of 10 year mortgage rates appears in figure 6. All rates follow a similar path since all are Emu countries. However, the maximum difference among countries is almost 2 pp with Denmark on the upper bound and Finland, France and Spain on the lower side.

It is well known how dependent housing purchases are on credit availability. Figure 7 shows the share of housing credit over total credit for households of some European countries. This share is lowest in Austria and Italy, with values around 55%, and is highest in the Netherlands, Denmark and the Uk (90, 85 and 80% respectively). It is true that a higher share means that housing finance is a larger burden

Figure 5

Typical mortgage interest rates (%)

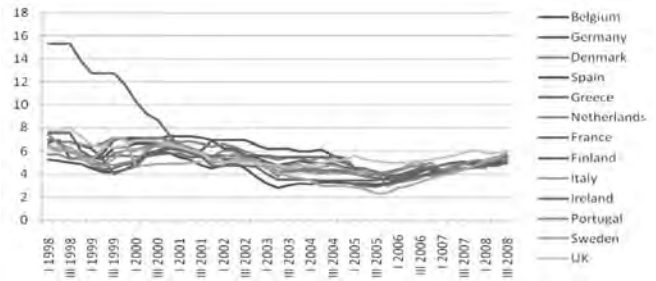
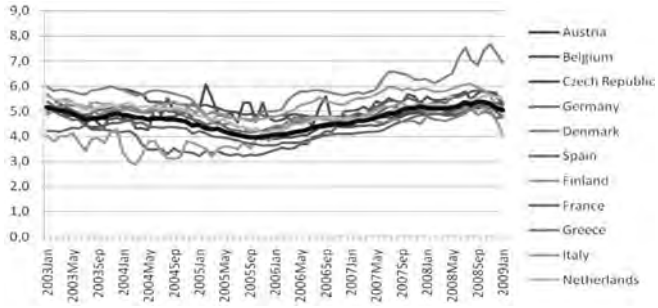


Figure 6

Interest rate of loans for house purchases (Original maturity: Over 10 years)

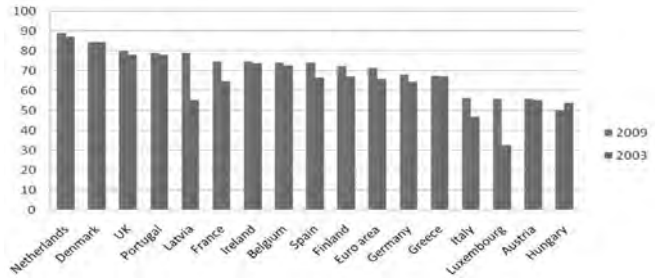


on household total indebtedness, although it might reflect only a lesser use of credit for purposes other than housing (consumption, etc.). Figure 7 also shows that the share of housing over total household credit has increased in all countries (except for Hungary), particularly strongly in Latvia, Italy, and Luxembourg.

Apparently those countries with the lowest share of housing over total credit at the beginning of the period have experienced the highest relative increase. To test for this possibility, figure 8 replicates a beta-convergence test. We regress the share of housing over total credit at the initial year of 2003 against its growth rate over the period.

Figure 7

Share of housing over total credit



Results show that there is beta-convergence since those financial systems with the lowest share of housing credit have experienced the highest rate of increase of mortgage loans. Figure 9 also confirms this result by means of a sigma convergence exercise. As can be observed, the deviation coefficient of the share of housing credits among countries is lower in 2009 than in 2003. In other words, housing credit conditions in countries are now more homogeneous than they were six years ago.

Housing loan trends appear in figure 10. Ireland and Spain show the highest average growth rates over the 2003-2009 period, around 16% compounded annual rate. The second group of countries, Finland and Austria, show a much lower rate of increase of 9.2%. Table 2 shows a clear corre-

Figure 8

Beta-convergence of the share of housing over total credit

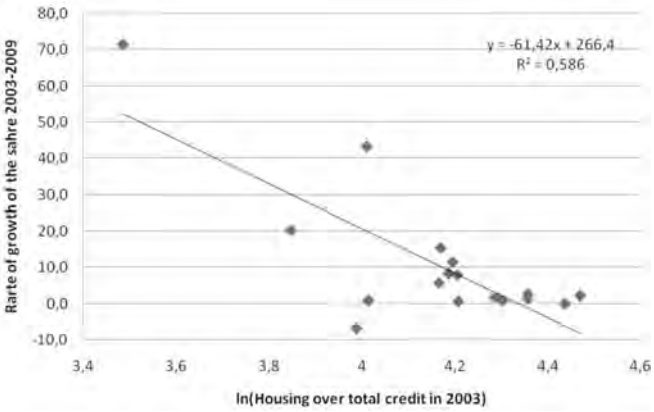


Figure 9

Sigma-convergence of the share of housing over total credit (deviation coefficient)

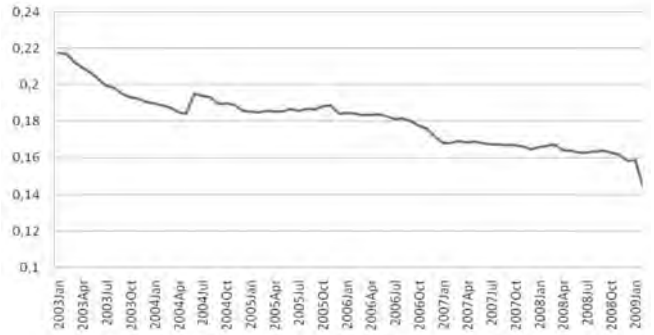


Figure 10

Housing loans

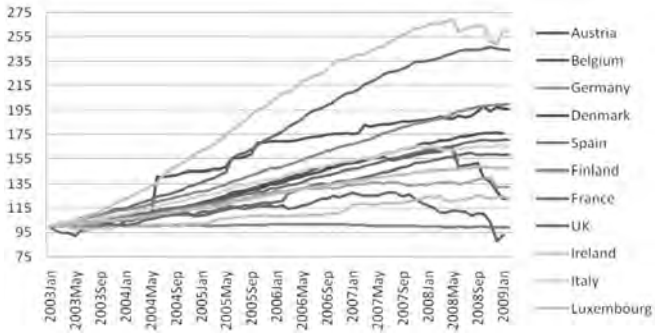


Table 2

Housing loans (rates of growth in pp)

	Bubble countries	*Non-bubble countries***	*Deflationary countries**
2003	16	14	2
2004	22	16	1
2005	24	16	1
2006	15	14	2
2007	9	12	-1
2008	-1	2	-1

* Only Germany;
** Including the USA

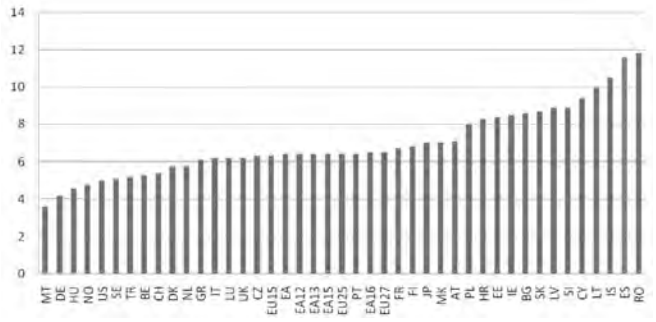
spondence between housing loan growth rates and housing price inflation.

Finally, a look at the country relative weight of the construction sector as a share of Gva explains the different quantitative implications of a credit crunch that originated in the housing sector. Figure 11 (a) shows that this share is around 4% in countries like Mt and De and is three times higher in countries like Spain and Romania[4]. It is interesting to note that the order of countries by size of the construction sector is almost identical to the ordering by accumulated growth 1995-2008. That is, countries with a high share of the construction sector have experienced a higher growth rate over the last 13 years.

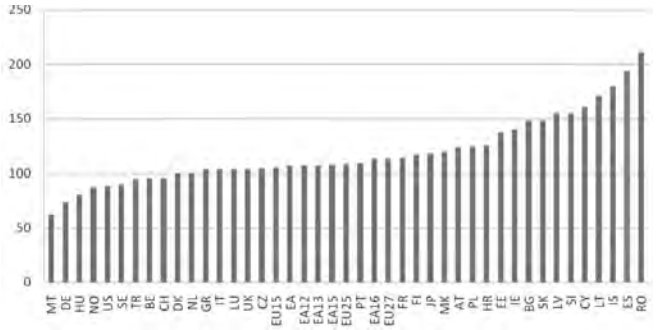
4 Interestingly, the Us – blamed for starting the international financial crisis after the subprime episode – shows one of the lowest relative size of the construction sector as well as one of the lowest accumulated growth rates.

Figure 11

Relative weight of the construction sector in GVA.
a) Weight of the construction sector in GVA. 2008



b) Accumulated increase of the weight of the of the construction sector in GVA. 1995-2008. 1995=100



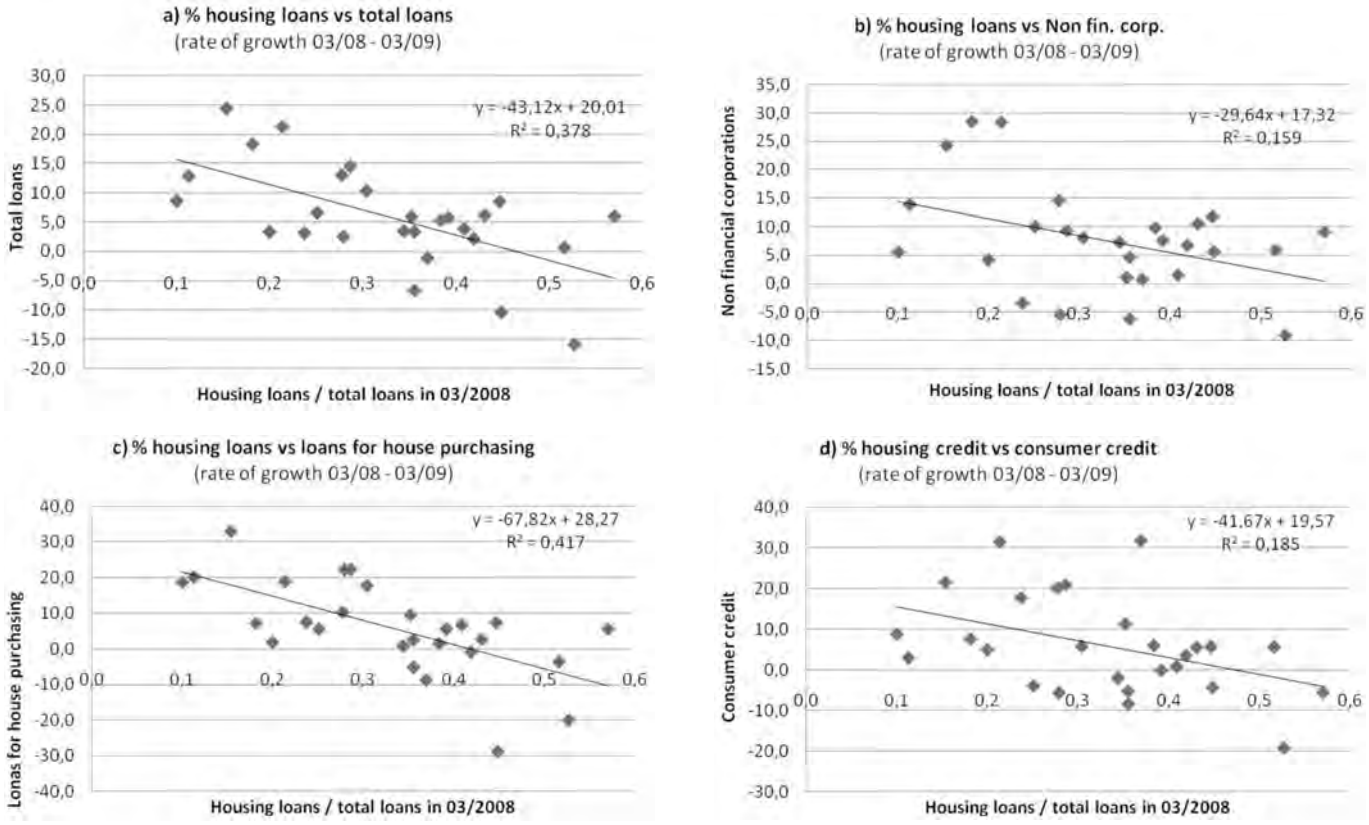
3 The crunch period

We now turn to the analysis of the crunch period defined as March 2008 through March 2009. In a series of tests, we want to check whether the intensity of the deceleration in credit growth is related with the relative size of the housing credit sector in the market. We find that those countries in which housing loans were relatively more important (representing a higher share of total loans) in March 2008 experienced – over the crunch period – the lowest growth in total loans (figure 12a), in loans to non financial companies (figure 12b), in loans to purchase houses (figure 12c) and, finally, in consumer credit (figure 12d).

However, we find no evidence as to whether the weight of the housing sector in the loan industry has influenced the increase in unemployment (figure 13). Apparently, the almost unanimous worsening of the unemployment situation in all

Figure 12

Credit growth and relative size of the housing credit sector



countries over the last year had no relationship with the banking specialization in lending to the housing sector.

We provide evidence on the influence of the weight of the housing loan industry on the intensity of the credit crunch. We define the intensity of the credit crunch as the difference between the growth rate of loans to house purchases during the crunch period and the annual average rate of growth over the expansion period of March 2003 through March 2008. Evidence on this measure of deceleration appears in figure 14. We find that loans to house purchasing have decelerated more than total loans (panel a), loans to non financial firms (panel b), consumer credit (panel c) or household loans (panel d).

Again, we find no relationship between the intensity of the credit crunch and variations in inflation or unemployment rates (figure 15).

Credit deceleration is plotted in figure 15 on the vertical axis. We can see that it is negative for most of the countries except in the cases of credit to non financial firms and consumer credit values.

We find no evidence between the importance of housing loans in the aggregate loan industry and the deceleration figures for total loans (16 a), non financial businesses (16 b) housing loans (16 c) or consumer credit (16 d).

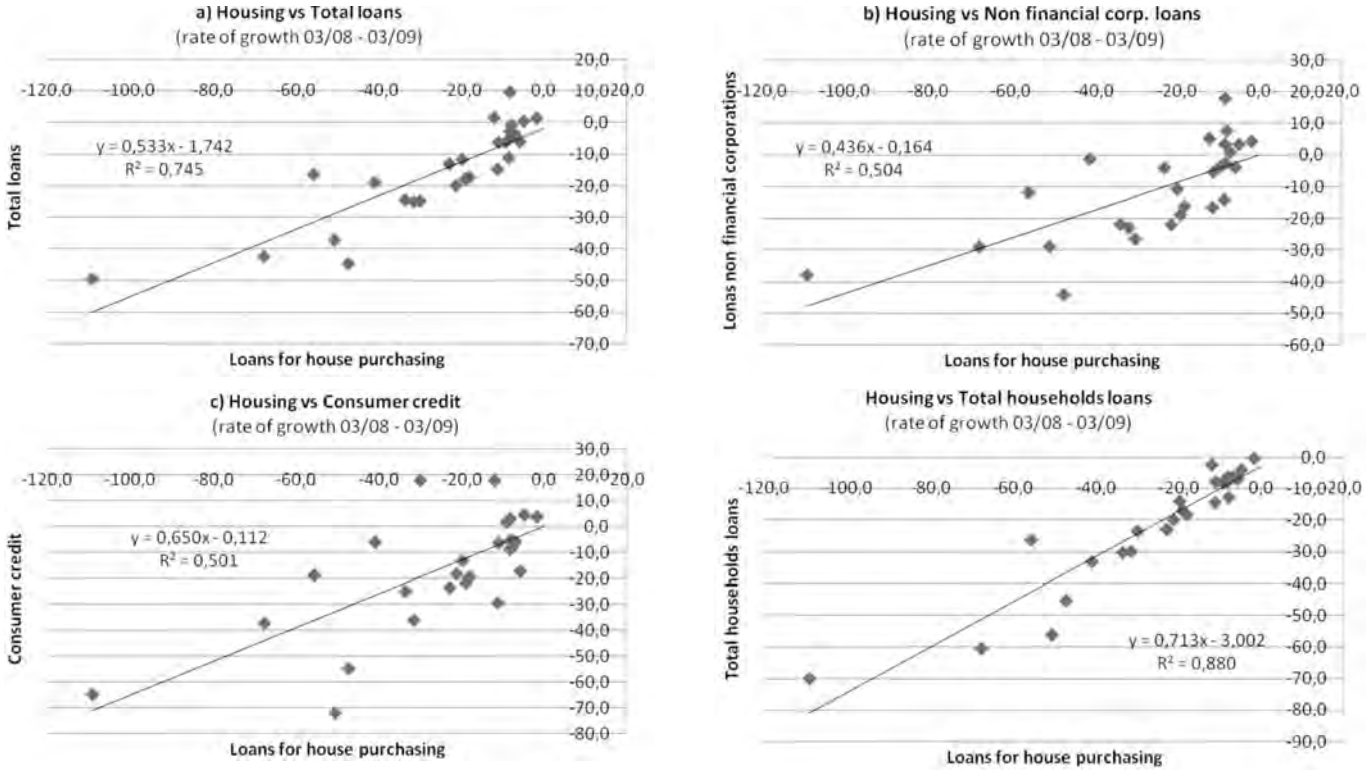
4 Concluding remarks

We find positive country evidence regarding the impact of the relative size of the housing sector on the intensity of the recent credit crunch period.

Countries which experienced the highest housing price

Figure 14

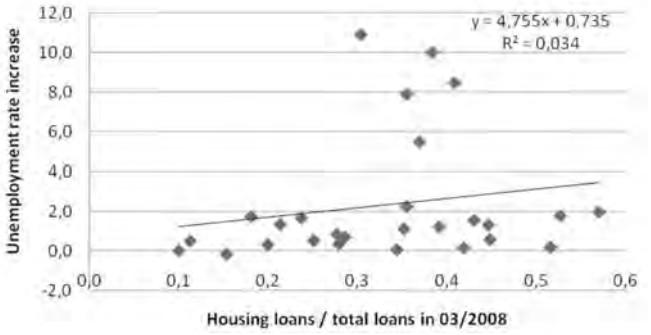
Weight of the housing loan industry and intensity of the credit crunch



hikes are also countries where the credit deceleration has been more intensive. The relative size of housing loans on banks portfolios, together with a much higher correspondent risk in the inter-bank markets, has probably been the main cause behind the liquidity constraint crises occurring over the last year.

Figure 13

Percentage of housing growth vs unemployment rate increase



REFERENCES

Barsky R.B. (2009), *The Japanese bubble; a "heterogeneous" approach*, NBER Working Paper 15052, June.

Bernanke Ben S., Lown Cara S. (1991), *The Credit Crunch*, Brookings Papers on Economic Activity, no. 2:, pp. 205–47.

Clair R.T., Tucker P. (1993), «Six Causes of the Credit Crunch (Or, Why Is It So Hard to Get a Loan?)», in *Economic Review*, Third Quarter 1993.

Kindleberger C.P. (1996), *Manias, Panics and Crashes*, Basic Books.

Parkinson M., Ball M., Blake N., Key T. (2009), *The Credit Crunch and Regeneration: Impact and Implications. An independent report to the Department for Communities and Local Government*, Department for Communities and Local Government.

Figure 15

Credit crunch vs inflation and unemployment rate

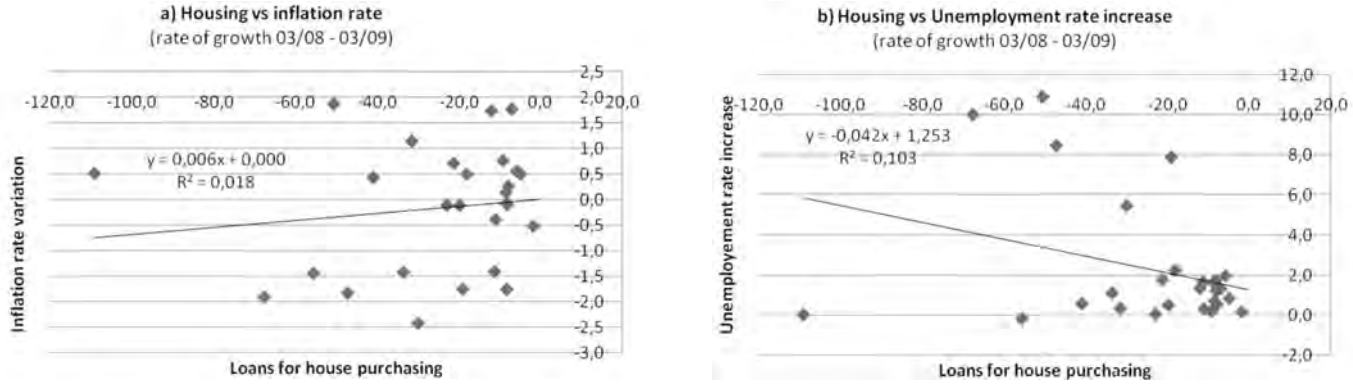
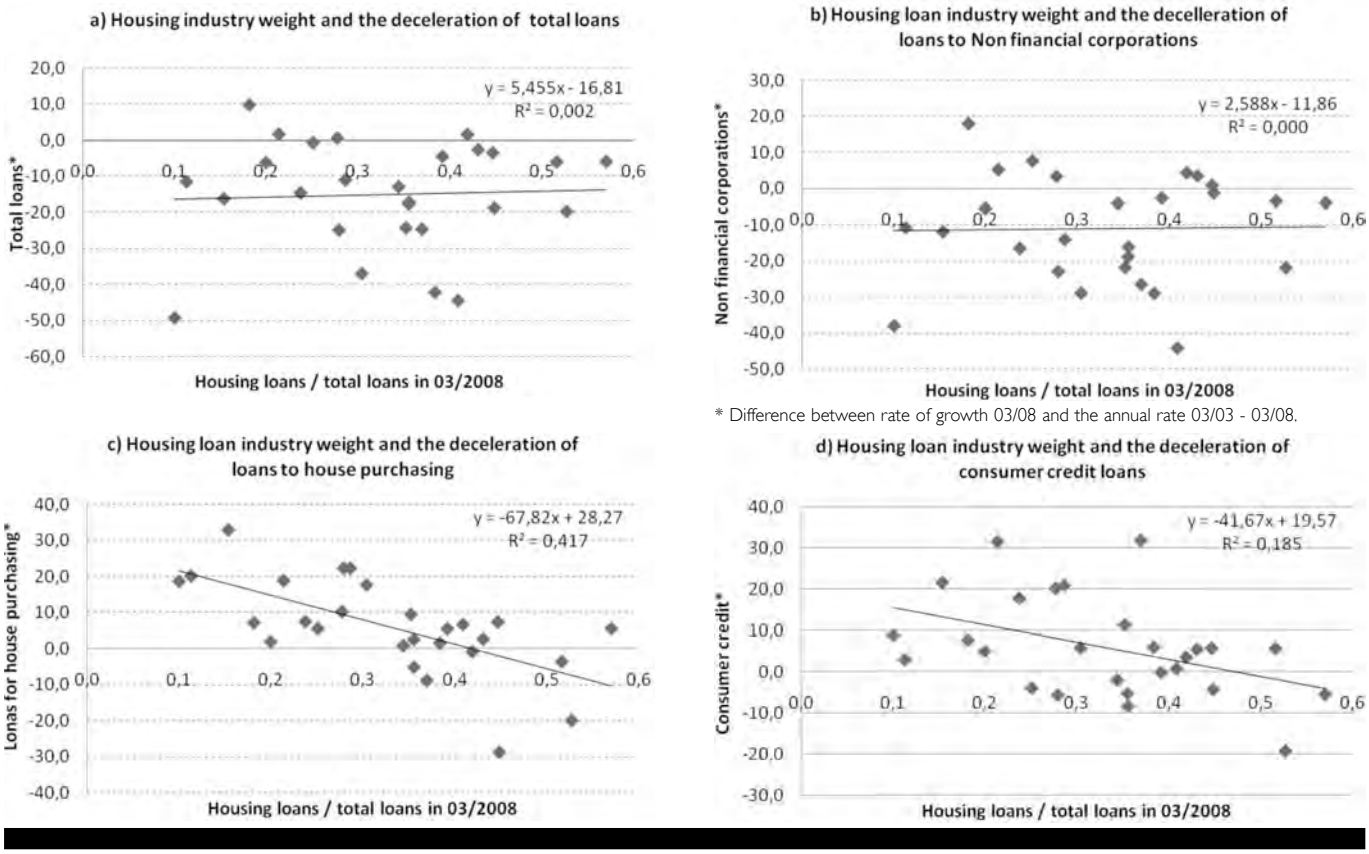


Figure 16

Importance of housing loans and the deceleration figures for total loans



* Difference between rate of growth 03/08 and the annual rate 03/03 - 03/08.