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Cyclical relationships between GDP and housing market in France: Facts and factors at play

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Abstract

In this paper we focus on cycles and trends of some macroeconomic and housing market variables representative of the French economy. In a first part, we empirically show that cycles in the housing sector, measured by housing prices, housing starts, building permits, sales or residential investment, are strongly correlated to GDP cycles with a lead lying between of one and four quarters, suggesting thus that a monitoring of housing fluctuations could bring useful information for macroeconomic forecasting. Interestingly, this result is robust to the various considered approaches. Moreover, it seems that the housing sector long-term trend possesses its own dynamics, quite different from the global French economic activity. Thus, in a second part, we review various structural factors that could drive housing market developments in France in the future.

Keywords: Economic cycles, Housing market, France

JEL codes: E20, E32, R21

Résumé

Dans cet article, nous nous intéressons au cycle et à la tendance d'un certain nombre de variables représentatives de l'activité macroéconomique et du marché de l'immobilier résidentiel en France. Dans une première partie, nous montrons de manière empirique que les cycles du secteur immobilier, mesurés à partir des prix de l'immobilier, des mises en chantier, des permis de construire, des ventes et de l'investissement résidentiel, sont fortement corrélés avec les cycles du PIB, avec une certaine avance variant entre un et quatre trimestres. Ce résultat est robuste aux différentes approches utilisées et laisse donc à penser qu'un suivi périodique du secteur pourrait amener une information utile en termes de prévision macroéconomique. De plus, il semble que la tendance du secteur de l'immobilier résidentiel possède sa propre dynamique, différente de celle de l'activité économique globale. Ainsi, dans une seconde partie, nous établissons une revue de plusieurs facteurs structurels qui pourraient guider les développements futurs du marché immobilier français.

Mots clés: Cycles économiques, Marché immobilier, France

Codes JEL: E20, E32, R21

1 Introduction

Strong empirical evidence of relationships between macroeconomics and the housing sector have been recently underlined in many research papers. For example, Mullbauer and Murphy (2008) have surveyed the multiple interactions between housing markets and macroeconomy, with applications on US and UK data, and Goodhart and Hofmann (2008) have shown evidence of a multidirectional link between house prices, monetary variables and the macroeconomy, based on data for 17 industrialized countries.

Among these papers, several authors have also focused on dependence among macroeconomic and housing market in term of cycles. In this respect, cyclical analyses often involve the concept of business cycle, see for example Leamer (2007) or Vargas-Silva (2007) for applications on US data. The business cycle refers to the level of the activity and delimitates periods of expansions (basically positive growth rate) from periods of recessions (negative growth rate). When dealing with European industrialized countries, especially France, recessions are a little less frequent and less intense since the end of World War II in comparison with US recessions. This stylized fact leads us to focus on the concept of deviation cycle (or growth cycle) resulting from the decompostion of variables between a long-term trend and a medium-term cycle.

Recently, in France, both macroeconomic activity and housing markets have been strongly affected by the consequences of the US sub-prime crisis, as in many other countries (see for example André, 2009, Alvarez et al., 2009, or Ferrara and Koopman, 2009, for recent international comparisons). For example, according to the lastest release of Quarterly National Accounts (QNAs)[1], GDP growth rate in France has been negative from the second quarter of 2008 to the first quarter of 2009, that is four consecutive quarters of negative growth. Almost simultaneously, it turns out that from August 2008 to July 2009, 420 764 building permits have been delivered, that is a drop of 18.7% by comparison with the same period one year before. Regarding house prices, the latest available figures reveal that the quarterly hedonic index for existing dwellings estimated by notaries and Insee has experienced four consecutive falls since the third quarter of 2008[2]. Our aim is to know whether this synchronised evolution between macroeconomics and housing markets is a stylized fact and has been already observed in the past or it is only short-lived event that will not impact on long-term fluctuations of both sectors.

In this paper we focus on deviation cycles and trends of some macroeconomic and housing market variables representative of the French economy. In a first part, we empirically show that deviation cycles in the housing sector are strongly correlated with macroeconomic cycles with a significant lead, suggesting thus that a monitoring of

[1] Released on August 15, 2009, by Insee, the French Statistical Institute

[2] *Information Rapide* released by Insee on September 10, 2009

housing fluctuations could bring useful information for macroeconomic forecasting. In a second part, it seems that long-term trend of the housing sector activity possesses its own dynamics, quite different from the global French economic activity. We review various assumptions on structural variables suggesting that the recent downturn in the French housing sector may be temporary.

2 Comparison of cycles

In this section, our aim is to compare macroeconomic growth cycles[3] based on French GDP with some housing market variables. Regarding variables related to the housing sector, we first consider real house prices deflated with the HICP [4]. We use the index for existing dwellings as released by Insee and French notaries (see Gouriéroux and Laferrère, 2009, for details), which has been internally back-calculated until 1980 Q1. Then we also consider various variables such as sales of new dwellings, household investment, employment in construction, permits, housing starts and IPI in construction. We also integrate into the analysis a survey by housing industrials carried out by the European Commission, especially the Confidence indicator in the construction sector. National account data are chain-linked and computed by Insee. In order to have a common sample size, data are analysed from 1980 Q1 to 2009 Q2[5]. Note that housing starts and industrial production index (IPI) only starts respectively in 1986 and 1990 and the EC survey starts in 1985. Last, we also consider in the analysis long and short interest rates (10-years government bonds and 3-months Euribor[6], respectively).

From a methodological point of view, when dealing with growth cycles, the question that arises is how to extract them from macroeconomic variables, knowing that diverse methods can lead to various estimated cycles (Canova, 1998). Several statistical approaches have been put forward in the literature to decompose a macroeconomic time series between trend and cycle. In this paper, we use the 2-step version of the Hodrick-Precott (HP) filter that considers that the HP filter can be designed as a low-pass filter with a cut-off frequency ω_0 and therefore enables to apply a band-pass filter by difference of two low-pass filters. This approach is described in details in the paper of Artis, Marcellino and Proietti (2004). This version of the filter avoids a too noisy growth cycle, but there is still the issue of the choice of the tuning parameter λ in the filter. According to Artis, Marcellino and Proietti (2004), the relationship between the cut-off frequency ω_0 of the HP low-pass filter and the parameter λ is given by :

$$\lambda = \left[4(1-\cos(\omega_0))^2\right]^{-1}.$$

[3] In this paper, the terms 'growth cycles' and 'deviation cycles' will be used interchangeably.
[4] The HICP is seasonally adjusted and back-calculated by the ECB.
[5] At the time the paper was written, only Q1 09 was available for prices and housing starts
[6] source OECD

For example, when dealing with quarterly data, $\lambda = 1600$ corresponds to a 10-year cycle, $\lambda = 677$ corresponds to a 8-year cycle, $\lambda = 215$ corresponds to a 6-year cycle and $\lambda = 1$ corresponds to a 1.5-year cycle. Thus a band-pass filter with a bandwidth 1.5-8 years is specified as the difference of two HP filters estimated with $\lambda = 677$ and $\lambda = 1$.

Preliminary results on French data have shown that non-parametric filters such as Hodrick-Prescott, Christiano-Fitzgerald or Baxter-King filters provide basically the same set of turning points. We refer also to the paper of Alvarez and Cabrero (2009) for a comparison of filtering methods on this kind of data. Thus, we focus only on the 2-step version of the HP filter with a window between 1.5 and 8 years. From a practical perspective, all series are taken in logs before filtering and are expressed in percentage (see Figures 8, 9 and 10). Estimations are carried out using the RATS sofware. We carry out the analysis until 2009 Q2, knowing that the last estimated points are subject to revision because of end-point effects inherent to filtering techniques.

In this empirical analysis, we are looking for relationships between economic cycles and housing market cycles. In this respect, we provide two types of analysis, first in terms of correlation coefficients, second in terms of cyclical turning points based on concordance indexes.

2.1 Correlation analysis

In this part, we aim at pointing out possible correlation between economic and housing cycles. First, we focus on contemporaneous correlation coefficients between the various variables, presented in the upper diagonal of Table 1. In the first row of Table 1, we note that GDP is highly correlated with household investment (0.80) what is an expected result insofar as it is a component of GDP, but also with employment

	GDP	Prices	Sales	Invest.	Employ.	Survey	Short	Long	Permits	Starts	IPI
GDP	1	0.44	0.01	0.80	0.72	0.57	0.68	0.53	0.32	0.45	0.60
H. Prices		1	0.20	0.60	0.54	0.48	0.18	0.19	0.61	0.62	0.26
Sales			1	0.23	0.21	0.10	-0.37	-0.42	0.38	0.40	-0.40
Invest.				1	0.65	0.53	0.46	0.39	0.40	0.57	0.39
Employ.					1	0.46	0.56	0.64	0.17	0.22	0.57
Survey						1	0.28	0.21	0.39	0.40	0.31
Short							1	0.57	0.10	0.09	0.60
Long								1	-0.13	0.05	0.54
Permits									1	0.67	0.13
Starts										1	0.31
IPI											1

Table 1: Contemporaneous correlation (upper diagonal) from 1980 Q1 to 2009 Q2. 'Short' and 'Long' refer to short term (3 months) and long term (10 years) interest rates, respectively.

in construction (0.72). IPI in construction and short-term interest rates present also a significant correlation with GDP. A more detailed analysis of this contemporaneaous positive correlation between GDP and short-term interest rates cycles is given below. Rather high correlation coefficients can also been observed between prices and household investment (0.60), housing starts (0.62) and permits (0.61), suggesting that housing activity in volume and house prices share common medium-term fluctuations. We also note negative correlation between housing sales and interest rates cycles (short and long interest rates cycles are mutually positively correlated), which is in line with the economic theory. Overall, those contemporaneous correlation measures appear quite small in comparison to what could be expected. In this respect, we focus now on cross-correlation coefficients.

In order to take leads and lags into account, we compute cross-correlations among all the deviation cycles. The various cross-correlations with GDP are presented in Figure 11. High correlation coefficients for negative values on the x axis indicate that the series is leading the business cycle, and conversely positive values imply a lagging behaviour of the series relative to the business cycle. From these graphs, it turns out that variables reflecting the housing cycle (house prices, sales, household investment, building permits, housing starts) lead the GDP growth cycle with a varying advance. For example, it seems that sales possess a larger advance than prices and household investment. Housing prices cycle is certainly a bit more resilient than housing sales cycle. Concerning the two variables related to production in volumes (permits and starts), we note that, due to administrative delays, permits cycle obviously leads the housing starts cycle[7]. Last we notice that IPI in construction and employment in construction are coincident with economic activity.

Turning to financial variables, it appears that long term interest rates movements and the GDP growth cycle are quite coincident, while short term interest rates seem slightly delayed with GDP growth cycle. Moreover, the correlation coefficient between long term interest rates and the GDP growth cycle also posts a negative sign when considering eight quarters earlier. As the cross-correlation is the highest at this time in the negative area under review, it comes out that the lower long term interest rates are, the higher GDP growth rate should be two years later. But an essential finding is that, all in all, variables describing the housing market activity tend to lead the economic cycle.

For a more specific interpretation, the highest cross-correlations and their corresponding leads-lags (in quarters) are presented in Table 2. Maximum correlation coefficients are on the upper diagonal while their corresponding lags are on the lower diagonal. A negative value in the lower diagonal indicates that the variable in row leads the variable in column with an advance equal to this figure, and, conversely, a positive value

[7]Figures of building permits and housing starts between 2007 and 2008 should be taken with caution because of an administrative reform that led to a statistical bias in the data collection process.

indicates that the variable in row lags the one in column. For example, the correlation between GDP and housing prices is of 0.64, this latter variable being leading with 2 quarters.

First, we note that values are larger than previously when we focused only on contemporaneous correlations, implying thus that taking dynamics into account leads to a richer analysis. In particular, correlation coefficients are noteworthy between employment in construction and real house prices (0.71), GDP (0.72) and household investment (0.69). It is indeed noticeable that employment is coincident with GDP but lags residential investment with one quarter and prices with two quarters. High correlation coefficients also appear between housing starts and both residential investment and building permits (0.70 and 0.69 respectively). We note that the chronology is respected in the sense that permits leads housing starts with a lag of one quarter. Cyclical relationship between residential investment and housing prices is also strong and positive (coefficient equal to 0.70), prices being leading with one quarter. This observation suggests that housing investment is accompanied with rising house prices due to supply constraints in the short run. The highest cross-correlation is posted by GDP and residential investment (0.80), the link being contemporaneous. All these results are summarized in Figure 1 where optimal leads and lags of the various variables with GDP are represented, as well as corresponding correlation coefficients (for the sake of presentation we plot absolute correlation coefficients).

2.2 Turning point analysis

Starting from the previously extracted growth cycles, we estimate the dates of peaks and troughs by using a quarterly version of the Bry-Boschan algorithm (BBQ algo-

	GDP	Prices	Sales	Invest.	Employ.	Survey	Short	Long	Permits	Starts	IPI
GDP		0.64	0.48	0.80	0.72	0.58	0.68	-0.52	0.58	0.62	0.60
Prices	-2		0.36	0.70	0.71	0.50	0.54	0.44	0.61	0.62	0.43
Sales	-3	-2		0.60	0.27	0.35	-0.37	-0.49	0.44	0.61	-0.49
Investment	0	+1	+3		0.69	0.53	0.50	0.54	0.63	0.70	0.39
Employment	0	+2	+7	+1		0.55	0.56	0.64	0.52	0.47	0.57
Survey	-1	+1	+3	0	-2		0.37	-0.41	0.42	0.44	0.38
Short rate	0	+3	0	+1	0	+2		0.59	0.44	0.43	0.62
Long rate	-8	+3	-1	+3	0	-7	-1		-0.48	-0.47	-0.52
Permits	-4	0	+1	-3	-4	-2	-5	+6		0.69	0.58
Starts	-1	0	+2	-1	-4	-1	-4	+5	+1		0.54
IPI	0	+2	-2	0	0	+2	-1	+8	+4	+3	

Table 2: Highest cross-correlation coefficients among all leads and lags (upper diagonal, lags in parenthesis) and leads/leags (lower diagonal), from 1980 Q1 to 2009 Q2. A negative number indicates that the series in row leads the series in column with an advance equal to this number, and conversely.

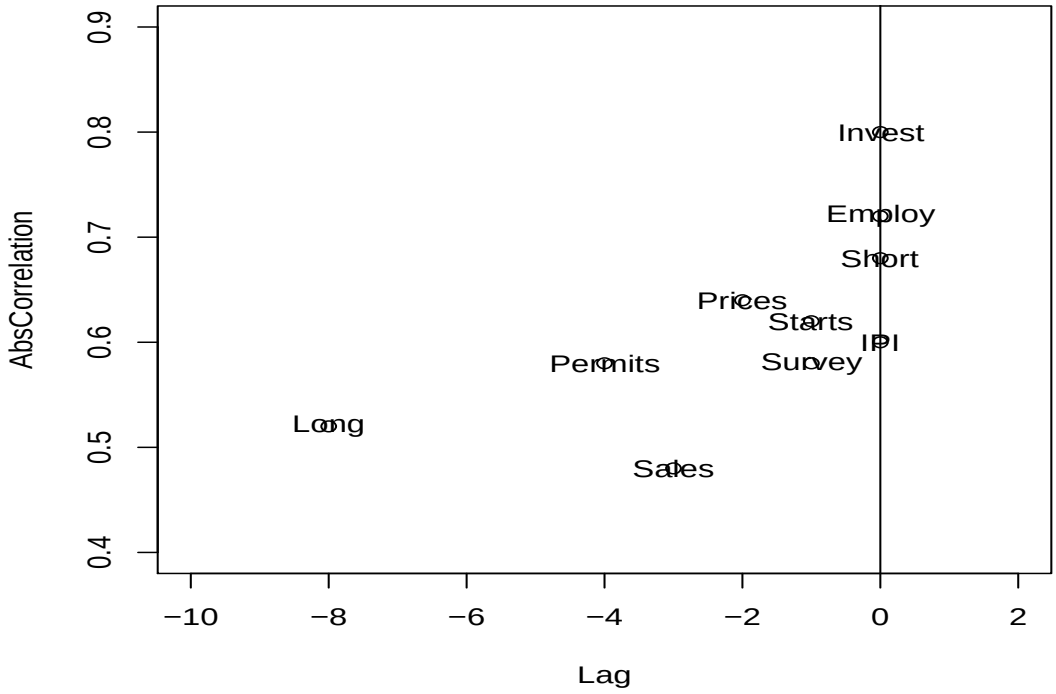

Figure 1: Leads and lags versus absolute correlation coefficients between GDP and various variables. A lead is indicated by a '-' and lag by a '+'.

rithm by Harding and Pagan, 2002). In fact, as the series are extremly smooth, peaks and troughs can be detected unambiguously. We carry out the analysis until Q2 2009, but the last turning points are subject to revision and therefore the analysis over the recent past has to be taken with caution. Estimated dates of peaks and troughs are presented in Table 5 in which leads and lags of the turning points of each variable are also presented in comparison with turning points in the GDP growth cycle. In this part, we use GDP as the reference cycle and we will compare other variables to it.

From Table 5, we first observe that turning points in the GDP growth cycle are shared by the other considered variables[8]. In this sense, we point out the existence of a growth cycle which is common to all the variables. The difference lies in the fact that the other variables may present some idiosynchratic extra-cycles not visible in GDP. For example, the short-term and long-term interest rates present two supplementary cycles (in 1991-92 and 1998-99 and in 1987-89 and 2004-05, respectively).

A striking feature in Table 5 is that, on average, almost all turning points in housing-

[8]Recall that IPI series only starts in 1990.

related variables lead turning points in the macroeconomic cycle. Indeed, we observe that housing prices, sales, housing starts and permits are leading the GDP growth cycle. The advance ranges between 4 quarters, for permits, and 2 quarters, for other housing-related variables. It is noteworthy that the advance of prices, sales, residential investment and housing starts is similar, close to two quarters. Moreover, the business survey in construction also possesses a lead of around one quarter over the macroeconomic cycle, with a reduced standard error of 1.4. This result means that this survey could be of great interest to economists for the monitoring and forecasting of short-term economic fluctuations.

Employment and IPI in construction are rather lagged over the GDP growth cycle (around one quarter). In fact, IPI is coincident for all turning points, the positive lag being only due to the trough in 2004 Q4, strongly lagged (6 quarters). Thus, IPI in construction should be reasonably caracterized as a contemporaneous variable.

Last, short-term and long-term interest rates are the variables among the selected ones whose turning points are on average the most accurately close to the GDP growth cycle turning points, with a coincidence for both interest rates (see Figure 2). However, in addition to the relatively higher volatility for such financial variables compared with real variables, the role of both variables is ambiguous because they can have also a counter-cyclical property as suggested in the previous section.

In order to assess synchronization among the variables, the concordance index allows to estimate the fraction of time that cycles are in the same phase (ascending or descending)[9]. Let $(S_{it})_t$ denotes the binary variable that represents the phase of the cycle

[9]See Artis et al. (1997), Artis et al. (2004) and Harding and Pagan (2006) for others measures of synchronization.

	GDP	Prices	Sales	Invest.	Employ.	Survey	Short	Long	Permits	Starts	IPI
GDP	1										
H. Prices	0.72	1									
Sales	0.64	0.56	1								
Invest.	0.75	0.81	0.53	1							
Employ.	0.79	0.75	0.54	0.79	1						
Survey	0.80	0.80	0.67	0.81	0.71	1					
Short	0.77	0.58	0.54	0.65	0.66	0.66	1				
Long	0.74	0.73	0.44	0.69	0.69	0.59	0.66	1			
Permits	0.70	0.72	0.66	0.70	0.63	0.82	0.54	0.59	1		
Starts	0.80	0.82	0.69	0.87	0.71	0.84	0.64	0.67	0.86	1	
IPI	0.81	0.64	0.40	0.72	0.85	0.72	0.74	0.65	0.56	0.63	1

Table 3: Concordance indexes for contemporaneous variables (lower diagonal) from 1980 Q1 to 2009 Q2. 'Short' and 'Long' refer to short term (3 months) and long term (10 years) interest rates, respectively.

(ascending: $S_{it} = 0$, descending: $S_{it} = 1$) for a given country i. In the bivariate case, for two variables i and j, the concordance index CI can be expressed in this way:

$$CI = \frac{1}{T} \sum_{t=1}^{T} I_t, \tag{1}$$

where

$$I_t = S_{it} S_{jt} + (1 - S_{it})(1 - S_{jt}). \tag{2}$$

At each date t, for all $(S_{it}, S_{jt}) \in \{0,1\}$, I_t is equal to 1 when $S_{it} = S_{jt}$ and equal to 0 when $S_{it} = (1 - S_{jt})$. This tool is very interesting in empirical studies to assess the synchronization between two cycles, although it possesses some shortcomings pointed out by Harding and Pagan (2002).

Concordance indices are presented in the lower diagonal of Table 3. We note that the GDP growth cycle is well synchronized ($CI \geq 0.80$) with housing starts and IPI in construction, as well as with the business survey in the construction sector. High concordance indexes also appear between GDP and residential investment, employment and interest rates. Strong synchronization also appear among variables of the housing sector such as housing starts and residential investment or permits. In order to get statistical evidence of the relationship between economic and housing cycles, we carry out the synchronisation test based on concordance index proposed by Harding and Pagan (2006). In this respect, we test the hypothesis that cycles are strongly non-synchronized (SNS) based on the statistic $\hat{\rho}_S$, namely the estimated correlation coefficient between $(S_{i,t})_t$ and $(S_{j,t})_t$ (see for example Darné and Ferrara, 2009, for an application). We use a heteroscedastic and autocorrelation consistent (HACC) standard error version of the test. The results presented in Table 4 enable to reject the null hypothesis of non-synchronisation at the usual 5% level, except for housing sales (t-stat=1.70).

	CI	Contemp	t-stat	CCI	Lead/Lag	t-stat
Prices	0.72	0	3.40	0.77	-2	4.10
Sales	0.64	0	1.70	0.71	-4	3.04
Invest.	0.75	0	4.01	0.77	-1	4.48
Employ.	0.79	0	4.78	0.83	+1	5.69
Survey	0.80	0	5.06	0.85	-2	6.58
Short	0.77	0	4.94	0.77	0	4.94
Long	0.74	0	5.29	0.74	0	5.29
Permits	0.70	0	2.84	0.77	-3	4.50
Starts	0.80	0	4.61	0.84	-1	5.52
IPI	0.81	0	3.60	0.81	0	3.60

Table 4: Contemporaneous concordance indexes (CI) and maximum cross-concordance indexes (CCI) for various variables with GDP cycle, optimal leads (-) and lags (+) and t-stat of the Harding-Pagan test of non-synchronisation (H0 = Strong No-Synchronisation), from 1980 Q1 to 2009 Q2.

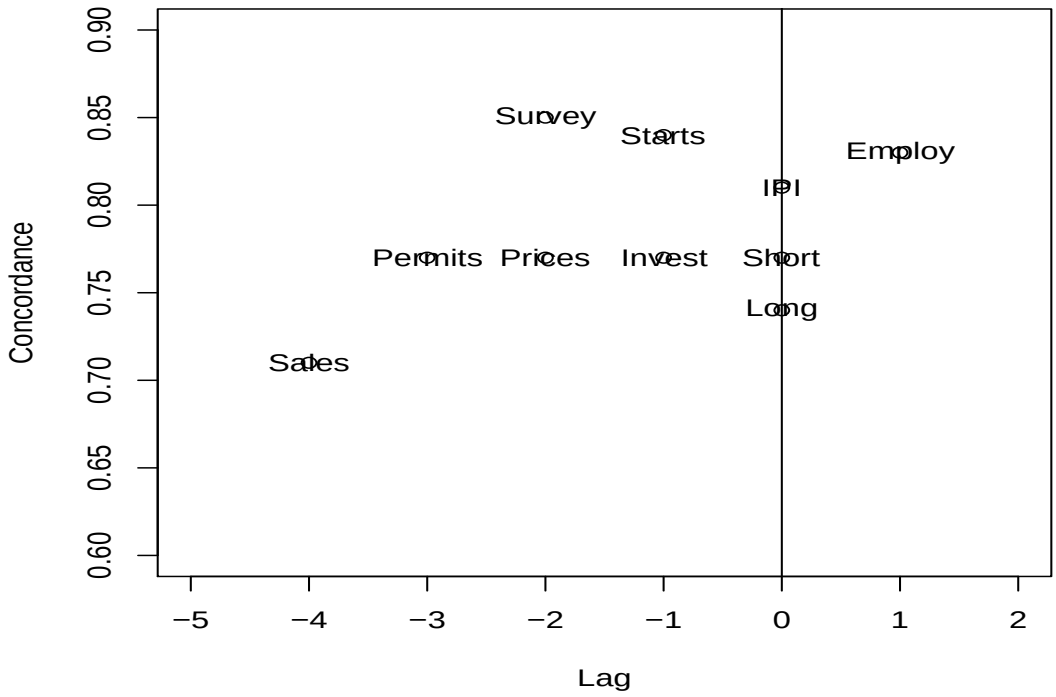

Figure 2: Leads and lags versus concordance indexes between GDP and various variables. A lead is indicated by a '-' and lag by a '+'.

As in the correlation analysis, we compute cross-concordance indexes (CCI) with GDP cycle in order to identify optimal leads and lags. That is we compute concordance index as defined in equation (1) between $S_{i,t}$ and $S_{j,t-k}$ for various lags k, positive and negative. Among all lags k, the maximum cross-concordance index is retained and presented in Table 4. First, we note that the values of the cross-concordance indexes have been improved when including a dynamic relationship, in comparison with first column of Table 3. Housing-related variables possess clearly a leading pattern, as in the correlation analysis. Moreover, the results of the Harding-Pagan test based on maximum cross-concordance indexes (see Table 4) enable to reject strongly the null hypothesis of non-synchronisation. Those results confirm the advance of the housing sector over the economic cycle, with a lead ranging from 1 (residential investment and housing starts) to 4 quarters (housing sales). The results of the turning point analysis are presented in Figure 2 where optimal leads and lags of the various variables with GDP are represented, as well as corresponding concordance indexes.

In conclusion, the results point out that variables reflecting the housing market are strongly related to the economic cycle and possess a significant lead. This latter result

is robust to both turning point and correlation analysis.

3 Structural factors affecting long-term cycles in the housing market

In this section, we complete the previous comparative analysis between housing market and macroeconomic cycles by investigating whether some structural variables play a significant role in shaping cyclical developments. The subsequent analytical framework is therefore based on a comparison of supply-demand side, price-quantity considerations and financial-real factors at play.

When focusing on euro area countries since 1980, and France in particular, empirical studies identify only two recession phases -defined in the NBER sense-, in addition to the 2008 recession, namely the second oil shock double-dip (1980-81 and 1982) and a phase in 1992-93 following the US recession in 1991. We refer to the CEPR Dating Committee (2009) or to Eurostat (Anas et al., 2007, Anas et al., 2008) for recession dating chronologies. When looking at real housing prices fluctuations in France (deflated with the HICP, see Figure 3), we observe two complete phases of negative growth: from 1981 Q1 to 1984 Q4 and from 1991 Q2 to 1997 Q1. Those two phases of

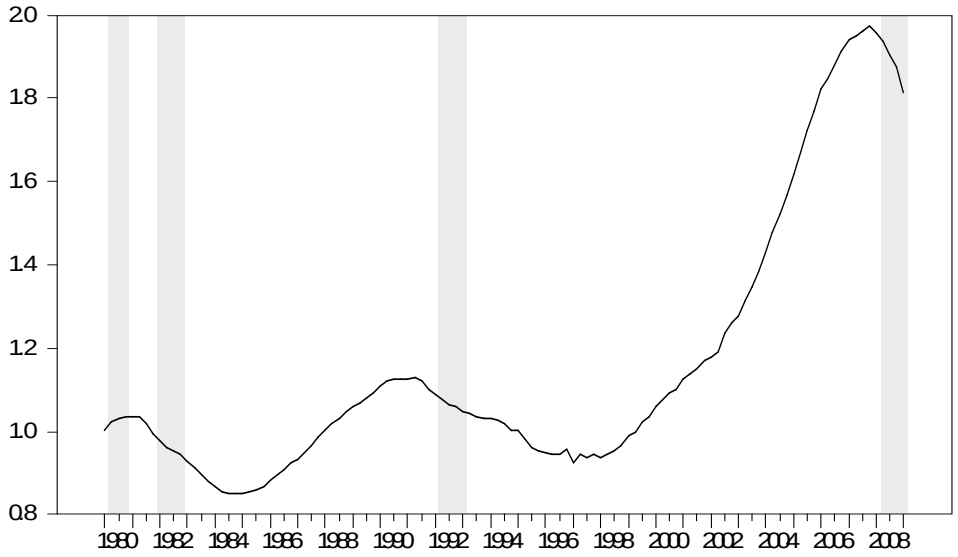

Figure 3: Housing prices (HICP deflated) 1980Q1 - 2009Q2 and the euro area recession phases (shaded).

negative growth roughly correspond to recession periods, except that the troughs in the housing cycle are significantly more protracted events lagging the economic business cycle (around 2 years and 4 years for the first and the second recession, respectively). Regarding the 2008 recession, the peak in housing prices occurs in 2008 Q1, as the peak in GDP, but the trough cannot not yet been recognized with the data available for 2009 Q2. Consequently, it seems that long-term dynamics in French housing prices are quite different from those in GDP and are more persistent. This fact has been also pointed out in Ferrara and Koopman (2009).

We consider now long-term trends of GDP, housing prices, residential investment and sales estimated by a low-pass Hodrick-Prescott filter that enables to drop fluctuations with a period lower than 8 years. We observe in Figure 4 that long-term trends have a quite different pattern for GDP and the three other housing market variables. Common fluctuations are present in the three housing variables, although the recent downturn in sales appears more severe, reflecting global housing market evolutions.

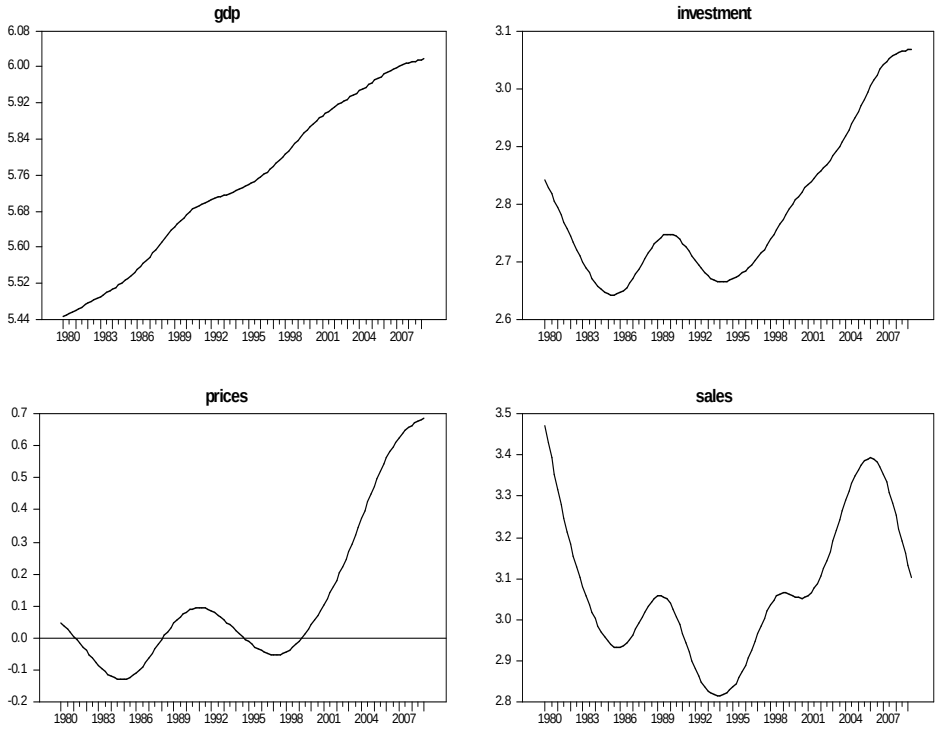

Figure 4: Long-term trends estimated by a low-pass HP filter (1980 Q1 - 2009 Q2).

The fact that long-term trends in housing market and in macroeconomics may have different dynamics leads us to turn more specifically to the determinants of housing market fluctuations in the long-term. Obviously, structural factors have an impact on long-term evolutions of the French housing market. Six considerations are indeed to be taken into account in order to assess structural developments in the French housing market. Such variables enable to partly explain why housing prices did not collapse in France in the recent period at the same pace as they did in other economies like Spain, Ireland or the United Kingdom for example.

1. Among the main euro area countries, France posted the lowest share of new housing loans to households with adjustable rate (see Figure 5). In fact, flexible rates represent in France around 10% of the new housing loans, while this share approximates 15% in Germany on recent years, 40% in the Euro zone as a whole and has exceeded the 50% threshold in 2004-2005. The highest share amongst the main European economies is observed in Spain, where only 10% of the new housing loans to households is granted at fixed rates.

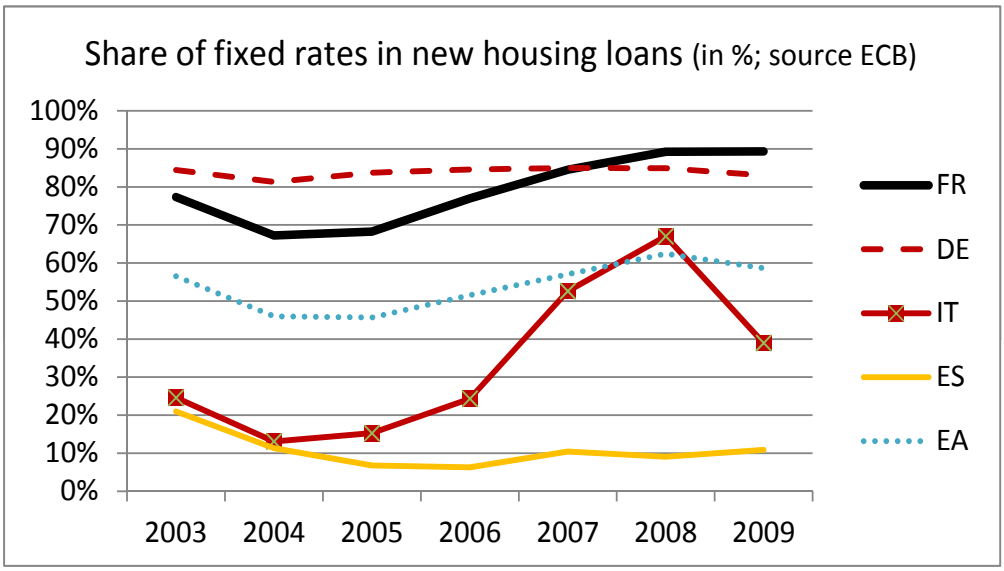

Figure 5: Share of fixed rates in new housing loans (source: European Central Bank)

2. The type of financial instruments used for housing financing is also important, notably the extent to which mortgage equity withdrawals instruments exist. In fact, in countries where growing housing prices allow households to get new funds from banks to increase their private consumption or their housing investment, the subsequent rise in their leverage ratio may have the opposite effect in a downward-oriented housing market: in such a case, decreasing prices make it quite impossible to extract new financing facilities from an asset whose price is eroding. In France mortgage equity withdrawals have only been introduced in 2006 with a very slow development, although no official data exist so far. On the contrary, in countries like the US or the UK, financial institutions are more willing to increase the amount of the initial housing loan when prices go up, as the market value of the guarantee also appreciates. Such a phenomena contributing to make the private saving ratio smaller, a housing prices decrease compel consumers to make an additional effort to save money, thus potentially amplifying the amplitude of business cycles. Regarding the US, Hatzius (2005), for example, indicates that mortgage equity withdrawals from 1990 to 2004 lowered the personal saving rate from 2 to 5 percentage points. As personal consumption expenditures account for two-thirds of aggregate spending in the US, such an effect would imply an impetus of as much as 0.3 percentage points to average annual real GDP growth over this period. Calza, Monacelli and Stracca (2007) also conclude that the correlation of consumption growth with changes in house prices is higher in economies with more-developed mortgage finance systems.

3. Regarding solvency, French households indebtedness is still quite moderate, at 75% of GDP mid-2009 (see Figure 6) vs 90% in the Euro area or quite 160% in the US. Taking into account real disposable income as a reference instead of GDP would not change the picture. This means there is some room for further residential investment for French households.

4. On the recent period, there is no sign of overinvestment in terms of GDP on the housing market. Indeed, the share of residential investment in total GDP, despite an increase from 3.4% in 2002 to 4.0% at the end of 2007-early 2008, has then been slightly decreasing -at 3.5% in September 2009- and is currently not going back to its long-term average of 5.8% calculated over the longest period - since 1949 - quarterly national accounts are made available by the INSEE. Far from the peak of 8.4% observed in 1974Q1, the present situation is therefore not characterized by a need of a significant correction according to this long term comparison. Moreover, in the recent period, residential investment in France in percentage of GDP is still below figures posted in Germany, Italy or Spain, and the US and UK have gone below the figures for France in 2008 for the first time since 1995.

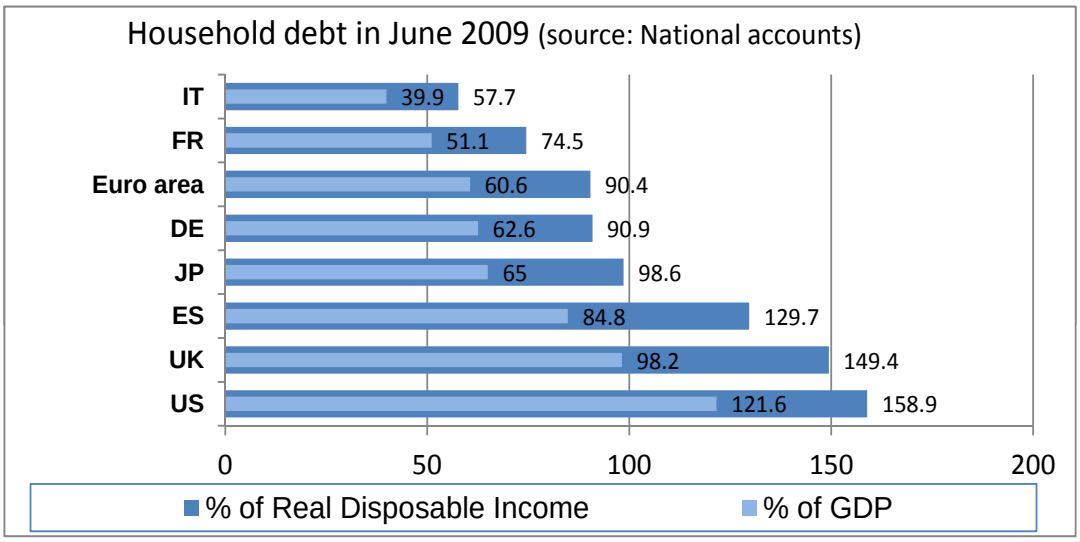

Figure 6: Household debt as percentage of GDP (source OECD).

5. A growing part of French people want to become home owner as an economic rational choice to secure their future and invest for their progeny (Mistral et alii, 2009). According to an international comparison (Hilbers et alii, 2008), France is one of the developed countries posting the strongest increases in the share of home owner since 1980, with +8 points in France compared with +3 points in the US, +1 point in Germany but +11 points in the UK. However, in spite of this catching-up process, the percentage of French people being owner of their home according to Eurostat (2009) is among the lowest in the European Union, at 58% in 2007 (47% in 1978), that is below the EU average of 65% and the French neighbours figures (83% in Spain, 72% in Italy, 67% in Belgium and 71% in Luxembourg) except the German one (46%). This factor should consequently also help sustain the demand side in the coming years. Furthermore, housing investment is becoming a crucial element in the strategy dedicated to improve the standard of living in the retirement period. The median age at which French people buy a dwelling (40 years old in Paris in 2007) lost 4 years from 1997 to 2007 as said by notaries data, underlying the willingness to prepare earlier this

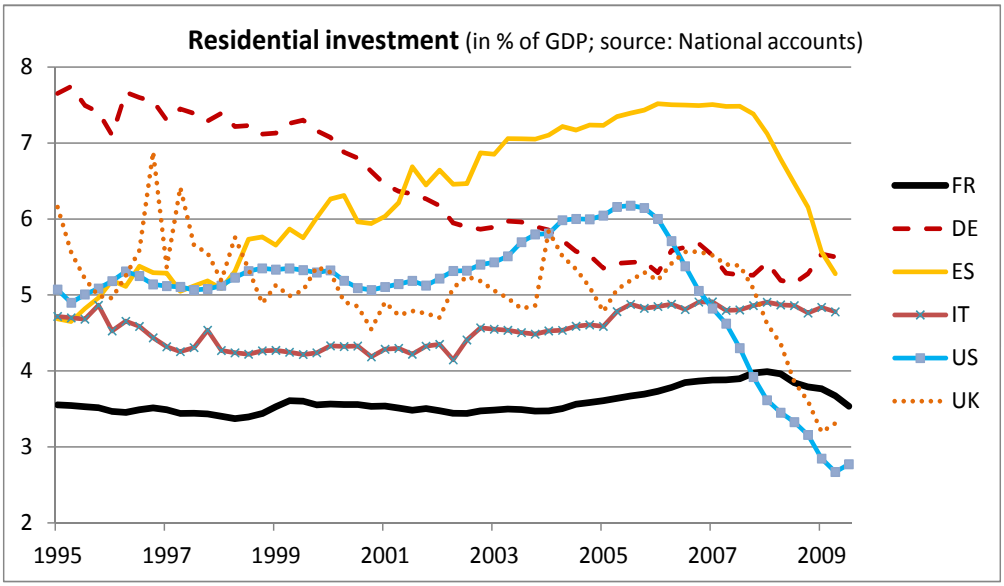

Figure 7: Residential investment in percentage of GDP.

lifetime. Fiscal incentives (encouraging rental investment in the new property market, for example the *Loi Scellier*, or enabling grandparents to give a higher lump-sum of money to their grandchildren without any tax) and rational anticipations (such as the expectation to get a profit with a higher probability by selling a dwelling rather than a share or a bond on more volatile financial markets) also contributed to this development. All in all, housing property (including land) accounted in 2007 for 72% of the net total value owned by households or the equivalent of 7.5 years of their gross disposable income vs. an average of 4.4 years on the period 1978-1998.

6. From a demographic point of view, both the current situation and the main projections are also supportive for fuelling the need of housing in the future. First, the size of French households has diminished: according to INSEE data, the share of housings occupied by one person grew from 19.1% in 1954 to 32.5% in 2005, whereas the share of housings occupied by at least six persons diminished from 9.9% to 1.9% on the same period. Eurostat (2008) also concluded that the percentage of single person living in private households was in France

in 2007, at 8%, above the figure of some neighboring countries (3.5% in Spain, 6.5% in Italy, 7% in the UK, but 10% in Germany). INSEE forecast the share of households with one person to represent in 2030 between 43.2% and 46.0% of the total number of households depending on the type of scenario (see Jacquot, 2006). In addition, the average number of people per household may get smaller from 2.31 in 2005 (2.57 in 1990) to a range of 2.04-2.08 in 2030 according to the scenario.

4 Conclusions

The analysis of correlations between housing and GDP cycles in France suggests that the former, as a leading variable, may add a significant information to help assess business outlook. In particular, several structural variables impacting the housing market and contributing to shape real estate developments, are vital for better understanding both GDP growth cycles and why the French real estate market so far did not collapse as it did in other developed countries.

As further research, it would be worthy to consider other real and financial variables, such as bonds or stock exchange prices (Friggit, 2009), in their correlation with house prices. Moreover, the development of an econometric model to check the empirical results that we found, for both cyclical and long-term components, would be of interest.

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Appendix

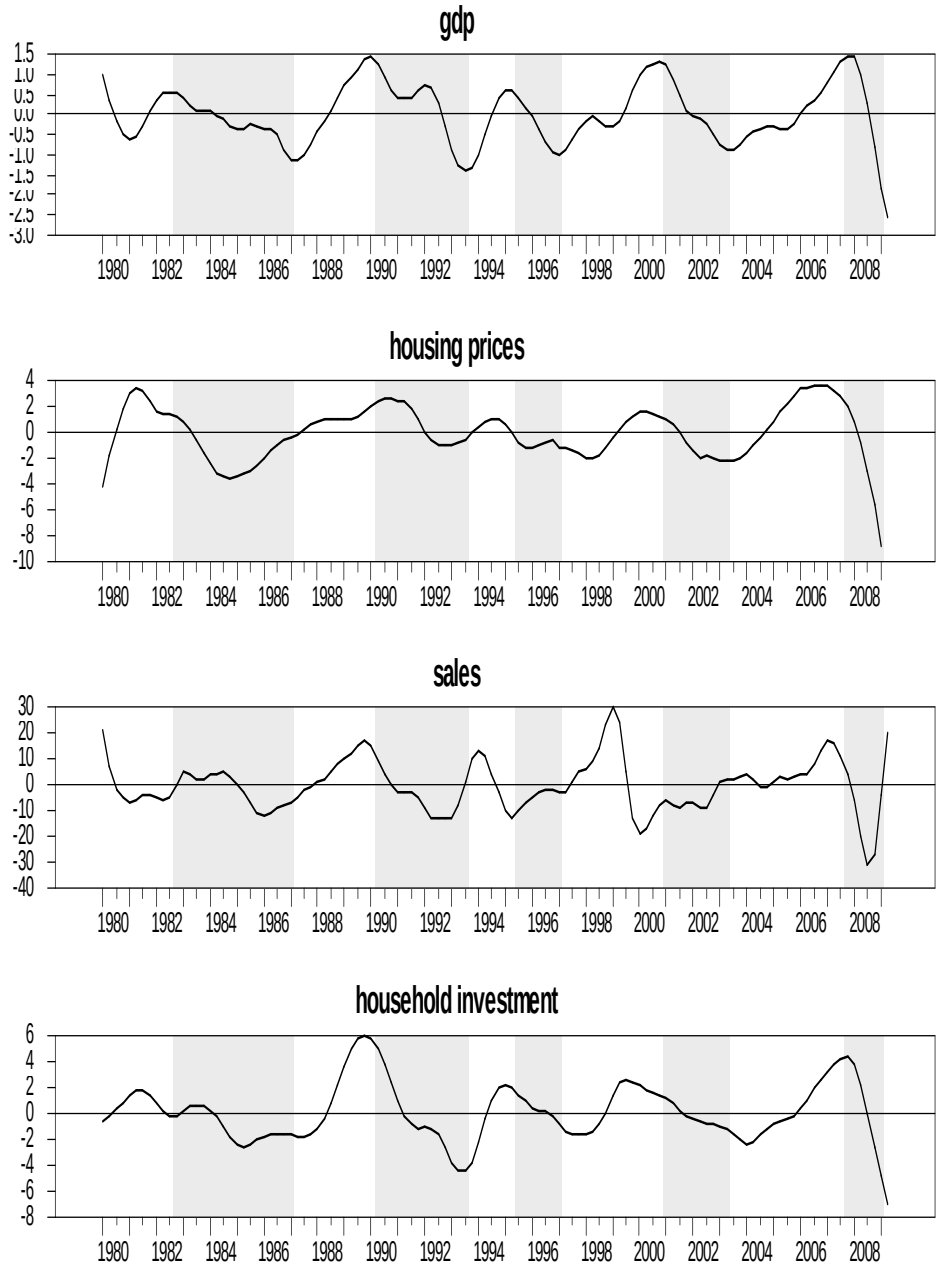

Figure 8: Growth cycles for GDP, for housing prices, for housing sales and for household investment, 1980Q1 - 2009Q2, and GDP growth cycle (shaded area).

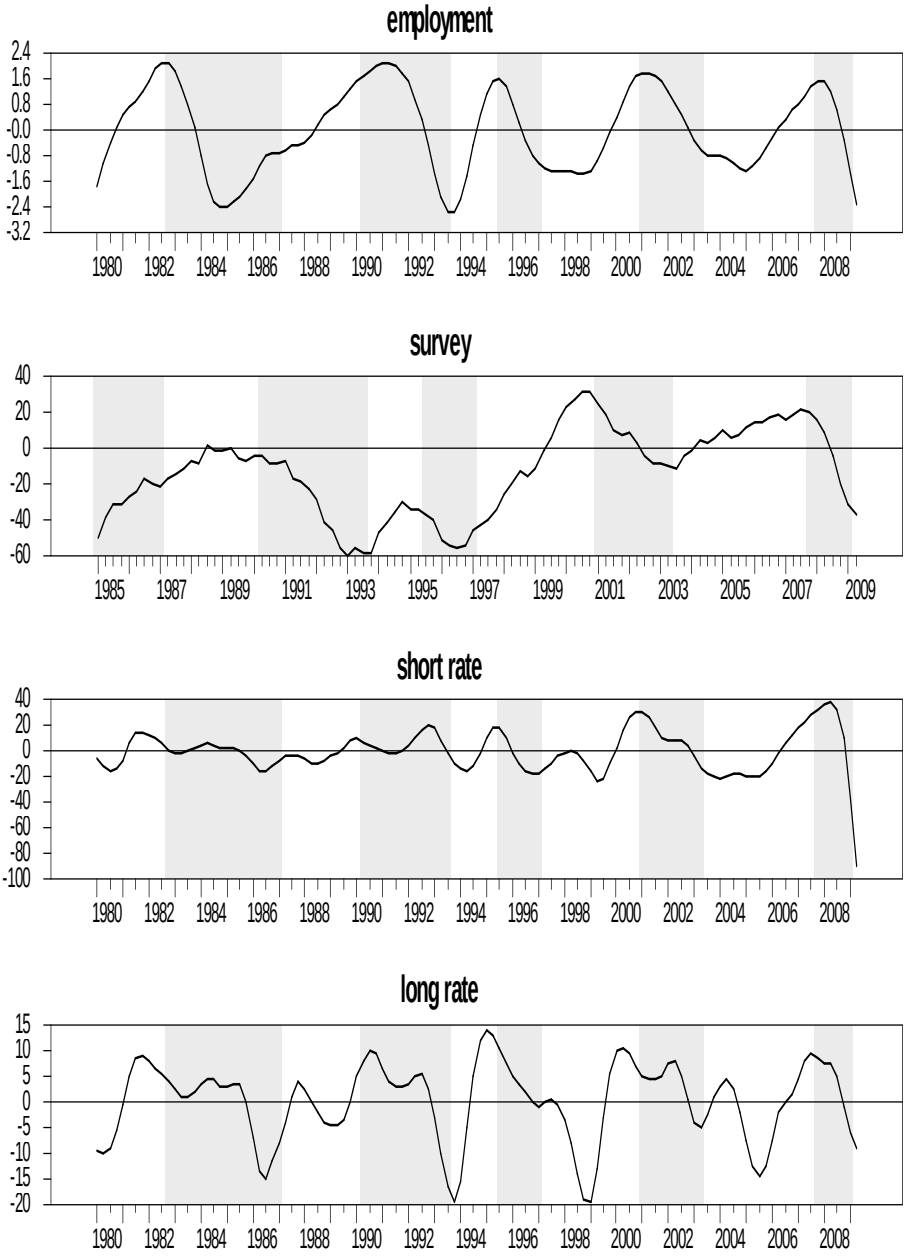

Figure 9: Growth cycles for employment in the housing sector, for short and long rates, and survey in housing, 1980Q1 - 2009Q4, and GDP growth cycle (shaded area).

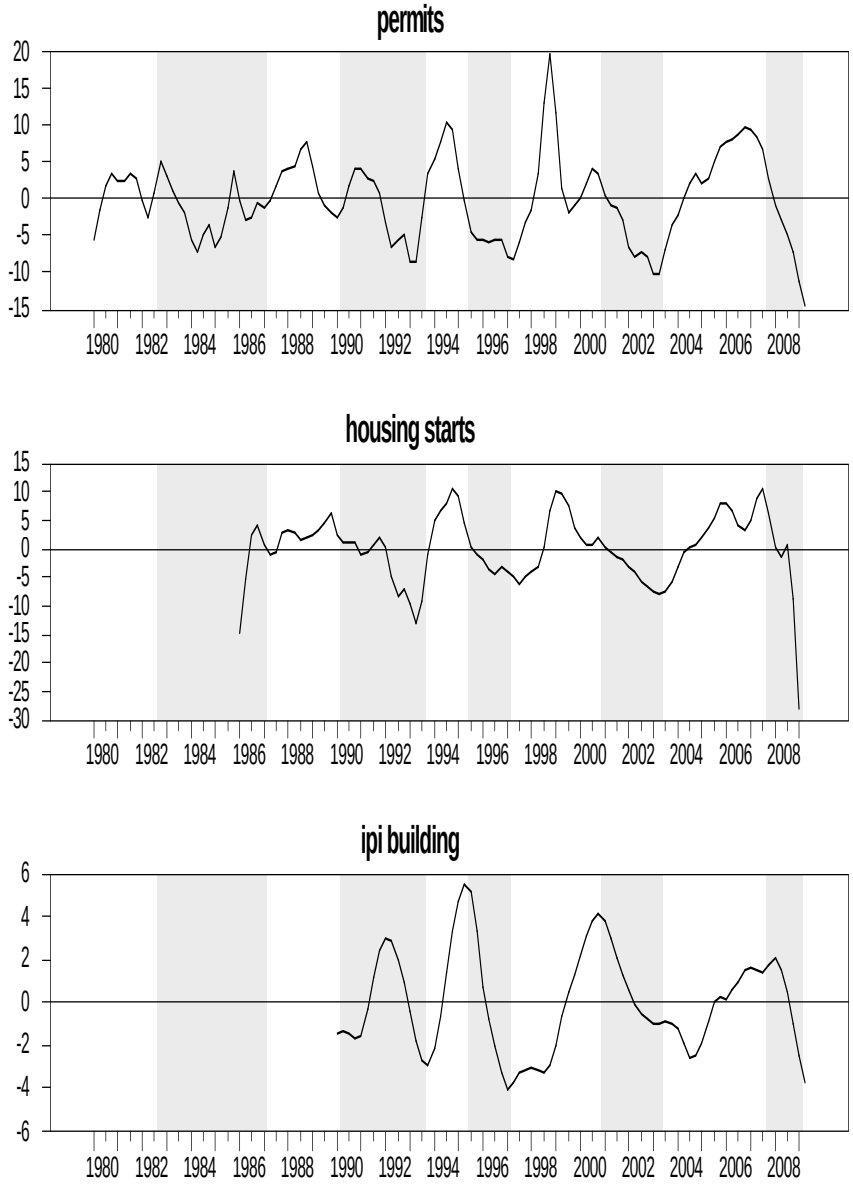

Figure 10: Growth cycles for permits, housing stats and IPI in construction, 1980Q1 - 2009Q2, and GDP growth cycle (shaded area).

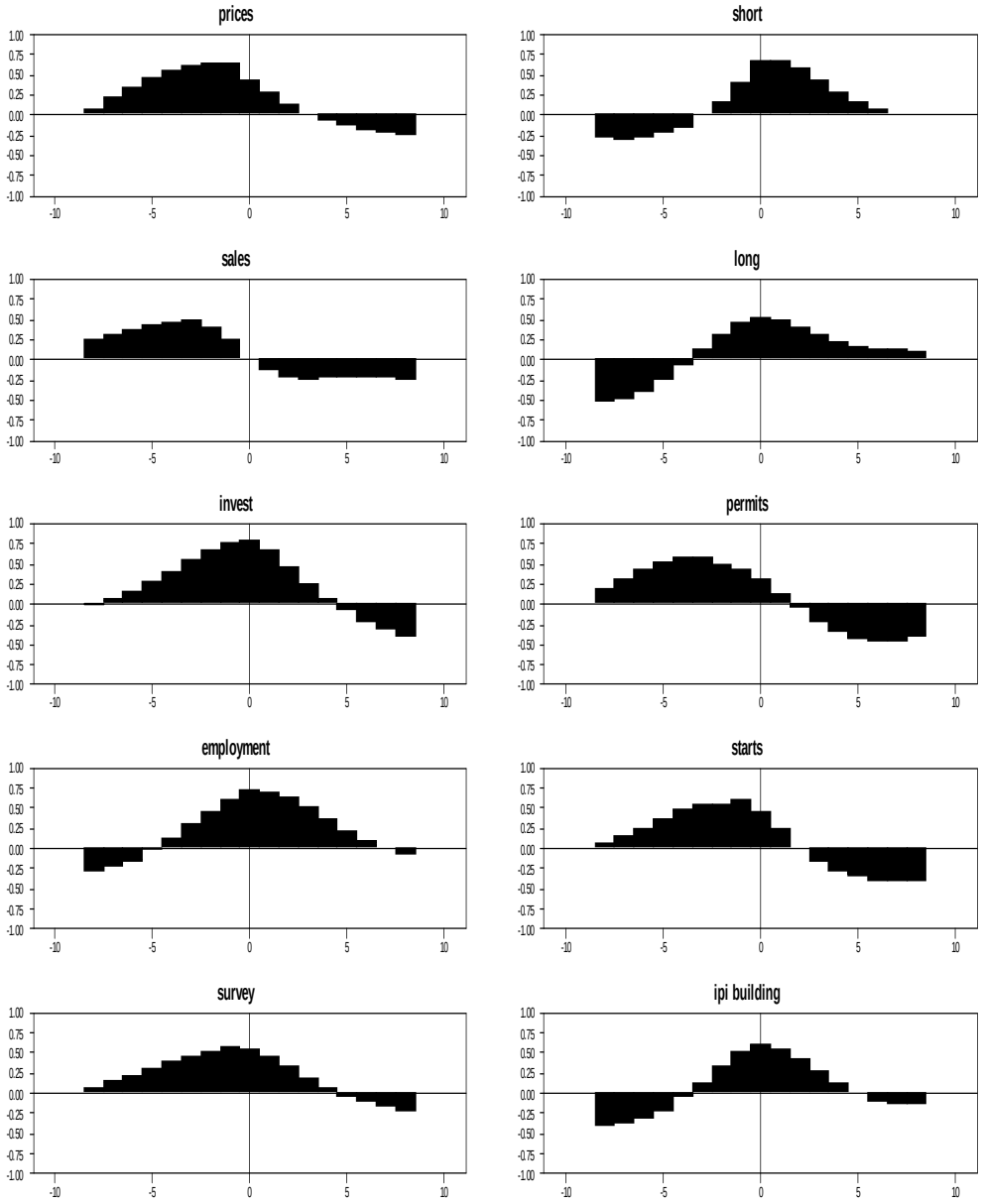

Figure 11: Cross-correlations with GDP growth cycle, 1980Q1 - 2009Q2.

	GDP	Prices	Sales	Invest	Employ	Survey	Short	Long	Permits	Starts	IPI
Trough			81Q1 ( )				80Q3 ( )				
Peak	82Q3	81Q2 (-5)	83Q1 (+2)	80Q4 (-7)	82Q4 (+1)		81Q4 (-3)	81Q4 (-3)	82Q4 (+1)		
Trough	87Q2	84Q4 (-10)	86Q1 (-5)	85Q2 (-8)	85Q1 (-9)		86Q3 (-3)	86Q3 (-3)	84Q2 (-12)		
Peak								87Q4 ( )			
Trough								89Q2 ( )			
Peak	90Q1	90Q4 (+3)	89Q4 (-1)	89Q3 (-2)	91Q2 (+5)	89Q2 (-3)	90Q1 (0)	90Q3 (+2)	88Q4 (-5)	89Q4 (-2)	
Trough							91Q2 ( )				
Peak							92Q4 ( )				92Q1 ( )
Trough	93Q3	93Q1 (-2)	93Q1 (0)	93Q2 (-1)	93Q4 (+1)	93Q1 (-2)	94Q2 (+3)	93Q4 (+1)	93Q1 (-2)	93Q2 (-1)	93Q3 (0)
Peak	95Q2	94Q3 (-3)	94Q1 (-5)	95Q1 (-1)	95Q3 (+1)	94Q4 (-2)	95Q2 (0)	95Q1 (-1)	94Q3 (-3)	94Q4 (-2)	95Q2 (0)
Trough	97Q1	98Q2 (+5)	95Q2 (-7)	98Q1 (+4)	98Q1 (+4)	96Q3 (-2)	96Q4 (-1)	99Q1 (+8)	97Q1 (0)	97Q3 (+2)	97Q1 (0)
Peak			99Q1 ( )				98Q2 ( )				
Trough			00Q1 ( )				99Q2 ( )				
Peak	00Q4	00Q2 (-2)		99Q4 (-4)	01Q1 (+1)	00Q4 (0)	00Q4 (0)	00Q2 (-2)	98Q4 (-8)	99Q1 (-7)	00Q4 (0)
Trough	03Q2	03Q2 (0)		04Q2 (+4)	04Q3 (+5)	03Q3 (+1)	04Q1 (+3)	03Q2 (0)	03Q1 (-1)	03Q2 (0)	04Q4 (+6)
Peak								04Q2 ( )			
Trough								05Q3 ( )			
Peak	07Q4	06Q4 (-4)	07Q1 (-3)	07Q4 (0)	07Q4 (0)	07Q3 (-1)	08Q2 (+2)	07Q3 (-1)	06Q4 (-4)	07Q3 (-1)	08Q1 (+1)
Mean		(-2.0)	(-2.7)	(-1.7)	(1.0)	(-1.3)	(0.1)	(0.1)	(-3.8)	(-1.6)	(1.2)
StdErr		4.4	3.2	4.2	4.2	1.4	2.3	3.4	4.1	2.8	2.4

Table 5: Peaks and troughs dating for growth cycles estimated by using HP2 filter with bandwidth 1.5-8 years. Lead and lags viz the GDP growth cycle turning points are in parenthesis. IPI series only starts in 1990.

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