

---

NOTES D'ÉTUDES

ET DE RECHERCHE

---

**UNDERSTANDING ASSET PRICES:  
DETERMINANTS AND POLICY IMPLICATIONS**

Laurent Clerc

May 2007

**NER - E # 168**



**UNDERSTANDING ASSET PRICES:  
DETERMINANTS AND POLICY IMPLICATIONS**

Laurent Clerc

May 2007

**NER - E # 168**

Les Notes d'Études et de Recherche reflètent les idées personnelles de leurs auteurs et n'expriment pas nécessairement la position de la Banque de France. Ce document est disponible sur le site internet de la Banque de France « [www.banque-france.fr](http://www.banque-france.fr) ».

Working Papers reflect the opinions of the authors and do not necessarily express the views of the Banque de France. This document is available on the Banque de France Website "[www.banque-france.fr](http://www.banque-france.fr)".

# Understanding Asset Prices: Determinants and Policy Implications

*An Overview of Recent Research Carried out at the Banque  
de France*

Laurent Clerc\*

Banque de France  
Research Department  
41-1422- POMONE  
75049 Paris Cedex 01  
FRANCE

Phone: +33 1 42 92 38 29  
Fax: +33 1 42 92 62 92  
E-mail: laurent.clerc2@banque-france.fr

April 2007

---

\*Head of the Monetary Policy Research Division. This paper was prepared for and presented at the Autumn Meeting of Central Bank Economists hosted by the Bank for International Settlements on 30-31 October 2006. Hördahl and Packer (2007) present an overview of the main contributions to this meeting. The views stated herein are those of the author and not necessarily those of the Banque de France.

## Abstract

The paper provides an overview of recent asset price developments in France in the light of analytical research carried out at the Banque de France. Like in many other countries, historically low interest rates have boosted asset price dynamics in France over recent years. The paper attempts to shed light on the main driving factors and assesses, in particular, the role played by “excess liquidity” in shaping current developments. Additional factors related to fierce competition in the French banking sector have also contributed to the upswing in residential property prices, exacerbating households’ demand through credit expansion and leading to a sharp and unprecedented increase in household debt, consistent with a financial-accelerator-like mechanism. On several occasions over the past two years, the Banque de France has expressed its concerns about lending for housing purchase and housing price developments, both from a monetary and a financial stability perspective. Finally, the paper presents some views, based on in-house research, on the role, if any, that asset prices could play in the setting of monetary policy.

**Keywords:** asset prices, monetary policy

**JEL classification:** E44, E50, G12

## Résumé

Cet article analyse l'évolution récente des prix d'actifs en France à l'aune des travaux empiriques et théoriques effectués à la Banque de France au cours de ces dernières années. A l'instar de ce que l'on a pu observer dans de nombreux pays, le niveau historiquement et durablement bas des taux d'intérêt a été à l'origine d'une forte progression du prix des actifs en France. L'article cherche à mettre en évidence les principaux facteurs à l'origine de cette flambée des prix d'actifs et étudie en particulier le rôle des "excès de liquidité" dans cette dynamique. Il ressort que des facteurs additionnels, liés par exemple à l'intensité de la concurrence dans le secteur bancaire, ont pu contribuer à l'envolée des prix de l'immobilier résidentiel, en exacerbant la demande de crédit des ménages d'une part et en conduisant à une forte croissance de leur endettement d'autre part, conformément au mécanisme de l'accélérateur financier. De telles évolutions ont conduit la Banque de France à exprimer, à plusieurs reprises au cours de ces dernières années, ses inquiétudes quant à l'évolution conjointe des crédits et des prix immobiliers, tant pour des raisons de stabilité monétaire que pour des raisons de stabilité financières. Enfin, l'article présente quelques pistes de réflexion sur le rôle éventuel des prix d'actifs dans la conduite de la politique monétaire.

**Mots-clés :** prix d'actifs, politique monétaire

**Classification JEL :** E44, E50, G12

## **Non technical summary**

This paper provides an overview of recent asset price developments in France in the light of analytical research carried out at the Banque de France. It first presents some stylised facts about recent asset price behaviour and developments and reviews the empirical research carried out at the Banque de France regarding their main determinants. The main lessons we can draw from this review are:

1- asset market prices have shown ample fluctuations in France over recent years. There is increasing evidence of the existence of wealth effects in France, though still difficult to spot from an econometric point of view. The recent surge in asset prices, in particular housing prices, is illustrative of an apparently increased interaction between residential property prices and credit constraints, in a context of historically low interest rates.

2- As far as their statistical properties are concerned, asset prices have, in general, not undergone dramatic changes, except for housing prices; in the latter case, the conjunction of easy monetary policy, low interest rates, fierce competition in the banking sector and measures to stimulate the French housing market have clearly contributed to the run-up in residential property prices.

3- Financial globalisation may have contributed to increasing the role of “common factors” or at least, occasionally facilitated the transmission of financial shocks across countries. For instance, there is strong evidence that the main developments in the French equity and bond markets are largely driven by international factors.

4- However, there are no clear signs of causality running from "excess liquidity" to asset prices. The causation, if any, rather appears to occur in the opposite direction. Indeed, on the period under review, such causation would be consistent with the portfolio shifts or “flight to liquidity” episodes evidenced in a context of increased uncertainty, in the aftermath of the stock market collapse in 2000.

5- Concerns about the risks of an abrupt correction in the bond and housing markets in the context of less easy monetary policy have led central banks to adjust their communication policies

vis-à-vis asset markets. The Banque de France for instance has on several occasions communicated its main concerns about the sustainability of current housing price developments and credit expansion.

6- Finally, recent research tends to strengthen the case for a monetary policy reaction to supposed or perceived asset price out-of-fundamental dynamics: first, stemming from an "insurance motive": a central bank, which may not have necessarily superior information, can send a credible signal that it fears possible non-fundamental price dynamics. In that case, an interest rate hike may be sufficient to curb the cascade by forcing market participants to re-assess their views about current price developments; second, by suggesting that monetary policy may have more leverage on asset prices by reacting to current private expectations of future asset prices rather than to current asset prices.

## Résumé non technique

Cet article analyse l'évolution récente des prix d'actifs en France à l'aune des travaux empiriques et théoriques effectués à la Banque de France au cours de ces dernières années. Il présente dans un premier temps les principaux faits stylisés concernant l'évolution de ces prix et tente d'en déterminer les causes. Les principaux résultats qui ressortent de cet exercice sont les suivants :

1- les prix d'actifs ont connu des fluctuations marquées au cours de ces dernières années. Ces évolutions pourraient refléter la présence d'effets de richesse en France, bien que ces derniers demeurent difficiles à mettre en évidence d'un point de vue économétrique. La récente envolée des prix d'actifs, en particulier ceux de l'immobilier, s'explique notamment par le relâchement des contraintes de crédit dans un contexte de taux d'intérêt historiquement bas.

2- Toutefois, de telles évolutions ne présentent pas de ruptures majeures au regard des propriétés statistiques passées des prix d'actifs, sauf en ce qui concerne les prix de l'immobilier. Dans ce dernier cas, la conjonction d'une politique monétaire accommodante, du bas niveau des taux d'intérêt, d'une concurrence accrue au sein du système bancaire et de mesures destinées à dynamiser le marché immobilier ont clairement participé à l'envolée singulière des prix de l'immobilier.

3- La globalisation financière a sans doute contribué à accroître le poids des "facteurs communs" dans la dynamique des prix d'actifs et a pu occasionnellement faciliter la transmission internationale des chocs financiers entre les pays. Il apparaît ainsi que l'évolution des marchés boursier ou obligataire français est largement déterminée par des facteurs internationaux.

4- Il est difficile de mettre en évidence, à l'aune des mesures disponibles, un lien de causalité allant des "excès de liquidité" aux prix des actifs. Le sens de la causalité serait d'ailleurs plutôt opposé, en cohérence avec les mouvements de portefeuille ou les épisodes de "fuite vers la liquidité" observés dans un contexte d'incertitude accrue aux lendemains du krach boursier de 2000.

5- Les inquiétudes à l'égard du risque d'un ajustement brutal des marchés obligataires et immobiliers dans un contexte de durcissement des politiques monétaires ont conduit les banques centrales à ajuster leur communication vis-à-vis des marchés d'actifs. Ainsi, la Banque de France

a signalé à plusieurs reprises au cours de ces dernières années ses craintes et interrogations quant à la soutenabilité du rythme de hausse des prix et des crédits immobiliers.

6- Enfin des travaux théoriques récents semblent considérer qu'une réaction de politique monétaire à une évolution des prix d'actifs perçue comme non conforme aux fondamentaux serait envisageable. Une première raison découlerait du principe "d'assurance": une banque centrale, ne disposant pas nécessairement d'une meilleure information que celle des agents privés, pourrait envoyer un signal crédible manifestant une crainte relative à la présence de comportements moutonniers sur les marchés financiers. Dans ce contexte, une hausse des taux directeurs, même limitée, pourrait suffire à rompre une "cascade informationnelle" en forçant les agents économiques à procéder à une nouvelle évaluation des cours. une seconde raison tiendrait au fait qu'une réaction non agressive de politique monétaire, visant à interrompre une bulle en cours de formation en déconnectant la valeur présente du prix d'actif des anticipations des agents privés concernant sa valeur future, exercerait un effet de levier sur ces anticipations.



# 1 Introduction

The last two decades have been marked by far-reaching changes in French financial markets. The combined effects of financial deregulation and innovation against the backdrop of globalisation, the inception of the euro and its effects on financial integration may have contributed to strengthening the role of financial factors in the economic cycle (Clerc and Pfister, 2003). Though wealth effects remain difficult to spot in France (cf. Fraisse, 2004), the recent increase in asset prices, in particular housing prices, is illustrative of an apparently increased interaction between residential property prices and credit constraints, in a context of historically low interest rates. Baude (2005) finds that ample fluctuations in asset prices in France from the mid-1990s to the end of 2000 generated important wealth effects in particular for firms that relaxed their credits constraints and led to a significant increase in their indebtedness. Over recent years, the decline of interest rates to historical lows has mitigated the effects of the stock market crash. It has been conducive, amongst other factors, to an increase in the prices of other assets, in particular residential property prices. The combination of these two developments has favoured an additional increase in the level of indebtedness of both households and firms.

The main risks stemming from the current situation are related to the following issues: first, there are still many questions about why interest rates have reached and remained at historical lows for such a long period. Economists at the FED and the IMF have pointed out the key role played by a fall in risk premia, suggesting in addition the possibility of a current under-pricing of risks on financial asset markets that would leave them vulnerable to revisions in the macroeconomic outlook. Second, the removal of the accommodative policy stance could lead to debt servicing difficulties, in particular in the household sector. As an illustration, fierce competition in the French banking sector has contributed to the upswing in residential property prices, exacerbating households' demand through credit expansion and leading to a sharp and unprecedented increase in household debt (see for instance Boutillier, Gabrielli and Montfront, 2005). In this context, the

Banque de France has, on several occasions over the past two years, expressed its concerns about lending for housing purchase and housing price developments, both from a monetary and financial stability perspective.

Finally, financial globalisation may have contributed to increasing the role of “common factors” or at least, facilitated the transmission of financial shocks across countries. As far as the French economy is concerned, there is strong evidence that the main developments in the equity and bond markets are largely driven by international factors. This has so far not been the case for housing prices, which were considered to be more determined by country-specific factors. From this viewpoint, the significant upswing in housing prices that started in the late 1990s in France however presents some new interesting and challenging features: first, the housing boom is not only in the big cities, particularly Paris, but is a widespread phenomenon affecting most parts of the country. Second, there is anecdotal evidence of “contagion”, with strong demand stemming from English, Dutch and more recently Irish investors putting additional pressures on prices, i.e. demand originating from European countries where both financial and housing wealth effects are evidenced.

This paper is organised as follows: section 1 presents some stylised facts about recent asset price behaviour; section 2 reviews the empirical research carried out at the Banque the France regarding their main determinants; section 3 attempts to draw some monetary and financial stability implications.

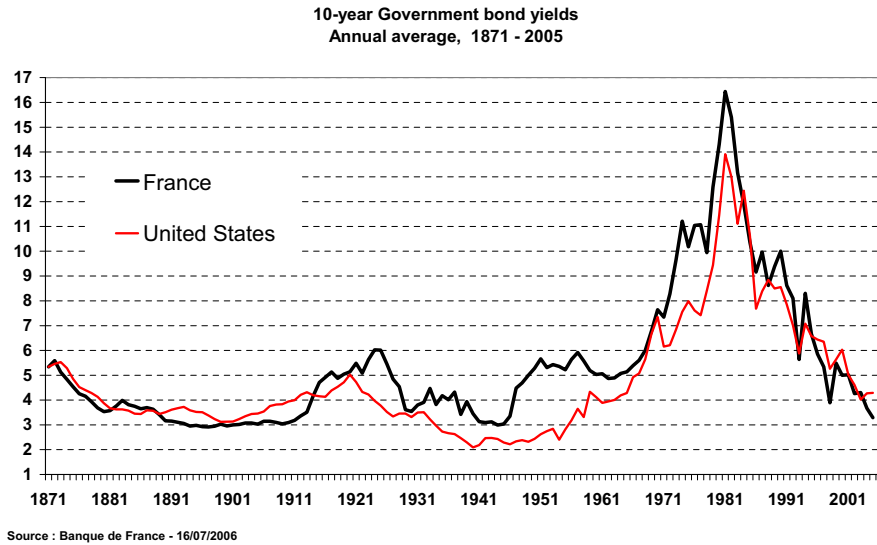
## 2 Stylised facts about recent asset prices behaviour

The historically low level of interest rates has undoubtedly been a key driving factor shaping asset price dynamics in France.<sup>1</sup> As illustrated in Figure 1 below, last year long-term nominal rates reached a level unprecedented in the last sixty years. Short-term nominal rates behaved alike.

---

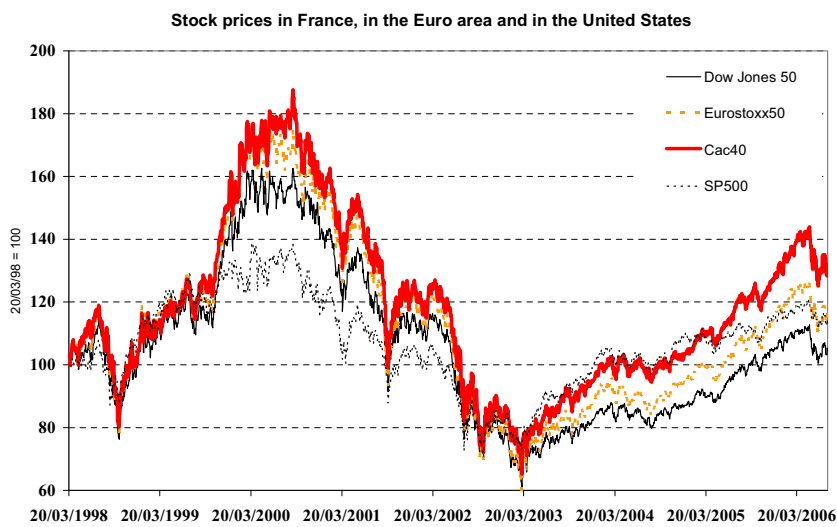
<sup>1</sup>This may simply reflect the standard present-value statement (see for instance Cochrane, 2001) according to which  $p_t$ , the asset price is given by:  $p_t = \sum_{j=1}^{\infty} \frac{E_t d_{t+j}}{R_{t,t+j}^f} + \sum_{j=1}^{\infty} cov_t(d_{t+j}, m_{t,t+j})$  where  $d$  stands for a stream of dividends or rents,  $R_{t,t+j}^f = E_t(m_{t,t+j})^{-1}$  for the  $j$  period interest rate and  $m_{t,t+j}$  for the pricing kernel

Figure 1



Indeed, the monetary policy stimulus resulting from aggressive monetary easing, at least in the United States in the context of a post-bubble era, prompted a surge in equity prices that occurred simultaneously in the United States and continental Europe in the first quarter of 2003 (Figure 2).

Figure 2:

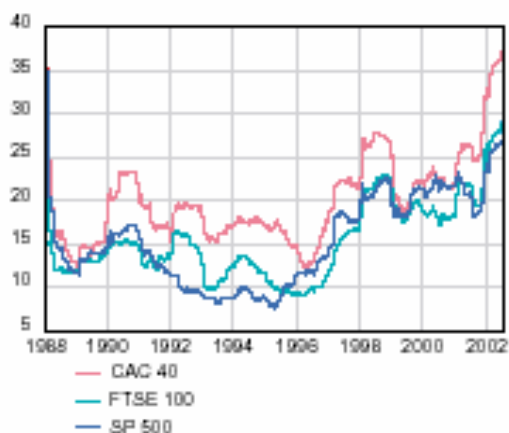


Nevertheless, domestic factors, such as a better macroeconomic outlook, may also explain why the French stock market has outperformed its European counterparts over the last three years.

Taking a longer term perspective, Grouard, Lévy and Lubochinsky (2003) show, based on various available volatility indicators, that stock market volatility had exhibited an upward trend since 1997, in particular for technology, media and telecommunications stocks. This tendency was a global phenomenon, as illustrated in Figure 3.

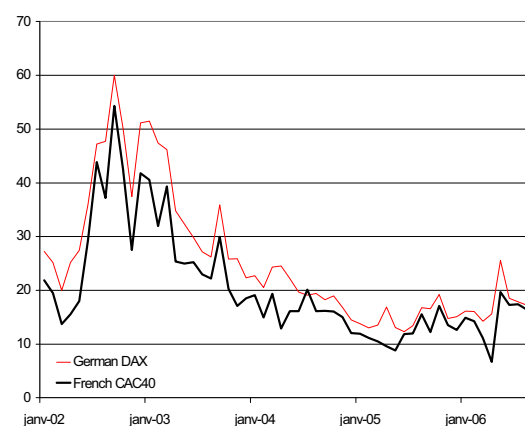
Figure 3:

**Annual historical volatility of the SP500, CAC40 and FTSE 100 stock market indices (in %)**



Source: Banque de France, Bloomberg

**Monthly implied volatility of the CAC 40 and the DAX stock market indices**



Source: Datastream

However, a peak was reached in 2002-2003, with annual historical volatility of the CAC index exceeding 38% while monthly volatility occasionally reached 60%. Since then, the trend has reversed and monthly volatility plummeted to 6% in April 2006, in line with the assumption of a fall in the risk premium. Like other financial markets, the French stock market experienced a sharp increase in volatility in May and June 2006, which was mainly interpreted as a reassessment of risk and a sound correction. However, this movement was short-lived and volatility declined again over the summer.

It remains unclear, from a long-term perspective, whether volatility has changed significantly over the last twenty years as current lows may simply be offsetting previous highs. Indeed, the statistical properties of volatility of French equity prices, i.e. volatility clusters and mean reversion, have not changed dramatically over recent years.

Housing prices have exhibited more unusual patterns (Figure 4 below). The current run-up in housing prices in France differs from past experiences in three important respects: first, the size of

the current upturn is striking, in particular in real terms: from Q1 1997 to Q4 2005, the current expansion phase, housing prices increased by around 80%, by far exceeding previous housing price upturns: they rose for instance by around 33% between Q3 1984 and Q1 1991 and by 31.2% between Q1 1970 and Q1 1981; second, the duration of the current expansion phase has surpassed that of similar past episodes: 37 consecutive quarters of price increases versus 27 during the last cycle; third, housing prices have also tended to move together across countries and, as far as France is concerned, the rise has been observed all over the country, whereas it was limited to the big cities, in particular Paris, during past boom episodes.

Amongst the factors that could have played a role, besides the usual determinants, financial deregulation in the mortgage market has contributed to significantly reducing borrowing constraints on households. Fierce competition in the French banking sector has resulted in a lengthening of mortgage terms, with loan duration extended to 30 years, and the developments of variable payment mortgages. In France, home ownership has traditionally been financed with 5-year and longer fixed-rate loans, with more than 50% of the outstanding loans with terms of 10 years or more. However, the share of new loans at variable rates or an initial rate fixed for one year or less reached almost 30% in 2005.

These developments have originated in a sharp increase in household indebtedness. The ratio of households' total debt to real disposable income rose from 49% in 1996 to 64.9% in Q1 2006 (Secrétariat du Conseil national du crédit et du titre, 2004 and 2005, and regular updates posted on the Banque de France web site). The analyses carried out at the Banque de France tend to show that debt levels have remained manageable so far, as the increase in indebtedness has been partly offset by the decline in the borrowing rate. Indices of housing affordability computed by Moëc (2004 and 2006) exhibit for example a downward trend as from 1998 but still remain 2 percentage points above the level prevailing before the last housing price reversal in 1991. However, the two papers by Moëc rightly question the sustainability of the current pace of housing price increases and point out the vulnerability of the French housing market to a rise in interest rates.

In May 2006, the French government introduced new measures to modernise the mortgage market that will allow French property owners to release mortgage equity in order to increase borrowing (refillable mortgage) or enter into a reverse mortgage. The purpose of the reform is twofold: foster the use of mortgage loans by households in order to develop home ownership; and encourage mortgage equity withdrawal to raise consumption and economic growth. Mésonnier (2004) analysed the draft proposals of this mortgage market reform and pointed out that, from a financial stability perspective, new market products would raise indebtedness and risks for households and lenders, increasing their vulnerabilities to income and asset price fluctuations. However, it is fair to say that the final draft of the Order adopted last May accounted for these risks and has been mindful of protecting consumers by limiting the credit to the original amount of the loan.

Figure 4: **Housing prices and lending for house purchase in France**



### 3 Determinants of asset prices

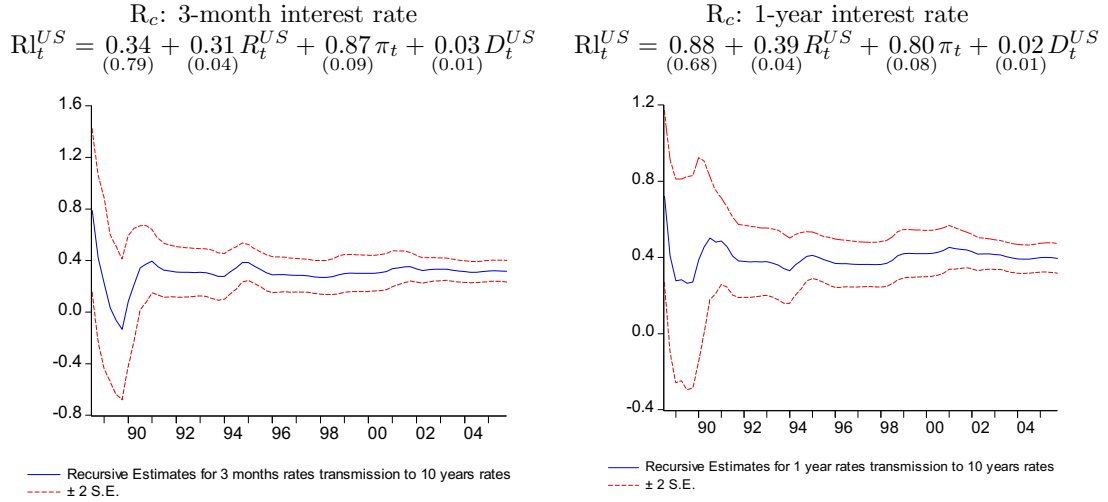
Long-term interest rates have played a key role in shaping asset price dynamics over the last few years, posing several challenges for central banks as these developments have been difficult to fully rationalise. In particular, long-term interest rates have apparently responded less than normally to changes in policy rates during the current tightening cycle and have even declined further last summer. These developments raise additional issues, in particular the question of whether the correlations within the same class of assets across countries have increased or not. It could be expected, for example, that the inception of the euro has fostered financial market integration within the euro area, increasing correlations amongst continental European financial markets and independence vis-à-vis the US markets.

In a recent contribution, Idier, Jardet and de Loubens (2007) offer an attempt to account for the level of long-term interest rates both in the United States and the euro area between 1986 and 2005. Besides usual determinants, such as core inflation, short-term nominal rates or public debt, they review the alternative explanations put forward in the financial market literature to account for the current lows, such as the “savings glut hypothesis”, the “global liquidity” assumption and the portfolio shifts stemming from increased uncertainties or regulatory constraints<sup>2</sup> and leading to a strong demand for bonds, in particular at longer maturities. They also examine the co-movements between the US and European bond markets. Their results first tend to show that European long-term interest rates have been heavily influenced by their US counterparts over the period under review. Second, their estimations do not evidence a weakening of the link between short- and long-term interest rates (Figure 5).

---

<sup>2</sup>In a recent OECD working paper, Ahrend, Catte and Price (2006) point out that recent regulatory and accounting changes (such as IAS 19) forced pension funds to adopt a much sharper focus on the management of the interest rate risk they face on the liability side of their balance sheets.

Figure 5: Recursive coefficients of short-term interest rates in the long-run equation



Third, several factors such as excess global liquidity, as measured by the gap between monetary growth and nominal GDP growth, net foreign demand of US long-term bonds and financial market uncertainties, as measured by equity prices, seem to have significantly impacted on US long-term interest rates. However, the contribution of all these factors only affects the short-term dynamics of long-term interest rates. The authors establish a sequence in which excess liquidity first impacted long-term rates between 2000 and 2003, followed by portfolio shifts, which played a significant role between 2002 and 2003. Net foreign demand of US government bonds took over at the end of 2003. As from the beginning of 2005, they found evidence of a greater contribution stemming from excess global liquidity again. European long-term interest rates exhibit a similar pattern and sequence of events.

As far as equity markets are concerned, Avouyi-Dovi and Matheron (2006) investigate the degree of correlation between stock prices and productivity. They start by isolating the long-term and cyclical components of the productivity growth rate and of stock returns both in the United States and the euro area. They then measure the co-variations between productivity and stock prices at different levels, i.e. between the previously isolated components, and study how correlations vary according to the different frequencies characterising these variables. In addition, they compare the cyclical components of stock returns in the United States and the euro area.



Their findings can be summarised as follows: first, there is a clear correlation between the cyclical components of the rate of stock returns with that of the productivity growth rate in the United States. Such a correlation also holds for the euro area, though to a lesser extent; second, the cyclical components of stock returns in the United States and the euro area co-vary positively, suggesting the possibility of contagion effects from the United States to the euro area.

The question of the degree of interdependence between European and US stock markets has been studied by Avouyi-Dovi and Neto (2004) in a paper that combines the conditional correlations defined by Engle (2001) with copula functions. Their main results corroborate the assumption that correlations tend to vary over time. They observe the presence of periods of strong and weak correlation and similar periods for volatilities. In particular, they show that in phases of high volatility, the correlation between stock returns tends to rise above its medium-term average. Conversely, in phases of low volatility, markets seem to display greater independence. This finding is common in the empirical literature and is due, to some extent, to the statistical link between sampling volatilities and correlations (Forbes and Rigobon, 2002). They analyse daily data for the period from 31 December 1993 to July 2002. Over this time span, they find some evidence of the convergence of German and French stock markets.

Idier (2006) complements this analysis by focusing on the process of consolidation in the stock exchange industry. In his contribution, risk transmission is analysed through overlapping rolling cointegration and shocks on correlations through dynamic conditional correlation multivariate GARCH model. The models are estimated on daily data from 1 January 1994 to 1 April 2006. The results tend to show that, up to 2000, the dynamics of stock prices in Europe (the DAX, CAC and FTSE indices are considered) were largely influenced by US stock market developments. The link between the United States and continental European stock markets weakened until 2003, in line with the hypothesis that monetary union should raise the independence of European stock markets. Since then however, the correlation amongst stock returns has increased again in the wake of US intervention in Iraq, with a tendency for European indices again to follow US markets.

On several occasions over recent years, the Banque de France has expressed its strong concerns on the association of booming residential real estate markets, very strong credit expansion and very low interest rates in the context of an accommodative monetary policy. Several studies published in its Monthly Bulletin have, for example, raised the issues of the sustainability of housing credit growth (Wilhelm, 2005) and the sustainability of housing price developments in France, the euro area and the United States (Moëc, 2006), or raised concerns that a property bubble may be inflating in France (Moëc, 2004). As regards the latter contribution, several indicators measuring potential housing price misalignments were computed but did not evidence that a housing bubble was inflating in France. Two contributions further investigated this issue.

First, Mésonnier and Lecat (2005) carry out an econometric exercise to account for housing price developments in a panel of 18 developed countries.<sup>3</sup> The equation is estimated using the general method of moments as applied to dynamic panel data by Arellano and Bond (1991). The dynamic part stems from their attempt to capture the fairly strong persistence of housing price fluctuations and their tendency to revert to the mean as already evidenced in the empirical literature. These two features are factored in by the one-year lagged real house price rate of growth and the ratio of housing prices to real disposable income per capita. They also simultaneously consider the impact of the variations in the real short-term interest rate and the spread between short and long-term rates as variables determining the demand for housing loans via their impact on the user cost of capital. Other explanatory variables are the “fundamentals” expected in theory, such as the rate of growth of household disposable income and the rate of growth of population. The rate of growth of real credit to the private sector is introduced as a proxy for housing loans and the growth rate of real stock prices as a proxy for the fluctuations in households’ financial wealth. Finally, the model is completed by a dummy variable featuring changes in the regulation of mortgage lending.

Table 1 provides the main results of the estimation over the 1985-2002 period of the basic specification (column 1), two alternatives (column 2 and 3) and of a similar exercise carried out at

---

<sup>3</sup>Namely Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States.

the IMF (2004). Amongst the main results, the terms that describe the return to equilibrium and the three financial variables (the short-term rate, the spread and real credit growth) are highly significant. The paper suggests that over the past six years, with varying consequences across countries, monetary policy easing associated with the completion of the disinflation process and financial deregulation may have fostered macro-financial imbalances.

Table 1:

**Determinants of house prices in industrialised countries  
(panel of 18 OECD countries)**

Dependant variable: Real house prices, growth rate	M1 (1985-2002)	M2 (1985-2002)	M3 (1985-2002)	FMI (1971-2003)
	1	2	3	4
Persistence:				
Real house prices, growth rate (lagged)	0.33 ***	0.39 ***	0.34 ***	0.52 ***
Error correction term (lagged price-to-income ratio <i>per capita</i> )	-0.15 ***	-0.17 ***	-0.14 ***	-0.14 ***
Income per head, growth rate	0.53	0.49	0.66	0.53 ***
Population, growth rate	7.04	1.04	6.00	1.75 ***
Real short-term interest rate	-1.30 ***	-1.42 ***	-1.48 ***	-0.51 ***
Term spread	-1.30 ***	-1.61 ***	-1.20 ***	–
Real credit, growth rate	0.52 ***	0.40 ***	0.43 ***	0.11 ***
Real stock prices, growth rate	–	0.01	–	–
Real stock prices, growth rate (lagged)	–	–	0.2	0.033 ***
Deregulation (proxy)	–	-0.11	-1.89	–
Bank crisis (proxy)	–	–	–	-2.43 ***
Number of observations	288	288	288	524
Sargan (p-value)	0.25	0.13	0.14	–
Arellano-Bond (p-value)	0.81	0.74	0.80	–

NB: The symbols \*\*\*, \*\*, \* denote a significance threshold of 1%, 5% and 10%, respectively. The Sargan test for overidentifying restrictions is used to validate the choice of instrumental variables used in the GMM. The Arellano and Bond test (1991) verifies the absence of second-order autocorrelation of residuals. The estimation by GMM is carried out on the equation in differences and the variables are instrumented by their second and even third lagged values in level form, except for the proxy for deregulation that is instrumented by itself.

Source: Mésonnier and Lecat (2005); Property prices: BIS; other macroeconomic variables: OECD.

Second, Villetelle (2005) looks more specifically at the behaviour of French property prices. Though his main purpose is not to assess whether housing prices are evolving broadly in line with fundamentals, his econometric framework sheds light on their recent behaviour. He estimates the following equation for housing prices:

$$B(L) \Delta \ln p_t = b_0 + \gamma \left( \ln p_{t-1} - \ln \frac{R_{t-1}}{N_{t-1}} \right) + \gamma_1 r_{t-1} + \gamma_2 \frac{H_{t-1}}{R_{t-1}} + B_1(L) \Delta \ln \left( \frac{R_t}{N_t} \right) + B_2(L) \Delta r_t + B_3(L) \Delta \left( \frac{H_t}{R_t} \right)$$

where  $p_t$  stands for residential property prices;  $R_t$  : nominal disposable income;  $H_t$  : nominal housing investment;  $N_t$  : total employment;  $r_t = i_t - \Delta_4 \ln p_t$ , the long-term real rate and  $i_t$  the long-term nominal interest rate. Table 2 presents the estimation results.

Table 2: Estimation results

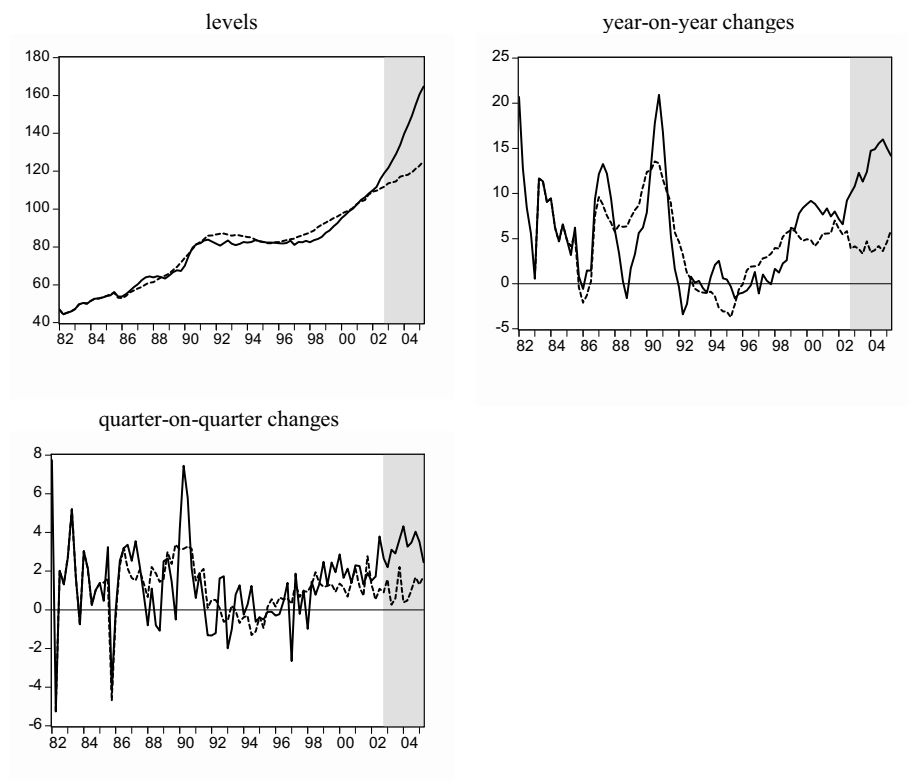
	1983 Q1 -	2002 Q4
	Coeff.	T-Stat
$b_0$	0.048	0.51
$\gamma$	-0.053	-1.42
$\gamma_1$	1.344	4.15
$\gamma_2$	-0.354	-8.47
$\alpha = -\frac{\gamma_1}{\gamma}$	-1.291	-
$\beta = -\frac{\gamma_2}{\gamma}$	0.407	-
$\Delta \ln p_{t-2}$	-0.418	-5.23
$\Delta \ln p_{t-3}$	-0.307	-3.98
$\Delta \ln p_{t-4}$	-0.275	-
$\Delta \left( \frac{H_{t-1}}{R_{t-1}} \right)$	-4.038	-2.84
$\Delta \ln \left( \frac{H_{t-4}}{N_{t-4}} \right)$	0.598	2.89
$I_{1985Q4}$	-0.059	-4.41
DW	1.97	
$R^2$	0.81	
SER	1.33%	

As shown in Figure 6 below, the equation shows some signs of instability from the end of the 1990s and actual prices have diverged substantially from their past and usual determinants since 2002. This model may be too simplistic to conclude that French property prices exhibit bubble-like behaviour, in particular because it does not factor in other asset prices<sup>4</sup> and the correct arbitrage conditions among them. However, it points out that housing price developments remain very puzzling over the recent period, even when the effects of financial variables, captured here by the short-term real interest rate (coefficient  $\alpha$ ), or those of financial deregulation, as measured by the dummy variable  $I_{1985Q4}$  that corresponds to the period of the dismantling of credit controls on the French banking sector, are accounted for.

---

<sup>4</sup>Empirical evidence suggests the existence of a lagged impact of stock price fluctuations on housing prices in industrialised countries of about one to three years (see for instance Borio and McGuire, 2004) and about two years in France according to in-house estimates.

Figure 6: Residential property prices: simulations



Source: Villetelle (2005); The shaded areas represent the out-of-sample period.

To conclude this section, we examine market participants' view according to which the coincident rally in asset prices has been primarily driven by the “excess liquidity” generated by the inordinately accommodative monetary policies of overly lax central banks. The main intuition here is that there is an extraordinary amount of liquidity in circulation that is being spent on equities, bonds, houses, etc.

The concept of excess liquidity or global liquidity is however difficult to pin down. There is no universally-accepted definition and liquidity is generally captured by relevant price indicators (the level of interest rates, bid-ask spreads) rather than quantities. Gouteron and Szpiro (2005) investigate this issue by testing Granger causality between a set of “excess liquidity” measures and stock, bond and housing prices. In order to capture liquidity, various indicators are computed: “excess money”, that measures the extent to which overall money supply (M3 for the euro zone or M2 for the United States) is growing faster than nominal GDP. It corresponds to the “Marshallian-

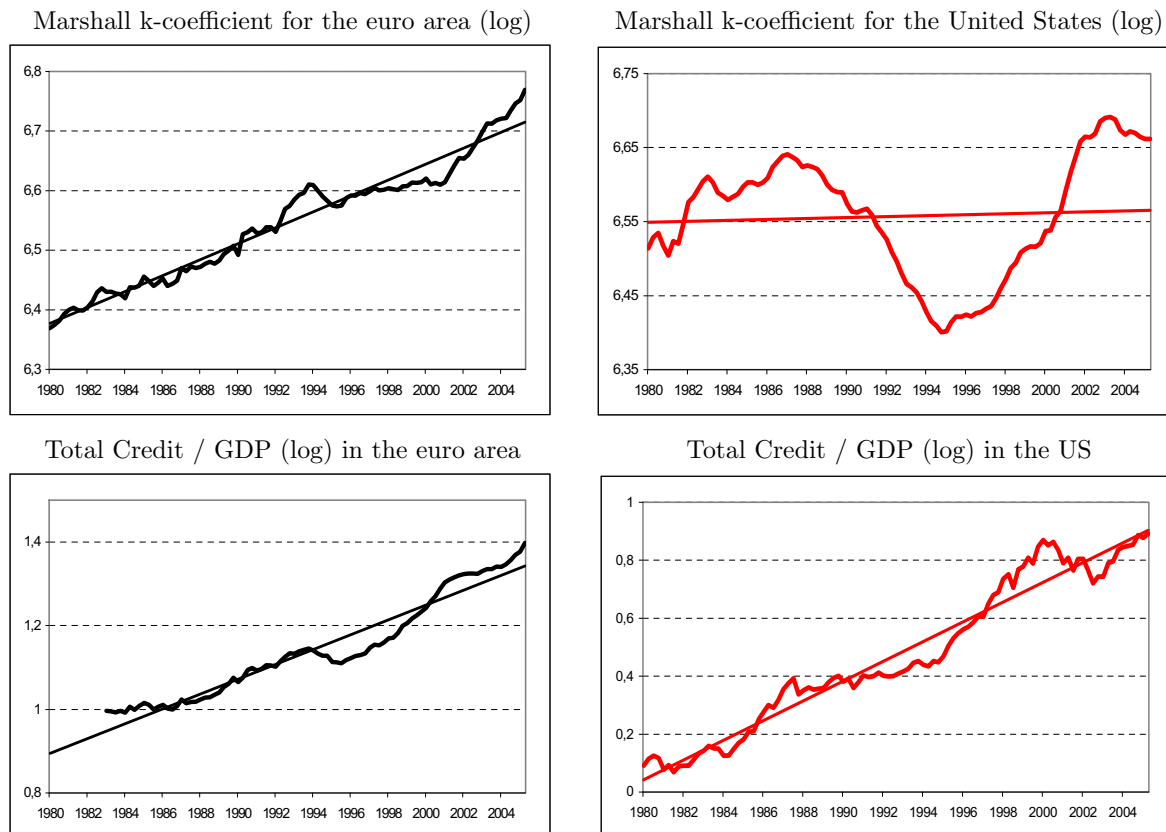
k”, i.e. the reciprocal of money velocity; “excess credit”, that is measured exactly the same way by the ratio of total credit to nominal GDP. Both indicators are considered in terms of their deviation from a deterministic trend. Finally, an interest rate gap, i.e. the difference between the actual real interest rate and the natural interest rate (approximated by the long-term average of the real interest rate), completes this set of excess liquidity indicators.

Figure 7 below provides an overview of the quantity indicators of excess liquidity for both the euro area and the United States. Indeed, the different measures confirm that, after several years of very accommodative monetary policies, liquidity has become abundant and has even accelerated since 2004. The striking point is that the emergence of “excess liquidity” has not led to inflationary pressures in the prices of goods and services<sup>5</sup> but, rather, has been accompanied by, if not led to, a sharp increase in the prices of a wide range of assets.

---

<sup>5</sup>For a recent discussion of the stability of money demand in the euro area and its implications for the reliability of “excess liquidity” measures based on cumulative money growth, see Bordes *et al.* (2007).

Figure 7: Excess liquidity indicators



In order to assess this conjecture, Gouteron and Szpiro run Granger causality tests. The main results are provided in Table 3 below.

Whatever the measure considered, there are no clear signs of causality going from excess liquidity to asset prices. The causation, if any, rather appears to occur in the opposite direction. Indeed, under the period under review, such causation would be consistent with the portfolio shifts or “flight to liquidity” episodes evidenced in a context of increased uncertainty, in the wake of the stock market collapse in 2001. It would also be consistent with the broad credit channel view, whereby an improvement in the collateral value of the borrower’s assets allows banks to increase their lending,<sup>6</sup> the loan being spent eventually on the assets that were at the origin of the initial increase in the borrower’s net wealth, fuelling further asset price increases. However, it is fair to say

<sup>6</sup>In this view, the demand for loans stemming from the borrower leads the bank to borrow reserve money from other banks on the money market or directly from the central bank to create the loan and eventually meet its reserve requirements, thereby leading to an increase in the monetary base. In this context, the expansion of the monetary base is the consequence rather than the cause of the credit expansion.

that, according to these results, the causal link from asset prices to excess credit is not evidenced.

Table 3: Granger causality tests

Table 3: **Granger causality tests**

<b>Euro area</b>							
<b>Granger causality tests</b>	Lags (quarters)			<b>Granger causality tests</b>	Lags (quarters)		
	4	8	12		4	8	12
Excess money to stock prices	39.8	44.0	71.4	<b>Stock prices to excess money</b>	<b>9.2</b>	<b>12.8</b>	<b>7.1</b>
Excess credit to stock prices	72.3	13.1	56.7	Stock prices to excess credit	55.1	50.4	80.6
Interest rate gap to stock prices	46.7	56.8	93.7	Stock prices to interest gap	36.5	10.1	2.0
Excess money to housing prices	90.3	74.9	96.9	Housing prices to excess money	16.2	21.5	2.9
Excess credit to housing prices	90.0	86.8	99.1	Housing prices to excess credit	51.4	23.8	74.7
Interest rate gap to housing prices	87.9	71.5	32.6	<b>Housing prices to interest rate gap</b>	<b>0.1</b>	<b>0.1</b>	<b>2.3</b>
Excess money to bond prices	79.5	87.1	98.9	Bond prices to excess money	51.9	26.8	53.2
Excess credit to bond prices	94.8	95.3	97.4	Bond prices to excess credit	42.0	26.9	79.1
Interest rate gap to bond prices	71.3	68.6	72.4	Bond prices Interest rate gap	2.6	17.8	44.9

<b>United States</b>							
<b>Granger causality tests</b>	Lags (quarters)			<b>Granger causality tests</b>	Lags (quarters)		
	4	8	12		4	8	12
Excess money to stock prices	15.1	40.7	50.9	<b>Stock prices to excess money</b>	<b>1.3</b>	<b>9.2</b>	<b>0.5</b>
Excess credit to stock prices	56.2	71.3	87.8	Stock prices to excess credit	48.8	87.1	93.3
Interest rate gap to stock prices	57.7	53.8	2.4	Stock prices to interest gap	19.2	57.0	89.3
Excess money to housing prices	38.8	12.9	33.5	Housing prices to excess money	2.2	55.4	92.5
Excess credit to housing prices	65.9	36.8	68.1	Housing prices to excess credit	78.7	71.3	66.9
Interest rate gap to housing prices	1.4	23.8	42.8	Housing prices to interest rate gap	4.8	14.9	59.4
Excess money to bond prices	80.8	66.7	45.8	<b>Bond prices to excess money</b>	<b>0.2</b>	<b>4.6</b>	<b>2.0</b>
Excess credit to bond prices	25.7	45.1	19.7	Bond prices to excess credit	70.2	78.2	67.6
Interest rate gap to bond prices	9.3	5.9	34.4	Bond prices Interest rate gap	44.5	89.5	79.5

P-values: significant at the 10% level (bold)

Amongst the alternative determinants reviewed in this section, the historically low level of interest rates seems to have played a crucial role in asset price movements over the last ten years. The strong monetary and credit expansion that has accompanied these asset price fluctuations also reflect the incidence of the very low levels of interest rates. Taken together, these developments have many implications and raise many issues for the conduct of monetary policy.

## 4 Monetary policy and Financial Stability implications

Following the 2000 new tech stock market crash, in a context of increased macroeconomic and geopolitical uncertainty, many central banks across the world entered a phase of monetary easing which has contributed to the sharp fall of long-term real interest rates across the world. Low volatility and very narrow credit spreads completed this broad picture. The response of central



banks, in particular the FED, to the stock market bust is indeed the way central banks usually deal with asset price bubbles. This response is asymmetric, as pointed out by Chairman Greenspan on several occasions, and can be stated as follows: monetary policy should not react to asset bubbles when they are on the way up but only respond to observed declines in asset prices. In the context of the post-bubble era, asset prices responded to aggressive monetary policy easing in a way that is consistent with the traditional monetary policy transmission mechanism: asset prices went up, mitigating the fall of the net financial wealth caused by the stock market crash. The issue is whether central banks did not go too far, feeding bubbles on other asset markets.

This asymmetric response of central banks may simply reflect the fact that asset bubble boom-and-bust dynamics are themselves asymmetric in several dimensions (Greenspan, 1999). First, because rapidly falling asset prices are likely to cause more serious damage to the economy than rising asset prices. Asset bubble collapses usually lead to severe economic recession and systemic financial distress. Second, because asset price booms are not systematically followed by asset price busts. Bordo and Jeanne (2002) for example use a mechanical rule to identify boom-and-bust asset price dynamics in a set of 15 industrialised countries as from 1970. They find that out of 24 boom episodes identified for stock prices, only 3 were followed by busts, and that out of 19 boom episodes evidenced for property prices, 10 were followed by busts. They note however that property boom-bust dynamics tend to be local phenomena associated generally with only one big city. The current run-up in housing prices therefore raises additional issues as it is widespread and appears to be a global rather than a local phenomenon. This new situation may be a case for a monetary policy response.

In the context of monetary policy making, asset prices generally play an important role as information variables or as leading indicators of output, growth or financial distress. Using quarterly data from the 1970s, Clerc (2003) investigates the forecasting performance of asset prices and a wide set of potential leading indicators for output growth and inflation in the euro area. Following Stock and Watson's methodology (2001), the author performs out-of-sample forecasting

exercises. Some asset prices and financial variables are found to have a predictive power for real output growth and, to a lesser extent, for inflation, yet are barely statistically significant. Asset prices are outperformed by some monetary aggregates, such as M2, and other leading indicator candidates, such as oil prices, not only with respect to their forecasting abilities but also to their ability to detect turning points. However, it is found, like in Stock and Watson, that combining forecasts of poorly performing indicators can sometimes lead to reliable forecasts. This tends to be the case for asset prices and other financial market variables both for real GDP and inflation in the euro area. The policy implication is that it is probably not advisable to rely or focus on a subset of leading indicators, in particular as far as asset prices are concerned, but rather to gather the maximum reliable information for assessing future economic developments. It leaves open the issue, especially for inflation targeting central banks, of whether monetary policy needs, in certain circumstances, to respond more actively to asset price developments, in particular when these developments alter the central bank's assessment of the risks to its central scenario and this assessment plays an important role in the central bank's communication with the public.

Asset prices may play an even greater role if they are explicitly considered as an objective for the central bank. Some economists who advocate more activist monetary policies have recommended, for example, that asset prices be factored into the definition of price stability. Goodhart and Hofmann (2004) make the case for housing prices. Indeed, the global liquidity assumption examined earlier on encapsulates such an implication. This assumption is in particular consistent with the initial quantitative theory put forward by I. Fisher in 1911. In this approach, the quantitative equation states that  $MV=PT$ , where M stands for money, V for velocity, P for the price level and T for the volume of transactions. T represents both economic and financial transactions, and thus P is a price index aggregating both the prices of goods and services and financial prices. The fact that monetary expansion has not led to inflationary pressures as captured by usual consumer price indices does not mean that money is innocuous for the economy but that it feeds through to asset price inflation. The main implication would be that most central banks focus on the inappropriate

price index and that their resistance to responding directly to asset price inflation is irresponsible as it favours the development of financial imbalances. It also has a financial stability implication as the current removal of monetary accommodation, i.e. the withdrawal of global liquidity, could severely undermine asset prices and put several sectors in financial distress.

The “excess liquidity” assumption has another important implication for monetary policy as it is not completely consistent with the portfolio choice theory underlying the standard money demand functions central banks may rely upon for their analyses. In the standard approach, money and assets are perfect substitutes, so that an increase in money demand, driven by a decline in the opportunity cost of money, implies a reduction in the demand for other assets. This contradicts the current situation characterised by monetary expansion and a global increase in the holding of assets. To rationalise these developments, money and assets must be imperfect substitutes. Such a point is made in the neo-monetarist literature, e.g. in Andrès, Lopez-Salido and Nelson (2004), who introduce in a dynamic optimising model with money the assumption that agents who purchase long-term securities would like to hold additional money to compensate themselves for the loss of liquidity. This makes the spread between interest rates a function of the relative quantities of assets. As a result, the term structure of interest rates is shifted by the ratio of money to long-term holdings. The implication of such a result for monetary policy is that it opens a new transmission channel whereby money creation could exert additional effects on long-term rates for a given path of the short-term interest rate.

The excess liquidity assumption lacks empirical evidence so far, as illustrated by Gouteron and Szpiro (2005). However, the conjunction of monetary easing, historically low long-term interest rates, monetary and credit expansion and buoyant asset markets have rendered central banks slightly more sensitive and vigilant vis-à-vis asset price fluctuations. The housing market is a striking case in point as recent episodes of monetary policy tightening could be seen as attempts to address the risks stemming from this particular market, despite the fact that house prices do not appear to help forecast consumer prices over the short to medium term. However, major financial

stability concern may be a more relevant rationale for making the cooling of the housing market an important objective of the current removal of monetary accommodation across the world: the high level of indebtedness in the household sector and the fierce competition in the banking sector have for example led to situations in which households have been able to borrow from banks without lodging any internal funds as collateral, or simply with no equity. This puts additional risks on the banking sector that may spread to other financial institutions such as insurance companies in the event of an abrupt adjustment in the housing market.

Finally, central banks have made tremendous efforts over recent years to improve their communication and their transparency vis-à-vis the general public and the financial markets. One objective of being more transparent about policy intentions is to reduce unintended uncertainty and heightened volatility around monetary policy decisions on financial and asset markets by disclosing some relevant information. This may introduce a new rationale for central banks to lean against asset bubbles. So far, the analytical research carried out at the Banque de France has been in the vein of the seminal paper by Bernanke and Gertler (2001), leading to the conclusion that a central bank should only take account of and respond to asset price developments insofar as they have an impact on its macroeconomic policy goal, in particular price stability (e.g. Clerc, 2001). Épaulard, Loisel, Pommeret and Portier (2006) tackle this issue from a very different perspective that corresponds, to a certain extent, to the “insurance” motive put forward by B. Bernanke (2002) who declared: “it may be worthwhile for a central bank to take out a little ‘insurance’, so to speak, against the formation of an asset-price bubble and its potentially adverse effects”. In their ongoing research, they consider an economy prone to an asset price bubble generated by an informational cascade about the uncertain productivity of a new technology. The central bank does not have superior information on the true productivity of this new technology, nor has it identified with certainty that an asset bubble may be inflating, but it is simply worried about the possibility of rational herd behaviour in the stock market price. In this context, an interest rate hike can send the market the signal that something might be going wrong and that the central bank fears the

existence of possible out-of-fundamental price dynamics and this signal might be sufficient to stop the cascade by forcing market participants to re-assess their views about the productivity of the new technology. Another contribution by Loisel (2006) tends to strengthen the case for a monetary policy reaction to perceived asset-price bubbles by suggesting that monetary policy may have more leverage on asset prices (and hence might curb asset-price bubbles without aggressive interest-rate hikes) by reacting to current private expectations of future asset prices rather than to current asset prices.

## 5 Conclusion

The main lessons we can draw from this literature review are:

- asset market prices have shown ample fluctuations in France over recent years. There is increasing evidence of the existence of wealth effects in France, though still difficult to spot from an econometric point of view. The recent surge in asset prices, in particular housing prices, is illustrative of an apparently increased interaction between residential property prices and credit constraints, in a context of historically low interest rates.

- As far as their statistical properties are concerned, asset prices have, in general, not undergone dramatic changes, except for housing prices; in the latter case, the conjunction of easy monetary policy, low interest rates, fierce competition in the banking sector and measures to stimulate the French housing market have clearly contributed to the run-up in residential property prices.

- Financial globalisation may have contributed to increasing the role of “common factors” or at least, occasionally facilitated the transmission of financial shocks across countries. For instance, there is strong evidence that the main developments in the French equity and bond markets are largely driven by international factors.

- However, there are no clear signs of causality running from "excess liquidity" to asset prices. The causation, if any, rather appears to occur in the opposite direction. Indeed, on the period under review, such causation would be consistent with the portfolio shifts or “flight to liquidity”

episodes evidenced in a context of increased uncertainty, in the aftermath of the stock market collapse in 2000.

- Concerns about the risks of an abrupt correction in the bond and housing markets in the context of less easy monetary policy have led central banks to adjust their communication policies vis-à-vis asset markets. The Banque de France for instance has on several occasions communicated its main concerns about the sustainability of current housing price developments and credit expansion.

- Finally, recent research tends to strengthen the case for a monetary policy reaction to supposed or perceived asset price out-of-fundamental dynamics: first, stemming from an "insurance motive": a central bank, which may not have necessarily superior information, can send a credible signal that it fears possible non-fundamental price dynamics. In that case, an interest rate hike may be sufficient to curb the cascade by forcing market participants to re-assess their views about current price developments; second, by suggesting that monetary policy may have more leverage on asset prices by reacting to current private expectations of future asset prices rather than to current asset prices.

- developing techniques to break asset prices down – in particular short and long-term rates – into their constituent components (riskless rate, risk premia...) in order to isolate in particular the factors driving risk premia;

- exploring the information content of financial prices;

- analysing if and how central banks should react to asset price fluctuations in the context of DSGE models.

## References

1. Ahrend, R., P. Catta and R. Price (2006): "Factors behind low long-term interest rates", *OECD working paper*, n° 490, June.
2. Andrés, J., J. D. López-Salido and E. Nelson (2004): "Tobin's Imperfect Asset Substitution in Optimizing General Equilibrium", *Working Paper 2004-003A*, Federal Reserve of Saint-Louis, February.
3. Avouyi-Dovi, S. and J. Matheron (2006): "Productivity and stock prices", *Financial Stability Review*, Banque de France, No. 8, May, p.85-98.
4. Avouyi-Dovi, S. and D. Neto (2004): "Equity market independence: the relationship between European and US stock markets", *Financial Stability Review*, Banque de France, No. 4, June, p.115-133.
5. Baude, J. (2005): "The impact of stock market shocks on credit in France since the mi-1990s", *Financial Stability Review*, Banque de France, No. 7, November, p.99-113.
6. Bernanke, B. (2002): "Asset-Price 'Bubbles' and Monetary Policy", Remarks before the New York Chapter of the National Association of Business Economics, New York, October, 15.
7. Bernanke, B. and M. Gertler (2001): "Should Central Banks Respond to Movements in Asset Prices?", *American Economic Review*, p. 253-257, May 2001.
8. Boutillier, M., D. Gabrielli and R. Montfront (2005): "L'endettement immobilier des ménages : comparaison entre les pays de la zone euro", *Bulletin de la Banque de France*, No. 144, December.
9. Bordes, C., L. Clerc and V. Marimoutou (2007): "Is there a structural break in equilibrium velocity in the euro area?", *Notes d'études et de recherche*, Banque de France, No 165, February.

10. Borio, C. and P. McGuire (2004): "Twin peaks in equity and housing prices?", *BIS Quarterly Review*, p. 79-93, March.
11. Clerc, L. (2001): "La politique monétaire doit-elle prendre en compte les fluctuations des prix des actifs ? Une application à la zone euro", *Mimeo Banque de France*, February.
12. Clerc, L. (2003): "Do asset prices tell us something about future inflation and output growth in the euro area", *Mimeo Banque de France / European Central Bank*, January.
13. Clerc, L. and C. Pfister (2003): "The role of financial factors in the transmission mechanism of monetary policy", *BIS papers No. 19*, Monetary policy in a changing environment, September, p. 192 - 212.
14. Cochrane, J. H. (2001): *Asset Pricing*, Princeton University Press.
15. Engle, R. (2001): "Dynamic conditional correlation: a simple class of multivariate Garch models", University of California, Economic Department, *Working Paper*.
16. Épaulard, A., O. Loisel, A. Pommeret and Frank Portier (2006): "Monetary Policy and Asset Prices in an Economy with Private Information and Social Learning", *Mimeo Banque de France*, ongoing research, Preliminary Draft, September.
17. Forbes, K. J. and R. Rigobon (2002): "No contagion, only interdependence: measuring stock market co-movements", *Journal of Finance*, no 57 (5), p. 2223-61.
18. Fraisse, H. (2004): "A new analysis of the French household saving ratio", *Banque de France Bulletin Digest*, n° 130, October.
19. Goodhart, C. A. E. and B. Hoffmann (2004): "Deflation, Credit and Asset Prices", Financial Market Group – London School of Economics, *Working Paper*.
20. Gouteron, S. and D. Szpiro (2005): "Excès de liquidité monétaire et prix des actifs", *Notes d'études et de recherche*, Banque de France, No. 131, September.



21. Greenspan, A. (1999): "General discussion: Monetary Policy and Asset Price volatility", in *New Challenges for monetary policy*, Federal Reserve Bank of Kansas City, p. 143.
22. Grouard, M. H., S. Lévy and C. Lubochinsky (2003): "Stock market volatility: from empirical data to their interpretation", *Financial Stability Review*, Banque de France, No. 2, June, p. 61-79.
23. Hördahl, P. and F. Packer (2007): "Understanding asset prices: an overview", *BIS Papers*, No 34, March.
24. Idier, J. (2006): "Stock exchanges industry consolidation and shock transmission", *Notes d'études et de recherche*, Banque de France, No. 159, December.
25. Idier, J., C. Jardet and A. de Loubens (2007): "Les déterminants des taux d'intérêt à long terme aux États-Unis et dans la zone euro", *Economie et Prévision*, Forthcoming.
26. IMF (2004): "What explains the recent run-up in housing prices?", *World Economic Outlook*, Chapter II, Autumn.
27. Lecat, R. and J.-S. Mésonnier (2005): "What role do financial factors play in house price dynamics?", *Banque de France Bulletin Digest*, No. 134, February, p. 21-37.
28. Loisel, O. (2006): "Bubble-free interest-rate rules", *Notes d'études et de recherche*, Banque de France, No. 161, December.
29. Mésonnier, J.-S. (2004): "Crédit hypothécaire et soutien à la consommation : quelles leçons tirer du modèle anglo saxon ?", *Bulletin de la Banque de France*, No. 132, September, p.43-57.
30. Moëc, G. (2004): "Y-a-t-il un risque de bulle immobilière en France ?", *Bulletin de la Banque de France*, No. 129, September, p.45-58.
31. Moëc, G. (2006): "La soutenabilité des prix de l'immobilier aux États-Unis et en Europe", *Bulletin de la Banque de France*, No. 148, April, p.21-38.

32. Secrétariat du Conseil national du crédit et des titres (2004): “L’endettement des ménages européens de 1995 à 2002”, *Bulletin de la Banque de France*, No. 128, August, p.39-46.
33. Secrétariat du Conseil national du crédit et des titres (2005): “L’endettement des ménages européens à fin 2004”, *Bulletin de la Banque de France*, No. 144, December.
34. Stock J.H. and W. Watson (2001): “Forecasting output and inflation: the role of asset prices”, *NBER Working Paper*, No. 8180, March.
35. Villetelle, J.-P. (2005): “Housing price projections for France”, *Mimeo Banque de France*, November.
36. Wilhelm, F. (2005): “L’évolution actuelle du crédit à l’habitat en France est-elle soutenable ?”, *Bulletin de la Banque de France*, No. 140, August, p.37-51.

## Notes d'Études et de Recherche

1. C. Huang and H. Pagès, "Optimal Consumption and Portfolio Policies with an Infinite Horizon: Existence and Convergence," May 1990.
2. C. Bordes, « Variabilité de la vitesse et volatilité de la croissance monétaire : le cas français », février 1989.
3. C. Bordes, M. Driscoll and A. Sauviat, "Interpreting the Money-Output Correlation: Money-Real or Real-Real?," May 1989.
4. C. Bordes, D. Goyeau et A. Sauviat, « Taux d'intérêt, marge et rentabilité bancaires : le cas des pays de l'OCDE », mai 1989.
5. B. Bensaïd, S. Federbusch et R. Gary-Bobo, « Sur quelques propriétés stratégiques de l'intéressement des salariés dans l'industrie », juin 1989.
6. O. De Bandt, « L'identification des chocs monétaires et financiers en France : une étude empirique », juin 1990.
7. M. Boutillier et S. Dérangère, « Le taux de crédit accordé aux entreprises françaises : coûts opératoires des banques et prime de risque de défaut », juin 1990.
8. M. Boutillier and B. Cabrillac, "Foreign Exchange Markets: Efficiency and Hierarchy," October 1990.
9. O. De Bandt et P. Jacquinot, « Les choix de financement des entreprises en France : une modélisation économétrique », octobre 1990 (English version also available on request).
10. B. Bensaïd and R. Gary-Bobo, "On Renegotiation of Profit-Sharing Contracts in Industry," July 1989 (English version of NER n° 5).
11. P. G. Garella and Y. Richelle, "Cartel Formation and the Selection of Firms," December 1990.
12. H. Pagès and H. He, "Consumption and Portfolio Decisions with Labor Income and Borrowing Constraints," August 1990.
13. P. Sicsic, « Le franc Poincaré a-t-il été délibérément sous-évalué ? », octobre 1991.
14. B. Bensaïd and R. Gary-Bobo, "On the Commitment Value of Contracts under Renegotiation Constraints," January 1990 revised November 1990.
15. B. Bensaïd, J.-P. Lesne, H. Pagès and J. Scheinkman, "Derivative Asset Pricing with Transaction Costs," May 1991 revised November 1991.
16. C. Monticelli and M.-O. Strauss-Kahn, "European Integration and the Demand for Broad Money," December 1991.
17. J. Henry and M. Phelipot, "The High and Low-Risk Asset Demand of French Households: A Multivariate Analysis," November 1991 revised June 1992.
18. B. Bensaïd and P. Garella, "Financing Takeovers under Asymmetric Information," September 1992.

19. A. de Palma and M. Uctum, "Financial Intermediation under Financial Integration and Deregulation," September 1992.
20. A. de Palma, L. Leruth and P. Régibeau, "Partial Compatibility with Network Externalities and Double Purchase," August 1992.
21. A. Frachot, D. Janci and V. Lacoste, "Factor Analysis of the Term Structure: a Probabilistic Approach," November 1992.
22. P. Sicsic et B. Villeneuve, « L'afflux d'or en France de 1928 à 1934 », janvier 1993.
23. M. Jeanblanc-Picqué and R. Avesani, "Impulse Control Method and Exchange Rate," September 1993.
24. A. Frachot and J.-P. Lesne, "Expectations Hypothesis and Stochastic Volatilities," July 1993 revised September 1993.
25. B. Bensaïd and A. de Palma, "Spatial Multiproduct Oligopoly," February 1993 revised October 1994.
26. A. de Palma and R. Gary-Bobo, "Credit Contraction in a Model of the Banking Industry," October 1994.
27. P. Jacquinet et F. Mihoubi, « Dynamique et hétérogénéité de l'emploi en déséquilibre », septembre 1995.
28. G. Salmat, « Le retournement conjoncturel de 1992 et 1993 en France : une modélisation VAR », octobre 1994.
29. J. Henry and J. Weidmann, "Asymmetry in the EMS Revisited: Evidence from the Causality Analysis of Daily Eurorates," February 1994 revised October 1994.
30. O. De Bandt, "Competition Among Financial Intermediaries and the Risk of Contagious Failures," September 1994 revised January 1995.
31. B. Bensaïd et A. de Palma, « Politique monétaire et concurrence bancaire », janvier 1994 révisé en septembre 1995.
32. F. Rosenwald, « Coût du crédit et montant des prêts : une interprétation en terme de canal large du crédit », septembre 1995.
33. G. Cette et S. Mahfouz, « Le partage primaire du revenu : constat descriptif sur longue période », décembre 1995.
34. H. Pagès, "Is there a Premium for Currencies Correlated with Volatility? Some Evidence from Risk Reversals," January 1996.
35. E. Jondeau and R. Ricart, "The Expectations Theory: Tests on French, German and American Euro-rates," June 1996.
36. B. Bensaïd et O. De Bandt, « Les stratégies "stop-loss" : théorie et application au Contrat Notionnel du Matif », juin 1996.
37. C. Martin et F. Rosenwald, « Le marché des certificats de dépôts. Écarts de taux à l'émission : l'influence de la relation émetteurs-souscripteurs initiaux », avril 1996.

38. Banque de France - CEPREMAP - Direction de la Prévision - Erasme - INSEE - OFCE, « Structures et propriétés de cinq modèles macroéconomiques français », juin 1996.
39. F. Rosenwald, « L'influence des montants émis sur le taux des certificats de dépôts », octobre 1996.
40. L. Baumel, « Les crédits mis en place par les banques AFB de 1978 à 1992 : une évaluation des montants et des durées initiales », novembre 1996.
41. G. Cette et E. Kremp, « Le passage à une assiette valeur ajoutée pour les cotisations sociales : Une caractérisation des entreprises non financières “gagnantes” et “perdantes” », novembre 1996.
42. S. Avouyi-Dovi, E. Jondeau et C. Lai Tong, « Effets “volume”, volatilité et transmissions internationales sur les marchés boursiers dans le G5 », avril 1997.
43. E. Jondeau et R. Ricart, « Le contenu en information de la pente des taux : Application au cas des titres publics français », juin 1997.
44. B. Bensaïd et M. Boutillier, « Le contrat notionnel : efficience et efficacité », juillet 1997.
45. E. Jondeau et R. Ricart, « La théorie des anticipations de la structure par terme : test à partir des titres publics français », septembre 1997.
46. E. Jondeau, « Représentation VAR et test de la théorie des anticipations de la structure par terme », septembre 1997.
47. E. Jondeau et M. Rockinger, « Estimation et interprétation des densités neutres au risque : Une comparaison de méthodes », octobre 1997.
48. L. Baumel et P. Sevestre, « La relation entre le taux de crédits et le coût des ressources bancaires. Modélisation et estimation sur données individuelles de banques », octobre 1997.
49. P. Sevestre, “On the Use of Banks Balance Sheet Data in Loan Market Studies : A Note,” October 1997.
50. P.-C. Hautcoeur and P. Sicsic, “Threat of a Capital Levy, Expected Devaluation and Interest Rates in France during the Interwar Period,” January 1998.
51. P. Jacquinet, « L’inflation sous-jacente à partir d’une approche structurelle des VAR : une application à la France, à l’Allemagne et au Royaume-Uni », janvier 1998.
52. C. Bruneau et O. De Bandt, « La modélisation VAR structurel : application à la politique monétaire en France », janvier 1998.
53. C. Bruneau and E. Jondeau, “Long-Run Causality, with an Application to International Links between Long-Term Interest Rates,” June 1998.
54. S. Coutant, E. Jondeau and M. Rockinger, “Reading Interest Rate and Bond Futures Options’ Smiles: How PIBOR and Notional Operators Appreciated the 1997 French Snap Election,” June 1998.
55. E. Jondeau et F. Sédillot, « La prévision des taux longs français et allemands à partir d’un modèle à anticipations rationnelles », juin 1998.

56. E. Jondeau and M. Rockinger, "Estimating Gram-Charlier Expansions with Positivity Constraints," January 1999.
57. S. Avouyi-Dovi and E. Jondeau, "Interest Rate Transmission and Volatility Transmission along the Yield Curve," January 1999.
58. S. Avouyi-Dovi et E. Jondeau, « La modélisation de la volatilité des bourses asiatiques », janvier 1999.
59. E. Jondeau, « La mesure du ratio rendement-risque à partir du marché des euro-devises », janvier 1999.
60. C. Bruneau and O. De Bandt, "Fiscal Policy in the Transition to Monetary Union: A Structural VAR Model," January 1999.
61. E. Jondeau and R. Ricart, "The Information Content of the French and German Government Bond Yield Curves: Why Such Differences?," February 1999.
62. J.-B. Chatelain et P. Sevestre, « Coûts et bénéfices du passage d'une faible inflation à la stabilité des prix », février 1999.
63. D. Irac et P. Jacquinet, « L'investissement en France depuis le début des années 1980 », avril 1999.
64. F. Mihoubi, « Le partage de la valeur ajoutée en France et en Allemagne », mars 1999.
65. S. Avouyi-Dovi and E. Jondeau, "Modelling the French Swap Spread," April 1999.
66. E. Jondeau and M. Rockinger, "The Tail Behavior of Stock Returns: Emerging Versus Mature Markets," June 1999.
67. F. Sédillot, « La pente des taux contient-elle de l'information sur l'activité économique future ? », juin 1999.
68. E. Jondeau, H. Le Bihan et F. Sédillot, « Modélisation et prévision des indices de prix sectoriels », septembre 1999.
69. H. Le Bihan and F. Sédillot, "Implementing and Interpreting Indicators of Core Inflation: The French Case," September 1999.
70. R. Lacroix, "Testing for Zeros in the Spectrum of an Univariate Stationary Process: Part I," December 1999.
71. R. Lacroix, "Testing for Zeros in the Spectrum of an Univariate Stationary Process: Part II," December 1999.
72. R. Lacroix, "Testing the Null Hypothesis of Stationarity in Fractionally Integrated Models," December 1999.
73. F. Chesnay and E. Jondeau, "Does correlation between stock returns really increase during turbulent period?," April 2000.
74. O. Burkart and V. Coudert, "Leading Indicators of Currency Crises in Emerging Economies," May 2000.
75. D. Irac, "Estimation of a Time Varying NAIRU for France," July 2000.

76. E. Jondeau and H. Le Bihan, "Evaluating Monetary Policy Rules in Estimated Forward-Looking Models: A Comparison of US and German Monetary Policies," October 2000.
77. E. Jondeau and M. Rockinger, "Conditional Volatility, Skewness, and Kurtosis: Existence and Persistence," November 2000.
78. P. Jacquinot et F. Mihoubi, « Modèle à Anticipations Rationnelles de la CONjoncture Simulée : MARCOS », novembre 2000.
79. M. Rockinger and E. Jondeau, "Entropy Densities: With an Application to Autoregressive Conditional Skewness and Kurtosis," January 2001.
80. B. Amable and J.-B. Chatelain, "Can Financial Infrastructures Foster Economic Development?," January 2001.
81. J.-B. Chatelain and J.-C. Teurlai, "Pitfalls in Investment Euler Equations," January 2001.
82. M. Rockinger and E. Jondeau, "Conditional Dependency of Financial Series: An Application of Copulas," February 2001.
83. C. Florens, E. Jondeau and H. Le Bihan, "Assessing GMM Estimates of the Federal Reserve Reaction Function," March 2001.
84. J.-B. Chatelain, "Mark-up and Capital Structure of the Firm facing Uncertainty," June 2001.
85. B. Amable, J.-B. Chatelain and O. De Bandt, "Optimal Capacity in the Banking Sector and Economic Growth," June 2001.
86. E. Jondeau and H. Le Bihan, "Testing for a Forward-Looking Phillips Curve. Additional Evidence from European and US Data," December 2001.
87. G. Cette, J. Mairesse et Y. Kocoglu, « Croissance économique et diffusion des TIC : le cas de la France sur longue période (1980-2000) », décembre 2001.
88. D. Irac and F. Sédillot, "Short Run Assessment of French Economic Activity Using OPTIM," January 2002.
89. M. Baghli, C. Bouthevillain, O. de Bandt, H. Fraisse, H. Le Bihan et Ph. Rousseaux, « PIB potentiel et écart de PIB : quelques évaluations pour la France », juillet 2002.
90. E. Jondeau and M. Rockinger, "Asset Allocation in Transition Economies," October 2002.
91. H. Pagès and J.A.C. Santos, "Optimal Supervisory Policies and Depositor-Preferences Laws," October 2002.
92. C. Loupias, F. Savignac and P. Sevestre, "Is There a Bank Lending Channel in France? Evidence from Bank Panel Data," November 2002.
93. M. Ehrmann, L. Gambacorta, J. Martínez-Pagés, P. Sevestre and A. Worms, "Financial Systems and The Role in Monetary Policy Transmission in the Euro Area," November 2002.
94. S. Avouyi-Dovi, D. Guégan et S. Ladoucette, « Une mesure de la persistance dans les indices boursiers », décembre 2002.

95. S. Avouyi-Dovi, D. Guégan et S. Ladoucette, "What is the Best Approach to Measure the Interdependence between Different Markets?," December 2002.
96. J.-B. Chatelain and A. Tiomo, "Investment, the Cost of Capital and Monetary Policy in the Nineties in France: A Panel Data Investigation," December 2002.
97. J.-B. Chatelain, A. Generale, I. Hernando, U. von Kalckreuth and P. Vermeulen, "Firm Investment and Monetary Policy Transmission in the Euro Area," December 2002.
98. J.-S. Mésonnier, « Banque centrale, taux de l'escompte et politique monétaire chez Henry Thornton (1760-1815) », décembre 2002.
99. M. Baghli, G. Cette et A. Sylvain, « Les déterminants du taux de marge en France et quelques autres grands pays industrialisés : Analyse empirique sur la période 1970-2000 », janvier 2003.
100. G. Cette and Ch. Pfister, "The Challenges of the "New Economy" for Monetary Policy," January 2003.
101. C. Bruneau, O. De Bandt, A. Flageollet and E. Michaux, "Forecasting Inflation using Economic Indicators: the Case of France," May 2003.
102. C. Bruneau, O. De Bandt and A. Flageollet, "Forecasting Inflation in the Euro Area," May 2003.
103. E. Jondeau and H. Le Bihan, "ML vs GMM Estimates of Hybrid Macroeconomic Models (With an Application to the "New Phillips Curve")," September 2003.
104. J. Matheron and T.-P. Maury, "Evaluating the Fit of Sticky Price Models," January 2004.
105. S. Moyen and J.-G. Sahuc, "Incorporating Labour Market Frictions into an Optimising-Based Monetary Policy Model," January 2004.
106. M. Baghli, V. Brunhes-Lesage, O. De Bandt, H. Fraisse et J.-P. Villetelle, « MASCOTTE : Modèle d'Analyse et de préviSion de la COnjoncture TrimesTrielle », février 2004.
107. E. Jondeau and M. Rockinger, "The Bank Bias: Segmentation of French Fund Families," February 2004.
108. E. Jondeau and M. Rockinger, "Optimal Portfolio Allocation Under Higher Moments," February 2004.
109. C. Bordes et L. Clerc, « Stabilité des prix et stratégie de politique monétaire unique », mars 2004.
110. N. Belorgey, R. Lecat et T.-P. Maury, « Déterminants de la productivité par employé : une évaluation empirique en données de panel », avril 2004.
111. T.-P. Maury and B. Pluyaud, "The Breaks in per Capita Productivity Trends in a Number of Industrial Countries," April 2004.
112. G. Cette, J. Mairesse and Y. Kocoglu, "ICT Diffusion and Potential Output Growth," April 2004.
113. L. Baudry, H. Le Bihan, P. Sevestre and S. Tarrieu, "Price Rigidity. Evidence from the French CPI Micro-Data," September 2004.



114. C. Bruneau, O. De Bandt and A. Flageollet, "Inflation and the Markup in the Euro Area," September 2004.
115. J.-S. Mésonnier and J.-P. Renne, "A Time-Varying "Natural" Rate of Interest for the Euro Area," September 2004.
116. G. Cette, J. Lopez and P.-S. Noual, "Investment in Information and Communication Technologies: an Empirical Analysis," October 2004.
117. J.-S. Mésonnier et J.-P. Renne, « Règle de Taylor et politique monétaire dans la zone euro », octobre 2004.
118. J.-G. Sahuc, "Partial Indexation, Trend Inflation, and the Hybrid Phillips Curve," December 2004.
119. C. Loupias et B. Wigniolle, « Régime de retraite et chute de la natalité : évolution des mœurs ou arbitrage micro-économique ? », décembre 2004.
120. C. Loupias and R. Ricart, "Price Setting in France: new Evidence from Survey Data," December 2004.
121. S. Avouyi-Dovi and J. Matheron, "Interactions between Business Cycles, Stock Markets Cycles and Interest Rates: the Stylised Facts," January 2005.
122. L. Bilke, "Break in the Mean and Persistence of Inflation: a Sectoral Analysis of French CPI," January 2005.
123. S. Avouyi-Dovi and J. Matheron, "Technology Shocks and Monetary Policy in an Estimated Sticky Price Model of the US Economy," April 2005.
124. M. Dupaigne, P. Fève and J. Matheron, "Technology Shock and Employment: Do We Really Need DSGE Models with a Fall in Hours?," June 2005.
125. P. Fève and J. Matheron, "Can the Kydland-Prescott Model Pass the Cogley-Nason Test?," June 2005.
126. S. Avouyi-Dovi and J. Matheron, "Technology Shocks and Monetary Policy in an Estimated Sticky Price Model of the Euro Area," June 2005.
127. O. Loisel, "Central Bank Reputation in a Forward-Looking Model," June 2005.
128. B. Bellone, E. Gautier et S. Le Coent, « Les marchés financiers anticipent-ils les retournements conjoncturels ? », juillet 2005.
129. P. Fève, « La modélisation macro-économétrique dynamique », juillet 2005.
130. G. Cette, N. Dromel and D. Méda, "Opportunity Costs of Having a Child, Financial Constraints and Fertility," August 2005.
131. S. Gouteron et D. Szpiro, « Excès de liquidité monétaire et prix des actifs », septembre 2005.
132. J. Baude, « L'impact des chocs boursiers sur le crédit en France depuis le milieu des années quatre-vingt-dix », septembre 2005.

133. R. Bournès and G. Clette, "A Comparison of Structural Productivity Levels in the Major Industrialised Countries," October 2005.
134. T. Grunspan, "The Fed and the Question of Financial Stability: An Empirical Investigation," October 2005.
135. S. Fabiani, M. Druant, I. Hernando, C. Kwapil, B. Landau, C. Loupias, F. Martins, T. Mathä, R. Sabbatini, H. Stahl and A. Stockman, "The Pricing Behaviour of Firms in the Euro Area: New Survey Evidence," November 2005.
136. E. Dhyne, L. Alvarez, H. Le Bihan, G. Veronese, D. Dias, J. Hoffmann, N. Jonker, P. Lünemann, F. Rumler and J. Vilmunen, "Price Setting in the Euro Area: Some Stylized Facts from Individual Consumer Price Data," November 2005.
137. D. Fougère, H. Le Bihan and P. Sevestre, "Heterogeneity in Consumer Price Stickiness: A Microeconomic Investigation," November 2005.
138. L. Alvarez, E. Dhyne, M. Hoeberichts, C. Kwapil, H. Le Bihan, P. Lünemann, F. Martins, R. Sabbatini, H. Stahl, P. Vermeulen and J. Vilmunen, "Sticky Prices in the Euro Area: a Summary of New Micro Evidence," November 2005.
139. E. Kharroubi, "Illiquidity, Financial Development and the Growth-Volatility Relationship," February 2006.
140. M. Baghli, C. Cahn and H. Fraise, "Is the Inflation-Output Nexus Asymmetric in the Euro Area," April 2006.
141. E. Jondeau and J-G. Sahuc, "Optimal Monetary Policy in an Estimated DSGE Model of the Euro Area with Cross-country Heterogeneity," April 2006.
142. S. Avouyi-Dovi, M. Brun, A. Dreyfus, F. Drumetz, V. Oung et J.-G. Sahuc, « La fonction de demande de monnaie pour la zone euro : un réexamen », mai 2006.
143. C. Jartet, "Term Structure Anomalies : Term Premium or Peso Problem?" May 2006.
144. S. Avouyi-Dovi, R. Kierzenkowski and C. Lubochinsky, "Are Business and Credit Cycles Converging or Diverging? A comparison of Poland, Hungary, the Czech Republic and the Euro Area", May 2006.
145. O. De Bandt, C. Bruneau and A. Flageollet, "Assessing Aggregate Comovements in France, Germany and Italy. Using a Non Stationary Factor Model of the Euro Area" June 2006.
146. M. Baghli, C. Cahn and J-P. Villetelle, "Estimating Potential Output with a Production Function for France, Germany and Italy", June 2006.
147. E. Fonteny, « La désaisonnalisation des séries d'agrégats monétaires et de crédit à la Banque de France : aspects théoriques et mise en œuvre », juin 2006.
148. J. Matheron and C. Poilly, "How Well Does a Small Structural Model with Sticky Prices and Wages Fit Postwar U.S. Data", July 2006.
149. E. Kharroubi, "Financial (Dis)Integration," July 2006.
150. J. Carrillo, P. Fève and J. Matheron, "Monetary Policy Inertia or Persistent Shocks?" July 2006.

151. C. Ewerhart, N. Cassola and N. Valla, "Declining Valuations and Equilibrium Bidding in Central Bank Refinancing Operations," August 2006.
152. D. Fougère, « Réformes structurelles sur le marché du travail : quels enseignements peut-on tirer des études existantes », août 2006.
153. D. Irac, "Revisiting the proximity-concentration trade-off: Distance and Horizontal Foreign Direct Investment in OECD Countries," August 2006.
154. D. Irac and C. Minoiu, "Risk insurance in a Transition Economy: Evidence from Rural Romania," August 2006.
155. H. Lustig and A. Verdelhan, "The Cross-Section of Foreign Currency Risk Premia and Consumption Growth Risk," August 2006.
156. R. Boursès and G. Clette, "Trends in "structural" productivity levels in the major industrialized countries," September 2006.
157. J.-S. Mésonnier, "The Reliability of Macroeconomic Forecasts based on Real Interest Rate Gap Estimates in Real Time: an Assessment for the Euro Area," October 2006.
158. O. de Bandt, C. Bruneau and W. El Amri, "Convergence in Household Credit Demand across Euro Area Countries: Evidence from Panel Data," October 2006.
159. J. Idier, "Stock Exchanges Industry Consolidation and Shock Transmission," December 2006.
160. E. Gautier, "The Behaviour of Producer Prices: Some Evidence from the French PPI Micro Data," December 2006.
161. O. Loisel, "Bubble-free interest-rate rules," December 2006.
162. J. Boivin and M. P. Giannoni, "DSGE Models in a Data-Rich Environment," January 2007.
163. J. Coffinet, J. Matheron et C. Poilly, « Une évaluation structurelle du ratio de sacrifice dans la zone euro », janvier 2007.
164. P. Vermeulen, D. Dias, M. Dossche, E. Gautier, I. Hernando, R. Sabbatini and H. Stahl, "Price setting in the euro area: Some stylised facts from Individual Producer Price Data," February 2007.
165. C. Bordes, L. Clerc and V. Marimoutou, "Is there a structural break in equilibrium velocity in the euro area?" February 2007.
166. D. Fougère, « Les méthodes micro-économétriques d'évaluation », mars 2007.
167. C. Jardet and G. Le Fol, "Euro money market interest rates dynamics and volatility: How they respond to recent changes in the operational framework," may 2007.
168. L. Clerc, "Understanding asset prices: determinants and policy implications," may 2007.

Pour tous commentaires ou demandes sur les Notes d'Études et de Recherche, contacter la bibliothèque de la direction de la recherche à l'adresse suivante :

For any comment or enquiries on the Working Papers, contact the library of the Research Directorate at the following address :

BANQUE DE FRANCE  
41- 1404 Labolog  
75049 Paris Cedex 01  
tél : 0033 (0)1 42 92 49 55 ou 62 65  
fax :0033 (0)1 42 92 62 92  
email : [thierry.demoulin@banque-france.fr](mailto:thierry.demoulin@banque-france.fr)  
[jeannine.agoutin@banque-france.fr](mailto:jeannine.agoutin@banque-france.fr)