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France: Financial Sector Assessment Program—
Technical Note on Housing Prices and Financial Stability

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FINANCIAL SECTOR ASSESSMENT PROGRAM UPDATE

FRANCE

HOUSING PRICES AND FINANCIAL STABILITY

TECHNICAL NOTE

JUNE 2013

INTERNATIONAL MONETARY FUND
MONETARY AND CAPITAL MARKETS DEPARTMENT

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GLOSSARY

ACP	*Autorité de Contrôle Prudentiel*
BdF	Banque de France
Bps	Basis points
BPCE	*Banque Populaire et Caisse d'épargne*
CACES	*Collège des autorités de contrôle des entreprises du secteur financier*
CAS	*Centre d'Analyse Stratégique*
CRH	*Caisse de Refinancement de l'Habitat*
CIF	*Crédit Immobilier de France Group*
CGEDD	*Conseil Général de l'Environnement et du Développement Durable*
CORÉFRIS	*Conseil de la Régulation Financière et du Risque Systémique*
CRE	Commercial real estate
DTI	Debt service to income
ECB	European Central Bank
ECBC	European Covered Bond Council
EMF	European Mortgage Federation
EPRA	European Public Real Estate Association
EU	European Union
Euribor	Interbank lending rate in the eurozone
FPI	Federation of French Property Developers
FSAP	Financial Sector Assessment Program
GDP	Gross Domestic Product
IMF	International Monetary Fund
INSEE	*Institut National de la Statistique et des Études Économiques*
IPD	Investment Property Databank
LCL	Le Crédit Lyonnais
LGD	Loss-given default
LTV	Loan-to-value
MFIs	Monetary and financial institutions
MI	Mortgage insurance
NPLs	Nonperforming loans
PAS	*Prêt Accession Sociale*
PD	Probability of default
PRR	Price-to-rent ratio
PTZ+	*prêt à taux zéro plus*
OECD	Organization of Economic Co-operation and Development
OF	*obligations foncières*
OH	*obligations de financement*
PIR	Price-to-income ratio
SCF	*société de crédit foncier*
SFEF	*société de financement de l'économie française*
SFH	*société de financementde l'habitat*
SGACP	*Secrétariat Général de l'ACP*
SGCB	*Secrétariat Général de la Commission Bancaire*
S&P	Standard and Poor's
UCITS	Undertaking for Collective Investment in Transferable Securities

I. INTRODUCTION[1]

1. **Sharply rising house prices have caused concerns about mortgage credit risk and the stability of the financial system, particularly if the macroeconomic environment were to deteriorate further.** France's housing market proved resilient during the crisis, declining by about 9 percent from its pre-crisis peak before rebounding since mid-2009 to surpass its pre-crisis peak. This resilience has reflected a confluence of fundamental, macroeconomic, financial, and asset allocation factors that have caused the demand for housing to remain well in excess of supply, thereby sustaining prices. These factors include population growth, historically relaxed lending terms (low interest rates, longer maturities, high loan-to-value (LTV) ratios, the perception of real estate as a safe haven, and a muted supply response. Certain tax incentive schemes introduced during the 2008–09 crisis (e.g., the *Scellier* regime for buy-to-let investors) may have exacerbated housing market imbalances.

2. **The authorities are cautious about characterizing house price developments as out of line with fundamentals, pointing to increased borrowing capacity and supply rigidities as key explanations for the sharp price increases since 2000: Q4.** Reflecting the recent slowdown in economic activity and the perception that prices are high, demand for housing loans has slowed and prices have started decreasing in 2011. While the timing and likelihood of a near-term price correction is difficult to predict, estimates of misalignment at end-2011 suggest that prices could be overvalued by 10 percent to 20 percent, with some studies suggesting even higher valuation gaps (over 50 percent).[2] The lack of a surge in residential investment and small, estimated wealth effects suggest that the impact on activity of a bust is likely to be small, unless consumer confidence is negatively affected. The adverse macrofinancial repercussions of a price drop are further limited by the unavailability of home equity loans and lending criteria that are mostly based on income (conservative underwriting standards that usually require a qualifying ratio of one-third, meaning that the monthly principal and interest payment cannot exceed one-third of the monthly income) and thus independent of changes in home prices, unlike the United States and the United Kingdom, as well as Spain, Denmark, and The Netherlands. However, the risks to bank stability have increased, as discussed below.

3. **Structural features of the housing market and limited household indebtedness mitigate the risks to financial stability.** The boom since 2000 is characterized by a relaxation of lending terms (especially interest rate, maturity, and LTV) spurring strong loan demand and rising household indebtedness. The tightening of bank lending practices since

[1] Prepared by Hélène Poirson with research assistance from John De Guzman (both IMF/EUR).

[2] It should be noted that aggregating information at the national level might mask important regional differences within France on the severity of the house price misalignment problem. Some locations, e.g., Paris and *Ile de France*, might be more prone to house price bubbles owing, in particular, to rigid supply conditions delaying response to demand-side shocks.

the last quarter of 2011 suggests that new loans are becoming less risky, and housing credit growth is slowing. Furthermore, most mortgages have fixed rates and there are no nonrecourse loans. Therefore, homeowners are less likely to default when the interest rate rises or when a fall in the market value of houses causes negative equity. Finally, household debt levels remain low on average compared to other advanced countries. Nonetheless, the past loosening of lending criteria has resulted in increased risks to banks: LTV ratios are high compared to other advanced countries; and over one-fifth of borrowers have debt service to income (DTI) ratios above 35 percent. While residential mortgage loss rates remain structurally low, they have risen since 2008. As for the commercial real estate (CRE) market, it is struggling with a sharp increase in problem loans as in other European countries.[3] The share of European CRE loans that have repaid at their maturity date has fallen steadily over the past few years, from close to 50 percent in 2009 to only 28 percent of all matured loans by November 2011 (Moody's, 2012). In late 2011, another 9 percent of loans were repaid late.

4. **Preventive policy action needs to consider the specific institutional features of the French housing market and possible interactions between different measures.** The current dynamics of the housing market does not call for immediate macroprudential action. However, the authorities should continue to monitor closely the building of risk in this area by pursuing data collection efforts, and continue to think about how to develop macroprudential tools. In general, several frictions and externalities make the case for early policy intervention in real estate market booms stronger than for booms in other asset classes, including (a) leverage, (b) wealth, and (c) supply-side effects. While the latter two are comparatively limited in France, the former is a concern for some segments of the mortgage debt market, including first-time borrowers,[4] households in regions with above-average house price inflation (e.g., *Ile de France*), and rental investors. The use of macroprudential tools is well suited to targeting such specific pockets of vulnerability as measures can be differentiated by region, borrower category, and/or property value.[5] By contrast, over-the-board measures, e.g., monetary or fiscal tightening may have more unintended consequences than well-calibrated macroprudential measures. Measures used in other countries include caps on LTV and DTI ratios, and increased risk weights or provisioning requirements. In France's case, limits on LTV ratios, combined with DTI limits on selected categories, could

[3] According to the 2010 *Secrétariat Général de l'ACP* (SGACP) annual survey of CRE financing, nonperforming loans (NPLs) decreased only slightly to 8 percent in 2011 from their peak of 8.6 percent in 2010, and were up from 1.7 percent in 2007. French CRE is dominated by the office market, which accounts for 51.3 percent of the Investment Property Databank (IPD) France index's underlying assets at end-2011. The retail market accounts for 22.8 percent, followed by residential (15 percent), logistics (7.4 percent), and others (3.5 percent).

[4] Some studies suggest that borrowers who benefit from state subsidies incur lower defaults than others.

[5] Canada, Germany, and Hong Kong SAR, for example, set lower LTV limits for commercial investors, while China, Malaysia, and Singapore set the ceilings lower for second and third homes; South Korea limits LTV ratios to 40 percent in areas deemed "speculative" (Appendix Table 4).

be considered. Such measures have been effective in slowing speculative demand in other countries, especially when combined with supportive fiscal and monetary policies and applied widely. LTV caps—possibly differentiated by property value and/or by whether the loan benefits from state subsidies or guarantees, to avoid overly restricting access to credit for first-time borrowers—would be particularly useful, given almost half of loans originated in 2011 with down payments of 5 percent or less. Effective LTV caps, however, will require strengthening appraisals (currently infrequent). The ability to design and calibrate instruments, and evaluate ex post their effectiveness, will also require strengthening reporting requirements on new mortgage origination, building on efforts already underway.

5. **The use of macroprudential tools is in its infancy.** Maximizing their effectiveness will require openness to experimentation, overcoming political economy obstacles, and coordination at the European level, given the high potential for circumvention through cross-border banking activities. The experience of other countries suggests that implementation will likely involve a trial-and-error approach, including the ability to nimbly react and adjust limits as needed when their actual impact on different socio-economic groups and financial institutions becomes clearer. In addition, the designated macroprudential authority should communicate ex ante to the public and the affected financial institutions its analysis of the risks and the rationale both for action and for inaction. The *Conseil de la Régulation Financière et du Risque systémique* (CORÉFRIS), created in October 2010 to replace the *Collège des autorités de contrôle des entreprises du secteur financier* (CACES), is responsible for the surveillance of macroprudential risks and met for the first time in February 2011.[6] The analysis of CORÉFRIS concluded that credit played a significant role in the recent boom (CORÉFRIS, 2012). Consequently, the governor of Banque de France (BdF) reminded banks of the appropriateness of prudent and conservative mortgage lending practices, and the CORÉFRIS asked the *Autorité de Contrôle Prudentiel* (ACP) to undertake a close monitoring of risks (including a monthly reporting of banks' lending practices) but stopped short of recommending intervention so far.

6. **This note is organized as follows.** Section II describes the recent evolution of house prices, and discusses the likelihood of a correction and its potential macroeconomic consequences. Section III discusses the main features of the mortgage market, including banks' real estate exposures and loan performance trends. Section IV draws the policy conclusions in terms of the potential impact of the likely range of housing outcomes on financial stability, and implications for policy tools.

[6] Lessons learned from the functioning of the CACES informed the setting up of the new institution. The CACES was also presided over by the Minister of Finance, and its role was limited to the exchange of information between the supervisory authorities.

II. HOUSING MARKET[7]

7. **France's financial and property markets were resilient during the 2000s (Box 1).** During the 2008–09 financial crisis, house prices fell by just 9 percent from peak-to-trough, compared with more than 30 percent in the United States and Ireland and 18 percent in the United Kingdom. Prices have since recovered and hit new record highs in 2011. Since the mid-1990s, real house price inflation has fallen short of that in only two other major European countries (United Kingdom and Sweden). While the rebound in housing values has been more subdued in the CRE market, total returns have held up due to sustained rental growth.

Box 1. The Global Financial Crisis

Rising unemployment and the uncertainty about the economic outlook produced a fall in housing transactions and prices. The number of transactions for existing homes dropped from more than 820,000 per year before the crisis to less than 600,000 in 2009 (a 12 percent decline, after a decrease of 17 percent in 2008). Real housing prices declined by 10.3 percent between end-2007 and late 2009, before recovering by 6.3 percent through March 2012 as government intervention and low mortgage rates provided support. Construction contracted very sharply. The number of housing starts plummeted from over 460,000 per year pre-crisis to little more than 300,000 in 2009 (a 16 percent decline, after a decrease of 14 percent in 2008). Housing starts have recovered to over 400,000 in 2011 and early 2012, but they remain below their pre-crisis levels and have declined since February 2012.

Government intervention has boosted recovery from the housing market downturn. In 2009, the authorities authorized the social housing firms to buy 30,000 dwellings from real estate developers, to help reduce the number of unsold homes (European Mortgage Federation (EMF), 2010). This measure, combined with the introduction of the *Scellier* incentive for buy-to-let investments, a temporary doubling of the interest-free loan *prêt à taux zéro plus* (PTZ+) ceiling, and the temporary creation of the French Financing Corporation (SFEF) to support banks' funding and the European Central Bank (ECB) interest rates' cut, led to a rebound by 32 percent in sales of existing homes in 2010.[1/] Housing loans increased by 3.7 percent in 2009, after 7.5 percent in 2008. The average rate on new fixed-rate housing loans started decreasing in April 2009 and reached a low of 4.1 percent at end-2010.

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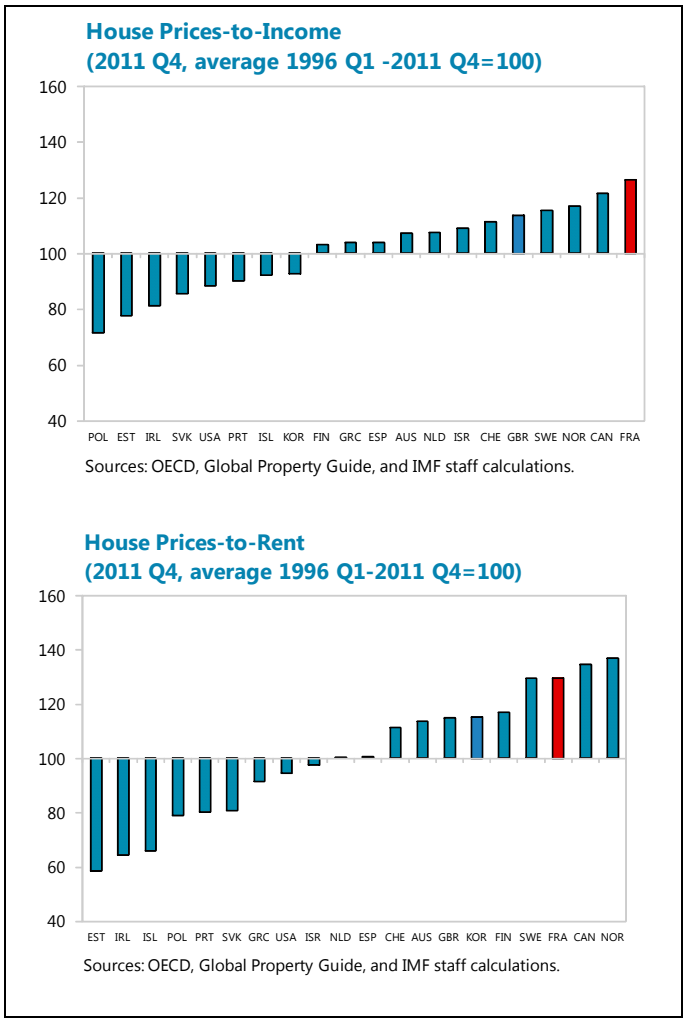
[1/]At the end of the summer of 2009, when the SFEF stopped activity, the SFEF issuance amounted to €77 billion.

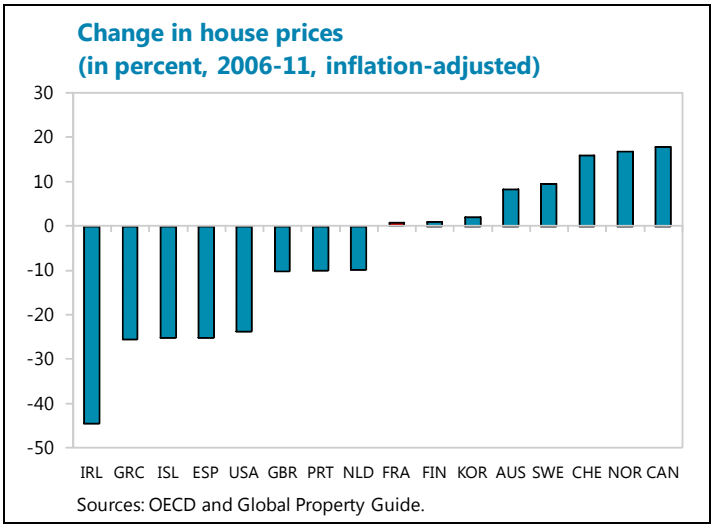
8. **Housing valuations continue to appear stretched relative to income and rents.** France's ratio of house prices to income at end-2011 is about 27 percent above its average since 1996, high enough to expect a drop. Similarly, the ratio of house prices to rent is 30 percent above the average since 1996. France (along with Canada, Norway, and Sweden) firmly leads the group of advanced countries on the overvaluation side, based on both indicators. The recent correction was not enough to offset previous deterioration in affordability, as prices rebounded quickly in 2010 and 2011, leaving the overall real price

[7] This section updates and expands on the analysis of housing market developments and vulnerabilities done in the context of the 2011 Article IV consultation with France (IMF, 2011).

level up 0.8 percent since end-2006.[8] Focusing on valuation ratios can be misleading, as other factors—including interest rates, maintenance and property taxes, tax benefits, and mortgage length (in the case of the affordability ratio)—can influence the equilibrium level of those ratios. A more sophisticated way of estimating misalignment is to calibrate a theoretical house price model to obtain the fundamental value of home prices. Model-based estimates of price misalignment typically range from 10–20 percent, with one study—based on the modeling of house prices as the sum of expected future rents—yielding a larger gap (over 50 percent).



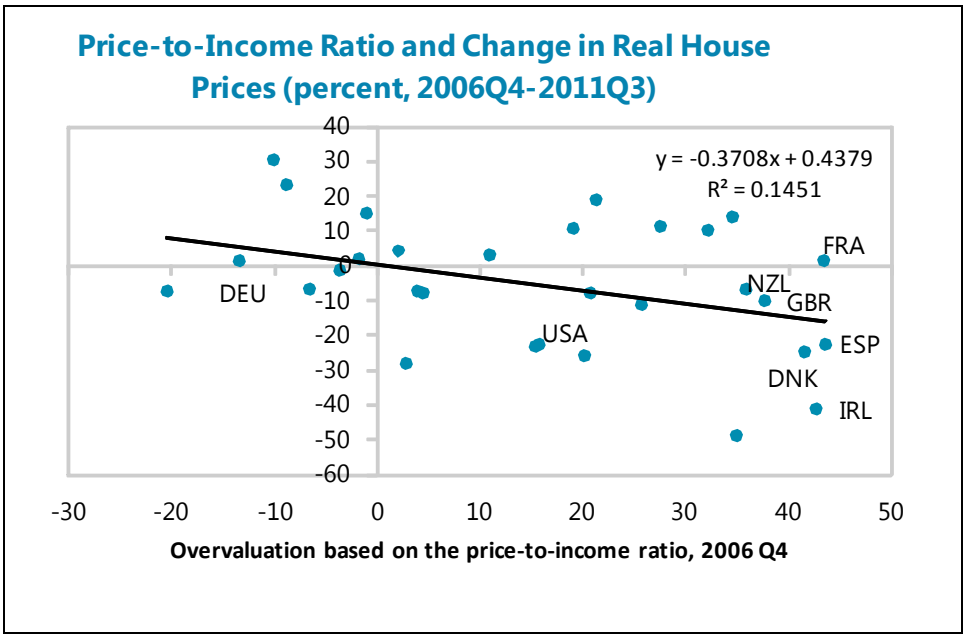
[8] The use of the price-to-income ratio (PIR) as a yardstick to assess housing market developments relies on the supposed co-integration relationship between income and house prices. If house prices exceed incomes more than the historically observed ratio, this can be interpreted as an indicator of overvaluation in the housing market. The price-to-rent ratio (PRR) is simply the inverse of the rental yield, a basic indicator of return on housing. The difference between current PRR values and long-term averages can also provide some guidance as to the extent of overvaluation of the housing market. In both cases, we compare current values with the long-term average since 1996 as there are no reliable house price series for France before the mid-1990s.

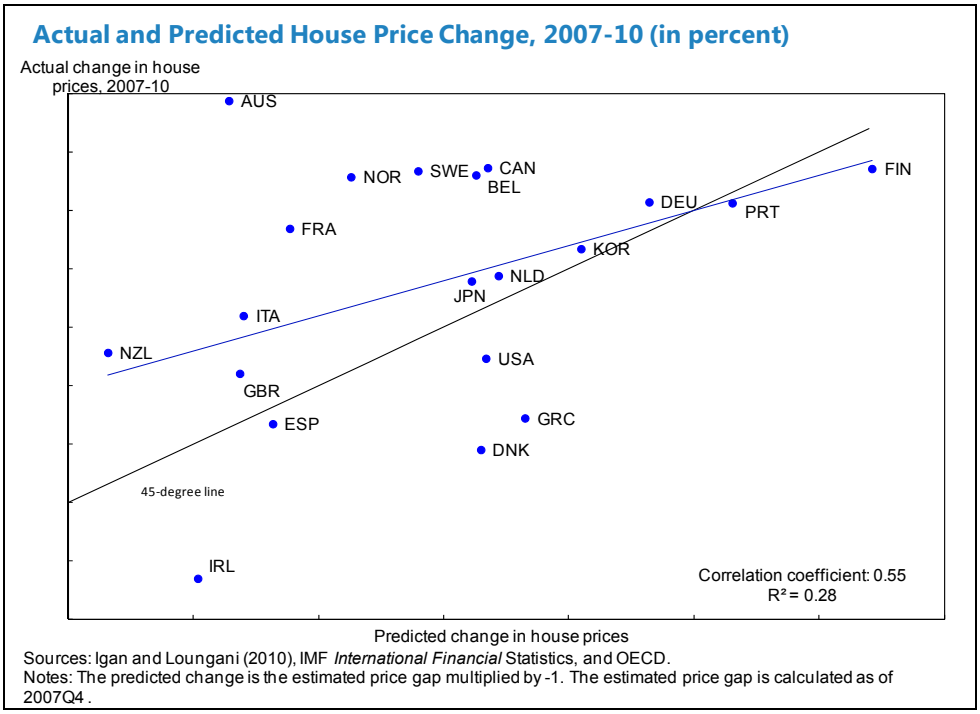


France: Housing Price Misalignment 1/	
	Model estimates:
Antipa and Lecat (2012)	15-20
Borgy, Clerc, and Renne (2012)	very low estimated probability of a housing boom at end-2010
Hott and Jokipii (2012)	>50
Igan and Loungani (forthcoming)	10-20
S&P (2012)	<15
Igan and Loungani (2010)	10-20
1/ At end-2011 unless otherwise indicated.	

9. **The pre-crisis misalignment detected by these methods has not unwound in France to the same extent as in other advanced countries.** While the analysis does not convey information on when a correction would start and how long it would last, even a simple affordability price-to-income ratio (PIR) helps detect the countries most likely to experience subsequent declines in house prices. In a sample of Economic Co-operation and Development (OECD) countries, there is a negative relationship between the potential misalignment indicated by the PIR as of end-2006 and the realized change in house prices since that date. The staff's model-based estimate also predicts reasonably well the actual path of house prices in 2007–10, based on the estimated price gap as of end-2007. In France's case (similar to Australia, Canada, Norway, and Sweden), the downturn has been less severe than predicted. This might reflect a policy-induced rebound (see Box 1), or indicate that the correction is still underway and additional house price declines can be expected over the next

few years. The timing and length of a correction, however, remain uncertain. Moreover, several near-term factors continue to support demand, as discussed below.

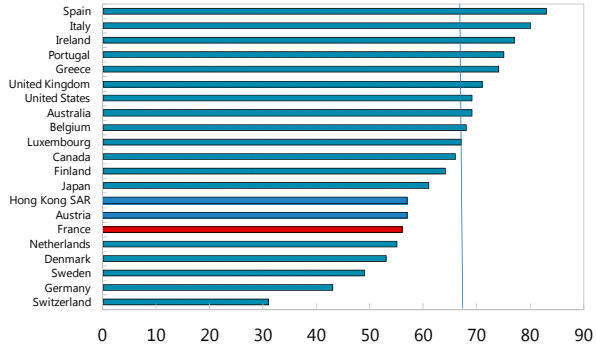




Sources: Igan and Loungani (2010), IMF *International Financial* Statistics, and OECD.
Notes: The predicted change is the estimated price gap multiplied by -1. The estimated price gap is calculated as of 2007Q4 .

10. **Speculative activity is limited in aggregate, albeit rising, as indicated by a growing share of investor purchases of new properties since 1995.** Lending for the purchase of investment property represented around 17 percent of housing loans in 2010, up from 12 percent in 2001 (ACP, 2012a). The 2009–10 household wealth survey of the *Institut National de la Statistique et des Études Économiques* (INSEE) suggests that investor-owned properties represent around 20 percent of total.[9] Among the households with real estate wealth (also the wealthiest overall), 30 percent own a secondary residence or a property investment in 2010, up 3 points from 2004 (INSEE, 2011).[10] Buyers purchase primarily to own their home in retirement, and due to the perception of real estate as an attractive safe haven. The homeownership rate in France has risen by about 3 points since 1994 to 58 percent in 2010, an increase similar to that in other OECD countries on average (Slok, 2012), but remaining lower than in the United Kingdom, United States, Italy, and Spain.[11] In selected segments of the housing market, the participation of (buy-to-let) investors is higher: for example, they accounted for over 60 percent of the number of properties sold by real estate developers in 2010, up from 40 percent in 1995, according to data from the Federation of French Property Developers (FPI) (Moody's, 2012). Investors also play a more significant role in certain geographic zones (Paris, Alps Valley, Lubéron, and Côte d'Azur). In Paris, they accounted for 29 percent of transactions in 2012: Q1, according to Century 21 data.[12]

Selected Advanced Countries: Home Ownership Rates 1/
(Percent)



1/ Census dates vary from 2000 to 2005. Data for France as of 2002.
Sources: EMF; BIS; OECD; UNECE; ECLAC; IADB; IUHF; IUT; national statistics; central bank statistics; Warnock and Warnock (2009); and IMF staff calculations.

11. **Since end-2009, consistent with the rise in investor activity, the market is shifting to older and more affluent borrowers.** According to the *Observatoire du Crédit Logement/CSA*, the share of younger borrowers (below 35) declined over the past two years from 52 percent to 49 percent, while the share of higher-income borrowers (above five times the minimum wage) rose from 20 percent to 22½ percent. Worsening affordability ratios and the recent tightening of credit conditions have also contributed to this trend.

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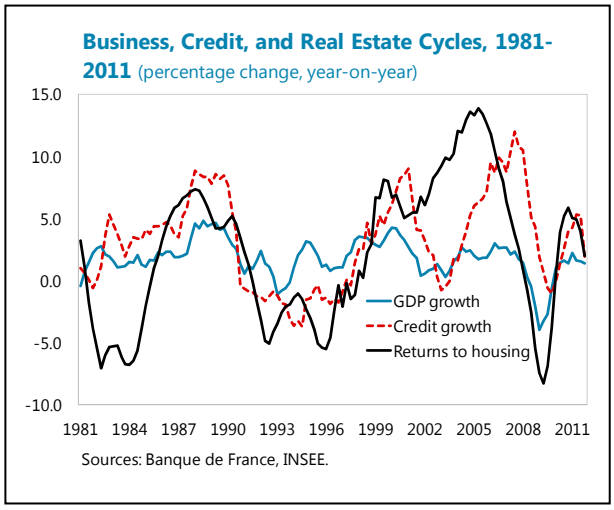
[9] In the United States and Australia, investor-owned properties also represent about 20 percent of total.

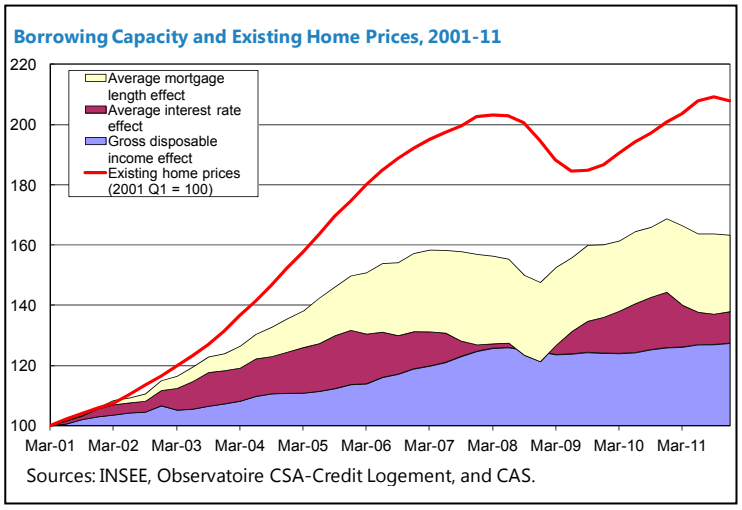
[10] Investment property owners are primarily households in the 80th wealth percentile and above. Investment properties represent 10–60 percent of their total wealth according to BdF calculations.

[11] Care should be taken in comparing home ownership rates internationally, as the important role of social housing in France diverts a significant proportion of households (circa one-fifth) out of the housing market.

[12] Data non-seasonally adjusted.

12. **Low interest rates and longer durations have been key contributing factors to the increase in housing demand.** The French real estate cycle moves more closely with the credit cycle than it does with the business cycle.[13] New fixed-rate housing loans charge interest of about 4.7 percent on average since mid-2011 (up from 4.1 percent at end-2010, but still below their 10-year mean of 5.1 percent and down 260 bps since 1998).[14] In response, French households have sought bigger loans and lengthened initial maturities. This has capped the increase in the average DTI ratio to 5.4 percentage points during 2001–2011, notwithstanding a 112 percent increase in house prices. The average DTI ratio was about 30.6 percent in March 2012, according to banks' monthly reporting to the ACP. Overall, the decrease in interest rates is estimated to have contributed about 40 percent of the increase in borrowing capacity during 2003–10, compared to 32 percent for the increase in revenues and 21 percent for the increase in debt payments to revenue (CORÉFRIS, 2012). A similar calculation holding the DTI ratio constant at one-third implies that lower interest rates (both the direct effect and the indirect effect through longer loan duration) account for 55 percent to 60 percent of the increase in borrowing capacity since 2001 (*Centre d'Analyse Stratégique* (CAS), 2011). The increase in borrowing capacity in turn can explain about 60 percent of the rise in existing home prices through 2011 (CAS, 2011).[15]





[13] For a similar result in the case of the United States, see Igan (2009).

[14] There are indications that mortgage costs are starting to decrease again. The average interest rate on outstanding housing loans of over five years maturity fell to 3.93 percent in April 2012, from 3.99 percent in March.

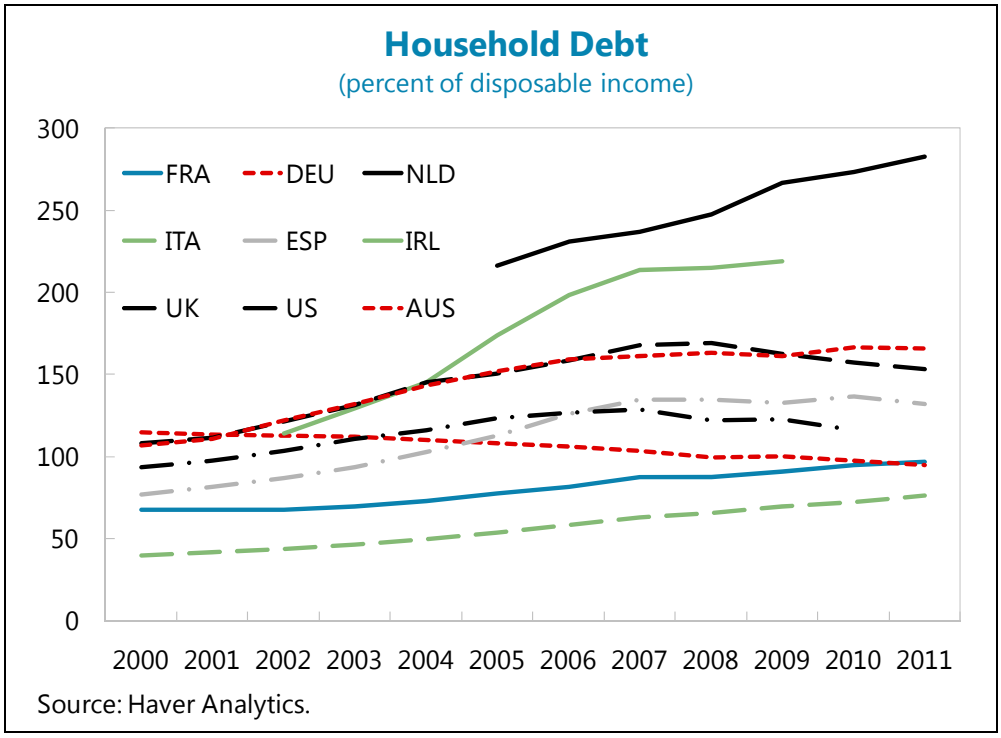
[15] In contrast, Antipa and Lecat (2012) find that, after accounting for borrowing capacity, French home prices are no longer fundamentally misaligned. As the authors emphasize, higher borrowing capacity is—however—partly the result of the price rise itself. Statistical tests find that over different periods between 1980 and 2010, the change in house prices systematically explains the change in borrowing capacity but not vice-versa—with the exception of the 2000–2010 period, when there is evidence of two-way causality (Clévenot, 2011).

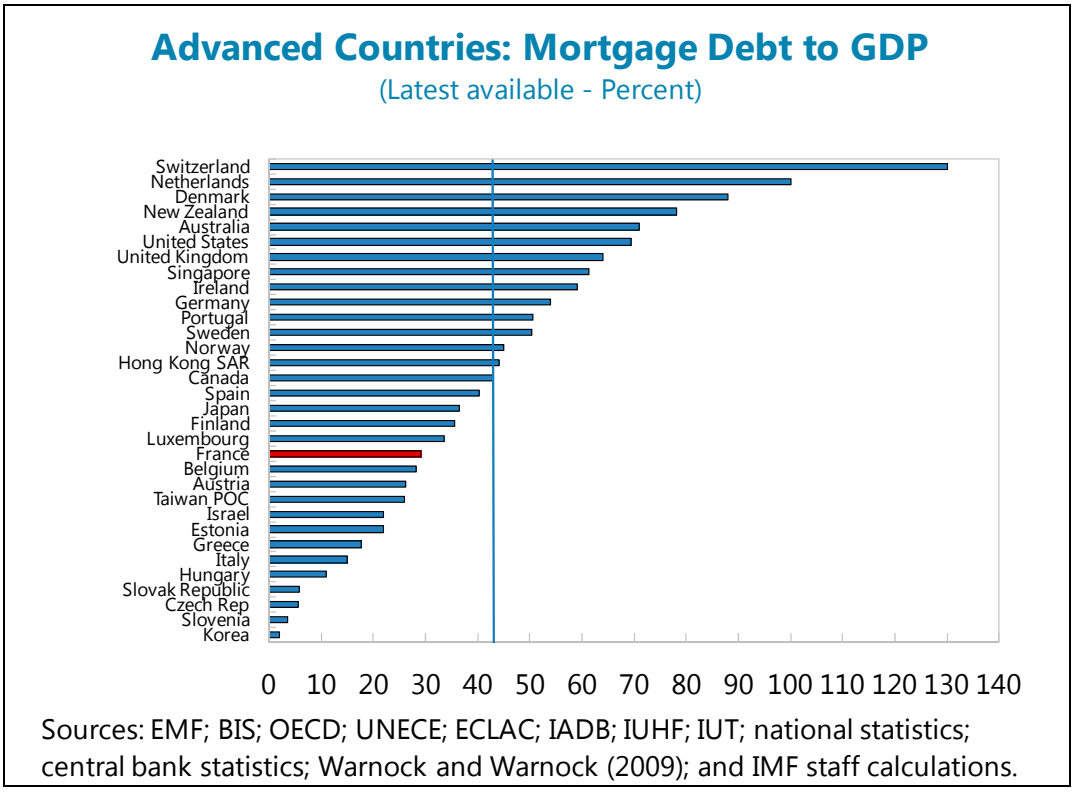
13. **Financial factors helped offset the worsening affordability ratios only partly.** After accounting for lower interest rates and lengthening maturities, housing affordability has decreased by 20 percent in the past 10 years (Friggit, 2010). While availability of financial resources for real estate projects has been one of the driving forces of developments in this market, other factors also played a role, including some government support measures in 2009–2010 (Box 1) and buyers' anticipation of rising prices. Friggit (2010) finds a high short-term autocorrelation (1–5 years) of annual house price changes over 1965–2009, consistent with adaptive (backward-looking) buyers' expectations.[16]

14. **Household leverage and mortgage debt remain comparatively low, suggesting that most households are not consuming beyond their means.** While France's ratio of household debt to disposable income has risen by nearly 30 points in the past decade, it remains well below the levels of most other developed countries. The ratio of mortgage debt to GDP is lower than in most other advanced countries. This suggests scope for further deepening of the mortgage market.

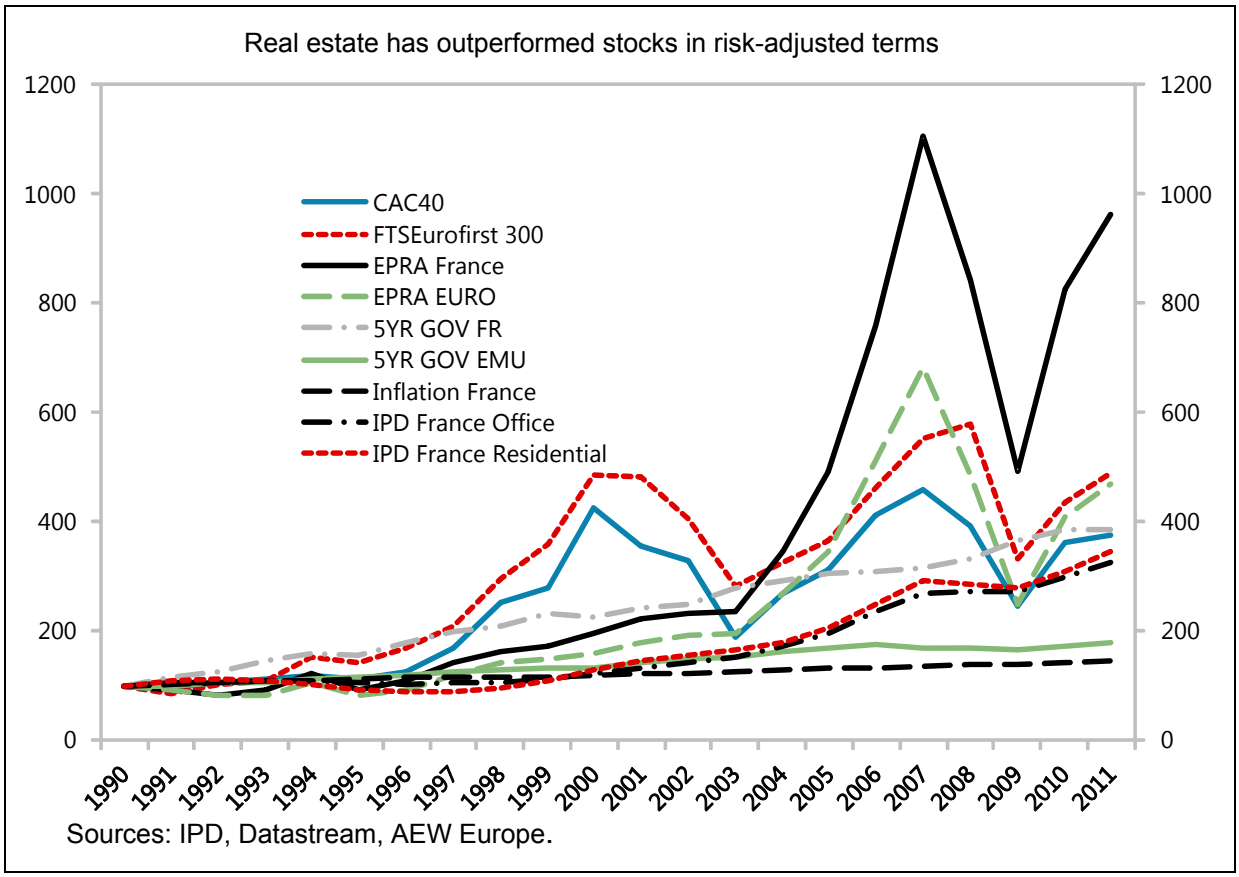
15. **Moreover, low deposit rates in real terms and continued macroeconomic uncertainty provide incentives for retail and institutional investments into real estate.** Inflation-adjusted interest rates for bank deposits turned negative in early 2010. Riskier investments have outperformed property over the long run, but the housing market is considered safer. Since 1990, stocks, for example, have cumulated a higher return than real estate investment property, but with higher volatility. In risk-adjusted terms, overall property investment—as measured by the total return on the France IPD indices for residential and office investments—has thus outperformed stocks (Appendix Table 2). From an asset allocation perspective, property returns have also displayed relatively low correlation with other asset classes making them a diversifying asset (Appendix Table 3). While this is less true for French listed real estate—as measured by the France European Public Real Estate Association (EPRA) index, which has a relatively high correlation with stocks—the high yield (compared to both stocks and bonds or other European countries listed real estate vehicles) and liquidity of listed real estate (France accounts for almost a quarter of the Europe EPRA index) still makes it an attractive investment for income-oriented investors less sensitive to price swings.

[16] Conversely, the study finds no short-term autocorrelation for stocks, which appear to follow a "random walk."


Household Debt
(percent of disposable income)
300
250
200
150
100
50
0
FRA
DEU
NLD
ITA
ESP
IRL
UK
US
AUS
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
Source: Haver Analytics.


Advanced Countries: Mortgage Debt to GDP
(Latest available - Percent)
Switzerland
Netherlands
Denmark
New Zealand
Australia
United States
United Kingdom
Singapore
Ireland
Germany
Portugal
Sweden
Norway
Hong Kong SAR
Canada
Spain
Japan
Finland
Luxembourg
France
Belgium
Austria
Taiwan POC
Israel
Estonia
Greece
Italy
Hungary
Slovak Republic
Czech Rep
Slovenia
Korea
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
Sources: EMF; BIS; OECD; UNECE; ECLAC; IADB; IUHF; IUT; national statistics; central bank statistics; Warnock and Warnock (2009); and IMF staff calculations.

Indexed Total Return Performance of French and European Asset Classes



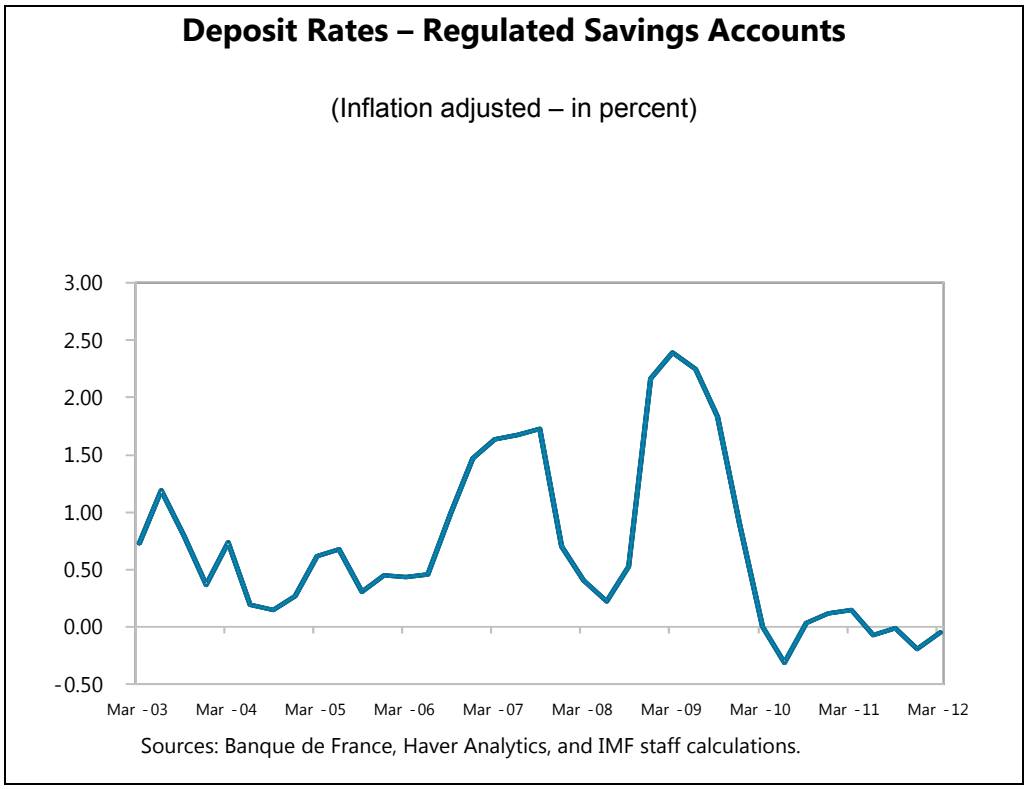
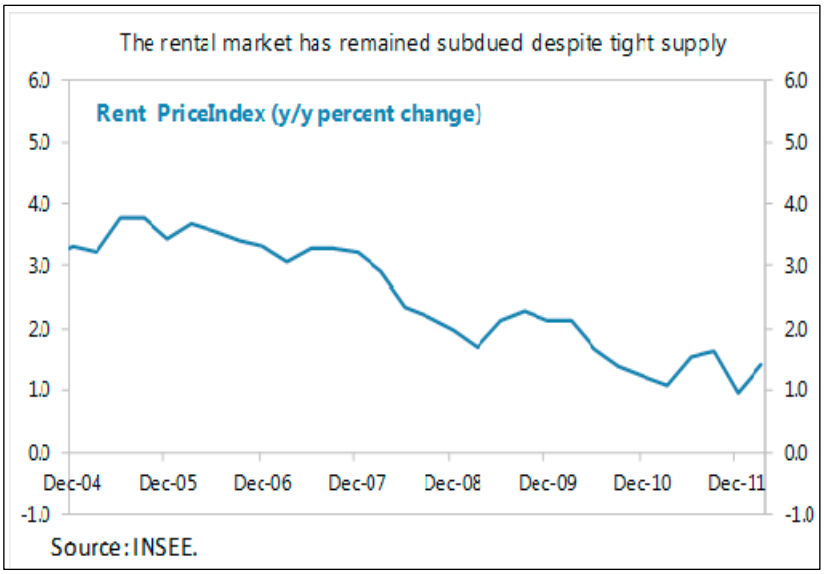


Table. 1. France: EPRA Global Listed Real Estate Indices: Yield and Market Value Capitalization, May 2012

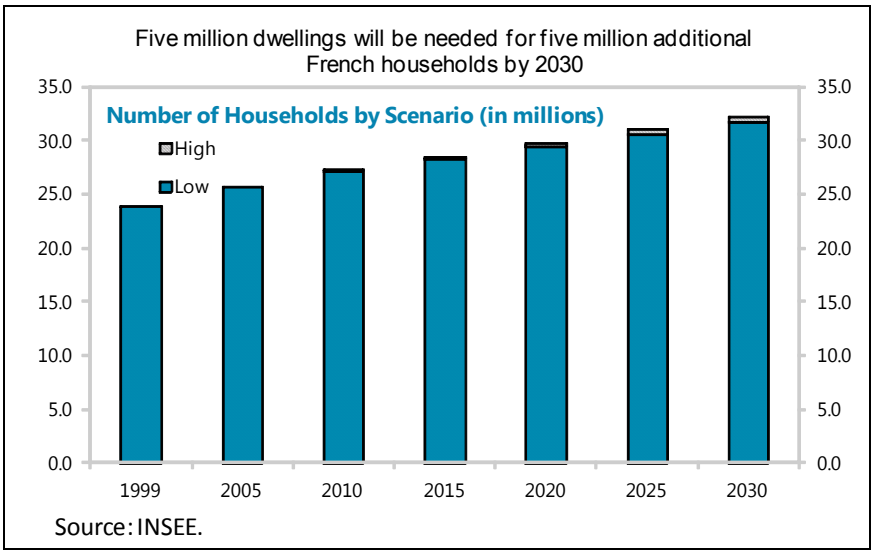
Name	Dividend Yield	Index Value	Market Capitalization	Number of Stocks	Share of Europe Index	Share of Eurozone Index
EPRA/NAREIT Europe	0.05	1317.41	92,484,155,980	84	100%	220%
Of which:						
EPRA/NAREIT Eurozone	0.06	1481.05	42,089,980,700	42	46%	100%
EPRA/NAREIT France	0.06	2689.71	21,903,368,030	10	24%	52%
EPRA/NAREIT Austria	0.02	446.28	1,475,530,198	2	2%	4%
EPRA/NAREIT Belgium	0.08	903.82	2,924,501,247	6	3%	7%
EPRA/NAREIT Germany	0.02	472.08	7,008,458,105	12	8%	17%
EPRA/NAREIT Greece	0.1	201.56	71,736,000	1	0%	0%
EPRA/NAREIT Italy	0.06	725.84	488,138,644	2	1%	1%
EPRA/NAREIT Netherlands	0.09	1161.26	6,541,681,560	5	7%	16%
EPRA/NAREIT Norway	0.02	121.41	559,973,111	1	1%	1%
EPRA/NAREIT Sweden	0.04	3128.51	7,087,660,118	8	8%	17%
EPRA/NAREIT Switzerland	0.04	2475.19	8,567,410,875	4	9%	20%
EPRA/NAREIT UK	0.04	851.16	34,179,131,170	29	37%	81%

Source: EPRA.

16. **A slow supply response has also contributed to the rise in prices.** Unlike in some other advanced countries, there has been no surge in residential construction investment (Appendix Figure 1), reflecting structural constraints including scarcity of buildable land in dense metropolitan areas and regulatory barriers to new housing construction. The housing stock has thus barely kept up with population growth. Over 2005–09, France added around 350,000 new housing units per year to its housing stock according to INSEE, whereas 350,000 to 400,000 were actually needed to maintain existing occupancy rates, based on household growth trends and replacement needs (Jacquot, 2007). Overall rental price growth has remained subdued, reflecting regulations requiring the indexation of rents during the lease period but rental price on new leases has increased significantly. The demographic pressures are further evidenced in a 31 percent increase in French land prices (in euros per square meter) during 2006–10.



17. **At the aggregate index level, house prices show low-frequency trends associated with increases in construction costs and population density.** Population growth and the dual trends of de-cohabitation and aging (as seniors tend to live alone following the death of their partner) imply annual increases in the number of households by 2030 of 227,000 to 255,000, depending on the scenario.[17] This is less than in the past (2005–10), but will still require the addition of an estimated 320,000 to 370,000 new dwellings



[17] INSEE projects that, by 2050, one in three people in France will be aged over 60, against one in five in 2005.

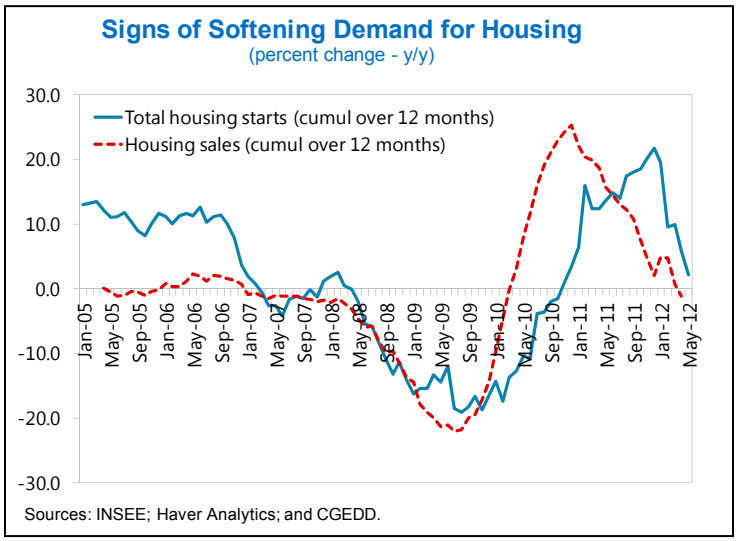
each year over the next decade (Jacquot, 2007). Until 2000, house prices broadly tracked the increase in construction costs and lagged population growth; since then, house prices have increased faster than construction costs and caught up with demographics (Appendix Figure 2).

18. **On the basis of long-run relationships of house prices with their main driving sources, prices have ample room to fall.** With prices experiencing only a modest correction during the 2008–09 crisis and the following rebound, the PIR and PRR at a national level are well above their long-term averages, and model-based estimates also indicate the potential for a protracted mean-reversion (Loungani, 2010). Cyclical factors which have supported demand so far—such as low interest rates—remain supportive but could reverse this year as banks raise rates to preserve margins in the face of increased financing costs (Standard & Poor's (S&P), 2012).

19. **A sharp slowdown in house price growth in 2012–13 is consistent with the relatively benign FSAP's central scenario.**[18] Household leverage will likely stabilize or rise at a more moderate clip, given the perception that prices are high and a more adverse financing environment. With slower increases in leverage and unemployment remaining high in 2012–2013 (at around 10 percent), the housing market is widely seen as at or near its peak. In the FSAP's adverse scenario, rising interest rates, sluggish economic activity, and higher unemployment (rising to 11 percent in 2013–14) are likely to trigger a downturn, with house prices projected to correct by up to 5 percent over 2012–13. The correction under the adverse scenario could be stronger if accompanied by a shift in investor (price and income) expectations and asset allocation.

[18] The *Notaires d'Ile de France* expect prices to drop by 5 percent in *Ile de France* and by up to 10 percent in France as a whole. S&P expects a 15 percent price decline over the next two years as interest rates rise by 50 bps, constraining borrowing capacity (S&P, 2012).

20. **Under the FSAP's central scenario, the house price landing will probably be soft.** Increases in house prices are already slowing and demand is softening, as evidenced by a decreased transaction activity at a time when the rate of new construction is also decreasing. The BdF's May 2012 lending survey also signals a drop in the demand for mortgages since late 2011 (BdF, 2012). Sellers have started cutting prices,[19] but buyer response to lower prices is being dulled by tighter credit conditions since 2011: Q4.[20] The phasing-out of earlier tax incentives in 2012 has likely boosted transactions in late 2011, but in the longer run may deter buyers whose borrowing capacity was supported by the schemes from entering the market. Recent government measures have lowered real estate incentives in 2012, including the restriction of the PTZ+[21] to new home purchases, the removal of the *Scellier* incentive for buy-to-let investors,[22] and doubling the holding period for exemption of capital gains tax on secondary properties to 30 years effective February 1, 2012 (Box 2).



[19] In Paris, apartment prices have declined by 1.1 percent in 2012: Q1 compared to the previous quarter (following a 0.3 percent quarter/quarter decline in 2011: Q4). In France as a whole, prices have declined by 0.7 percent.

[20] The banking regulator (ACP) increased its scrutiny of housing in response to concerns about increasing risk, both in terms of NPLs and the risk profile of borrowers. In addition, banks may have tightened lending standards (e.g., decreased mortgage maturity and LTV ratios; see Section III) in response to more difficult financing conditions.

[21] Interest-free loan granted to first-time buyers for the purchase of a new or existing dwelling if they meet certain income criteria (until 2010) and without income restrictions thereafter.

[22] Tax reduction of 25 percent of the price of a new existing home or under construction (up to €300,000) for a rental investment realized in 2009 and 2010, and 20 percent for an investment realized in 2011 and 2012.

Box 2. Tax Policy-Related Elements

The government has withdrawn several housing market support and tax relief measures since end-2010. Mortgage interest deductibility—the seventh largest "tax expenditure" cited in the 2011, budget bill—was abolished for loans originated after 2010, and replaced by an updated version of the 2010 zero interest rate loan program (PTZ+).[1/] Other measures withdrawn at end-2011include: the cessation of the PTZ+ for existing homes, a reduction in the 2009 *Scellier* scheme for buy-to-let purchases, and capital gains tax reform. These developments are likely to accentuate the change in buyers' profile already evident in the recent data. Faced with tighter lending standards and a difficult economic environment, first time buyers will likely continue to decrease as a share of total, and older buyers wanting to buy rental property as a safe haven investment amidst the prevailing macroeconomic uncertainty will continue to gain prominence (AEW Europe, 2012).

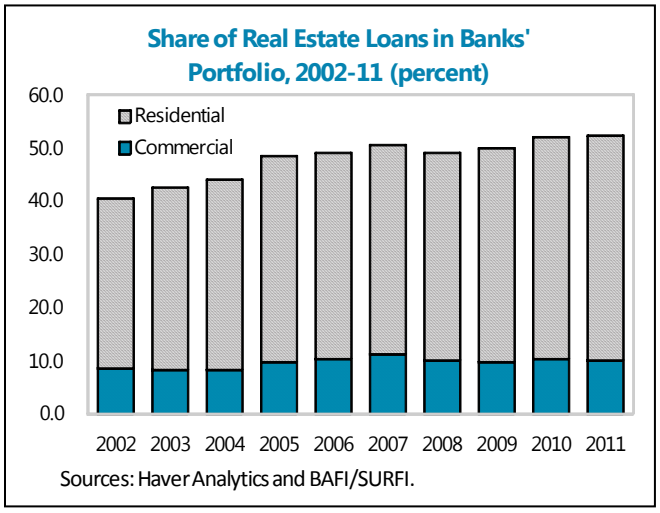
Efforts to curb the cost of tax expenditures and reduce the distortions they can cause in the economy should continue. While the abolition of the mortgage interest deductibility in 2011contributes to reducing incentives for household leverage, prospective buyers of new homes continue to benefit from the PTZ+. Another aspect of the tax treatment of housing—which plays a more limited role in France—is the tax expenditures accorded to administered savings plans designed to facilitate the accumulation of down payments requirements (Table 1). A similar scheme was withdrawn in Canada in the late 1970s (Wood, 1992).

_____

[1/] Unlike the 2010 version, the 2011 PTZ+ has no income restrictions and the amounts borrowed can be higher in higher-priced regions and when the dwelling purchased meets certain energy standards (Poirson, 2011).

III. The Mortgage Market and Risks to Financial Stability

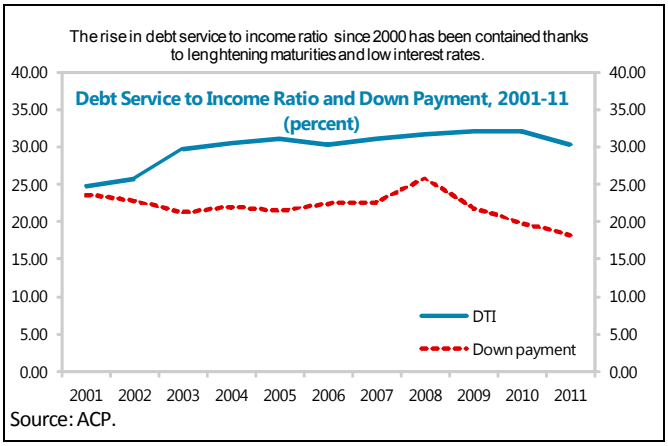
21. **The discussion above suggests that banks are exposed to a near-term price correction that is likely to translate into only limited credit losses under the FSAP's central scenario.** In particular, banks would be exposed to higher defaults on residential mortgage loans and losses, were house prices to fall; but the 2008–09 experience and institutional features of the mortgage market (discussed below) provide some reassurance that defaults resulting directly from the price decline would be small. Losses on CRE exposures are likely to be higher based on past episodes, although banks are comparatively less exposed to this sector. In view of the low current provisioning rates, banks can likely weather a modest correction; however, a more adverse scenario of house price declines accompanied by a shock to incomes and a hike in interest rates (as in the FSAP's adverse scenario) would likely result in greater stress. Although variable rate mortgages remain marginal, such mortgages are predominantly originated by some specialized lenders, making them more vulnerable to higher interest rates while they are already struggling with a higher-than-average increase in problem loans.

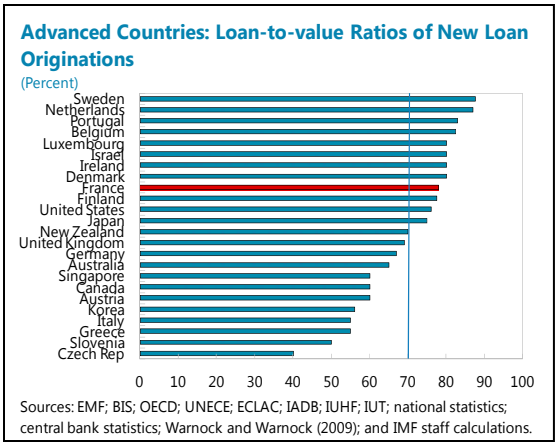


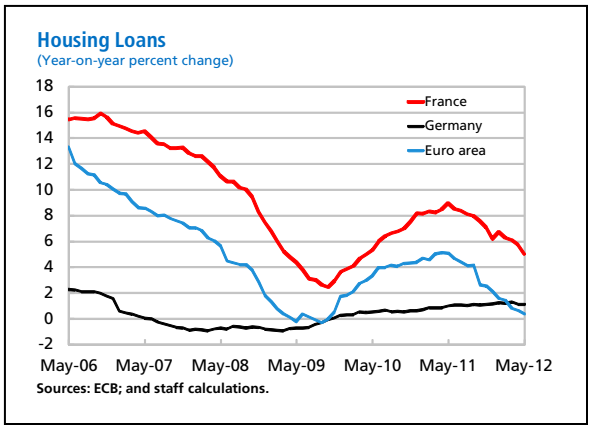
Structural factors limit risks to the mortgage market

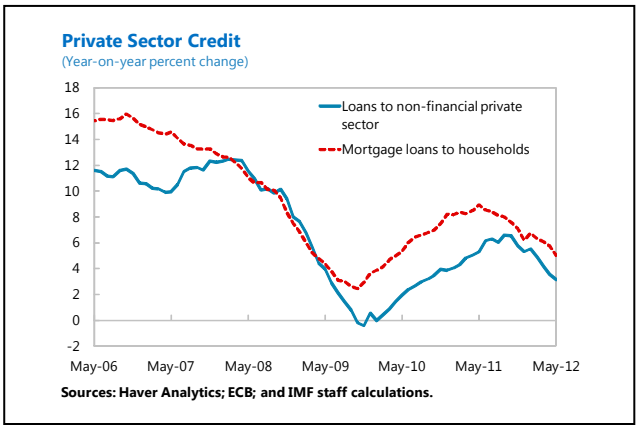
22. **Mortgage credit growth remains below pre-crisis trends.** The slowdown in housing loans since May 2011 has been less pronounced than in other euro area countries, with mortgage lending rising 5 percent year-on-year in May 2012 compared to 0.4 percent in the euro area as a whole and 1.1 percent in Germany. Mortgage lending growth has generally kept up with or outpaced overall domestic credit growth by a significant margin since 2006. Unlike in some other countries experiencing a real estate boom, lending growth has been more tempered overall and targeted at households, not property developers. On a macroeconomic basis, home-owning rates and mortgage debt-to-GDP ratio remain lower in France than in many other advanced countries.

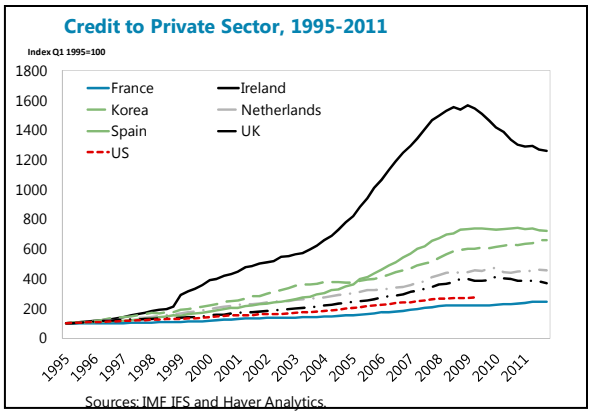
23. **There is also some institutional reassurance of the quality of the underlying lending, stemming primarily from underwriting criteria emphasizing sustainability of the borrower's income rather than collateral value.** Mortgage lending conditions are largely based on the capacity to service the loan until maturity, and therefore based upon the stability of the borrower's income. Banks tend to set a debt service (including mortgage service payment) to income ratio equal to one-third. The average DTI ratio is accordingly conservative. It has declined since its June 2011 peak, to reach 30.6 percent in March 2012, but remains higher than at end-2010 (ACP, 2012a). The average term to maturity at end-2011 was 18.5 years, up 4.4 years since 2001 but 0.8 years down from its 2008 peak, and the average loan amount was €108,000 (ACP, 2012b). In contrast to a conservative DTI ratio, the average LTV ratio is around 80 percent in March 2012, lower by 4 bps compared to end-2010 but higher than the advanced country mean. Leverage is also decreasing in the CRE market. Some market participants have announced reduced leverage ratio targets in late 2011, achieved mainly via asset disposals.

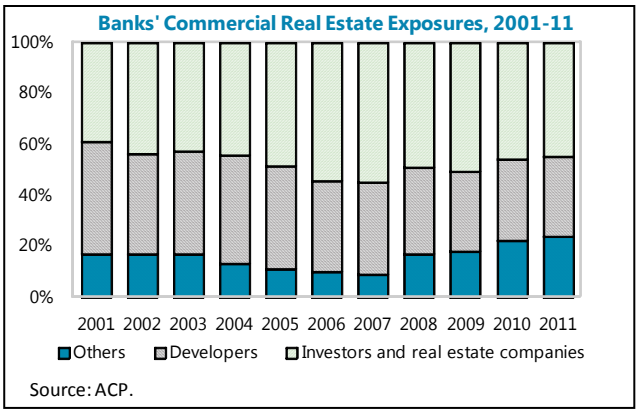




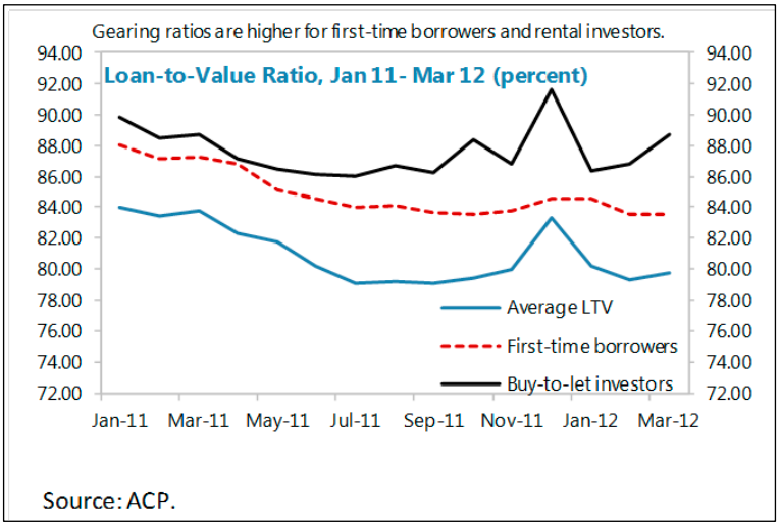








24. **Average gearing and debt service ratios mask significant variations, both across regions and borrower categories.** The average LTV ratio in *Ile de France* (at 74 percent) is lower than in the provinces (81 percent), reflecting greater down payments in the Paris regions (possibly explained by a higher proportion of transactions by second- or third-time buyers). Gearing also varies across borrowers: loans to first-time borrowers and buy-to-let investors have average LTV ratios of 83 percent and 89.5 percent, respectively, compared to 73 percent for other borrowers. In both cases, LTV ratios exceeding 100 percent are not uncommon; they represented 12.7 percent of loans to first-time borrowers in March 2012, down about 4 points since end-2010 (ACP, 2012a). DTI ratios vary also across regions. Borrowers in *Ile de France* have a higher DTI ratio (of 31.5 percent) than in the provinces (30.3 percent), likely reflecting higher average prices. The share of borrowers with debt service payments exceeding 35 percent of income has almost doubled during 2001–11



(from 18.8 percent to 33.8 percent), but has sharply declined since then (27.3 percent at end-2011) (ACP, 2012b).

25. **Credit institutions, rather than households, bear most of interest rate volatility risk, given the preponderance of fixed-rate or quasi-fixed rate mortgages.** Most mortgage loans (89 percent of loans granted in 2011) carry fixed rates and nearly all the flexible rate loans are capped (ACP, 2012b).[23] The share of flexible rate loans in successive vintages of production has been divided by more than three since 2005 to under 10 percent of total loans granted in 2011. The share of other types of loans, such as hybrid-rate mortgages, is very low (1.5 percent of origination in 2011).[24] Nontraditional loan products that allow borrowers to defer repayment of principal, and sometimes interest, remain extremely marginal. Loans are full recourse. Bank penalties for early repayment are capped at 3 percent of the remaining principal, enabling refinancing activity when interest rates are low. Banks require a guarantee against the default of borrowers: a mortgage or a caution—mortgage insurance (MI)—with the latter covering 61.6 percent of all loans in 2011 (up from 34.3 percent in 2001).[25] Only around 5 percent of loans do not have any form of guarantee. Moreover, insurance against death and disability is mandatory. Unemployment insurance is optional, and less than 10 percent of borrowers subscribe, according to the *Fédération Française des Sociétés d'Assurance*.[26]

26. **The mortgage market is proving very valuable to French banks at this juncture, because it allows them to issue mortgage covered bonds.** While the senior unsecured debt market was virtually closed to European banks in 2011: Q4, covered bond issuance remained buoyant. The share of covered bonds in the wholesale funding mix of French banks increased to 56 percent. The shift reflects the lower cost and availability of covered bonds, amid greater demand from insurance companies and pension funds.[27] Funding by covered bonds has kept pace with lending growth since 2003, accounting for around 20 percent of outstanding residential mortgage loans extended by French banks European Covered Bond Council (ECBC), 2011. The volume of French covered bonds outstanding at end-2010 amounted to €156 billion (18 percent of the euro area and 9 percent of the worldwide market), which

[23] The three-month Euribor is the reference rate for most flexible rate contracts.

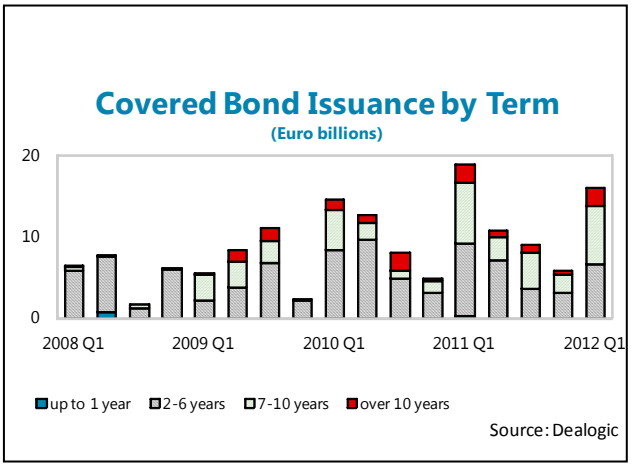
[24] Part of the hybrid-rate mortgage is at a floating rate and another part is either a fully fixed-rate mortgage or an adjustable-rate mortgage.

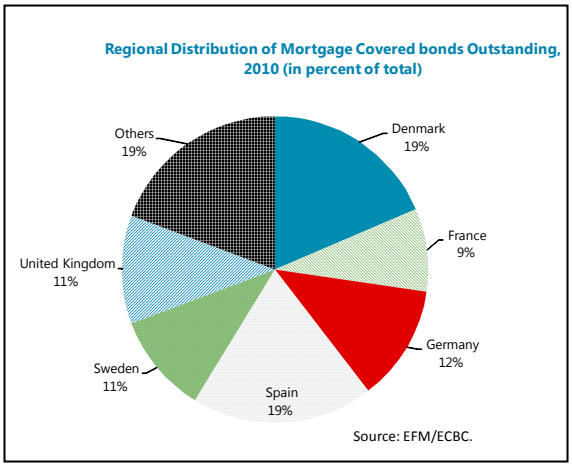
[25] *Crédit Logement*, the main provider of MI, is owned by a group of French monetary and financial institutions (MFIs). Over 2001–10, its market share exceeded 20 percent on average.

[26] More generally, (public) unemployment insurance has a large coverage with high replacement rate.

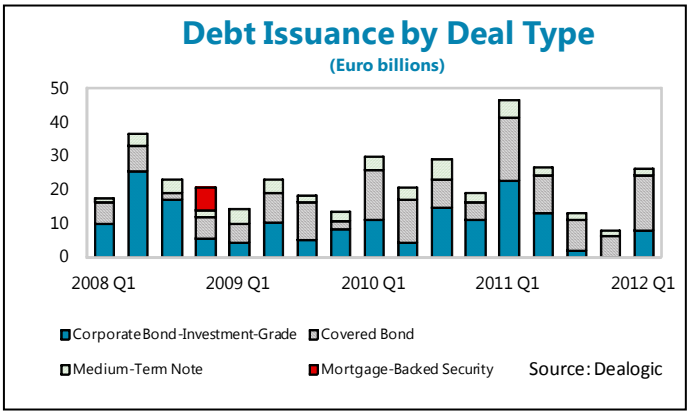
[27] The regulation around covered bonds (e.g., Undertaking for Collective Investment in Transferable Securities (UCITS) and/or Solvency II) reflects this relative safety of covered bonds and also encourages institutional investors to engage on a large scale in this market (ECBC, 2011). In addition, investments in covered bonds are favorably considered in prudential regulation such as in the new Basel III liquidity framework.

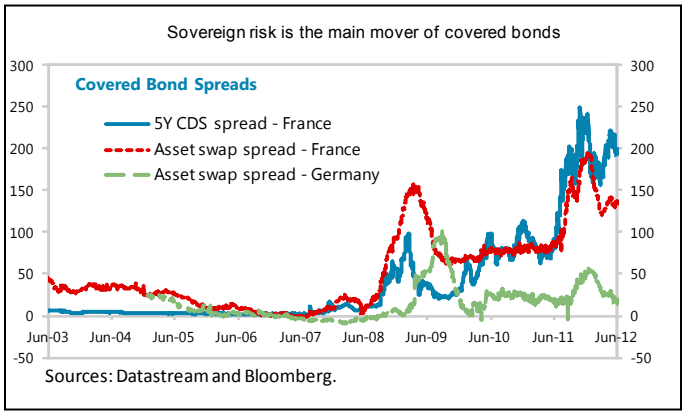
makes French covered bonds a significant segment in this market. With a weighted average maturity of 7 years (compared to a typical duration of loan contracts of about 11 years, since most households prepay), covered bond funding helps limit the maturity mismatch.





27. **The continued availability of covered bonds has kept a lid on funding costs.** Given the high credit quality, covered bonds offer relatively cheap funding and help ensure market accessibility even in turbulent times (Box 3). On the back of a stringent legal framework, covered bonds are perceived as safe, offering higher recoveries and more transparency compared to a senior unsecured bank bond. However, the counterparty of the covered bonds remains the issuing bank, and the performance of covered bonds is still connected to that of the bank (and during stressed times, to that of the French sovereign). Spreads have risen by 100 bps since mid-May 2011, more than for German banks, owing to concerns about credit quality of the sponsor banks triggered by rating reviews and downgrades (Guerra, 2012). Despite the widening spreads, yield levels remain historically low (112 bps below their past five-year average, as of June 2012), partly reflecting the investors' preference for sovereign bonds and covered bonds (which, in the case of banks, count toward their liquidity buffers for regulatory purposes) over riskier assets.





Mortgage loans: Exposure detail

28. **This section examines several indicators to assess the position of the banking sector in early 2012, and explores to what extent these risks are evenly distributed among banks (based on 2010 published data).** Mortgage and retail banks are the largest holders of mortgage debt outstanding. The time-series patterns of real estate-related activity in the monetary and financial institution (MFI) balance sheets show that the weight in commercial banks' loan portfolio of residential real estate loans has increased through end-2010. The weight of real-estate related loans is thus at historically high levels in March 2012. Retail mortgages total €832 billion (41 percent of GDP) and represent nearly 41 percent of domestic loans to the private sector.[28]

29. **In addition to the time-series aspect, it is interesting to explore the variation among banks in their exposure.** Banks active in the French housing loan market include BPCE (*Banque Populaire et Caisse d'épargne*) Group (including its specialist mortgage arm *Crédit Foncier de France*), *Crédit Agricole* (including *Le crédit Lyonnais* (LCL)), *Crédit Mutuel (*including *Crédit Industriel et Commercial* and *Banaue Privée Européenne)*, *Société Générale* (including *Crédit du Nord),* BNP Paribas (including its specialized lender BNP Paribas Personal Finance), *La Banque Postale*, HSBC France, *Crédit Immobilier de France Group* (CIF), a specialized residential lender (along with *Banque Patrimoine & Immobilier*).

30. **We analyzed mortgage exposures at eight banks with available data as of end-2010: mortgages represent on average 55 percent of retail and corporate loans.**[29] The importance of mortgage loan exposures varies across individual banks, ranging from 5 percent of total for HSBC France to over one-half for *Crédit Agricole*, *Crédit Mutuel Group*, *La Banque Postale*, and *Crédit Immobilier de France* (Appendix Figure 3). BNP Paribas, BPCE Group, and *Société Générale* SA are in an intermediate position, with mortgage loans representing less than one-half of exposures. French banks are also exposed to corporate and unsecured credit. However, mortgages are generally the first largest exposure, with the exceptions of BPCE Group, *Société Générale*, and HSBC France. Exposures to commercial real estate are not available on a bank-by-bank basis, but in aggregate appear much less prominent than exposures to residential real estate.

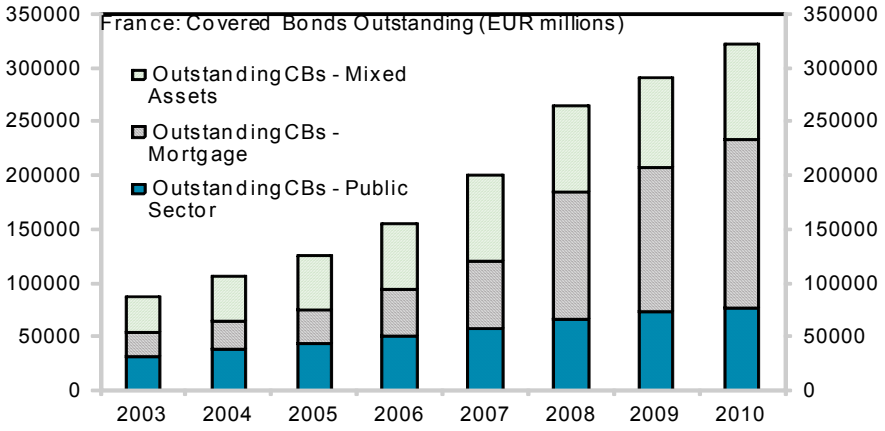
[28] Retail mortgages are defined as customer loans originated to households and non-profit institutions serving households for real estate purposes.

[29] Mortgages represent 42 percent when considering French banks' aggregated accounting data at end-2011.

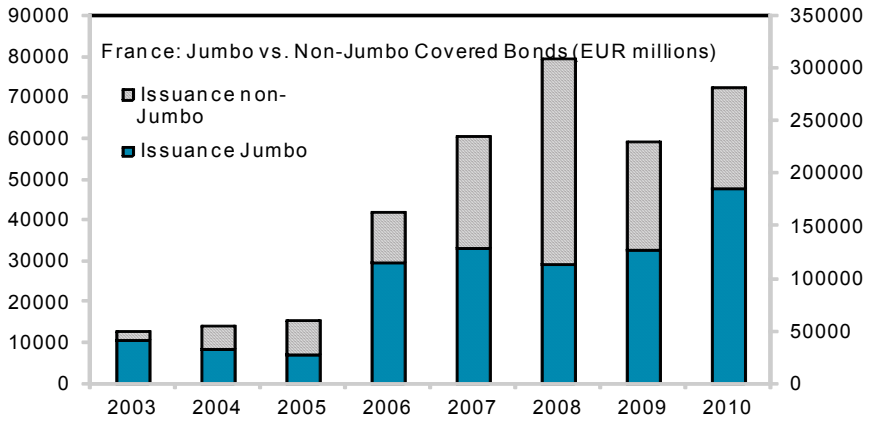
Box 3. Covered Bond Market [1/]

France has an established market in covered mortgage bonds, e.g., obligations foncières (OFs), and obligations de financement de l'habitat (OHs), and billets hypothécaires de la Caisse de Refinancement de l'Habitat, (CRH). OFs and OHs are unsubordinated senior secured obligations, issued by specialized subsidiaries. Mortgages accounted for one-half of all cover assets and jumbo issuances amounted to two-thirds of total issuance in 2010. While covered bonds are usually debt securities issued by ordinary MFIs, France requires the set-up of an ad hoc company, the société de crédit foncier (SCF). SCFs are licensed by the ACP and governed by a stringent legal framework. An SCF is by law "bankruptcy remote" (exempt from any bankruptcy proceedings against its parent company). Both mortgages and public sector exposures are eligible to "cover" the OFs, with a minimum coverage ratio of 102 percent.

Mortgages are the predominant form of cover assets....



...and jumbo issuances are more common.



Source: ECBC Fact Book 2011.

1/ Mixed assets refer to the covered bonds of Compagnie de Financement Foncier (CIF), where the mortgage and public sector assets are put in the same pool and as such, no specific asset is linked to a specific bond issue.

Box 3. Covered Bond Market (concluded)

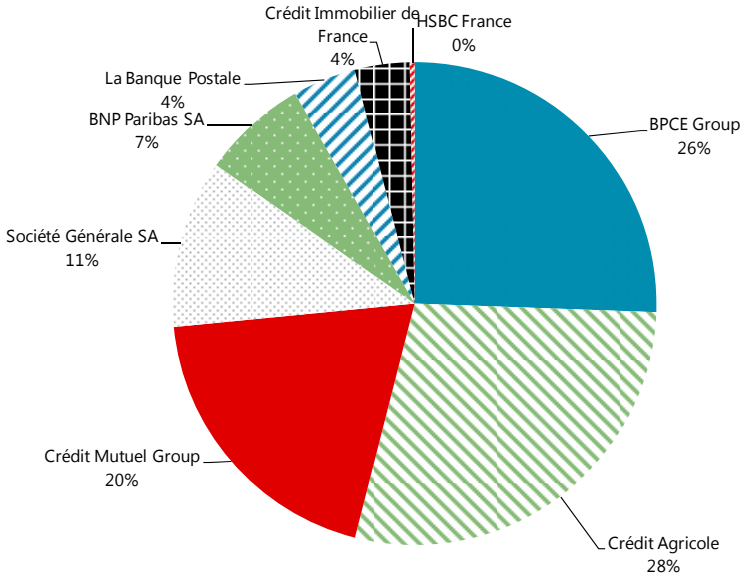
The law was significantly modified in 2010 with the creation of home financing companies, e.g., *sociétés de financement de l'habitat* (SFHs).[2/] Under the SFH law, a bank pledges or assigns collateral to a subsidiary with the limited purpose of issuing covered bonds (OHs) backed by loans that are in turn secured by a dynamic pool of assets. In the dual structure type of SFH, these secured loans are typically made toward the sponsor bank, which also originates and holds the cover assets. In the single structure type, cover assets are transferred to the issuer. Loans are refinanced up to an 80 percent limit for residential loans and 60 percent for commercial loans, and the minimum coverage ratio must exceed 102 percent similar to the SCF framework. The new framework allows for unlimited inclusion of guaranteed loans in the cover pool of SFH (while for SCF there is a cap on the share of the cover pool that may include guaranteed loans). Almost all issuers have now opted for the SFH regime. The few issuers who have not converted their existing programs have discontinued issuance of new bonds under the programs.

The credit quality of OFs and OHs is high because of both the preferential rights their holders enjoy in the event of bankruptcy and the over-collateralization requirements. Similar to the German Pfandbriefe, the collateral backing OFs constitutes a protected fund if the issuer goes bankrupt. Given the recognized good credit quality, this funding is relatively cheap and credit risk as indicated by asset swap spreads has been low until 2008. However, since mid-2008, spread volatility has increased and covered bonds issued post-crisis tend to pay higher spreads. The higher spreads may reflect the market concerns about exposures to a possibly overvalued housing market as well as credit quality of the issuer, its business model, and the respective sovereign.

The *Caisse de Refinancement de l'Habitat* (CRH) is the third main issuing structure. CRH is a central government agency created in 1985 with the sole purpose of funding French banks' housing loans to individuals. It is now a private undertaking held by major French banks. It issues bonds and on-lends the proceeds to banks with the same characteristics (rate and duration). Only residential mortgages with LTV capped at 80 percent or guaranteed loans (by a MFI or insurance company) are eligible as cover assets, and the coverage ratio must exceed 125 percent of CRH's bonds/loans.

1/ This section is based on (ECBC, 2011).
2/ There are currently seven SFH issuers: BPCE SFH; BNP Paribas Home Loan SFH; Crédit Mutuel Arkea Home Loans SFH; Crédit Mutuel-CIC Home Loan SFH; Crédit Agricole Home Loan SFH; HSBC SFH (France); and Société Générale SFH.

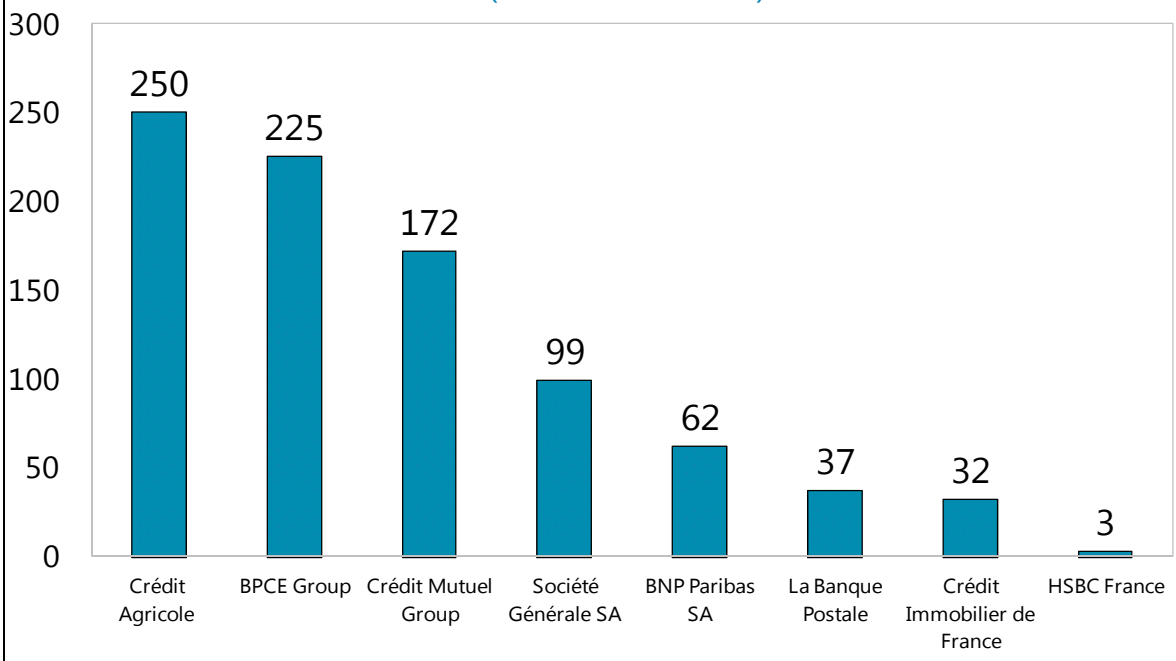
Aggregate Mortgage Loans Exposure, 2010



Sources: SNL, banks' public information, and IMF staff calculations.

Mortgage Loan Exposure by Bank, 2010

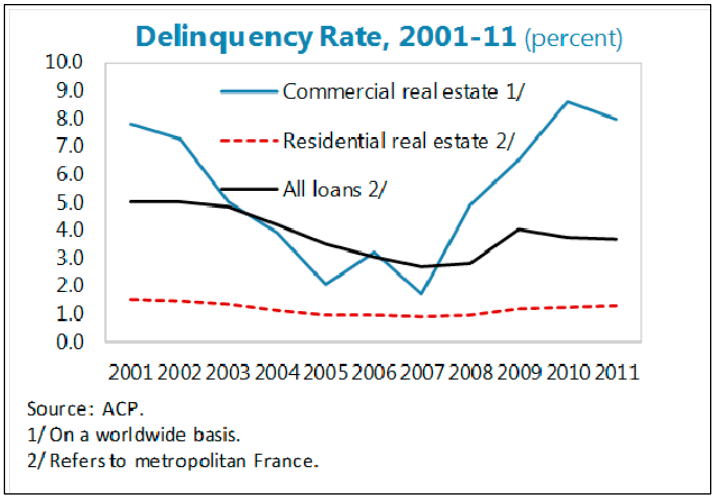
(In billions of euros)



Sources: SNL, banks' public information, and IMF staff calculations.

Performance and risk management

31. **Despite the unemployment rate at a 12-year high, arrears have been low so far.** As already discussed, important factors behind the resilience of households have included sound bank lending practices, limited financial innovation, and the predominance of fixed-rate loans, an active refinancing market, and the reliance on MI as well as generous unemployment insurance. On an aggregated basis, the NPL ratio for household mortgages in France remained low at 1.25 percent in 2010–11, up from 0.9 percent in 2007. Even though this segment of the market is relatively small, arrears are higher for floating rate loans, at about 2.6 percent in 2010–11, up from 1.1 percent in 2007. The quality of CRE loans has also declined very rapidly, and problem loans reached 8.5 percent of total in 2010, declining only by 50 bps in 2011.



32. **Provisioning rates have declined and are low relative to expected losses.** It peaked at 42 percent in 2005, and was slightly below 30 percent in 2010. For CRE exposures, the provisioning rate decreased even more sharply, from around 60 percent prior to the subprime crisis (2001–07) to slightly above 30 percent since 2008. Nonetheless, the real losses incurred by banks on their French residential mortgages remain very low (0.0116 percent of total loans outstanding at end-2011). The currently low provisioning rates could be the most important channel through which banks might be hit by lower real estate values, accompanied by lower household disposable incomes impacting ability to pay.

33. **The banking system in aggregate appears solidly positioned to absorb an increase in the loan delinquency rates that could emerge from a fall in housing prices.**[30] As an illustration of the limited credit risk on the housing portfolio overall, a 100 percent increase in current NPLs of residential mortgages would imply potential losses of €3-4 billion given the exposures of €824 billion at end-2011, current impaired loan coverage (of 30 percent), and a 33 percent loss-given default (LGD). This in turn would decrease regulatory Tier 1 capital adequacy ratios by about 0.1 percentage point (to 10.9 percent). The system's resilience is underpinned by (i) overall sound underwriting and risk management practices resulting in a prudent DTI ratio on average; (ii) the absence of non-recourse loans, which suppresses the risk of "strategic default" by borrowers in situation of negative

[30] The downturn is assumed to be largely confined to a price correction (with no indirect effects on income and no concomitant hike in interest rates).

equity;[31] (iii) the reliance on third-party guarantees; and (iv) cautious lending criteria for CRE.[32]

34. **Some localized risks could still emerge that are not well captured by the aggregate stress tests.** The credit institutions with loan books consisting of a higher-than-average share of flexible rate loans (e.g., specialized lenders such as CIF) or CRE loans are more vulnerable to sharper downturns in those markets. In CIF's case, for example, the same "stress" scenario as above (i.e., doubling of NPLs) could result in €525 million of potential losses (CIF, 2012).[33] This in turn could decrease CIF's Common Equity Tier 1 ratio at end-2011 by 3.2 points to 11.4 percent. CIF's risk is also higher, as it services a higher proportion of low-income borrowers with high LTV ratios (87 percent compared to the national average of 81 percent). Only 17 percent of its loan book was secured by a third-party guarantee at end-September 2011, while almost all the remaining part of the credit book is covered by mortgages (Fitch, 2012).[34] In addition to a higher risk of negative equity, lower income households face a higher risk of job loss in the event of a macroeconomic downturn. Mitigating factors include the relatively low share of low-income borrowers overall, as fewer low-income households are able to access credit and purchase a home since the 2000s,[35] and the available evidence suggesting that highly leveraged households are also the ones with higher income levels.[36]

35. **The risk of market reversal is also higher for banks with a higher proportion of loans to (buy-to-let) investors.** As discussed above, the buy-to-let investor category has a high gearing ratio, and almost 24 percent of such borrowers have DTI ratios above

[31] For borrowers that default, the reliance on third-party guarantees implies that banks would be able to recover their losses in the case of loans covered by the guarantee; the guarantee, however, is likely to be insufficient in the case of a systemic price correction, given that—in some cases (e.g., *Crédit Logement*)—banks themselves are the shareholders of the MI providers.

[32] Banks do not lend directly to developers without a minimum reservation rate or a guarantee by a financial institution; in a context of more costly financing, credit is largely restricted to first-tier, high-quality projects.

[33] CIF's loan book comprises a higher-than-average share of floating rate loans (55 percent of total) and serves a higher-than-average proportion of low-to-middle income borrowers. Subsidized loans (i.e., PTZ and *Prêt Accession Sociale* (PAS) loans) represented 17 percent of the overall portfolio at end-November 2011. The NPL ratio was 4.1 percent at end-2011 (Fitch, 2012).

[34] The MI provider in CIF's case is CNP Caution, a subsidiary of CNP Assurances, a leading insurance company in France. The lender is indemnified by the guarantor in case of default after six missed payments. Subsidized loans also benefit from a partial state guarantee since 2007 (full guarantee before that date), whereby default is borne 50/50 by the state and the lender up to the first trigger; 100 percent by the lender up to the second trigger; and 100 percent by the state above the third trigger.

[35] Households in the first income quartile represented 6.3 percent of first-time home buyers in 2002–06, down from 8.7 percent in 1995–96 (Briand, 2010).

[36] Fifty-eight percent of households belonging to the last income decline had incurred private debt in 2010 compared to only 26 percent of households in the first decile (INSEE, 2011).

35 percent, compared to 24.5 percent for primary residence buyers (ACP, 2012a). The risk for banks is mitigated to the extent that investors are primarily high-income households who can likely access other financial assets to cushion a potential loss of employment or wealth. On the other hand, such financing is typically more subject to the investment cycle, and may therefore be a source of future price instability if investors decide to shift their asset allocation (Moodys, 2012).

36. **The broader consequences of a real estate bust are hard to predict.** In addition to direct effects on LGD, a fall in housing prices would impact economic activity through confidence, wealth, and employment effects (especially in the construction sector); the higher unemployment resulting from lower consumption and business investment, in turn, could cause a second-round effect rise in delinquencies. The CORÉFRIS estimates that a 15 percent correction would result in less than 20 percent of the recent cohorts of borrowers (those that incurred loans during 2006–10) in negative equity (CORÉFRIS, 2012). This proportion could be even more significant according to ACP data, as loans with down payments of 5 percent (15 percent) or less represented about one-half of total loans issued in 2011. However, since banks have recourse to all of a borrower's assets, and French lending standards emphasize income stability and the ability to service the loan rather than collateral value, a negative equity situation would not necessarily result in widespread default. Direct wealth effects are also likely to be small based on existing estimates for France. In addition to the direct wealth effect, a large correction could negatively affect confidence, causing households to increase their precautionary savings and/or to shift their asset allocation.[37] This, in turn could trigger further price declines and losses, especially if investor expectations of house price appreciation are durably affected. Finally, selected categories of borrowers and specialized lending institutions may be disproportionately affected, even the correction has a limited impact in aggregate (Box 4).

[37] For evidence that asset price variations impact French households' consumption both through capital gains and losses and through the confidence channel, see Arrondel et al. (2011).

Box 4. France's Vulnerability to a House Price Decline

While the contribution of residential investment to GDP growth is limited, the French economy is still dependent on consumption (Appendix Figure 1). Lower confidence and stricter lending standards will likely slow business investment in the first half of 2012, and all levels of government are constrained by the fiscal deficit targets aiming at reducing the general government balance to 3 percent of GDP by 2013. Jobless claims climbed 5.6 percent in 2011. Assuming there is no worsening of Europe's debt crisis, GDP growth is forecast to slow to 0.5 percent (official forecast: 0.7 percent) this year from 1.7 percent in 2011. Private consumption is projected to contribute 0.3 percent (52 percent) of growth this year. Since the direct wealth effect is very low in France, the impact on consumption should be small if consumers start feeling less well off. However, as evidenced during the 2000–09 crisis, confidence, and thus households' consumption plans, could be negatively affected (Arrondel, et al., 2011). In addition to direct effects on real estate exposures (higher arrears and LGD), this could indirectly have a significant impact on the banking sector, through feedback loops between the real and the financial sectors.

The impact of a house price shock on household balance sheets is potentially significant but, given small wealth effects, the impact on economic activity should be limited unless confidence is adversely affected. Although households' and banks' exposure in France is limited compared to other advanced countries, real estate is the most important storage of wealth in the economy. In 2005, non-financial assets accounted for 73 percent of households' net wealth, the bulk of which in the form of housing (31 percent) and land (38 percent).[1/] Since 1998, the increase in house prices was the main contributor to the rise in household wealth, to over seven years of gross disposable income in 2005 (up from five years in 1995–97). The wealth effect of changes in house prices is limited by (i) the absence of home equity loans; and (ii) the preponderance toward real estate as a portfolio investment being largely limited to the 13 percent richer households, which may be able to rely on other assets and income streams in the event of a downturn (INSEE, 2011).[2/] However, confidence could decline and investor perceptions of real estate as a safe haven could shift, triggering asset allocation changes and further price declines.

Even if the effect of a correction is limited in aggregate, a significant proportion of households remain vulnerable. Further deterioration in the labor market, combined with falls in house prices, could lead to financial difficulties for recent cohorts, which have taken advantage of looser underwriting practices to access credit. In 2008, due to relaxation of lending criteria in the boom years, about 40 percent of borrowers had incurred loans with LTV ratios above 95 percent, and 11 percent of them have incurred loans with LTV ratios above 100 percent (*Secrétariat Général de la Commission Bancaire* (SGCB), 2009). Such borrowers comprise mainly first-time borrowers and rental investors. The former are less likely to be covered by MI, as MI providers tend to cover only the most creditworthy borrower, and non-insured loans for the lower-quality borrowers still represent 43 percent of the total at end-2011. Some specialized lenders (e.g., CIF) concentrate a higher proportion of riskier loans and have already incurred higher-than-average NPLs.

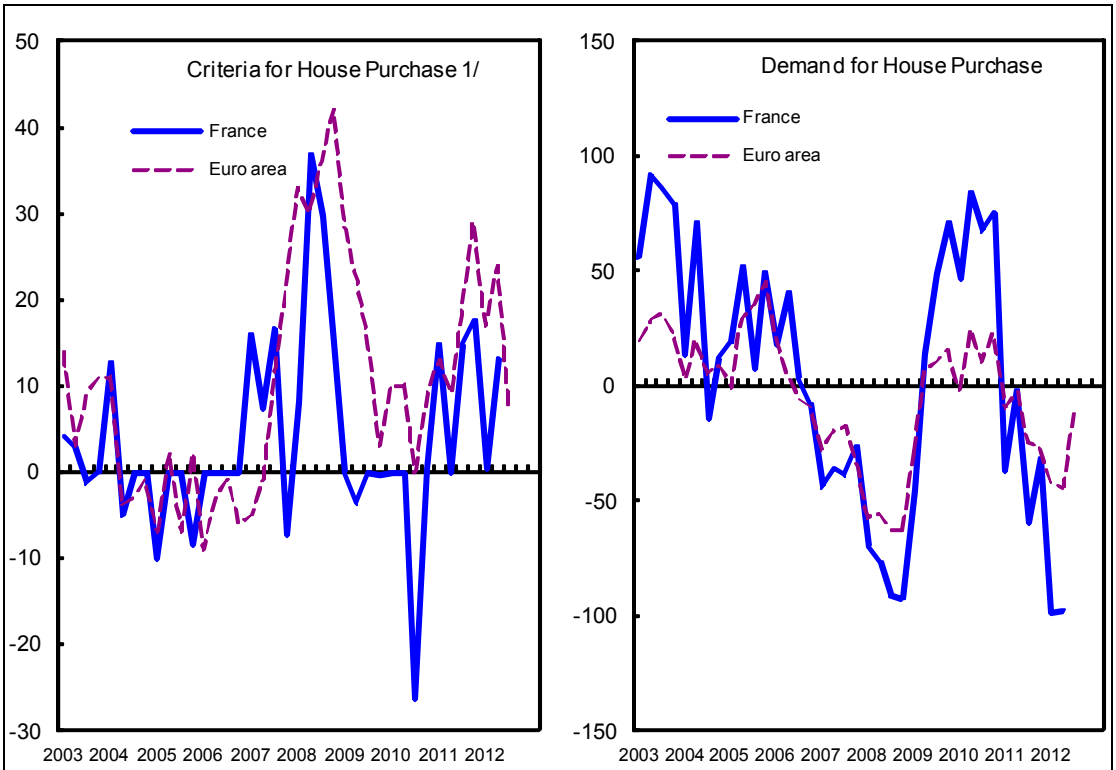
By contrast, France's growth is relatively less vulnerable to an equity price shock. In 2005, stocks and other securities accounted for only 11 percent of household's net wealth. Even adding insurance products (13 percent of households' net wealth), the share of net wealth accounted for by securities remains limited.

[1/] *Dossier: Epargne et Patrimoine des Ménages*, INSEE, 2006, available at www.insee.fr.

[2/] In France's case, empirical evidence supports the idea that the impact of wealth changes on consumption plans is decreasing with the level of wealth (Arrondel, et al., 2011).

IV. Policy Conclusions and Implications for Policy Tools

37. **Several measures have already been taken to dampen the rise in prices.** Recent fiscal measures, such as the phasing-out of the *Scellier* tax incentive and limiting access to the PTZ+ from purchases of new dwellings, have cooled demand. On the supply side, banks are reportedly tightening lending criteria, including by shortening loan duration and requiring higher down payments. With the combined withdrawal of fiscal support and restricted availability of credit, younger households in particular appear increasingly priced-out of the market and expected loan demand has fallen sharply.[38]



Sources: Global Insight/Datainsight; ECB and Bank of France.
1/ Criteria above (below) zero indicates tightening (loosening) of lending standards compared to previous 3 months. For France, as of the May 2012 survey.

38. **Changing price conditions remain a significant vulnerability.** In particular, the widespread perception of real estate as a "riskless" investment was not challenged in France during the 2008–09 crisis to the same extent that it was in other advanced countries. This

[38] According to a March 2012 FNAIM-IFOP poll, only 17 percent of households believe it is easy to obtain a housing loan, against 40 percent in December 2010. Century 21 data for *Ile de France* indicate that 21 percent of purchasers are currently below age 30 compared to 24 percent in 2011.

perception continues to fuel expectations of long-run price appreciation, potentially leading to a bubble. As noted earlier, the risk of market reversal is higher in selected markets where investors play a significant role (Paris, Alps Valley, Lubéron, and Côte d'Azur). Overall, while investors still play a limited role in the French market, their importance has risen since 2009 (Moody's, 2012). Against this background, in the residential housing market, there is a concern that limited market transparency and institutional investor participation hamper the ability of retail investors to fully understand and appraise risks. The price discovery process, for example, is likely not as efficient as in other advanced countries with more institutional investor participation (e.g., Germany), and thus more institutional transaction activity. Valuations by banks are infrequent,[39] and there are no independent property appraisals. The lack of a well-developed residential rental market, with extensive institutional investor participation, also suggests that arbitrage opportunities between renting and housing may not be fully exploited.

39. **Macroprudential measures can help alter expectations, which play a key role in bubble dynamics, by encouraging a more realistic risk assessment and preventing prices from getting further out of line with fundamentals.** The use of macroprudential tools is particularly appropriate for markets where price dynamics appear fuelled by "one-way" expectations and/or have risen far beyond underlying changes in the fundamental determinants (income growth, interest rates, demographic change, and building costs). Other government policies—such as higher interest rates—are less well suited to this purpose, as they cannot be targeted to specific asset markets or pockets of overheating. In France's case, with high unemployment, a still large output gap, and fiscal stimulus being withdrawn, overheating is not a concern and higher interest rates risk derailing the recovery.

40. **The limited evidence about the impact of macroprudential measures suggests that some of the measures could help deal with boom-busts.** Korea, for example, introduced limits on LTV and DTI ratios, which were a dampening factor on house price appreciation and transaction activity (Igan, 2011). Furthermore, the limits altered expectations, thus curbing speculative pressures. Other countries have used similar measures in recent years, with varying degrees of effectiveness (Appendix Table 4). The measures typically appear more effective when combined with supportive fiscal, structural, and/or monetary policies. For example, supportive fiscal actions could include eliminating the existing incentive for new home purchases (PTZ+), perhaps accompanied by other measures to more directly relieve supply-side constraints.

[39] In practice, banks rely on a statistical approach, as they have access to a large residential property database with a long track record.

41. **In France's case, a uniform LTV ratio of, say, 80 percent would be very simple to administer and could be considered as a first line of defense.**[40] Such a ceiling could be complemented as warranted by tighter limits on LTV ratios for selected categories (e.g., investors) and geographic zones. While there is no case for immediate introduction of macroprudential tools, given the incipient downturn in demand since late 2011, the macroprudential authority (CORÉFRIS) should continue its monitoring and its preparations to implement a macroprudential framework, to be ready to act if price dynamics start to display again signs of "one-way" expectations and/or indicators such as the real estate risk premium point to excessive risk-taking. Introduction of a uniform measure needs to be mindful also that an LTV ratio can limit transaction activity and thus the efficiency of price discovery (Igan and Kang, 2012). Ex post evaluation of effectiveness would also be desirable and will require greater data reporting requirements, each at the household, transaction, and new mortgage origination levels. Recent efforts to introduce a monthly bank reporting system to the ACP are in the right direction and need to be further expanded, toward a better understanding of the micro-dynamics of the French residential market, notably through the creation of a database of mortgage origination details.

42. **Caps on debt service-to-income ratios could also usefully complement LTV ceilings, but may need to be set at very low levels to be binding.** The current industry practice already commonly limits DTI ratios to 33 percent on average. It is not clear to what extent a regulatory cap is needed, except perhaps in the case of selected borrower categories (e.g., buy-to-let investors), if mortgage markets were to shift to variable rate products, or if interest rates were to rise significantly, constraining borrowing capacity for the new borrower cohorts.

43. **Measures that would require banks to set aside additional capital, such as higher risk weights or higher provisioning requirements for real estate, may be counter-productive at this juncture.** CRE exposures already carry higher risk weights. French banks should comply with the more demanding Basel 3 capital requirements target in the beginning of 2013, and imposing further real estate-specific requirements may result in accelerated deleveraging and a negative impact on activity. Dynamic provisioning has been used in other countries with some degree of success (e.g., Spain), but has proven insufficient by itself to arrest an ongoing real estate boom or to ensure full loss coverage, after risks have materialized. If the objective is to specifically target pockets of speculative activity, instruments such as LTV or DTI ceilings appear likely to be more effective at obtaining a counter-cyclical effect, at least in the short term.

44. **The measures need to be carefully designed and communicated to ensure their effectiveness and avoid some key implementation challenges.** The latter include the need

[40] While few advanced countries currently have such limits in place, Canada, Germany, and Sweden are exceptions (see Table 4). In other countries (e.g., Australia and the United States), there are no formal ceilings; but high LTV ratios may trigger higher capital adequacy ratings and private mortgage insurance requirements.

for appropriate calibration; the risk of hampering desirable financial development; political economy considerations (the perception that affected socioeconomic demographic groups are unjustly targeted); and the risks of circumvention.

45. **Calibration is a key implementation challenge.** In principle, threshold effects (e.g., limits on LTVs that are effective only for certain loan categories) should be avoided, as they can be easily circumvented. On the other hand, setting LTV or DTI caps that are differentiated by geographic zones and/or borrower category may be useful if the intention is to target certain "speculative" areas or income groups. Table 4 shows that other countries have often made use of such differentiation to achieve their macroprudential objective(s). Such fine-tuning, however, puts a premium on data requirements—in particular, micro-level data, disaggregated by region and household category to allow better understanding of the risks at a more granular level. Calibration will also depend, in practice, on the extent to which the regulatory authorities judge the prices to be misaligned and on the general macroeconomic environment. For example, if interest rates are very low and/or banks are already conservative in assessing debt payment capacity, limits on DTI ratios may need to be set at unusually tight levels to be binding. This in turn could cause undesirable side effects, such as an overly strong drop in transaction volumes, which in turn could hamper the normal price-discovery process, and thus market efficiency. More generally, to avoid overly restraining credit availability and housing demand when the interest rate cycle turns, the authorities should stand ready to nimbly adjust the limits as warranted by macroeconomic developments.

46. **The concern about restricting access to credit, and thus hampering desirable credit deepening, is important in the case of France where low-income borrowers face difficulty accessing credit.** It is important that policies ensuring a sufficient supply of affordable housing alternatives (e.g., rentals) are in place, as some of the more vulnerable groups (younger, lower-income categories) could be even further restricted from access to credit and home ownership if tighter LTV or DTI norms are enforced but do not trigger house price adjustments in the near term, instead mainly affect activity.[41]

47. **Political economy considerations are important to take into account, and can be addressed through an effective communication policy.** Unlike an interest rate hike that affects all housing market participants across-the-board, macroprudential measures tend to have a differentiated and clearly identified impact on different categories. The rationale and the long-run benefit of the measures needs to be clearly communicated to the public and affected MFIs. The decision to take no action also needs to be communicated to the public, with an explanation of the pros and cons of action vs. inaction. In addition to higher market transparency and frequent communication, investor education can play a greater role in

[41] More generally, policies should ensure a sufficient supply response to accommodate the projected rise in number of households due to both demographic and socioeconomic changes.

supporting realistic assessments of the real estate risk premium and the need to diversify long-term wealth portfolios more broadly across asset classes.[42]

48. **In France's case, the risk of circumvention is mainly related to the possibility of lending shifting to nonregulated intermediaries, as foreign lenders currently have only limited access to retail customers.** Nonetheless, given the already extensive foreign retail operations of some large French banks, there is a risk of circumvention through a shift of the mortgage loan portfolio to other countries in the euro area. The measures may need to be coordinated at a regional level to prevent the risk of circumvention through cross-border banking activities. Coordination at the regional level would also be desirable if there is evidence of co-movement across countries in the real estate cycles. There is, for example, strong empirical support for a relationship between the French and Spanish housing cycles, while the German one possesses its own dynamics (Ferrara, et al., 2010). IMF staff analysis similarly finds strong co-movement between the French and U.K., as well as Dutch, Italian, and Spanish housing cycles, and weaker concordance with Germany's housing cycle.

Table 2. France: Concordance between French Housing Cycles and Selected Advanced Countries' Cycles

Period	Germany	Italy	Spain	Belgium	Netherlands	United States	United Kingdom	Japan	Canada
1980s	0.63	0.68	0.68	0.83	0.83	0.70	0.70	0.63	0.83
1990s	0.38	0.85	0.78	0.50	0.40	0.48	0.73	0.65	0.65
2000s	0.15	0.77	0.77	0.83	0.71	0.67	0.85	0.17	0.81

Sources: OECD and Aneja, Cheng, and Poirson (forthcoming).

49. **In conclusion, the current price adjustment does not call for immediate macroprudential action.** However, the French authorities should continue to monitor closely the building of risk in this area by pursuing data collection efforts, and continue to think about how to develop macroprudential tools (such as LTV limits). A uniform LTV limit would be straightforward to administer. However, the timing of policy action should be based on a further careful monitoring of risks. The fine-tuning of LTV ceilings by region, while potentially more effective, would require more disaggregated data on loan origination and practices, and needs to be supported by an independent valuation industry or more frequent appraisals. The authorities should press ahead with preparations for the implementation of a macroprudential framework (in line with European Union (EU)-level requirements), and give further consideration to the pros and cons of such measures in the French context. Whether the final decision is to implement the tools or not, it should be

[42] Housing is currently the single most important asset to hold for retirement purposes, with life insurance savings also serving that purpose to a more limited extent.

communicated to the public, and to the affected MFIs, along with its rationale. More frequent communication by the macroprudential authority is desirable more generally to help improve housing market transparency and assessment of risks by market participants. In this context, the CORÉFRIS could consider strengthening its communication, including through its ongoing effort to engage with private sector analysts and industry participants.

REFERENCES

Autorité de Contrôle Prudentiel, 2012a, Evolution des Risques sur les Credits a l'Habitat, *Analyses et Synthese,* February, February 2012a, pp. 5.

—2011, Synthese de l'Enquete sur le Financement de l'Habitat en 2010, *Analyses et Syntheses,* July 2011.

—2012b, Synthese de l'Enquete sur le Financement de l'Habitat en 2011, *Analyses et Syntheses.* July, 2012b.

AEW Europe, 2012, *European Real Estate Quarterly Q4 2011,* 2012.

Aneja, Sumit, Kevin Cheng, and Hélène Poirson, Forthcoming, *How Do Housing Cycles Interact with Other Financial Cycles in the Euro Are,.* s.l. : Forthcoming, IMF Working Paper (Washington:Internation Monetary Fund).

Antipa, Pamfili and Rémy Lecat, 2012, *"Bulle Immobilière" et politique d'octroi de crédit: enseignements d'un modèle structurel des marchés francais et espagnol de l'immobilier résidentiel.* s.l. : Banque de France, 2012, mimeo.

Arrondel, Luc, Frédérique Savignac, and Kévin Tracol, 2011, *Wealth Effects on Consumption Plans, French Households in the Crisis,.* Mimeo, 2011, Banque de France.

Banque de France, 2012, Enquete mensuelle aupres des banques sur la distribution du credit en France, *StatInfo,* May, 2012.

Borgy, Vladimir, Laurent Clerc, and Jean-Paul Renne, 2012, *Measuring Aggregate Risk: Can we Robustly Identify Asset-Price Boom-Bust Cycles?* s.l. : Banque de France, 2012, mimeo.

Briand, Pierrette, 2010, L'Accession a la Propriete dans les Annees 2000, *INSEE Premiere,* May, 2010, p. 1291.

Centre d'Analyse Stratégique, 2011, L'évolution des prix du logement en France sur 25 ans, *La Note d'Analyse,* April, 2011, p. 221.

Clévenot, Mickael, 2011, *Les prix immobiliers en France: une évolution singulièr,* s.l. INSEE, 2011, June.

Conseil de la Régulation Financière et du Risque Systémique, 2012, *Rapport Annuel du Conseil de la regulation financiere et du risque systemique,* 2012.

Crédit Immobilier de France, 2012, January, *The Pure Mortgage Player,.* s.l. Available via Internet: www.credit-immobilier-de-france.fr .

European Covered Bond Council, 2011, *ECBC European Covered Bond Fact Book,* European Mortgage Federation/European Covered Bond Council (Brussels).

European Mortgage Federation, 2010, *Hypostat 2009: A Review of Europe's Mortgage and Housing Markets,* 2010.

Ferrara, Laurent and Siem Jan Koopman, 2010, *Common Business and Housing Market Cycles in the Euro Area from a Multivariate Decomposition.* s.l. : Banque de France, 2010. January.

Fitch, 2012, *Crédit Immobilier de France Développement (CIFD),* s.l. : FitchRatings, January.

Friggit, Jacques, 2010, *Le prix des logements sur le long terme,* s.l. : Conseil Général de l'Environnement et du Développement Durable, 2010. March.

Guerra, I., Forthcoming, *France FSAP: Banking System Developments and Prospects,* IMF Staff Financial Sector Assessment Program Report(Washington: International Monetary Fund).

Hott, Christian and Terhi Jokipii, 2012, Housing Bubbles and Interest Rates, Available via the Internet: www.voxeu.org, March, 2012.

Igan, Deniz, and Heedon Kang, 2011, *Do Loan-to-Value and Debt-to-Income Limits Work? Evidence from Korea,* IMF Working Paper 11/97 (Washington: International Monetary Fund).

———, and Marcelo Pinheiro, 2009, *Exposure to Real Estate Losses: Evidence from the U.S. Banks,* IMF Working Paper 09/79 (Washington: International Monetary Fund).

———, and Prakash Loungani, Forthcoming, *Global Housing Cycles,* s.l, IMF Working Paper (Washington: International Monetary Fund).

International Monetary Fund, 2011, *France 2011 Article IV Consultation-Staff Report,* IMF Staff Country Report No. 11/211 (Washington: International Monetary Fund).

———2011, *France 2011 Article IV Consultation—Staff Report*, IMF Staff Country Report No. 11/211 (Washington: International Monetary Fund).

Institut National de la Statistique et des Études Économiques, 2011, *Les Revenus et Le Patrimoine des Menages,* Paris, France. Available via the Internet: www.insee.fr .

Jacquot, Alain, 2007, La Demande Potentielle de Logements: Un Chiffrage a Horizon 2020, *Notes de Synthèse du SES*, Vol. 165 (April–May–June, 2007).

Loungani, Prakash, 2010, "Housing Prices," *Finance & Development*, Marc 2012, Vol. 47, Number 1, pp. 16–19.

Moody's Analytics, Inc, 2012, *European CMS, 2012 Central Scenarios* (February).

———2012, *French Banks: Ability to Absorb a Moderate House Price Correction, but Risks Increase,* 2012.

Poirson, Hélène, 2011, Toward a Growth-Oriented Tax System for France, *France-Selected Issues*, IMF Staff Report No. SM/11/174, July, 2011, pp. 17–43.

Standard & Poor's, 2012, *French Banks Can Weather a Falling Housing Market,* s.l. : S&P (April).

Secrétariat Général de la Commission Bancaire, 2009, Synthèse de l'Enquete du Secretariat General de la Commission Bancaire sur le Financement de l'Habitat en 2008, *Bulletin Officiel du CECEI et de la Commission Bancair* (July), pp. 16–28.

Slok. T., 2012, *Global Home Prices— Several Countries Still Overvalued,* s.l. : Deutsche Bank, 2012.

The Economist, 2012, "Global House Prices: Downdraft—European House Prices Are Finding it Harder to defy Gravity," March 31, 2012.

Wood, Gavin A., 1992, The Tax Treatment of Housing, Economic Issues and Reform Measures, *Housing Finance International* (June).

Appendix Table 1. France: International Comparison of Taxation Regimes

	Transfer tax or stamp duty	Tax on imputed rent	Interest tax deductibility		Negative gearing	Depreciation	Capital gains tax (CGT)		Preferential Tax Treatment to Savings		Annual wealth tax	Land tax	
	Owner	Owner	Owner	Investor	Investor	Investor	Owner	Investor	Owner	Investor	Owner/Investor	Owner	Investor
Australia	5.5%	no	no	yes	yes	yes (d)	no	half	no	no		limited	yes
Canada	yes	no	no	yes	yes (e)	yes	no	half	no (i)	no		yes	yes
France	5.1%	no	no	yes	limited (g)	yes	no	no (f)	yes	no	yes	limited	limited
Germany	3.5%	no	no	no	yes	yes	no (f)	no (f)	yes	no		limited	limited
Netherlands (a)	yes	yes	yes	na	na	no	na	na	yes	yes	yes	yes	yes
New Zealand		no	no	yes	yes	yes	no	no				limited	limited
Sweden	yes		yes	yes	yes	no	limited	limited	no	no		yes	yes
Switzerland (b)		yes	yes	yes	no	outlays	yes	yes				yes	yes
UK	0-4%	no	no	no	no	no	limited	yes	no	no		yes	yes
USA	yes	no	yes	yes	limited (h)	yes	no	yes	no	no	yes	limited	yes

Source: Wood (1992) and Yates (2009).
Notes: Under CGT, 'limited' means homeowners may defer payment provided the proceeds of sale are reinvested in housing. Under land/property tax, 'limited' refers to property owner charges along the lines of council rates, which are linked to local services and need not move proportionately with property values.

(a) The Netherlands levies a tax on net wealth using an assumed rate of return, so negative gearing is not possible.

(b) Swiss homeowners pay tax on imputed rental income, net of interest and renovation costs.

(c) CGT is levied in Australia and Canada at half the taxpayer's marginal rate if the holding period exceeds one year, but in Canada gains resulting from changes in the cost base due to depreciation are levied at the full rate.

(d) For buildings constructed after 1985.

(e) Only cash expenses, not depreciation, can be negatively geared in Canada.

(f) Provided property owned for at least 15 years (France) or 10 years (Germany). Holding period was increased to 30 years in France in 2012.

(g) Negative gearing allowed up to a set limit and interest costs may not exceed gross rent.

(h) Rental property expenses cannot be deducted against unrelated labour income in the US, which effectively limits negative gearing to professional investors and developers.

(i) Abolished in the 1970s.

Appendix Table 2. France: Total Return by Asset Class, 1990–2011

(In percent)

	CAC40	FTSE100	FTSEurofirst 300	EPRA UK	EPRA France	EPRA EURO	5YR GOV UK	5YR GOV FR	5YR GOV EMU	Inflation France	IPD France Office	IPD France Residential
All sample period												
Mean	9.88%	10.36%	10.31%	9.88%	14.81%	10.97%	8.22%	6.78%	2.80%	1.74%	5.93%	6.41%
St Dev	26.69%	19.59%	22.13%	31.88%	27.65%	26.26%	6.11%	5.26%	2.53%	0.72%	6.06%	8.84%
MHR	42.60%	29.10%	42.53%	62.57%	41.65%	48.80%	0.43%	2.09%	3.48%	0.00%	3.30%	10.50%
Autocorr	-6.33%	-2.34%	5.56%	-4.27%	5.47%	2.54%	0.56%	-3.13%	23.53%	13.79%	71.01%	65.27%
Sharpe Ratio	0.37	0.53	0.47	0.31	0.54	0.42	1.34	1.29	1.10	2.41	0.98	0.73
2002-2011												
Mean	5.18%	6.68%	3.23%	11.91%	21.46%	15.82%	5.64%	4.84%	2.32%	1.76%	9.64%	9.34%
St Dev	31.20%	24.74%	24.63%	41.01%	35.86%	34.73%	3.65%	3.73%	2.91%	0.72%	6.04%	7.68%
MHR	42.60%	29.10%	42.53%	62.57%	41.65%	48.80%	0.00%	0.00%	3.48%	0.00%	0.00%	2.53%
Autocorr	-16.88%	-18.15%	-2.16%	-4.74%	3.73%	-0.04%	-27.39%	-1.70%	49.86%	-36.49%	45.95%	34.68%
Sharpe Ratio	0.17	0.27	0.13	0.29	0.60	0.46	1.55	1.30	0.80	2.47	1.59	1.22

Source: IPD, Datastream, and AEW Europe.

Appendix Table 3. France: Asset Class Correlation Matrix (Q1 1990–Q1 2011—Total Return Series)

	CAC 40	FTSE 100	FTSEurofirst 300	EPRA UK	EPRA France	EPRA EU	5YR GOV UK	5YR GOV FR	5YR GOV EMU	AEW RE 40% LTV
CAC 40	1.00	0.87	0.53	0.58	0.64	0.96	-0.18	-0.19	-0.18	0.36
FTSE 100		1.00	0.55	0.52	0.59	0.92	-0.06	0.05	-0.01	0.31
FTSEurofirst 300			1.00	0.74	0.76	0.59	-0.01	-0.01	-0.09	0.39
EPRA UK				1.00	0.93	0.57	0.00	-0.08	-0.08	0.34
EPRA France					1.00	0.67	-0.05	-0.14	-0.13	0.38
EPRA EU						1.00	-0.14	-0.13	-0.14	0.38
5YR GOV UK							1.00	0.81	0.83	-0.40
5YR GOV FR								1.00	0.79	-0.35
5YR GOV EMU									1.00	-0.35
AEW RE 40% LTV										1.00

Source: AEW Europe.

Appendix Table 4. France: Use of Macroprudential Tools by Country

(As of April 2012)

	Main policy objective (Macroprudential authority)	LTV ceiling (year introduced)	DTI ceiling (year introduced)	Real-estate-specific loan loss provisioning	Real-estate-specific risk weights	Accompanied by other measures	Effectiveness score (0-4, 4 being the best outcome)	Impact on house price appreciation and transaction activity (measure, horizon of the effect)	Impact on credit growth (measure, horizon of the effect)
Argentina		de facto 80 percent	30 percent	no	no	restriction on profit distribution (2010)			
Australia		no, but high LTV may trigger higher capital adequacy ratings and private mortgage insurance requirements	no, but private mortgage insurance may require limits	yes	yes				
Belgium		no	no	yes	yes				
Bulgaria	limit build-up of risk for banking sector/cut lending growth and minimize systemic risk	70 percent for mortgages risk-weighted at 50 percent (2004-07)	no	no	increased risk weights for mortgages with LTV above 70 percent (2004-05)	credit ceilings, high reserve requirements, and restricted profit distribution	2	no	moderate
Canada		80 percent for privately insured mortgages and 90 percent for government insured mortgages; 85 percent when refinancing; lower limits for commercial investors	45 percent for all existing debts	no	no	maximum term for mortgages reduced to 35 years (2008); maximum amortization periord for new government mortgages with LTV above 80 percent reduced to 30 years			

Appendix Table 4. France: Use of Macroprudential Tools by Country (continued)

(As of April 2012)

	Main policy objective (Macroprudential authority)	LTV ceiling (year introduced)	DTI ceiling (year introduced)	Real-estate-specific loan loss provisioning	Real-estate-specific risk weights	Accompanied by other measures	Effectiveness score (0-4, 4 being the best outcome)	Impact on house price appreciation and transaction activity (measure, horizon of the effect)	Impact on credit growth (measure, horizon of the effect)
China	curb credit growth and housing price inflation (People's Bank of China)	lowered from 80 percetn to 70 percent for first homesand 40 percent for second homes (2004-11). Guidelines: 40 percent for third homes.	50 percent (2004)			caps on credit growth; higher provision ratio; folding back of tax incentives; higher mortgage rates on 2d and 3rd homes, tighter eligibility criteria for land development projects, tighter monetary policy, and supply of affordable housing (2010-11)	3	yes, both for prices and sales	yes
Croatia	contain rapid credit growth/reduce procyclicality	75 percent (2006)	100 percent on total repayment obligations (2006)	yes (2004-06)	increased risk weight on loans to debtors with currency mismatch (2005)	monetary and fiscal tightening and various speed limits on credit (2003 and 2007-08)	3	yes	yes (short-lived)
Cyprus		80 percent for primary residence and 70 percent for commercial real estate	no	no	no				
Finland		Recommendation: 90 percent	no	no	no				
Germany		80 percent for residential and 60 percent for commercial (60 percent for Pfandbriefe)	no	no	indirectly as the treatment depends on the value of the property				
Greece	contain credit expansion	no	indicative: 40 percent (2005)	no	yes	temporary credit controls (1999-2000)	1	no	no

Appendix Table 4. France: Use of Macroprudential Tools by Country (continued)

(As of April 2012)

	Main policy objective (Macroprudential authority)	LTV ceiling (year introduced)	DTI ceiling (year introduced)	Real-estate-specific loan loss provisioning	Real-estate-specific risk weights	Accompanied by other measures	Effectiveness score (0-4, 4 being the best outcome)	Impact on house price appreciation and transaction activity (measure, horizon of the effect)	Impact on credit growth (measure, horizon of the effect)
Hong Kong SAR	moderate mortgage growth and property price inflation; limit risks posed by the housing market boom (HKMA)	up to HK$8 million property value, 70 percent with loan cap of HK$4.8 million ; HK$ 8-12 million, 60 percent, with loan cap of HK$6 million; 50 percent for the rest and for commercial properties (2010)	50 percent including payments on all loans (early 2000s)	no	no	ceiling of 15 percent p.a. on mortgage loan growth (1994); exposure to property limited to 40 percent (1994-98); stamp duty increase for transactions above HK$20 million and increased land supply (2010)	3	inconclusive evidence on effectiveness, as boom driven by external buyers from Mainland China rather than domestic buyers	?
Hungary	address excessive FX lending to households	75 percent (2010); lower limits for FX loans ; 70 percent for loans funded by covered bonds	yes	yes	no	reduction in housing subsidies (2003-04); efforts to promote financial literacy (2006); modification in banks' scoring systems and ban on FX mortgage lending (2010)		House prices stabilized in 2005	significant reduction in mortgage lending growth following cuts in subsidies but expansion of foreign-currency loans
India	reduce procyclicality	80 percent for residential real estate loans (2010)	no	housing loans with 'teaser' rates (2010)	housing and commercial real estate (2004-07 and 2010)	higher reserve requirements and general provisions (2004-07)	2	yes	?
Ireland	dampen credit growth; strengthen banks				on portion of mortgages exceeding 80 percent of the value of the property (2006)		1	yes (but could be due to the own dynamics of the market)	yes (but could be due to the own dynamics of the market)

Appendix Table 4. France: Use of Macroprudential Tools by Country (continued)

(As of April 2012)

	Main policy objective (Macroprudential authority)	LTV ceiling (year introduced)	DTI ceiling (year introduced)	Real-estate-specific loan loss provisioning	Real-estate-specific risk weights	Accompanied by other measures	Effectiveness score (0-4, 4 being the best outcome)	Impact on house price appreciation and transaction activity (measure, horizon of the effect)	Impact on credit growth (measure, horizon of the effect)
Israel	Central bank	increased risk weight for floating-interest-rate mortgages greater than NIS 800,000 with LTV above 60 percent (2010)				hike in the benchmark interest rate (2010)		none so far	?
Latvia		90 percent for loans exceeding 1,000 times the minimum salary (2007); abolished in 2008			for loans with LTV above 70 percent	raise in refinancing rates and reserve requirements (2004-05); increase in land and mortgage registration fees; taxes on speculative transactions; income certification requirements		no	moderate (2 months)
Malaysia	moderate excessive investment and speculative activity in residential market	70 percent for third residential property purchases (2010); otherwise 90 percent	no	cyclically-based as provisions increase with the period in default regardless of collateral value	for non-performing residential mortgage loans(2005)	tax measures (2009) and hike in the price floor for foreign buyers (2010)	2	yes	yes
Netherlands		112 percent with the portion exceeding 100 percent being redeemed in 7 years	yes	no	no				
Norway	curb credit growth and property price inflation; address high housing debt	guidelines: 90 percent for housing loans and 75 percent for home equity loans (2010)	guidelines: about 30 percent (2010)	no	for loans with LTV above 60 percent (1998); abolished in 2001		2	significant (1 year)	yes

Appendix Table 4. France: Use of Macroprudential Tools by Country (continued)

(As of April 2012)

	Main policy objective (Macroprudential authority)	LTV ceiling (year introduced)	DTI ceiling (year introduced)	Real-estate-specific loan loss provisioning	Real-estate-specific risk weights	Accompanied by other measures	Effectiveness score (0-4, 4 being the best outcome)	Impact on house price appreciation and transaction activity (measure, horizon of the effect)	Impact on credit growth (measure, horizon of the effect)
Poland	mitigate credit and FX risk; strengthen buffers (Commission for Financial Supervision)	tighter LTV for FX mortgage lending based on loan maturity (2010)	50-65 percent ; 42 percent for FX loans to households (2010)	no	for FX residential loans (2008)	abolished mortgage interest rate deductibility (2007); limits on FX lending (2002, 2006, and 2010); restriction on profit distribution (2009)	2	no	yes, FX lending
Portugal	moderate cycles in specific sectors; safeguard banking system soundness			no	for loans with LTV above 75 percent (1999)	formation of a national council of supervisors (2000); interest rate rise	2	?	significant
Russia		60 percent for loans purchased by state agency	45 percent for loans purchased by state agency	yes	no				
Singapore	ensure a stable and sustainable property market; reduce further speculative demand	caps reduced to 80 percent (2010); 60 percent on second and subsequent mortgages ; 50 percent for non-natural individuals (2011)	no	no	no	caps on exposures; stimulus measures for property developers discontinued (2009); sellers' stamp duty on residential land and properties sold within a year (2010-11); supply measures; curbs on foreign ownership (2010)	3	yes, slowdown in price appreciation for apartments; drop in sales	

Appendix Table 4. France: Use of Macroprudential Tools by Country (continued)

(As of April 2012)

	Main policy objective (Macroprudential authority)	LTV ceiling (year introduced)	DTI ceiling (year introduced)	Real-estate-specific loan loss provisioning	Real-estate-specific risk weights	Accompanied by other measures	Effectiveness score (0-4, 4 being the best outcome)	Impact on house price appreciation and transaction activity (measure, horizon of the effect)	Impact on credit growth (measure, horizon of the effect)
South Korea	maintain house price appreciation rates within the zero and nominal GDP growth rate band (Financial Supervisory Service, FSS)	50-60 percent in non-speculative areas; 40 percent in speculative areas (2002-09)	40 percent for loans used to buy houses in the speculative zones for single borrowers under 30 or married borrowers and the spouse has debt (2005-09)	no	no	tax measures	4	decrease in monthly percent change in real price level: 0.5 percent (LTV, six months); decrease in monthly percent change in number of transactions: 16 percent (LTV, three months); 21 percent (DTI, three months)	decrease in monthly percent change in household debt levels: 0.2 percent (DTI, three months)
Spain	stem credit growth and build a buffer (Banco de Espana)	no	no	based on the 'latent loss' in loan portfolios (on average 10 percent of net operating income) (2000), differentiated by high/low LTV (2004)	for loans with LTV above 95 percent for residential property and 80 percent for others (2008)	no	2		only a brief decline in 2000
Sweden	Riskbank	85 percent (2010)				tighter monetary policy (2006)		no (monetary policy); ? (LTV)	no (monetary policy); ? (LTV)

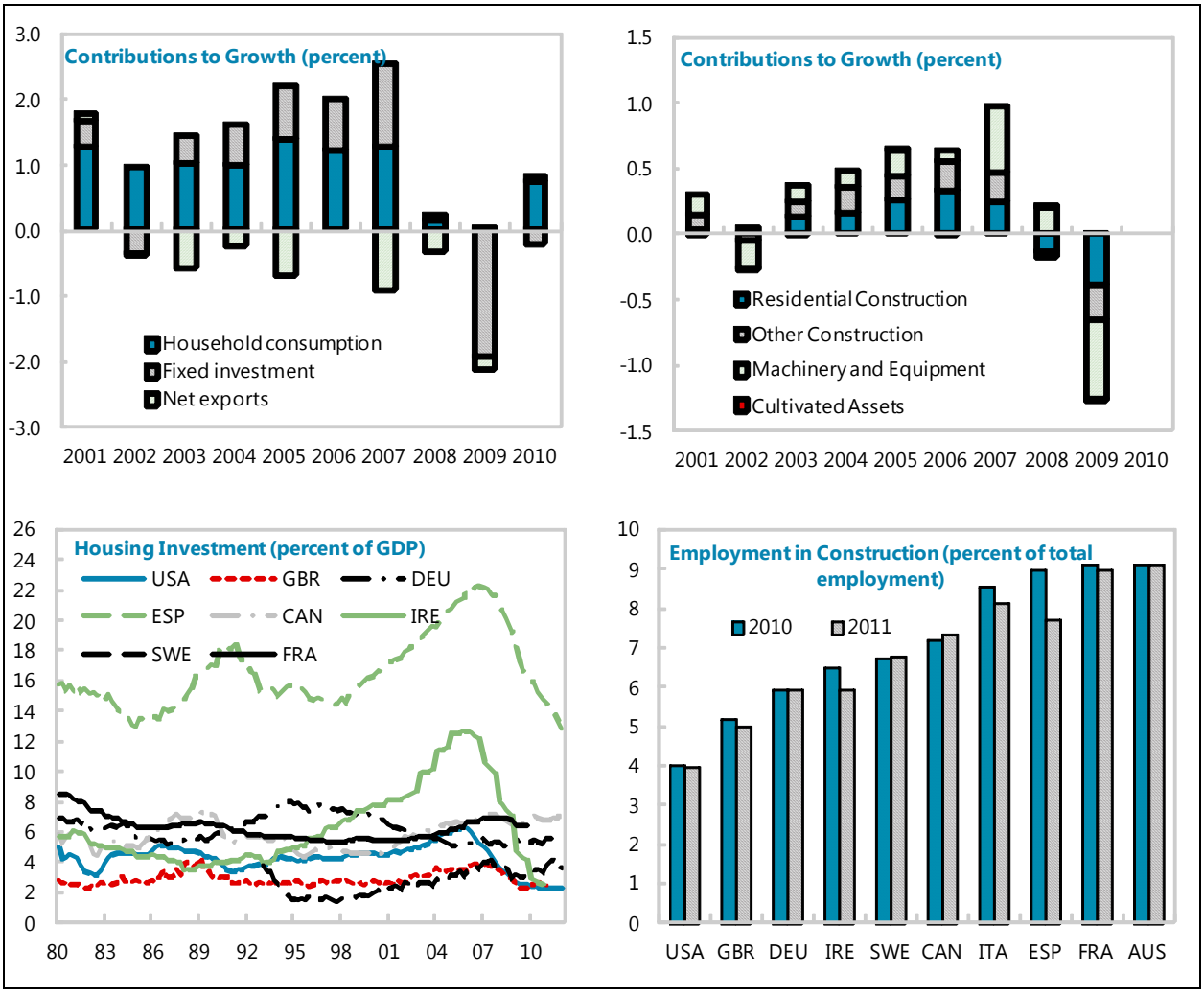
Appendix Table 4. France: Use of Macroprudential Tools by Country (concluded)

(As of April 2012)

	Main policy objective (Macroprudential authority)	LTV ceiling (year introduced)	DTI ceiling (year introduced)	Real-estate-specific loan loss provisioning	Real-estate-specific risk weights	Accompanied by other measures	Effectiveness score (0-4, 4 being the best outcome)	Impact on house price appreciation and transaction activity (measure, horizon of the effect)	Impact on credit growth (measure, horizon of the effect)
Thailand	reduce the cyclicality of the real estate sector; reduce currency risk	70 percent (2003); 80 percent for high-value loans (2009); 90 percent fof condos (2011); 95 percent for low-rise housing units (2012)	yes (2004)	no	for high value loans with LTV above 80 percent (2009) and lower value residential loans with LTV above 90 percent (2011)	limits on net open currency positions (2002)	3	?	?
Ukraine		100 percent	yes			increase in minimum CAR and monetary tightening (2004); higher reserve requirement ratios (2008)	1	no	no
United States		mortgage insurance required for LTV >80 percent	no	no	yes	anti-predatory lending laws in some states		no	lower subprime loan origination in states with an anti-predatory lending law in place
Uruguay	build up buffers and limit cyclicality; reduce currency risk	90 percent for 'special loans'	20-30 percent	subject to a dynamic setting that applies to all loans (2001)	for FX loans (2005)				

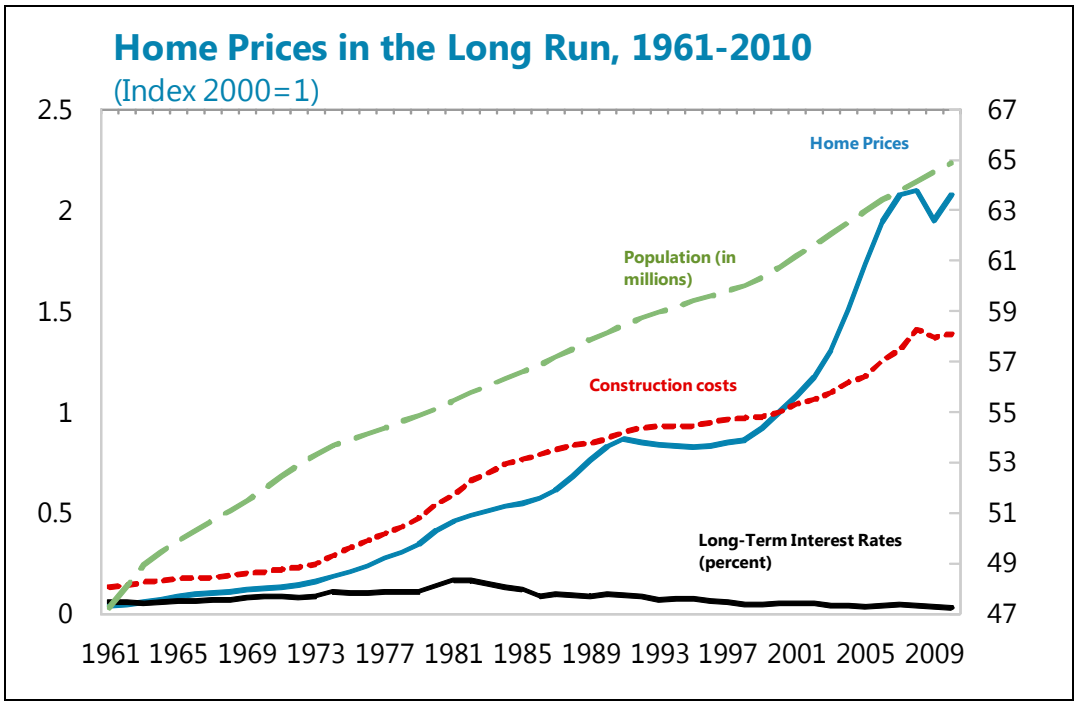
Sources: Crowe et al. (2011); IMF (2011); Igan and Kang (2011); Lim et al. (2011).

Appendix Figure 1. France: Building Investment



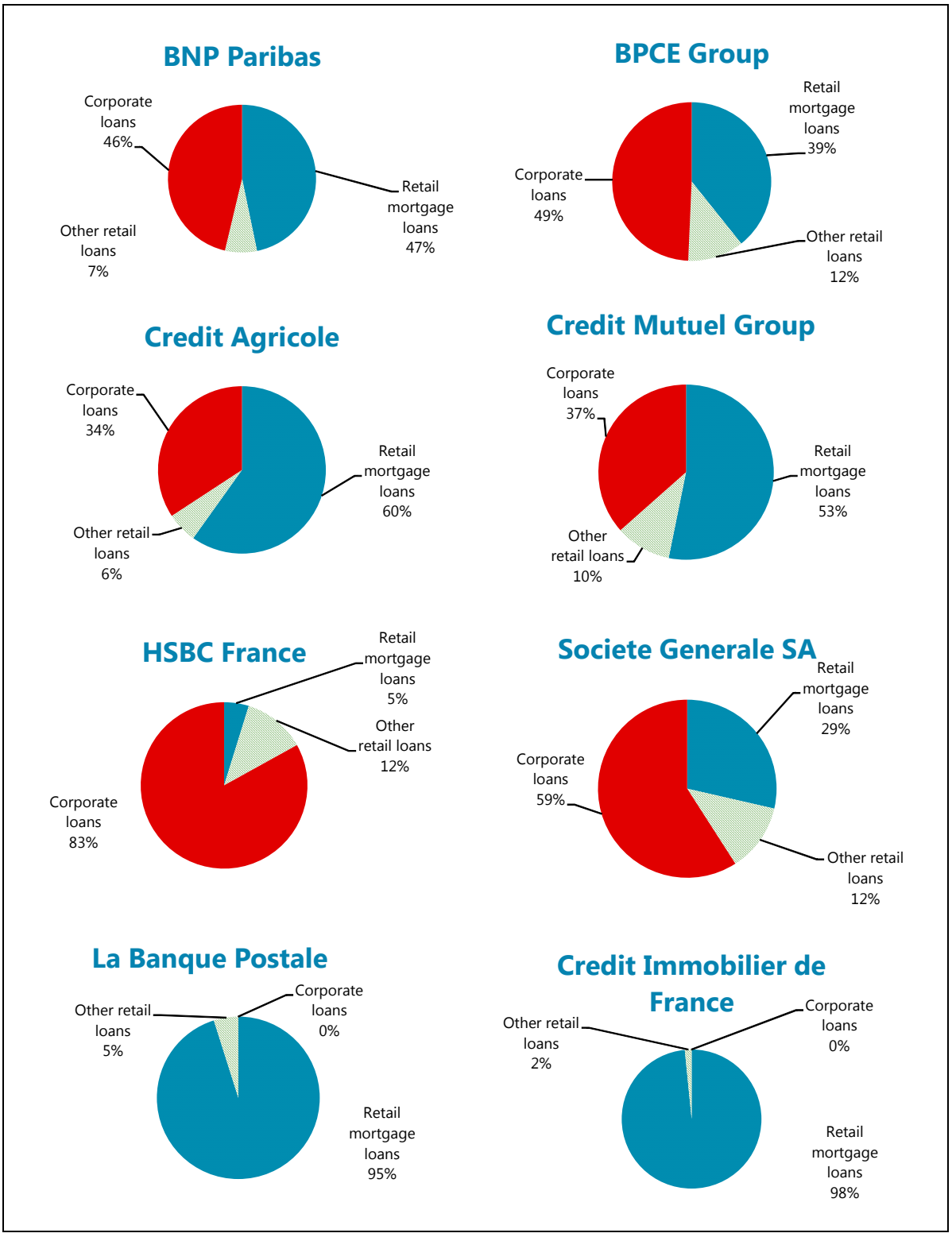
Source: Haver Analytics.

Appendix Figure 2. France: Fundamental Factors Influencing House Prices



Source: CGEDD, calculated from INSEE and BdF; available at http://www.cgedd.developpement-durable.gouv.fr/rubrique.php3?id_rubrique=138.

Appendix Figure 3. France: Mortgage Exposures of French Banks



Sources: SNL and banks' public information.