

MEMO

French commercial real estate market Updated analysis and stress test results

I. Market situation and analysis update

The analysis presented by the *Haut Conseil de stabilité financière* (HCSF, French macroprudential authority) in April 2015 has been supplemented, clarified and discussed with representatives of various market participants. This memo outlines these developments and presents the results of the coordinated themed stress tests carried out in the second half of 2016 at the HCSF's request.

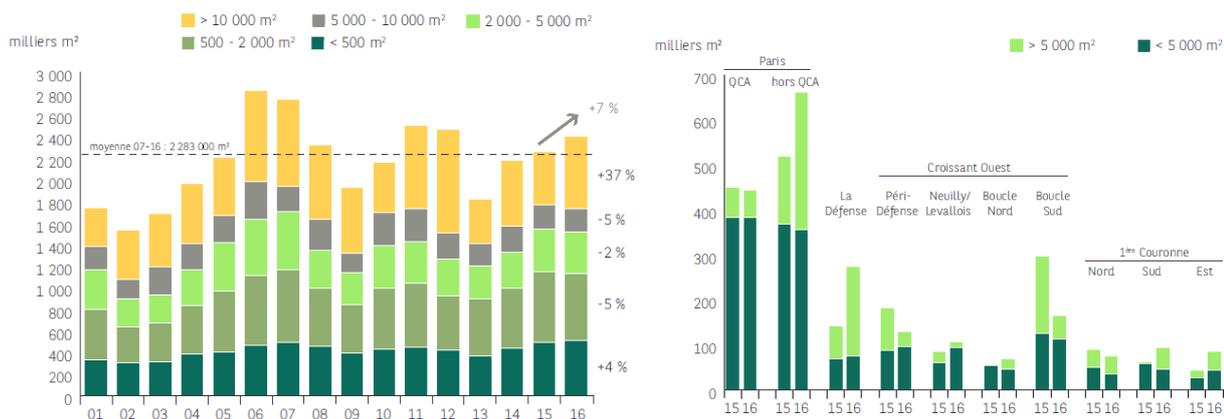
A. Overview of the commercial real estate¹ market at the end of 2016

The office market in Île-de-France (Paris region) improves

The latest available data on the office market in Île-de-France indicates an improvement in (the efficiency of) the market. In an expanding job market, take-up of office space² in Île-de-France reached 2.4 million sqm in 2016, an increase of 7% on the previous year and above the 10-year average of 2.3 million sqm.

The inner-city Paris market continues to be dynamic. The La Défense business district is producing an exceptional performance that is beginning to overturn the situation of recent years, which has been characterised by a number of available large floorspace units (a situation also observed in the broader Péri-Défense district). The office real estate market in the inner and outer rings (the *petite couronne* and *grande couronne*, respectively) of Île-de-France (excluding the Western Crescent, or *Croissant Ouest*) has performed solidly in recent months, but transaction volumes remain well below their long-term average. Although there have been a few major transactions in the east and particularly the south of the inner ring, activity remains sluggish in the north. In general terms, these areas are suffering from the competition of inner-city Paris (and, to a lesser extent, La Défense) in terms of high-quality assets.

Graphique 1 - Office take-up in Île-de-France

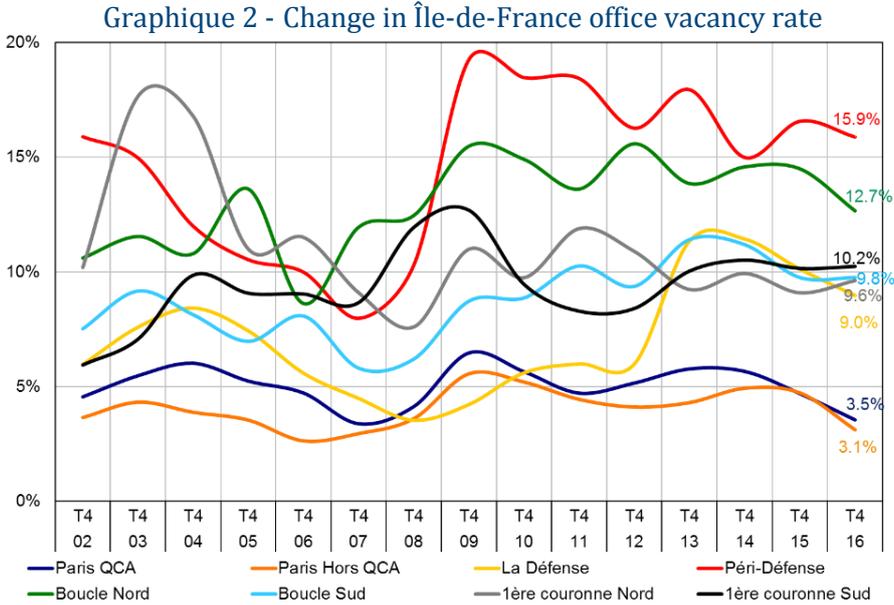


¹ For the purpose of this memo, commercial real estate is defined as all real estate assets held by professional parties that do not occupy these properties and that earn recurring income from these properties. The scope also includes corporate real estate (offices, shops, warehouses and service centres) and 'residential' assets (excluding social and individual landlords). Unless explicitly stated otherwise, residential assets are however excluded from this memo, which focuses on corporate real estate.

² Take-up of office space corresponds to all leases or sales to the occupier (as opposed to an investor) of premises for office use. The scope is therefore different to that of commercial real estate and corresponds to the market on which these assets are leased. Pre-marketing, turnkey and own-account transactions are included, but re-lettings and sales to existing tenants are excluded. Premises that have been vacated during the period are not taken in account. Take-up is expressed in square metres of usable floor space.

The combination of healthy commercialisation and fewer deliveries of new (or newly restructured) buildings compared with 2015 led to a shrinking of the immediate supply³ in 2016: the total immediately available floor space in Île-de-France was 3.5 million sqm at the end of 2016, down approximately 10% year on year, while the reduction in new floor space saw an even sharper downturn.

The drop in supply translates into a sharp reduction of the vacancy rate. Defined as the ratio of immediately available office space to total office space, the economic vacancy rate⁴ is a good indicator of short-term pressure on rents. This rate was 6.7% in Île-de-France at the end of 2016, compared with 7.4% a year earlier, and had fallen in nearly every geographical area. However, the vacancy rate continues to differ considerably from one area to the next: it varies from 3.5% in inner-city Paris (considered to be in a shortage of supply) to 15.9% in the Péri-Défense district and continues to increase in the inner ring north segment (see Graph 2).



Source: Immostat, BNP Paribas Real Estate; CBD: Central Business District

The fall in supply appears to have had a stabilising effect on rents paid by new corporate tenants. With headline rents broadly unchanged compared with 2015, the change was due to a stabilisation of rent incentives (rent holidays, capital expenditure, step-up leases), which had increased at the end of 2015 and beginning of 2016. The change in rents in Île-de-France is being driven by rents in Paris, with the low vacancy rate there causing pressure on rents, which itself results in a considerable drop in rent incentives. We can expect to witness a slight reduction in these incentives in certain segments, including small premises in the Central Business District (CBD) of Paris. However, this increase in rental values, driven by a reduction in immediate supply and substantial demand for new properties, remains limited. In the outlying areas, where supply is greater, there has been less of a change in economic rents.

Recent developments suggest an overall improvement in the functioning of the Île-de-France office market, except for the inner and outer rings (excluding the Western Crescent).

³ Immediate supply is the volume of floor space that is immediately available. Properties under notice or seeking new tenants are excluded from immediate supply until the current tenant leaves.

⁴ In addition, MSCI publishes an institutional vacancy rate covering rental properties owned by institutional investors. Since it measures losses stemming from unpaid rents, this indicator is more in tune with how investors perceive the market than the traditional vacancy rate. At present, both indicators are following a similar trend.

Trends in the Île-de-France non-office commercial real estate market

In the retail segment, business continues to be hampered by firms adopting a wait-and-see stance due to economic and political uncertainties. Moreover, the fundamental polarisation of the market between prime and secondary assets is growing. As companies attempt to streamline their operations, there are more closures and moves to more profitable and busier locations, which in turn are pushing up the vacancy rate and considerably reducing the rental values of less attractive locations. However, expansions and redevelopments of the most established sites have seen new shopping centre floor space increase sharply, with the nearly 300,000 sqm delivered in 2016 second only to 2013. Retail parks also performed extremely well in 2016, boosted by increasing numbers of retailers deciding to close stores that are no longer generating sufficient revenues.

The logistics segment remained active in 2016 against a background of far-reaching changes in the sector caused by rapidly evolving practices and requirements (e-commerce, pressure on delivery times, etc.).

The services segment (apartment hotels, hotels, healthcare facilities, etc.) appears to have been negatively affected by the downturn in tourism in 2016. However, there is little data available to shed further light on recent changes in this sector.

Transaction volumes stable in 2016

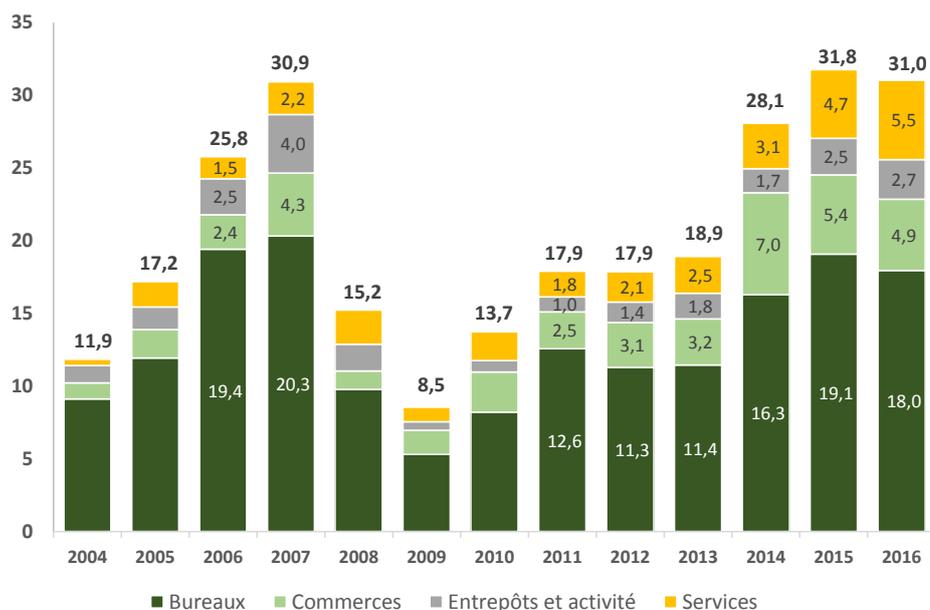
The commercial real estate market continues to attract investors due to relatively attractive returns in the current low interest rate environment. Transactions in the commercial real estate market⁵ represented €31bn in France in 2016, broadly in line with the figure for the previous year. When taking offices, retail spaces and logistics/industrial premises into account solely⁶, the cumulative transaction volume for 2016 was €25.6bn, down slightly from the figure for 2015 (see Graph 3).

- Despite a slight decline on 2015, offices remained the preferred market segment for investors in 2016. With investment of €18bn, including numerous sales of new premises, the office market accounted for nearly 60% of the total amount invested in commercial real estate in 2016 (70% when excluding services related properties).
- The retail segment was extremely active at the start of 2016, but has been less so for several months now. Deals in the segment were worth €4.9bn in the year as a whole (compared with €5.4bn in 2015), which accounted for 16% of the total amount invested in commercial real estate in 2016. The slowdown was due in particular to a shortage of popular assets: the shopping centre market, for example, appears to be slowing because of a lack of sought-after prime assets. The retail segment was essentially sustained by the purchase of second-hand properties for restructuring.
- The €2.7bn invested in logistics/industrial premises was in line with the previous year and accounted for around 9% of the total amount invested in commercial real estate in 2016.
- Investors' growing taste for new asset classes boosted activity in the services segment (e.g. healthcare facilities and hotels), which with €5.5bn accounted for 18% of the total amount invested and is now second only to the office market, having overtaken the retail segment.

⁵ i.e. excluding residential properties.

⁶ i.e. excluding properties used for services.

Graphique 3 - French commercial real estate transactions (in €bn) by segment



Source: BNP Paribas Real Estate

With 75% of the national commercial real estate transaction volumes⁷, Île-de-France remains the dominant geographical area for the market. The Île-de-France property market continues to benefit from the healthy performance of the office segment as well as considerable investor interest in its most dynamic tertiary sectors.

The market seems to be increasingly dominated by French investors, including the large-deal segment. They were responsible for over 70% of the amount invested in commercial real estate in France in 2016. However, although they dominate the office and retail segments, French investors are less active in industrial investment property, where US and UK private equity funds seem to be the main players. Asian funds also returned to the French market in 2016.

Price rises slowdown in 2016

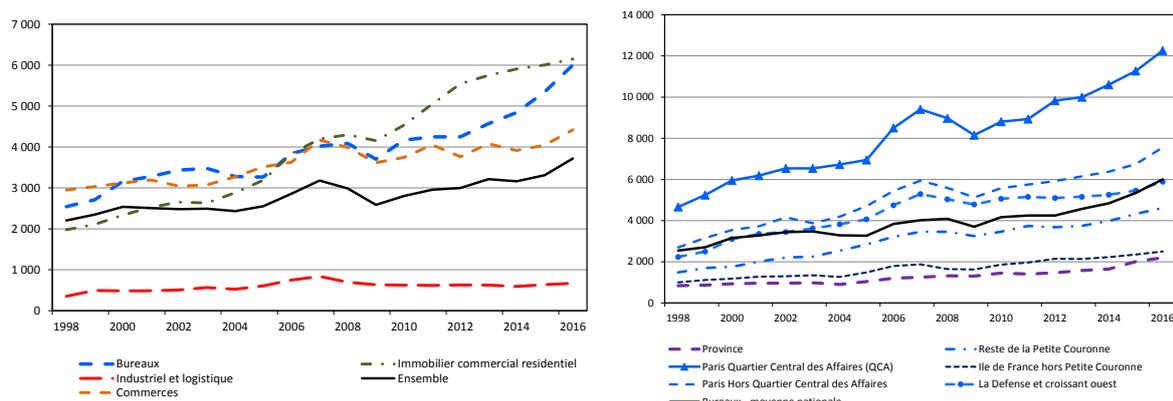
In the last two years, the Paris office market - particularly in the CBD - has seen a particularly sharp increase in fair value amid an environment characterised by low interest rates and vacancy rates, thereby sustaining rents⁸ (see Graph 4). Fair values continued to rise in 2016.

The rental profitability of Paris office space remains below its historical average. It is, however, in line with Europe's other main business districts. Moreover, the portfolio asset yield spread versus long-term government bond yields remains above its 15-year average (see Appendix 3).

⁷ Stripping out properties used for services, a total of €19.6bn was invested in Île-de-France in 2016, down 4% on the previous year.

⁸ On investors' balance sheets, properties are valued on the basis of expert valuations (so-called fair values) in which rental income, tenant quality and asset characteristics (such as quality and location) are discounted.

Graphique 4 - Fair value of commercial real estate in France (€/sqm), by segment and, for offices, by geographical area



Source: MSCI, like-for-like data.

In addition, transaction prices⁹, which serve as an additional indicator to fair values, have increased with investors' growing appetite for real estate. This is particularly the case in the Paris office segment, which has prime assets and very low rental risk in view of the attractiveness of the city and a shortage of assets available to investors.

Outlook remains uncertain

There remains considerable uncertainty in 2017 as regards borrowing conditions and the economic and geopolitical outlook. Anticipation of rising interest rates could impact demand¹⁰, and perhaps the capacity, of participants to finance their operations or maintain their exposure. We have also witnessed renewed confidence among participants as well as an upturn in economic activity that appears to be reflected in improved construction project forecasts.

Industry professionals expect demand in the office sector to remain steady in 2017, or perhaps to experience a slight decrease. However, on average, investors expect take-up in Île-de-France to be marginally lower in 2017¹¹. Yet, the shortage of supply in recent months in certain geographical areas has encouraged investors and developers to engage in new construction or renovation projects. The large number of new projects started over the last few months has pushed total floor space under construction towards 1 million sqm. Consequently, deliveries of new projects are expected to increase throughout 2017 and 2018. This is particularly true in Paris CBD (where close to 300,000 sqm are under construction or have been granted planning permission), the Western Crescent and the La Défense district. Unlike the projects currently under way, a majority of those that have merely been granted planning permission or are pending authorisation are located in the inner and outer rings.

These new assets to the market may affect the downward trend seen in the vacancy rate in 2016¹², which could be detrimental to economic rents. Most professionals seem to agree, however, that Paris CBD will continue to see growth in the value of the prime real estate segment because of the dearth of these kind of assets. Conversely, rents in La Défense are projected to drop more sharply.

⁹ Immostat has recently published a price-per-sqm index, taken as a simple average of prices recorded over the last 12 months. This index does not take the quality of the purchased assets into account. The number of transactions and the varied nature of the assets involved is not conducive to a transaction price index being drawn up using hedonic methods.

¹⁰ The rate increase trend that began in November 2016 is expected to continue and, in the absence of a rapid change in prices or rents, the narrowing spread between rental income and long-term French government bond yields is likely to reduce the relative advantage of commercial real estate.

¹¹ Source: MSCI Barometer.

¹² Nevertheless, the investors surveyed for the MSCI Barometer predict that the vacancy rate will dip in 2017.

B. An updated diagnosis

The commercial real estate market is characterised by considerable asset diversity and significant segmentation (according to the nature and location of assets, including on a fairly detailed level for Île-de-France). The buoyant market in Paris itself contrasts with a duller one in the outer ring, with a rising obsolescence rate and a number of construction and renovation projects that does not match rental demand (or its physical, technical or environmental standards). On average, the production cycle of commercial property lasts between two and six years, which means there are often significant gaps between the decision to invest, the start of the construction phase and the actual delivery of the asset.

More generally, the low interest rate environment and search for yield has increased investors' appetite for this kind of asset and thus explains the high transaction volume. Faced with a dearth of extremely high quality assets (typically prime office space in Paris CBD), and depending on their individual circumstances and preferences, investors are being attracted to new types of property (warehouses, hotels, retirement homes, private hospitals, student residences, etc.) and/or more risky transactions (higher exposure to rental risk, unsecured transactions, restoration projects, etc.). However, major investors remain choosy and reluctant to take on debt, while lending criteria are still strict for the most part.

Even though the market situation seems to be improving somewhat (renewed rental demand, more stable transaction volumes, values being checked), there are two main risks to be watched in the coming quarters:

- **Risk 1: a rapid increase in interest rates in the context of still somewhat sluggish growth.** In such a scenario, rents could not be raised and the spread between rental income and long-term government bond yields would narrow, which would make commercial real estate less attractive. This phenomenon would be accentuated by real estate losing its 'safe haven' status, thereby reducing demand from institutional and individual investors, who would turn to other asset classes. Even if sales remain limited, the drop in fair value and lower demand could cause a reduction first/initially in volumes and then in price.
- **Risk 2: a build-up of oversupply in the rental market.** Such a scenario may arise from inertia in the supply of real estate assets (especially if the supply is sensitive to price increases while project completion time is long) and poor coordination between demand and supply, leading to the wrong type of assets coming to market¹³, considerable demand for commercial real estate assets from investors (based on what has happened in previous years) or existing properties quickly becoming obsolete. This would lead to an unintentional increase in stocks and vacancy rates.

Both these risk factors would require the price of real estate assets to fall in order to ensure a return of rental profitability.

II. Implementation of multi-faceted stress tests

In line with the diagnosis of the French commercial real estate market and in view of the two major risks outlined above (a rapid increase in interest rates and oversupply) both conducive to a fall in prices, the *Banque de France* has designed stress test scenarios that can assess how a drop in commercial real estate asset prices would affect the financial sector.

The two-year impact of three commercial real estate price shocks has been analysed by the French Prudential Supervisory Authority (ACPR) in terms of effects on banks and insurance firms, and by the French Financial Markets Authority (AMF) in terms of effects on investment funds. The stress test carried out was a sensitivity analysis; it does not provide a full model of an asset price correction scenario over the considered period (see Appendix 2).

¹³ Since developers are not dissuaded from cutting back on new construction projects by continual price rises, they may find that the market is saturated when the project is delivered (excess supply in the event of less demand for floor space when delivery takes place a few years later). If the developer has pre-sold the property to investors, these investors will face greater rental risk. Otherwise, the developer risks struggling to sell the property when it is completed.

A. Three shocks

Shock 1: A drop in prices in line with their distance to long-term average

The first shock corresponds to the price adjustment required for rental profitability to return to its long-term average¹⁴. The correction would be around 15% in 2015 for the entire French commercial real estate sector and close to 30% for offices in Paris CBD. Appendix 3 shows rental profitability graphs for offices and estimated corrections for the various available geographical segments.

This shock was designed as follows:

- (i) Applied across all offices in Île-de-France, a simulated price correction of 30% (required to restore rental profitability for Paris CBD offices);
- (ii) Applied across all other segments, a simulated price correction of 15% (closing the observed spread between current profitability and its long term average across all French commercial real estate).

Shock 2: A drop in line with past experience

The second shock corresponds to the price drop witnessed during the real estate crisis of the early 1990s: after a price surge during the second half of the previous decade (office prices had more than doubled between 1986 and 1992¹⁵, prompting a severe drop in rental profitability that required a price reduction of 20%-25% to bring it back to the average levels seen between 1986 and 1992), office prices hit a ceiling in 1991. A period of sharp price reductions began in 1993 and would last until 1998, with prices falling by 30%-35% overall during that period.

Based on these estimates, the shock corresponds to a price correction of 30% for offices in Île-de-France¹⁶.

Shock 3: A severe drop

Shock 3 is an extreme shock (as yet never observed) which, for all offices in Île-de-France, is based on an assumption of a price correction that would wipe out the 60% by which the ECB estimates French commercial property to be overvalued¹⁷. This would give us a stress scenario, with a hypothetical price drop twice as severe as the one in Shock 2.

1. **Shock 1:** 15% price drop across the entire French commercial real estate market (excluding Île-de-France offices) and 30% price drop for Île-de-France offices, in line with the adjustment required to restore rental profitability (return to the long-term average).
2. **Shock 2:** 30% price drop for Île-de-France offices, in line with the reduction witnessed during the property crisis in France in the early 1990s.
3. **Shock 3:** 60% price drop for Île-de-France offices, as the most extreme shock.

B. Implementation of stress tests

Implementation of stress tests for banks

The exercise was carried out by the five main French banking groups covered by the ACPR General Secretariat's half-yearly survey on the financing of real estate professionals¹⁸. The banks simulated

¹⁴ We have used rental profitability itself, as opposed to its relationship with 10-year bond yields, because it provides an intrinsic measurement of the change in price of the assets compared with the yield they generate (net rental income), whereas the spread versus the 10-year yield shows the investment opportunity specifically in a low-rate environment.

¹⁵ Source: MSCI.

¹⁶ By comparing with the first shock, we can measure how the reduction will affect the rest of the commercial real estate market.

¹⁷ ECB, Financial Stability Review, November 2015, page 45, chart 1.39.

¹⁸ BNP Paribas, Société Générale, Crédit Agricole Group, BPCE, Crédit Mutuel Group.

how the three shocks would impact their portfolios in terms of probability of default (PDs) and loss given default (LGD). Implementation took place as follows:

- For Île-de-France offices, which account for a smaller part of their exposure¹⁹, the banks were able to perform a line-by-line analysis: for each scenario, they calculated the loan to value (LTV)²⁰ and the interest coverage ratio (ICR)²¹ post shock; the ICR reflects the borrower's ability to honour its debt (this is seen as a proxy for the PD), while the LTV identifies the exposures that would not be sufficiently covered by the post-shock value of the asset in question (this is seen as a proxy for the LGD). The banks then examined each case where (i) the stressed LTV ratio was greater than 95% and (ii) the ICR was less than 2.5 in order to determine whether the position should be declared in default²².
- For their portfolios that do not include Île-de-France offices, which account for most of their exposure, the banks directly modelled each exposure's post-shock LGD and PD. However, the choice of PD and LGD models was dictated by the available data. Consequently, in order to estimate the two stressed parameters, the banks used, depending on the case in question, their internal models or rating systems (default according to rating, taking the post-shock LGD into account), or resorted to the benchmarks used for the EBA's stress tests in 2016²³.

Implementation of stress tests for insurers

The exercise was carried out by 19 insurance companies (the 16 life insurance firms that took part in the EIOPA stress tests, accounting for 75% of the market and representative in terms of type and size of entity²⁴, and the three main non-life insurers²⁵) and took place using two different approaches:

- A bottom-up approach, at the end of which the companies measured how the different scenarios would affect their capital and, on an optional basis, their solvency capital requirement (SCR), taking into account their ability to absorb losses through technical reserves and deferred taxes. The modelling of how a property shock would affect the shares and bonds of real estate companies was based on assumptions provided by the *Banque de France*²⁶. In the majority of cases, the companies used their ACPR-validated liability projection tools to create the regulatory balance sheet that results from each scenario, in the same way as for regulatory reports. Lastly, the (optional) recalculation of the SCR was, more often than not, performed using the same method as the one used to draw up regulatory reports²⁷, although some insurers used proxies²⁸ that were documented in their explanatory notes.
- A top-down approach, at the end of which the ACPR used the information it received from the insurers on their real estate investments to evaluate the impact of the different scenarios. Unlike the bottom-up approach, the estimated losses on property assets were capitalised in full (loss-absorption methods were not taken into account).

Implementation of stress tests for investment funds

For the most part, undertakings for collective investment (UCIs) that invest significantly in real estate are *sociétés civiles de placement immobilier* (SCPIs) and *organismes de placement collectif immobilier* (OPCIs). SCPIs are closed-ended funds and as such do not undertake to honour redemption requests in the absence of simultaneous subscriptions. A property market crash would indeed reduce

¹⁹ At 30 June 2015, Île-de-France offices accounted for 20.3% of French bank's exposure to commercial real estate in France.

²⁰ $LTV^* = LTV / (1 + \text{price variation})$. In the absence of an assumption about changes in rents, these were deemed to be unaffected.

²¹ A ratio of the borrower's gross operating profit - or EBITDA - to the annual interest expense across all types of debt.

²² When it analyses the commercial real estate sector, Standard & Poor's uses an ICR limit of 2.5 to separate the three best and three worst ratings in terms of leverage. See "*Key Credit Factors for the Real Estate Industry*", Standard & Poor's Ratings Services, 19 November 2013.

²³ In that case, the stressed PD and LGD was calculated by applying an EBA-defined multiplying coefficient (benchmark) to the initial PD and LGD.

²⁴ La France Mutualiste, La Mondiale, La Mondiale Partenaire, CNP Assurances, Allianz Vie, Predica, Sogecap, Cardif Assurance Vie, Groupama Gan Vie, ACMN Vie, Suravenir, Axa France Vie, Assurance du Crédit Mutuel Vie, Aviva Vie, Generali Vie and BPCE Vie.

²⁵ Groupama SA, Axa France IARD and Allianz IARD.

²⁶ Namely a factor of 1.5 for shares of companies that specialise in property (real estate companies, etc.) and 0.7 for bonds of these companies. This means that a 30% drop in property prices would cause real estate companies' shares to fall by 45% and their bonds by 21%.

²⁷ Revaluation plus aggregation of the different modules and sub-modules.

²⁸ Extrapolation of the SCR obtained from internal sensitivity analysis performed using the different scenarios.

the value of fund units but would not force the management companies of these funds into a fire-sale of their assets or to contravene their regulatory or contractual requirements in order to honour pending redemption requests. SCPIs had a total net capitalisation of €43.5bn at the end of December 2016²⁹.

On the contrary, OPCIs are open-ended vehicles. They are aimed at both professional and retail investors.

- The former, known as OPPCIs, use particularly strict mechanisms to limit redemptions in order to reduce the share of liabilities that may be subject to redemption requests to a negligible level. Nearly all OPPCIs use a mechanism that blocks redemption requests exceeding 0.1% of the total value of the fund's shares or units. In exchange, they have a short life span prior to liquidation. This means that although they are open-ended funds from a legal perspective, OPPCIs function in a similar way to closed-ended funds and have no liquidity risk in the event of a slump in property prices. Net assets under management in these funds totalled €38bn as of 31 December 2016³⁰.
- Retail OPCIs, for their part, are not able to limit redemption requests as significantly. This means that a property market crash accompanied by a substantial influx of redemption requests could threaten the/such funds' ability to operate in compliance with the rules set out in their prospectus and force them to sell off several real estate assets in less-than-favourable conditions. There are currently 13 such funds, with their net assets under management having more than quadrupled since the end of 2014 to €9.28bn (of which €6.94bn are with the two biggest funds)³¹.

In view of the identified liquidity risks, the AMF asked all retail OPCI management companies to carry out the stress test scenarios proposed by the *Banque de France*. The funds included in the exercise were managed by eight management companies and included 96.2% of total retail OPCI assets under management³².

Should property prices crash, retail OPCIs could experience substantial outflows. Consequently, the AMF ensured that the asset-related scenarios were supplemented by the following assumptions:

- Shocks 1 and 2: outflows of 40% of initial liabilities, spread evenly over two months. The outflows would begin at the net asset value that undergoes the shock i.e. the value of one unit, which is generally calculated on a regular basis (every fortnight for open-ended property funds).
- Shock 3: outflows of 50% of initial liabilities, also spread evenly over two months.

These outflow assumptions are based on recommendations made by the French Association of Property Investment Companies (ASPIM)³³ when the AMF began to request stress tests as part of the OPCI authorisation process: the scale of the outflows (40%) is the same as the hypothesis used by ASPIM but the time period is shorter (two months versus one year) in order to reflect the severe nature of the real estate shock. For Shock 3, the outflow rate was increased to 50% over two months.

In addition, OPCI units are often subscribed *via* unit-linked life insurance policies. The insurance company that markets the policy is therefore the entity that subscribes to the fund. While a drop in property prices might prompt life insurance policyholders to reduce their exposure to OPCIs, an insurance company is likely to keep its units and wait for more favourable market conditions and thus not react immediately to asset reallocations or redemptions carried out on the life insurance policy.

Amid such an environment, the outflow assumptions used in the stress tests seem to be particularly demanding, in terms of both scale and abruptness.

²⁹ Source: ASPIM/IEIF estimate.

³⁰ Source: AMF.

³¹ Source: AMF as at 1 March 2017.

³² Of the 11 retail OPCIs that were active when the stress tests were rolled out, only one new fund, consisting primarily of cash, was not included. This fund was the only retail OPCI run by the asset management company in question.

³³ Since these outflow assumptions cannot be based on precedent (OPCIs are a relatively new phenomenon and there has not been a recent property crisis), it is possible to look abroad for comparisons. German open-ended property funds, which are similar to OPCIs, are a mature market with €184 bn of assets under management at the end of 2016 (source: ECB). Since 1995, they have never experienced a year of significant outflows, the largest being around 8.7% in 2006. Source: BVI (*Bundesverband Investment*), the German Investment Funds Association.

III. Results of stress tests

A. Limited exposure of stress test participants

French banks have fairly limited exposure to commercial real estate (€166.2bn at the end of June 2016, of which €97.4bn was in France) given their balance sheet totals (overall exposure of around 2.5% at the end of June 2016, and French exposure over total assets of 1.5%). With property purchases by institutional investors not relying on leverage, banks' exposure tends to be to development projects and possibly the listed real estate trusts (SIICs, French REIT-type vehicles), with managed exposure (typically, a listed real estate company has an LTV ratio of 40%-45%). In these conditions, only a widespread, sharp decline in prices would affect counterparties (full or partial default of the holder).

Insurers' exposures are also relatively limited: excluding unit-linked policies, as at the end of 2015, property investments on average accounted for 4.9% of the total amount invested by the entities included in the stress tests, of which 2.3% were offices in Île-de-France. In addition, these assets are held with a view to generating recurring income: since yield is determined by the purchase price and rental income, rather than by any latent capital gains, a drop in prices would not provide insurers with any particular incentive to sell their property assets, provided rents are not reduced.

Closed-ended funds (in practice, most SCPIs) and real estate companies, which are managed using similar logic, have very little exposure to liquidity risk since a unit cannot be sold unless an investor wishes to subscribe at the same time. Liquidity risk is borne by the unitholders, but a drop in prices creates no immediate pressure to sell the fund's property assets and these funds would continue to do deals in a broadly opportunistic fashion.

Open-ended funds (OPCIs) are the most likely to have to sell their real estate assets because of falling prices: such a drop could cause outflows since unitholders would rather sell up than run the risk of realising capital losses should the downturn persist. In exchange for the commitment to honouring redemption requests during their lifetime, OPCIs have only partial exposure to the property markets, with the rest invested in financial instruments. The share of gross assets invested in real estate must be at least 60% after three years of operation, including 51% invested in physical or unlisted property assets. The remaining assets may consist of shares, bonds or money market instruments. The financial assets of OPCIs tend to mainly comprise shares or bonds of listed real estate companies, which offer more liquidity than physical or unlisted real estate but are only partly correlated to property prices. Lastly, OPCIs are required to hold cash in the amount of at least 5% of gross assets.

B. The stress test results show no evidence of systemic risks in the commercial real estate market

The stress tests carried out by the ACPR and the AMF on the basis of the three shocks suggest that the impact of these different risks would be fairly limited for the French financial sector as a whole and would not, in theory, have any direct systemic consequences:

- in the banking sector, the stress tests would overall have a very small impact on solvency, owing to the limited balance sheet exposure to commercial real estate: indeed, the average impact on CET1 regulatory capital ratios of a 15% slump in commercial property prices and 30% in Île-de-France office prices – the least favourable scenario for banks – would be two or three basis points of risk-weighted assets;
- in the insurance sector, only one entity would have marginally insufficient capital (ratio of 99.3%) in a scenario where Île-de-France office prices drop by 60%, the most severe scenario for insurers (before stress, this entity displays the worst SCR ratio of all companies in the sample as well as above-average exposure to real estate);
- for open-ended funds (OPCIs), the stress tests (which add an assumption of significant outflows to the standard price assumptions) suggest that OPCIs' ability to honour redemption requests would not be threatened, but they also suggest that certain funds may be hamstrung by minimum liquidity requirements for a few months. Some of these funds may also be at risk of failing to meet diversification requirements (maximum ratio of physical or unlisted property assets)³⁴.

³⁴ However, it should be pointed out that certain OPCIs may be more vulnerable to ratio breaches than others, not because they are more susceptible to the vagaries of the market but because they impose stricter investment constraints than their competitors.

Appendix 1: Overview of stress test results by participant type

Banks	Insurers	OPCIs																								
<p>Limited average impact on CET1 regulatory capital ratio (0.2 to 2.4 basis points depending on the scenario).</p> <p>Impact of the three scenarios on the CET1 ratio of the sample banks</p>  <table border="1" data-bbox="143 699 730 1050"> <tr> <td>12,8330%</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>-0,0242%</td> <td>-0,0024%</td> <td>-0,0129%</td> </tr> <tr> <td>Moyenne au 31/12/2015</td> <td>Impact moyen scénario 1</td> <td>Impact moyen scénario 2</td> <td>Impact moyen scénario 3</td> </tr> </table>	12,8330%					-0,0242%	-0,0024%	-0,0129%	Moyenne au 31/12/2015	Impact moyen scénario 1	Impact moyen scénario 2	Impact moyen scénario 3	<p>Greater and more varied average impact on SCR coverage ratios</p> <p>Only one insurer displayed an SCR coverage ratio of (marginally) less than 100%, and that was for Shock 3.</p> <p>Impact of the three scenarios on the coverage ratio of the sample insurers</p>  <table border="1" data-bbox="819 703 1406 1050"> <tr> <td>194,5%</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>-14,0%</td> <td>-8,1%</td> <td>-18,0%</td> </tr> <tr> <td>Moyenne au 31/12/2015</td> <td>Impact moyen scénario 1</td> <td>Impact moyen scénario 2</td> <td>Impact moyen scénario 3</td> </tr> </table> <p>NB: impact measured only for entities <u>that have recalculated their SCR</u> (12 of 18).</p>	194,5%					-14,0%	-8,1%	-18,0%	Moyenne au 31/12/2015	Impact moyen scénario 1	Impact moyen scénario 2	Impact moyen scénario 3	<p>OPCIs remain able to honour simulated redemption requests.</p> <p>Certain funds constrained by minimum liquidity requirements for a few months.</p> <p>Constraints on diversification requirements (maximum ratio of physical or unlisted property assets)</p> <p>These impacts are common to the three scenarios, although Shock 3 provided a sterner test for all the OPCIs involved.</p>
12,8330%																										
	-0,0242%	-0,0024%	-0,0129%																							
Moyenne au 31/12/2015	Impact moyen scénario 1	Impact moyen scénario 2	Impact moyen scénario 3																							
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Appendix 2 - How the choice of method affects the type of potential scenario

Three types of exercise have been devised to measure how a shock affects the commercial real estate market.

Bottom-up, EBA-style stress test

This kind of approach involves:

- defining one or more complete scenarios on several macro-financial variables and a given time period, conditional upon a shock on the commercial real estate market;
- defining a methodology for the tests (see EBA methodology);
- asking banks, insurers and funds to perform the stress tests.

Top-down stress tests

This kind of approach involves:

- defining one or more complete scenarios on several macro-financial variables and a given time period, conditional upon a shock on the commercial real estate market;
- defining a methodology for the tests;
- carrying out the stress tests internally within the relevant regulator.

OIS-style sensitivity approach

This kind of approach involves:

- defining one or more adverse scenarios for the commercial real estate price index;
- creating an explicit report for commercial real estate that defines which exposures should be considered in order to record them accurately (along with the corresponding risk metrics) for the different operators (banks, insurers and funds) and check that the stress tests are being performed properly;
- asking institutions to apply the *Banque de France*-defined shocks to these exposures and to monitor the results.

A different implementation, a choice suited to the objective

The type of scenario depends on the approach used. For options 1 and 2, it is necessary to define a scenario for several macroeconomic variables. For option 3, it is above all necessary to underpin the nature and size of the shocks on the commercial real estate sector.

Option 3 was used to enhance responsiveness and raise awareness among operators. In particular, it allows for a more flexible base of *ad hoc* requests for sensitivity analysis by the French High Council for Financial Stability (HCSF), beyond the case of commercial real estate. It also makes it easier to communicate with banks and insurers that were fully engaged in EBA/EIOPA regulatory stress tests.

The first two options would have allowed for consideration of an adverse scenario involving a detailed description of how the shock is transmitted to the commercial real estate market, but the complexity of the analysis would have given rise to greater modelling vagaries, and all the risks of

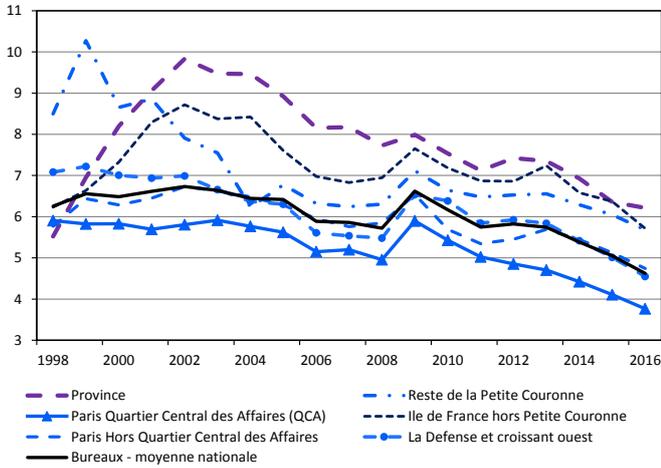
errors entailed (there is no clear link between macroeconomic variables and commercial real estate), and would have provided results that were harder to interpret.

The first option could have been deemed excessive for banks and insurers already having to produce bottom-up stress test results as part of the EBA and EIOPA's 2016 testing programmes.

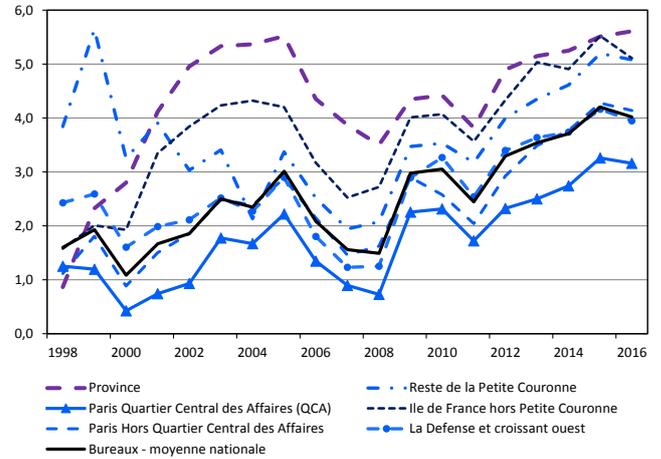
The second option uses stress testing tools that are devised for internal risk analysis (or backtesting) and are not institutional tools from a bank's perspective, which either use EBA-style stress tests (option 1) or QIS-style tests (option 3).

Appendix 3: Rental profitability and estimate of price difference required to restore average rental profitability (field: office commercial real estate)³⁵

Rental profitability (%)



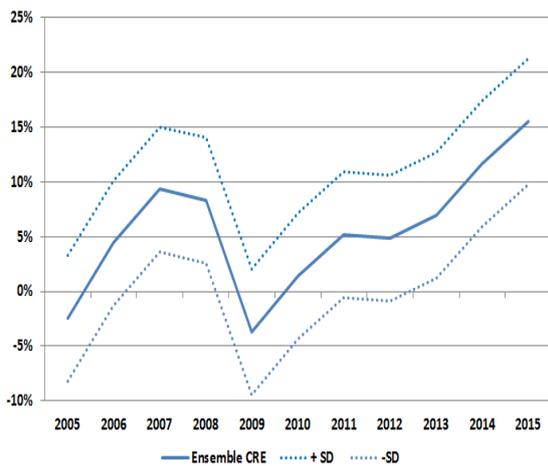
Spread between rental profitability and 10-year OAT (%)



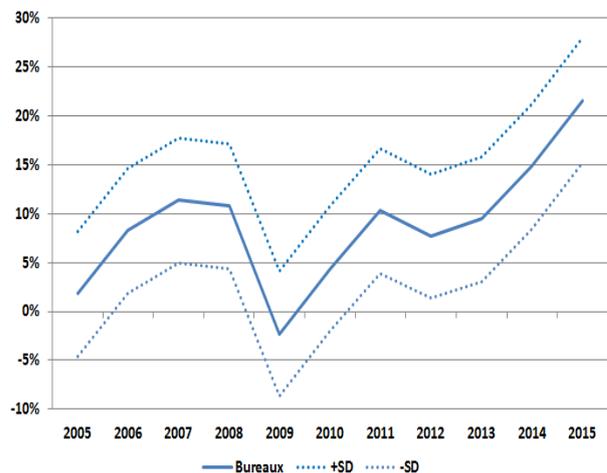
Source: MSCI, like-for-like data

Estimate of price correction required to restore average rental profitability (%)

All commercial real estate

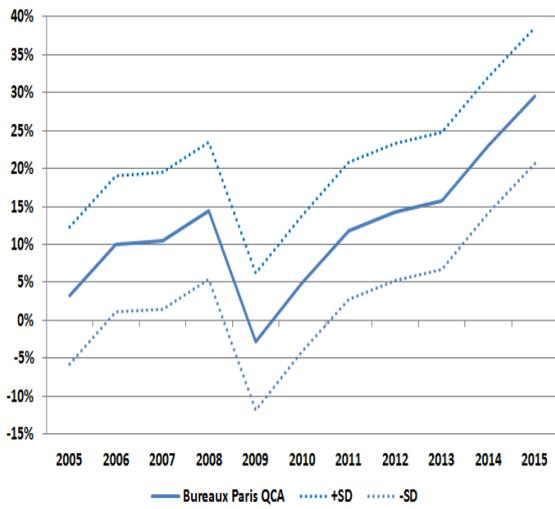


All offices

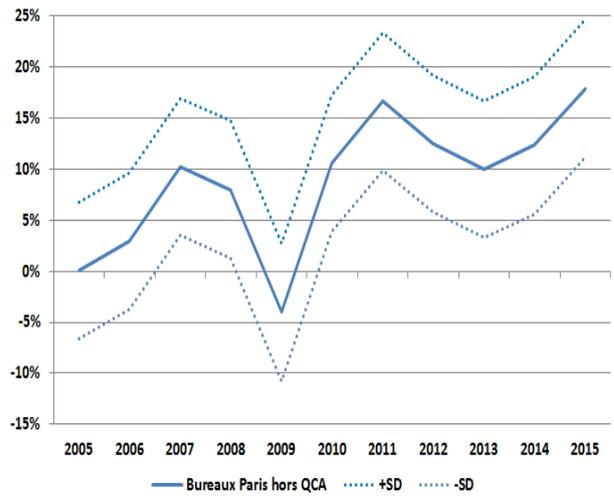


³⁵ In July 2016, MSCI changed the way it constructed its indexes, which resulted in changes to the graphs in HCSF's memo from April 2016. However, the evaluation of rental profitability and measure of price difference required to restore average rental profitability are only affected very marginally; as such, there is no need to call the April 2016 diagnosis into question.

Paris CBD offices



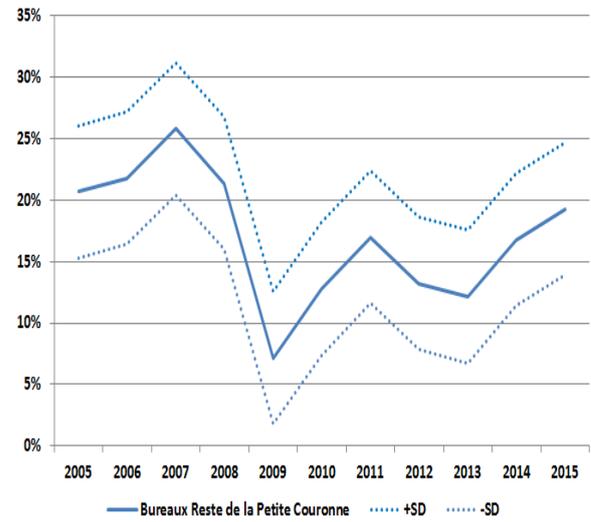
Paris non-CBD offices



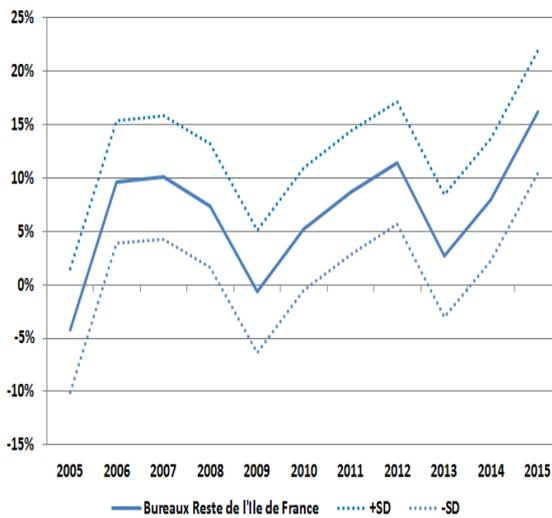
Western Crescent and La Défense offices



Rest of Inner Ring offices



Rest of Ile-de-France offices



Source: MSCI, like-for-like data