REAL ESTATE THEORY AND MODELLING

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CHRONICLE N°34

Income return: modelling the yield gap: summary

Let's start by defining "deflated OAT." This is the yield on 10-year French government bonds, our risk-free rate, adjusted for long-term inflation.

$$(1)\ OATd = rfr - inf \leftrightarrow OATd = OAT - inf$$

with:
- *OATd* : 10-year OAT deflated: the French risk-free rate adjusted for inflation
- *rfr* : risk-free return
- *inf* : the average long-term inflation rate
- *OAT* : 10-year OAT: the French risk-free rate

In **Chronicle 26**, we examined why it was more appropriate to use the deflated OAT rather than the nominal OAT when analysing net income return.

Furthermore, we will refer to the difference between the net income return and the deflated risk-free rate as the deflated yield gap; see **Chronicles 26**:

$$(2)\ nir = OATd + ygd \leftrightarrow ygd = nir - OATd$$

with:
- *nir* : net income return
- *OATd* : 10-year OAT deflated: the French risk-free rate adjusted for inflation
- *ygd* : deflated yield gap

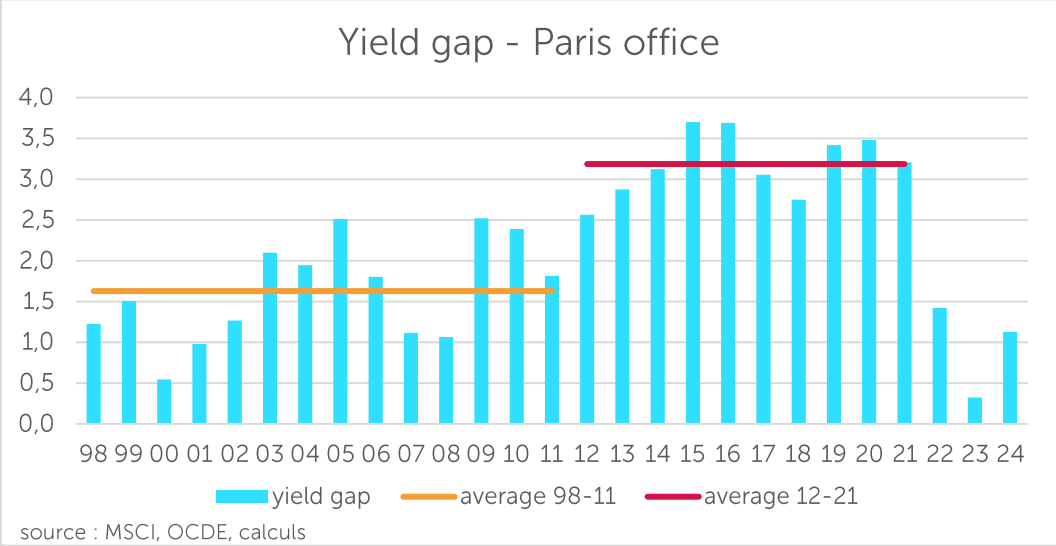
Finally, we define the yield gap deflated and adjusted as the deflated yield gap adjusted for the impact of price shocks (**see Chronicle 31**):

$$(3)\ ygda = nir - OATda = ygd - adj$$

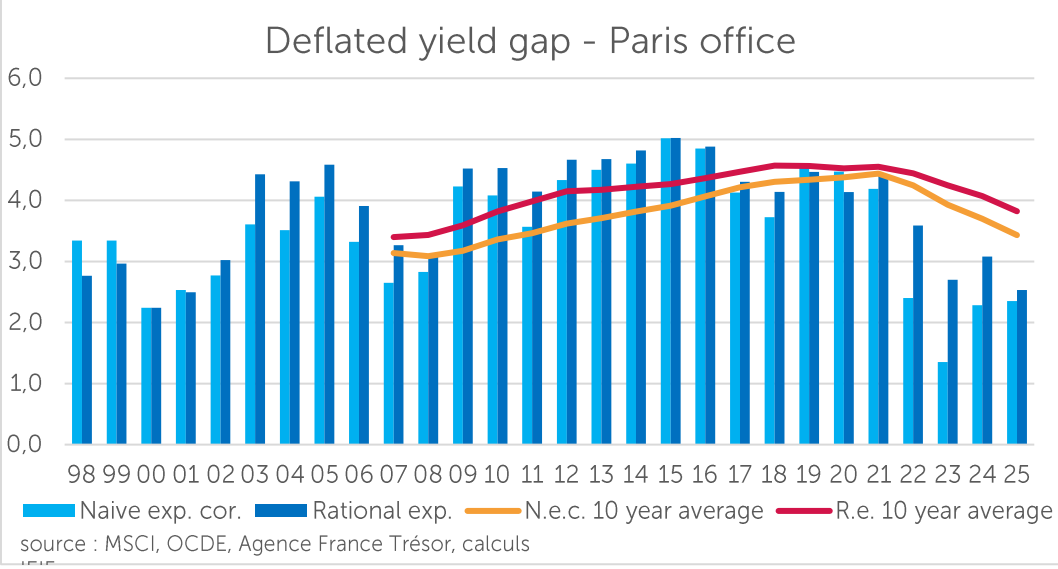
with:
- *ygda* : yield gap deflated adjusted
- *OATda* : 10-year OAT deflated adjusted
- *adj* : the adjustment related to price shocks

From **Chronicle 28 to Chronicle 33**, we have shown that, regardless of how sophisticated our analysis is — whether it is based on assumptions of naive expectations, adjusted naive expectations or rational expectations — we observe, in all scenarios, a substantial increase in the average 10-year yield spread.

Graph 1



Graph 2



Furthermore, still in **Chronicle 33**, we also set out the reasons why such an increase might appear counter-intuitive, or even entirely irrational, within our analytical framework — a framework in which only property-related variables are assumed to influence the trend in the yield gap.

We must therefore now revisit a line of analysis already mentioned: the possible existence of a monetary or financial factor capable of resolving the puzzle of the widening of the long-term yield gap (measured by its 10-year average), given that no credible property-related explanation can account for it.

Chronicles 25 and 26 introduce the idea that the yield gap can be modelled and explained by two components: a long-term component, assumed to be constant, and a short-term, cyclical component, which is constantly changing. The long-term component is thought to depend on structural factors such as liquidity, transparency and the average long-term vacancy rate in the market in question. Conversely, the short-term component is thought to depend on cyclical factors linked to the dynamics of supply and demand and, ultimately, to those of rents.

Chronicle 28 briefly outlines the monetary and financial explanations put forward in the economic literature to address the difficulties encountered in modelling numerous property variables – such as the risk premium, the yield gap and prices – during the 2010s.

Academic research employs econometric methods, which are sometimes sophisticated, as well as explanatory variables such as:

- changes in the money supply of investors' countries of origin, weighted by their relative market share in the market under study;
- a weighted average of bond yields across different credit rating categories (AA, A, BBB);
- changes in mortgage debt as a percentage of GDP;
- as well as numerous other financial indicators.

Building on this Chronicle, we shall revisit the equation presented in **Chronicle 28.** However, rather than continuing the work of reformulating the property variables (yield gap, deflated yield gap, adjusted yield gap, based on naive or rational expectations, etc.), we shall now focus our analysis on identifying monetary and financial variables capable of explaining and modelling the trend observed in the long-term yield gap between the 2000s and the 2010s.

The yield gap equation then takes the following general form:

$$(4)\ yg = yg(ST) + yg(LT) + yg(Mo) = ft(cycl.) + ft(struc.) + ft(Mo)$$

where:

yg	: yield gap
yg(ST)	: short-term explanations
yg(LT)	: long-term explanations (average)
yg(Mo)	: monetary impact explanation
ft(cycl.)	: cyclical risk factors
ft(struc.)	: structural risk factors
ft(Mo)	: monetary risk factors

The hypothesis we are going to examine is that of the 'risk premium on the risk-free rate', which has already been discussed in several recent publications:

- « Prendre en compte la prime de risque du taux sans risque… dans la modélisation du rendement locatif des bureaux en Ile-de-France », *Réflexions Immobilières*, n°105, 1er trimestre 2024.
- « La prime de risque du taux sans risque dans l'immobilier d'entreprise en France », *Réflexions Immobilières*, n°107, 3ème trimestre 2024.

I will be sharing these two publications on LinkedIn shortly. (They're only available in French, I'm afraid) However, as my thinking has progressed considerably since they were published, the following Chronicles will go beyond the analyses set out in them.

These chronicles are linked to my activity at the IEIF. a Paris based think tank on real estate where I conduct research into the modelling of major property variables.

For those less familiar with property analysis. these chronicles can be a source of information and a knowledge base. For experts in the field. their purpose is to launch discussions and exchanges on the various subjects I cover.
Some of the chronicles will be based on known and familiar elements. while others will deal with research elements and present some of the results of my work.