REAL ESTATE THEORY AND MODELLING

The Chronicles of Christophe Pineau, Senior Advisor, IEIF

INSTITUT DE L'ÉPARGNE IMMOBILIÈRE & FONCIÈRE

CHRONIQUE N°25

Income return: the yield gap in the 2000s

The difference between the income return and the risk-free rate (the 10-year government bond rate) is referred to as the yield gap, see **Chronicles 2 and 24**. (Chart 1):

$$(1)\ ir = rfr + yg \leftrightarrow yg = ir - rfr$$

with:
- *ir* : income return
- *rfr* : risk-free return
- *yg* : yield gap

Then, unlike all the work I have shared with you so far, I will not start from my current knowledge, presented as clearly as possible. We will journey together through the evolution of my analyses and economic/monetary and real estate facts. I will present how I understood income return in the 2000s, how this knowledge was challenged in the 2010s, and finally, my new way of understanding income return, which unifies the 2000s, 2010s, and 2020s... My understanding in the 2000s was correct, but it was challenged by the emergence of new monetary practices.

Let's start with the 2000s...

The yield gap as the sum of cyclical and structural risk factors

When I began analysing and modelling the main variables of the Paris office market (Ile-de-France), it was commonly believed that the average gap (between the income return and the risk-free rate) was stable and should be around 150 basis points (bp) (Chart 2).

The difference between the yield gap and its average was then thought to be the result of more or less favorable real estate market conditions: when the market is buoyant, real estate risk is low and the yield gap should be below its average, and vice versa.

Chart 1

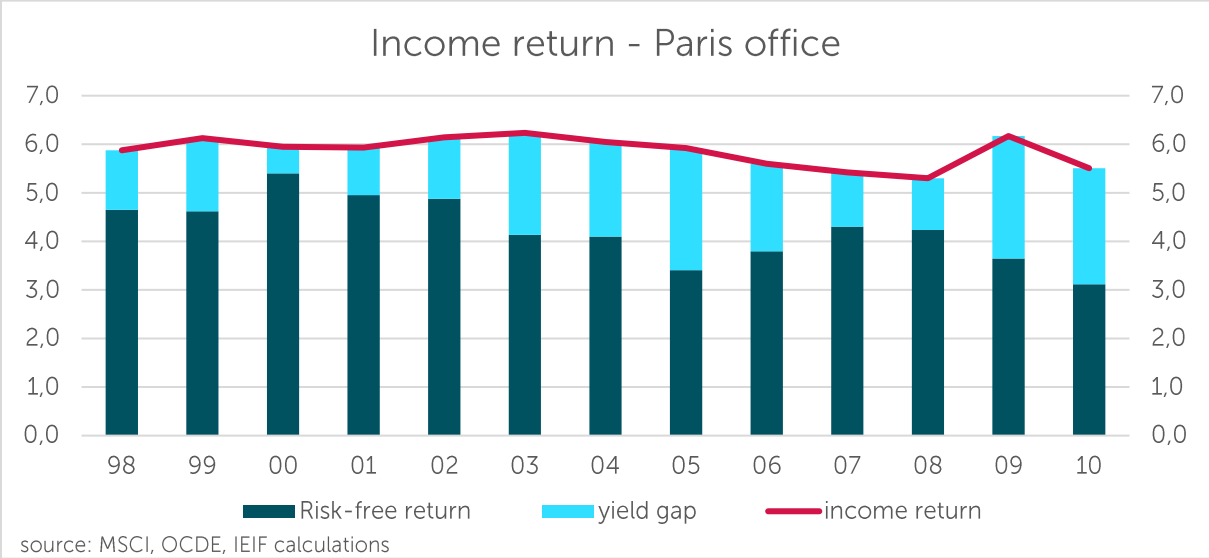
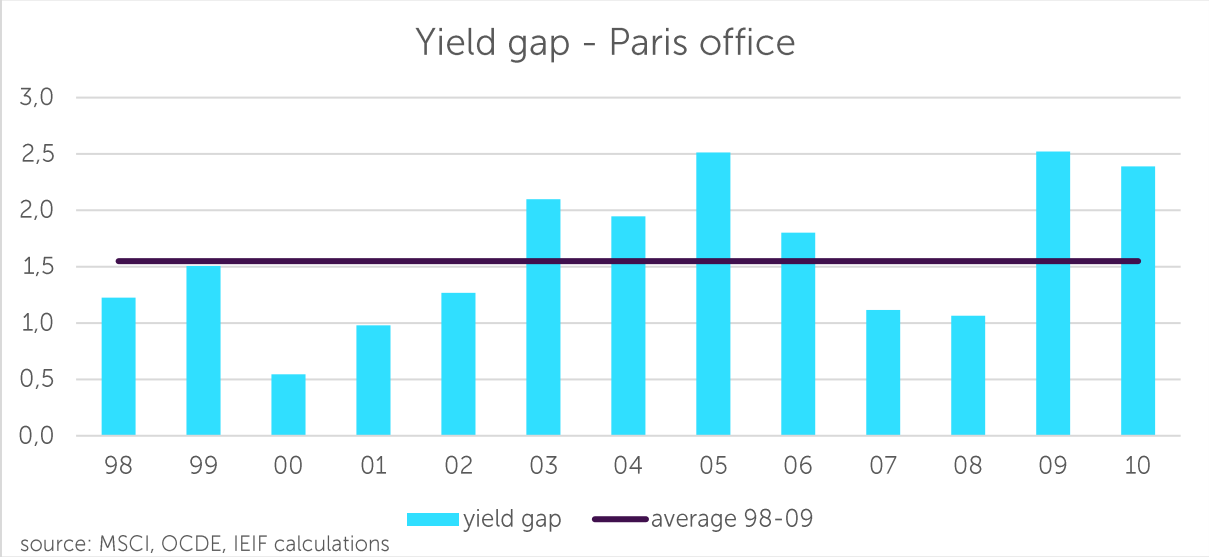


Chart 2



At the time, we believed that the spread was implicitly the result of stable long-term dynamics (the average gap) and short-term dynamics dependent on the economic situation. The gap could therefore be expressed as:

$$(2)\ yg = yg(ST) + yg(LT) = rf(cycl.) + rf(struc.)$$

with:

	yg	: yield gap
	yg(ST)	: short-term explanations
	yg(LT)	: long-term explanations
	rf(cycl.)	: cyclical risk factors
	rf(struc.)	: structural risk factors

Structural risk factors include, in particular, the transparency of the market analysed, long-term liquidity, the average long-term vacancy rate, etc. All these structural risk factors were assumed to be constant, and the average yield gap adequately represented the remuneration for these risks.

In general, a mature market with a lower average (structural) yield gap than another market was considered more attractive than the market to which it was compared, and vice versa. For example, over the period 1998-2009, the spread in the Paris market was around 150 bp, while that in the London market was around 120 bp. The greater transparency and liquidity of the London market more than offset its greater volatility.

Cyclical risk factors depend on short-term market dynamics, and therefore on the relative dynamics of supply and demand for office space, the employment situation and the delivery of new office space and, ultimately, the dynamics of vacancy rates and rents. A period during which a market was experiencing rising rents could legitimately be considered less risky than when that same market was experiencing falling rents, and vice versa.

In the following illustration, I focus solely on rent dynamics as an explanatory factor for cyclical risk, whereas, depending on the market, period, or product, other relevant factors may legitimately be taken into account. Nevertheless, rent dynamics are an essential indicator of the relative health of a market.

Figure 3 shows the very good symmetry between the dynamics of rent growth and those of the yield gap. As expected, the latter increases when rent growth decreases, and vice versa.

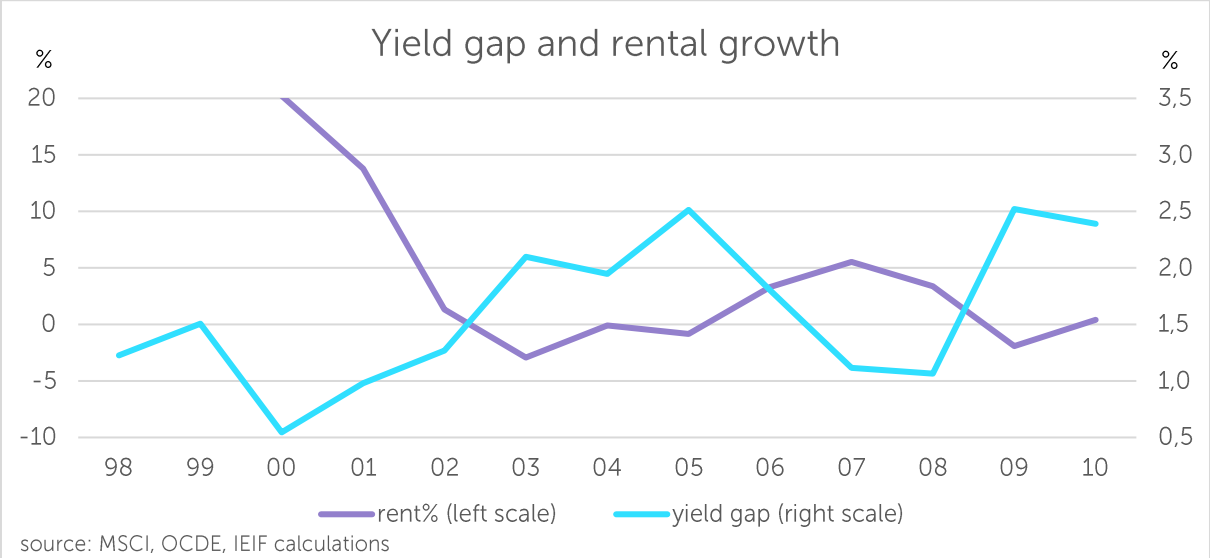
Ultimately, I can therefore express the yield gap as the sum of a constant (structural risk factors equal to the long-term average of the yield gap) and a cyclical factor, which I reduce here to the simplest dynamic, namely the dynamics of the growth rate of rents.

$$(3)\ yg = f(rent\%) + cst$$

with:

	yg	: yield gap
	f(rent%)	: a function dependent on the rate of rent growth
	cst	: constant assumed to be equal to the average yield gap

Chart 3



For those interested, the econometric illustration of this simple model gives the following results:

Let us consider the equation for the period 1998-2009:

$$(4)\ yg = a1\,.rent\% + cst$$

with:
ec : yield gap
a1 : the coefficient estimated by Ordinary Least Squares (OLS)
rent% : the rental growth
cst : constant assumed to be equal to the average yield gap

Variables	Coefficient	t-Statistic	Prob.
rent%	-0.076	-4.12	0.0033
cst	1.904	12.59	0.0000

Adjusted R^2: 0.64 Durbin-Watson: 1.88

The adjusted R^2 of 0.64 indicates that the model "explains" 64% of the dynamics of the yield gap.
The Durbin-Watson (DW) statistic of 1.88 suggests that the results are credible (probable absence of autocorrelation of the residuals, with the DW being greater than 1.7 and less than 2.3).
The t-statistic and the associated probability indicate whether the variable in question has a real impact, i.e., whether the associated coefficient is significantly different from zero.
This is the case here: the coefficient a1, associated with rent, whose value is -0.076, has a probability of being zero (and therefore of having no impact on the yield gap) of 0.33%, which is a completely negligible probability.
This is also the case for the constant (cst), whose coefficient is 1.904 with a probability of being zero of 0%.

This initial satisfactory result nevertheless warrants at least one comment.

Even back then, some of us were in the habit of using not the spread between the income return and the risk-free rate on OATs, but the difference with the "deflated OAT," i.e., adjusted for inflation. Why did we do this? What impact does this have? We will examine this in **Chronicle 26**.

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.