

CHRONIQUE N°2

The link between risk premium and yield gap

In real estate, the concept of "risk premium" is very often used without being defined, and it often covers very different realities. The concept of "risk premium" is used interchangeably to represent either the difference between the total return and the risk-free rate, or the difference between the income return and the risk-free rate.

In these Chronicles, we will use the term "risk premium" to refer to the difference between the total return and the risk-free rate, while we will use the term "yield gap" to refer to the difference between the income return and the risk-free rate.

Moreover, in financial theory (Markowitz (1952)¹ or Sharpe (1964)²), the concept of risk premium is only understood in the context of an analysis in terms of expectation (on average) and not as an instantaneous difference between the total return and the risk-free rate. A forthcoming chronicle will detail the reasons for this. For the time being, however, I shall be using the concept of the 'risk premium' extensively. In fact, in real estate, I have very rarely come across analyses that deal with the concept of a real estate risk premium in expectation, except in models that explicitly deal with portfolio optimisation. Feel free to share other examples if you have any.

All in all, while the difference between the risk-free return and the total return or the rental return cannot be described indiscriminately as a "risk premium", there is a strong link between the two concepts of "risk premium" and "yield gap".

As we explained in Chronicle 1, the risk premium is the difference between the total return and the risk-free rate:

$$(1) \quad tr = rfr + \pi \leftrightarrow \pi = tr - rfr$$

with: tr : total return
 rfr : risk-free rate (*10-year government bonds*)
 π : risk premium

¹ Markowitz, H. (1952) Portfolio Selection, Journal of Finance, Vol. 7, N°1, 77-91.

² Sharpe, W.F. (1964) Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. Journal of Finance, 19, 425-442.

And the total return is equal to the net income return plus the capital return:

$$(2) \quad tr = ic + cr$$

with: tr : total return
 ic : net income return
 cr : capital return / capital growth

Furthermore, the yield gap is defined as the difference between the net income return and the risk-free rate:

$$(3) \quad yg = ic - rfr$$

with: yg : yield gap
 ic : net income return
 rfr : risk-free rate

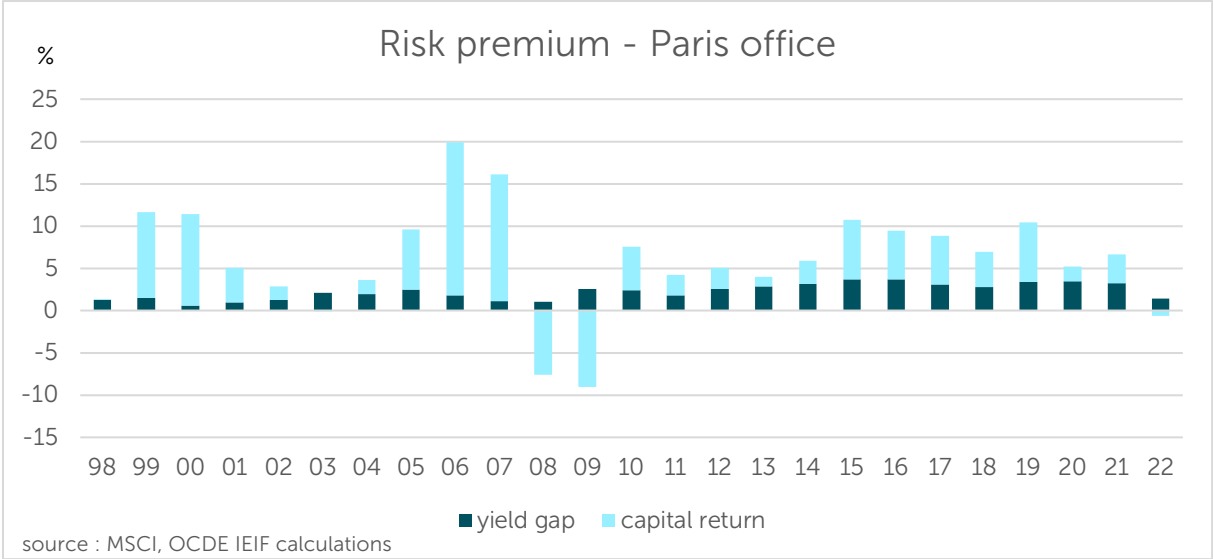
And so, combining (1) and (2):

$$(4) \quad ic - rfr = \pi - cr$$

Then, by combining (3) and (4), we find that the yield gap is equal to the risk premium minus the capital return or, put differently, that the risk premium is equal to the yield gap plus the capital return:

$$(5) \quad yg = \pi - cr \leftrightarrow \pi = yg + cr$$

It is easy to see graphically (see next page) that the volatility of the risk premium is much greater than that of the yield gap. This is entirely consistent with the fact that the most volatile part of the risk premium, namely the capital return, does not appear in the definition of the yield gap. This will be important when we discuss modelling.



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.