CHRONICLE N°4

The sensitivity of capital return to its main components (2/2)

As we saw in Chronicle n°3, the return on capital is nearly equal to the change in price (selling price minus purchase price) minus capital expenditure (capex), divided by the purchase price. Capex is used to maintain (as far as possible) the same quality of asset.

The return on capital can therefore be defined as follows:

$$(1)\ cr \cong \frac{\Delta p}{Pp} - \frac{capex}{Pp}$$

With:
- cr : capital growth/return
- Pp : purchase price
- Δp : price variation
- $capex$: capital expenditure

At the end of the last Chronicle we arrived at the following equation:

$$(2)\ cr \cong (1 + \partial nrv).(1 + \partial occ)/(1 + \partial ir) - 1 - capex\%$$

With:
- ∂nrv : the growth rate of net rental value
- ∂occ : the growth rate of occupancy rate
- ∂ir : the growth rate of income return
- $capex\%$: the capex rate

The aim of this Chronicle is to analyse the sensitivity of the capital return to each of its components if the capex rate is zero. Let's isolate the impact of each variable independently of the direct effect of the capex rate. What is the capital return for a given variation in each of these components when all the others remain stable? Equation (2) allows us to do this very simply.

Let's start by asking what the capital return is when the net rent increases and all other variables are stable ($\partial occ=0$, $\partial nrv=0$ and $capex\%=0$), then:

$$(3)\ cr \cong (1+\partial nrv).(1+0)/(1+0)-1-0$$

$$(4)\ cr \cong \partial nrv$$

The capital return is nearly equal to the growth rate of the net rental value (∂nrv). If the growth rate of net rent is 10%, then the capital return is nearly 10%.

capital return

nrv%

F calculations
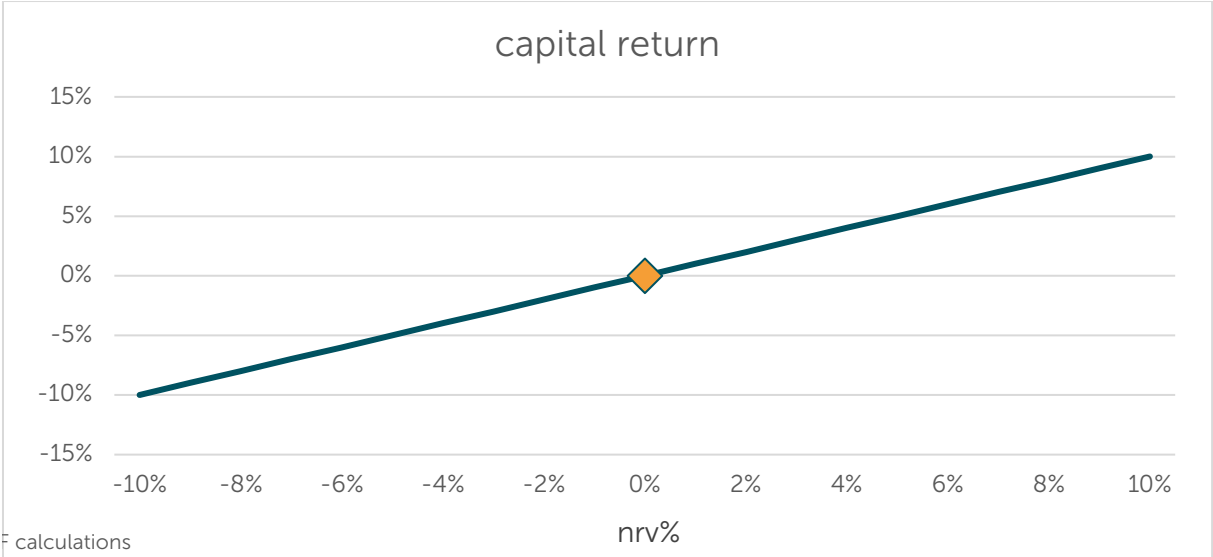
Then, if the occupancy rate increases and all the other variables are stable, it is easy to find that the capital return is nearly equal to the rate of increase in the occupancy rate (∂occ):
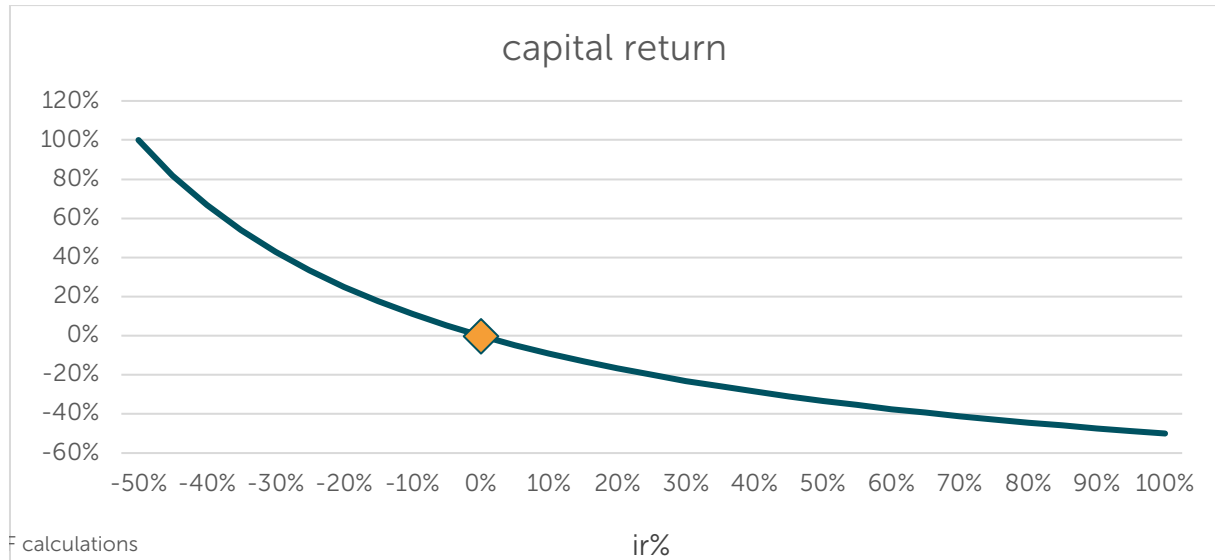
$$cr \cong (1+0).(1+\partial occ)/(1+0)-1-0$$

$$(5)\ cr \cong \partial occ$$

capital return

occ%

source: MSCI, IEIF calculations
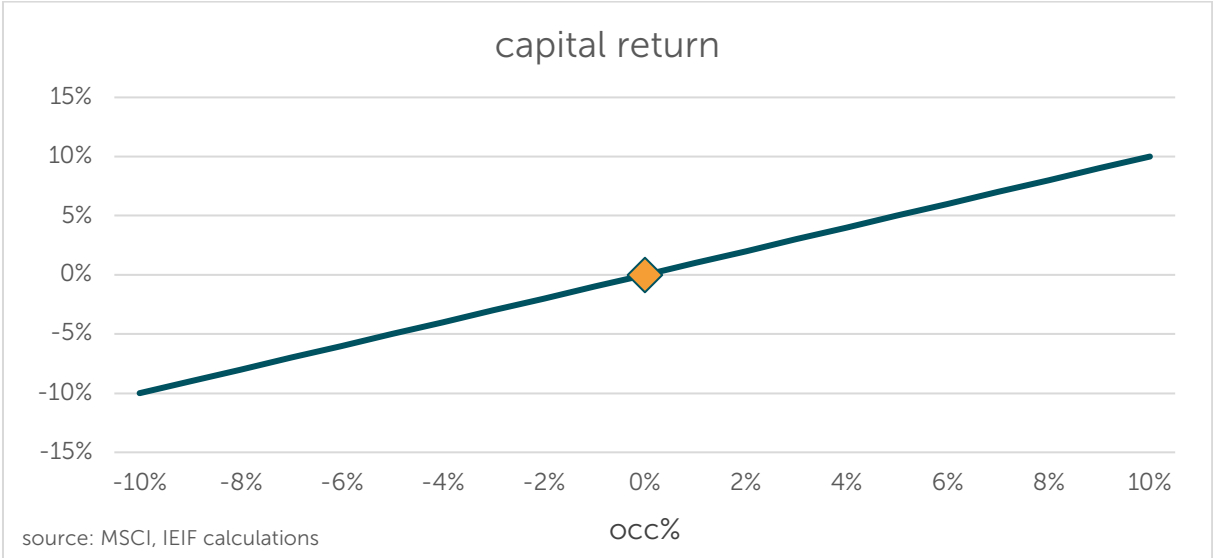
Regarding the impact of the growth rate of income return (∂ir) when the other variables are stable, the result is non-linear. We find:

$$cr \cong (1 + 0).(1 + 0)/(1 + \partial ir) - 1 - 0$$

$$(6)\ rdc \cong \frac{1}{(1 + \partial ir)} - 1$$

In other words, if the income return is halved (reduced by 50%), for example from 6% to 3%, then the return on capital is 100% and the value of the property doubles.
If, on the other hand, the income return doubles (increases by 100%), for example from 3% to 6%, then the return on capital is -50%, and the value of the property has halved.

And finally, it is easy to find that any rate of capex spent is accompanied by an inverse return on capital:

$$cr \cong (1 + 0).(1 + 0)/(1 + 0) - 1 - capex\%$$

$$(7)\ cr \cong -capex\%$$

Once again, it should be pointed out that this direct effect only treats capex as a cost. However, capex is much more than a cost; it is the investment that will enable the net rental value, occupancy rate and income return to perform better than if there had been no investment. And, if we commit to capex, it is because we hope that the positive induced effects will be greater than the direct costs engaged.

Let's now look at the real variations in the office market in the Paris Region between 1999 and 2022 for the variables studied:
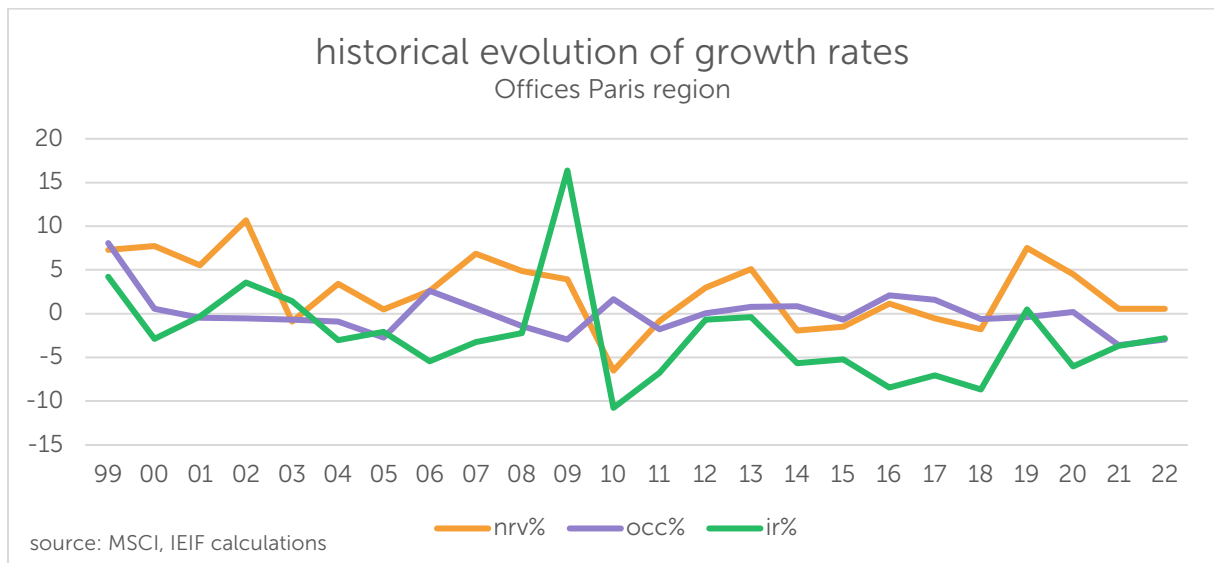
And let's look at their impact on the rate of return on capital.
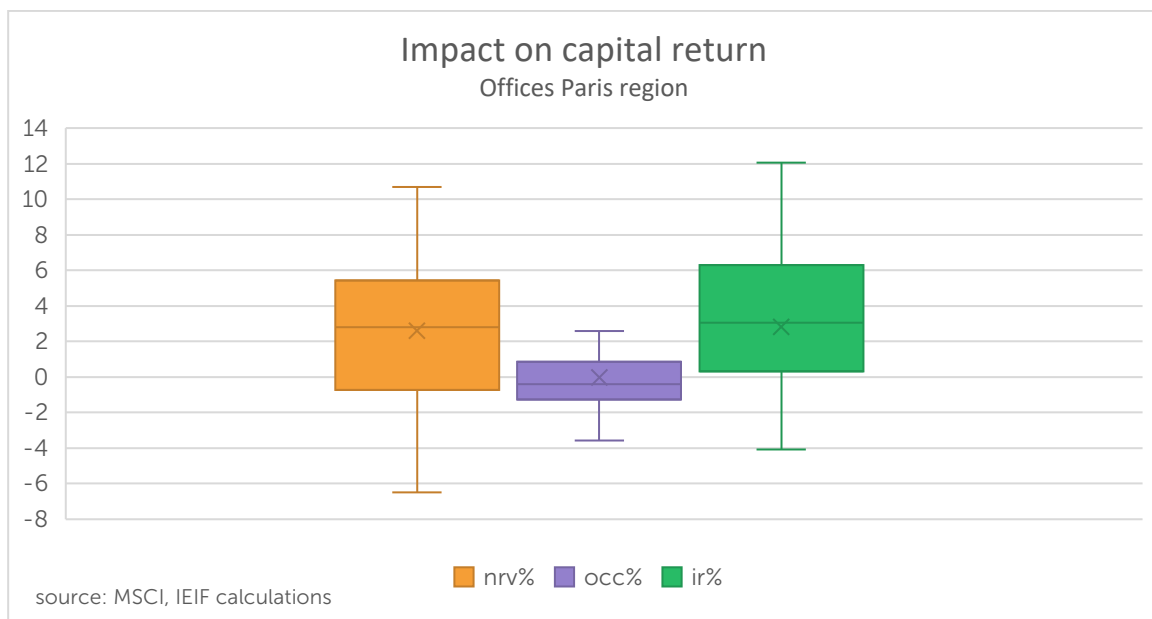
This graph shows that, over the past period, the impact of the growth rate of net rental value on the capital return was:

- 25% of the time between -6.5 performance points and -0.7,
- 25% of the time between -0.7 performance points and +2.8,
- 25% of the time between +2.8 performance points and +5.4,
- 25% of the time between +5.4 performance points and +10.7,

Over the last twenty years, in the Paris region office market, the impact of occupancy rate growth on capital returns has been much lower (close to zero) and less volatile (more limited amplitude) than that of rents or income return.

The impact of the rental growth rate and the income return were comparable: strongly positive but highly volatile over the period studied.

However, in a rapidly changing world - with the secular decline in interest rates coming to a halt, the impact of teleworking and the growing need to mitigate and adapt to global warming, to name but a few - the past no longer augurs well for the future.

So, in order to anticipate likely changes in the rate of return on capital, we need to analyse and model likely changes in net rental value, occupancy rate (or vacancy rate), income return and capex rate.

That's what we'll be doing, step by step, over the next chronicles.