Impact and innovation: Catella Residential's shield for the Black Swan's shadow

The fundamental risk and return assumptions upon which most of the real estate investment industry's business models are founded are fatally flawed in a world where multiplying supposedly rare extreme events, from the Global Financial Crisis, to the Covid-19 pandemic and the oncoming tsunami of Climate Change, are turning markets on their heads, Xavier Jongen, Managing Director of Catella Residential Investment Management said in an interview for IPE Real Assets.

The Catella Residential investment platform is the first and one of the largest cross-border investors in rental residential real estate in Europe, with around €4.8 billion in AUM of institutional capital, and with its main operating offices in Berlin and Maastricht. Affordable rental housing, student housing and senior living are at the core of Catella's investment portfolio.

"What we've found out in the residential market and this has become fundamental to our investment philosophy, is that what really kills you is more 'tail risk' than 'normal risk.' Most of the market, and Catella too when we started-off, assumes in advance that most investments fit within a certain bandwidth of normality. It is a land we call 'Mediocristan.' It sounds funny, but it isn't, because in that place you're actually spending 90% of your time analysing largely irrelevant market risks. Investments are not impacted by these Mediocristan events, they are impacted by what we call 'Extremistan' events – Nassim Taleb's Black Swans, " Jongen said.

'Ergodicity' the real estate investment industry's statistical road to ruin

Jongen said Catella Residential realised that it had a fundamental disagreement with the way real estate risk is quantified, extending back to the application of basic mathematical principles, such as the concept of ergodicity. At the most basic level, ergodicity states that a large collection of samples from a process can represent the entire average statistical properties of the process.

An example of ergodicity is that average income in the United States has been rising since World War II. But the number of people getting poorer is also increasing and 90 percent of the population are falling behind, while the moving average of income is going up.

"The perception of risk is also a kind of moving average. The moving average of income is rising, but the risk to an investment manager is that 90% of people are losers in this game, so you need to be aware the average by itself is a silly number. What's the point if you have a chance of three in 400 million of being a billionaire and a 95% chance of getting poorer? The average can still come out fantastically well, but the high number of billionaires can't make up for the huge number of poor people, which is the essential problem. We believe you have to go well beyond using an average, or standard deviation from the mean, as a proxy for risk in real estate, but everybody is still essentially working with that number today. Catella focuses on the tail risks contained within the deeper concept of 'uncertainty," Jongen said.

Catella Residential believes that 'real assets' have 'real options' attached to them, such as alternative usage, in the same way equities have call or put options that can either be 'in or out of the money,' but the real estate investment market doesn't transact in this way, he added. Most managers see no option value in buildings and act as though the assets are constantly out of the money, which in a world of tail risks is a critical mispricing that Catella can use to its advantage.

The investment outperformance of social justice

Once a new way of thinking about risk is introduced into the portfolio then the way investment returns are defined also has to change. Catella does this by stress testing the portfolio for tail risk events, automating and codifying the process within quantitative framework, which has become possible through advances in 'big data' mining and analysis and by applying artificial intelligence.

"By connecting all the mathematical dots you get risk and return numbers that make sense from the perspective of your investment philosophy. We also found something extremely interesting – that the risk from social injustice plays a very important part in residential investing. That's perhaps intuitively simple, because in residential you are investing in the kind of product that fulfils a basic human need, so you would expect a link to the social element of housing. But now we can show that the risk level actually goes up if inequality in society is reflected in your portfolio through a lack of sufficient affordable rental housing. If you change your notions of risk and return then you're able to bridge between social and financial returns more naturally," Jongen said.

When Catella launched its first cross-border European residential fund in 2007, and also the first residential fund of scale in the EU, just before the global financial crisis (GFC), the prevailing Dutch-German 'social safety net' culture of the firm meant it intuitively leaned towards affordable rental housing investments. These turned out to be one of the most resilient European property investment sectors in the ensuing Black Swan storm. "We were unknowingly competent, but then started to try and figure out why," Jongen noted.

The evolution of Catella's 'anti-fragility' shield in European residential markets

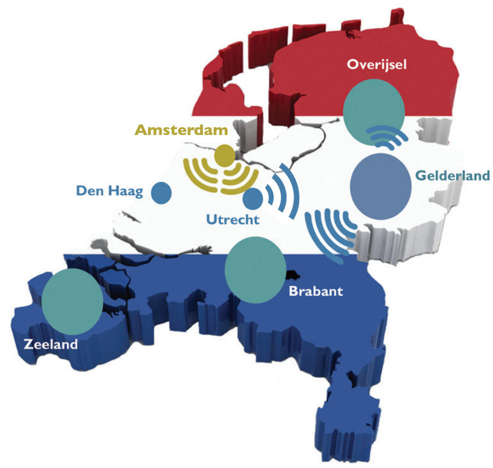
The market and societal impact of the Black Swans has led Catella to question the fundamental validity of monetary, economic and portfolio theories that have been the investment touchstones of the financial industry, central bankers and governments for years.

Catella also identified the timing and amplitude 'Ripple Effect' in housing values after the GFC, which showed that the hardest impact of the crisis fell on the primary 'gateway' cities within markets, such as Amsterdam in the Netherlands. The gateway cities are most exposed to changes in 'global pricing' and the negative fallout of an economic slump -- such as debt overhang and quickly rising unemployment, while also having more intrinsic demographic mobility, so people can uproot and move to more affordable markets. These effects ripple though in a wave to secondary and third- tier cities, with a time lag and less amplitude.

The GFC's Black Swan 'hit' on Amsterdam rippled outwards, impacting smaller housing markets such as Utrecht first. Other cities in the main Randstad urban conurbation 'caught up' with its effects between two-to-four months later and at a slightly lower level of amplitude, or impact. The ripples, or smaller market adjustments, in the more distant and less significant urban centres in the provinces occurred between six and twelve months later.

When Catella drilled further down into its portfolio it discovered why social justice through the provision

Ripple-effect in the Netherlands



1	Amsterdam	Tempo maker
2	Utrecht Den Haag	Directly following with slight catch-up (2-4 months)
3	Gelderland	Further small time delay
4	Zeeland Brabant Overijssel	Delays and adjustments require approx. 6-9 months
5	Groningen Rotterdam Limburg Friesland	Rotterdam roughly corresponds to the national price level. Further delay in adjustment.
6	Remaining parts of the country	Slower and less significant price shifts

of affordable housing provided such robust buffers against tail risks in its portfolio. Periods of economic crisis have a negative impact on levels of employment and the general workforce's income levels, so if the rent of a property is still affordable at a lower income then this underpins the stability of the cashflow from the asset. The greatest risks are then concentrated among middle class tenants paying proportionally the highest level of rents, which are also the least sustainable in the face of cuts to income and the high- end assets occupied by expats. These types of tenants and assets tend to be concentrated in the gateway housing markets and explains why the Black Swans hit these cities hardest.

The big data and artificial intelligence building blocks

Maarten Ende, Head of Artificial Intelligence and Innovation at Catella Investment Management Benelux, said the size and uniformity of assets within the European residential investment universe made them ideal for the application of data sciences compared with other property sectors.

The new AI tools Catella is developing in conjunction with Maastricht University, the leading Dutch centre for research into this 'deep tech' sector, are already generating huge gains in productivity, a vital cost advantage in an investment world where sheer weight of capital is compressing yields and returns on capital to levels where it is increasingly difficult to achieve real returns and exposing the padded fee structures of private equity property investment managers who are not providing any added value, he said.

Investment analysis that used to take between half-a-day and two days per analyst can now be done in 20 minutes to two hours. So, a productivity gain of 50%, and at the extreme of two days,or 16 hours, a leap of 800%, which is "enormous," Ende noted.

He said that the majority of return in residential real estate investment is generated during the acquisition process, which is far less automated, rather than in later asset management where standardised tools are more commonplace.

"Most investment managers work with excel sheets rather than software and this is quite inefficient and an organisational nightmare when you're comparing acquisitions in different countries," Ende said.

Catella is developing its own AI acquisition tool, which processes a wide range of public and private data and inputs to automatically produce very detailed local location analysis, that goes far deeper than the big city and regional that most managers use, he added.

The Covid-19 pandemic has proved to be a very different big tail-risk event for European real estate investment markets than the GFC. Xavier Jongen said the pandemic had accentuated Catella's questioning of another fundamental 'Bible' of the investment industry, economics Nobel prize winner Harry Markowitz's pioneering work on 'Modern Portfolio Theory' from the 1950s that led to the famous adage that "diversification is the only free lunch in finance" and which only went mainstream in the European real estate industry in the early 2000s.

He said an example of where the standard models of portfolio diversification have broken-down during the Covid-19 big tail risk event, is in the 'hotels for students' concept, of which Catella has a couple in its portfolio:

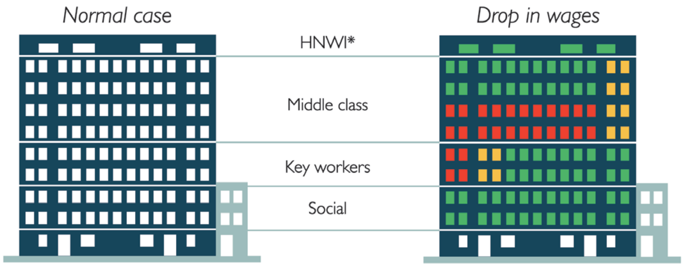
"What was the basic idea? Hey, if the students are not there it's not a problem because the tourists are there. And if the tourists are not there, it's not really a problem because we have a restaurant. And if the restaurant is not full it isn't really a problem because there are also co-working spaces. So, we have a fantastic asset, right? It can't be better. But then Covid happens and you see that you are hit at the same time all across the board. There are no tourists. There are no students. Nobody's working in the office. Nobody's eating in the restaurant. What you mixed up was that you didn't really understand the concept of 'causality,' "Because the causality affected all the kinds of functionalities in your building at the same time," Jongen said.

"You need to understand that your correlations are dynamic and can change dramatically.

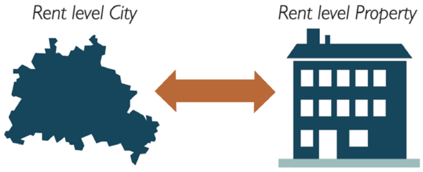
This is a real issue for us, because we want to protect against those worst-case scenarios by calculating real option values and think about flaws in portfolios and quantify them, so they are resilient for these tail risks," he added.

Stability through affordability

In times of crisis the property is generating a stable cash-flow. The rent is affordable with a smaller income.



MEASURABILITY



PORTFOLIO COMPOSITION

Global climate change's Swan Lake: the battle of the black and green swans

In his book: 'Green Swans: The Coming Boom in Regenerative Capitalism,' John Elkington, described as the "Godfather of Sustainability," says that if Nassim Taleb's 'Black Swans' are problems that take us exponentially towards breakdown, then 'Green Swans' are ESG solutions that take us exponentially towards breakthrough, in a Global Climate Change twist to Tchaikovsky's tale of the ballet of Swan Lake.

Elkington identifies the European Commission's 'Green Deal' as a potential Green Swan. The EC's plan is designed to attract at least €1.0 trillion worth of public and private investment over the next decade and to turn Europe into a climate neutral economy by 2050, which will require massive investment in clean energy technologies.

Catella's 'Green Cygnet,' or baby swan, is the 'Elithis Tower,' the world's first energy-positive residential building at scale, created by its partner French engineering design company Dijon-based Elithis, which produces more power than it consumes, at development costs comparable to non-positive buildings. The first in a planned €2.0 billion investment rollout of 100 Elithis towers was acquired in March in Saint-Etienne near Lyon in France, by the Catella European Residential Fund III (CER III). These projects will be delivered between 20-to-30 years ahead of the EU's ambitious 2050 carbon-neutral timeline target for the built environment and already outperform Europe's climate goals for cutting CO2 emissions.

Meet the team

Xavier Jongen
Managing Director
Catella Residential Investment Management

Maarten Ende
Head of AI/Innovation at Catella Investment Management Benelux

"The Elithis towers are the blueprint for the future of affordable and sustainable residential living in Europe and we are starting the roll-out of a planned 10-year investment programme, beginning in France and then moving into other major markets such as Germany, the Netherlands and the UK. The revolutionary energy-positive design of the towers means tenants can potentially eradicate their annual energy bills, while investors don't need to sacrifice returns for a sustainable and low-risk stable income product offered at an affordable rent. Everybody and the planet wins. 'Future-proof' is an over-used term in the real estate market, but the Elithis towers are genuinely exactly that and the Catella residential investment platform has the reach, and the resources from the capital backing of our investors, to scale-up this technological breakthrough across Europe," Xavier Jongen concluded.

Steve Hays, Bellier