

Open End Fund Pricing - Conclusion of Phase 1 July 2018



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Executive summary

- > Pricing policies are employed by institutional real estate funds to protect investors against the effects of dilution
- > Classic dual pricing and capitalisation and amortisation are traditionally used in Europe
- > Long term investors receive relatively similar returns under either

Since the financial crisis pricing mechanisms in institutional open end real estate funds have seen increased investor interest, alongside traditional differentiators including investment thesis and quality of management team.

The choice of pricing mechanism has become an increasingly important topic, as different approaches are employed by funds and fund managers, and the awareness of its influence on investor returns has grown. However, there is no consensus on which method is more effective at protecting long-term investors from the dilutive effects of transaction costs over time. This paper aims to provide clarity and context in this area. It describes the key issues faced by investors, the tools fund managers use to address these issues and their comparative benefits.

At a high level, there are two broad categories of pricing mechanisms commonly used: single pricing and dual pricing. Uses differ between geographies and can to some extent be explained by underlying market factors such as the level of transaction costs or commonly accepted features of fund design. Swing pricing mechanisms have not been considered within this paper as swing pricing is not commonplace within the market for

institutional non-listed real estate funds. This topic may merit a separate research project in the future.

There are two pricing mechanisms traditionally used in the European market: the classic dual pricing model and the capitalisation and amortisation model. Both fit within the broad dual pricing category.

The results of the modelling exercise that was carried out as part of Phase 1 demonstrates that long term investors receive relatively similar returns under either of the two dual pricing methods. These results are based on a simplified financial model for a typical open end institutional fund. The analysis indicates that the seed investor is protected from large scale dilution under both models. Such dilution can be caused by transaction costs incurred on subsequent capital calls from new investors. This same trend is observed for long term investors entering the fund over its lifetime. Therefore, when properly applied, either mechanism will provide investors with similar protection from the effects of dilution.

Both models enjoy popularity in their respective markets; however, they produce different results when stress tested. The dynamic qualities of the capitalisation and

amortisation model and its link to established industry guidelines contribute to its popularity in the market for internationally diversified funds. On the other hand, the stability of the classic dual pricing model makes it better suited to single jurisdiction funds as the transaction costs in single jurisdiction funds are expected to be less variable.

The scope of this study did not extend to marketability of pricing mechanisms. However, managers should consider the preferences of investor groups in certain jurisdictions when launching new products. Certain pricing mechanisms have historically presented challenges for marketing to investors in various jurisdictions, or may not be permitted by local law or regulation.

There are steps that can be taken to fine-tune each of the two models individually to a point where the comparative differences are negligible. One example is to increase the amortisation period used under the capitalisation and amortisation approach. Another example is to regularly re-set the spread used for the classic dual pricing based on actual transaction cost history. It may also be possible to combine the comparative qualities of both models which may provide improved results for investors. This is an area that can be further explored.

Introduction

Over the past year and a half, the design of pricing mechanisms for institutional open end real estate funds has become a major topic of discussion. Some of the general themes identified in the terms established for 'post-crisis' funds are:

- > More simple and transparent terms including those relating to pricing strategies;
- > A focus on catering for the expectations of investors from multiple geographic jurisdictions;
- > Introduction of liquidity measures that not only facilitate redemptions in normal market conditions but also allow the manager latitude to balance the interests of all investors during stressed situations.

Real estate carries transaction costs which significantly exceed those of most other asset classes. Allowing investors to trade in the units of a fund at a price which is inconsistent with that incurred by the fund when it deals in real estate assets can result in unequal treatment (and indeed a transfer of value) between investors in different subscriber vintages. This impact is commonly referred to as dilution and if not managed effectively, it offsets the other benefits to be obtained from investing in commingled products, such as risk sharing and diversification. It is for this reason that the majority of institutional open end real estate funds in Europe have implemented some form of pricing mechanism which governs how units in these funds are valued for the purposes of subscriptions and redemptions.

It is also clear from these discussions, that there are major differences in market practice between US, European and Asia Pacific open end funds. Within the European context, managers approach this issue with slightly different methodologies depending on investors' different preferences. This situation can be complex when, say, a European fund

is sold in the US market (where dual pricing has traditionally been unpopular) and in the UK (where dual pricing has traditionally been popular). Furthermore, moving from a legacy model to a new model can be costly for both investors and managers. This can act as a barrier to successful investment vehicles being able to continue to maintain contemporary terms.

This paper reflects feedback received from the industry during a discussion process that ran from 30 November 2017 to 31 January 2018. The discussion was based on a November 2017 paper from AREF and INREV entitled Open End Fund Pricing. The paper is intended to promote debate and facilitate a better understanding of the topic. It is not intended to be viewed as an industry guideline paper.

The aim of the first phase of this project was to promote a better understanding of the key principles that can help to align manager and investor interests. The overall objective is to provide managers and investors with a more structured and common approach to developing pricing methodologies for open

end real estate vehicles in the best interest of investors. This in turn will bring greater confidence to open end products as a whole.

Secondary transfers, where investors trade units via the secondary market, were out of scope for this phase of the study.

The first phase focused on developing a simplified financial model for a typical open end institutional fund. The model was developed solely for the purposes of this project and was used to test the impact of commonly used pricing methods on investor returns. The model was primarily focused on the perspective of the seed investor but the results and trends observed are also valid for all investors.

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The next phase of the project, Phase 2, will commence later in 2018. The aim of the second phase is to explore the governance around different pricing mechanisms.

1. The challenges and trends of fund pricing in different markets

Value dilution in open end funds

The objective in setting a fair fund pricing policy is to protect investors from the potentially dilutive effects of transaction costs on an investor's investment returns.

Dilution occurs when the cost of acquiring or disposing of real estate assets is not taken into account in the determination of the unit prices used for the purposes of subscriptions and redemptions. This mismatch, if not addressed, can result in a multitude of economic issues including unfair treatment of individual investors, particularly where the cost of transacting the underlying real estate is other than a nominal amount. Concepts of treating customers fairly must also be considered as part of this process.

The effects of dilution are illustrated with a simplified example shown below:

Dilution effects relating to subscriptions:

- Assume a fund with no leverage holding a single real estate asset, valued at €100, and nothing else.
- This fund has a single shareholder holding a single share.
- This fund would have a net asset value of €100 for financial reporting purposes, which reflects the current fair value of the real estate.

- The net asset value of this fund does not take into account the costs incurred by the existing investors in acquiring the real estate asset.
- Let's assume that this seed investor contributed €105 for their single share, of which €5 was spent on transaction costs related to the acquisition of the real estate.
- If the fund issues additional shares based on this NAV of €100 then the incoming investors are succeeding in acquiring shares, based on a value of €100, which have cost the existing investor €105 to acquire.
- Equally, if these new investors contribute an additional €100 on subscription, under identical market conditions, this contribution is not sufficient to allow the fund to acquire an investment which will increase the net asset value by €100 due to the associated acquisition transaction costs of such an asset.

Dilution effects relating to redemptions:

- Let's say a second investor enters the fund on the same terms as the seed investor (paying €105 and securing a single share worth €100) and then decides to redeem shortly after.
- If the value of the outgoing investor's units

were established solely with reference to the net asset value as per the financial reporting, €200 in the example above, then it would fail to take into consideration the costs associated with disposing underlying real estate, say €2 in this example, in order to facilitate this redemption.

- The failure to take this cost into account in determining the price used for the outgoing investor's redemption would again result in dilution for the remaining investors as they are left to carry the cost of the asset sale. Such a transaction would leave a NAV of €98 (€200 less €100 for the redemption, less €2 for the cost of sale).

The above illustration makes it clear that dealing in real estate assets can have a materially dilutive effect.

It seems inappropriate for incoming investors to enjoy the benefits of an established fund without contributing to any of the costs incurred in establishing the fund or investing capital. However, there is some debate around the philosophical objective that this pricing mechanism should have. Should the mechanism be backward looking or forward looking? Should incoming investors be contributing to compensate existing investors for the historical establishment and transaction costs that they have borne? Or should they be contributing to the costs necessary to deploy the capital they have invested?

Backward or forward pricing mechanisms can produce similar economic effects for a mature fund. However, there is a stronger preference for the backward-looking view as it is based on tangible facts and therefore is easier to measure, rather than a theoretical view of transactions that may or may not happen in the future. Furthermore, issuing new capital may not directly result in new asset acquisitions. This consideration is important when analysing the merits of potential pricing mechanisms. Also note that commingling of investments requires compromise not required for segregated mandates. This compromise may well extend to pricing policy considerations.

Different methods: from single pricing to dual pricing

Market consensus on the topic of pricing has not yet emerged and certainly not on a global level. On a more regional level, whilst very little guidance has been codified, some trends have developed.

There are multiple options available in terms of pricing policies. However, the options available can generally be broken into two broad categories – ‘Single pricing’ or ‘Dual pricing’. ‘Single pricing’ effectively means that an investor or existing shareholder can buy and/or sell units at a single defined price, as is the case for most US funds where transaction costs are relatively low and as a consequence dilution is typically immaterial. Alternatively, with ‘Dual pricing’, there is a separate and distinct price established for buying and for selling respectively. There are also numerous variations of these two broad categories.

Table 1: Single and dual pricing

	Single Pricing		Dual Pricing	
Sub-category	SWING	NAV	CLASSIC	CAPITALISATION AND AMORTISATION ('Cap & Am')
Typically used in	Daily priced funds targeting retail investors	US domestic funds	UK domestic funds	Pan European and Asia Pacific funds (multi-country funds)
Brief description	Provides for a mechanism whereby the NAV is 'swung' upwards or downwards by a predetermined factor depending on whether the net capital flows are positive or negative	Trades are directly based on the NAV of the fund determined in accordance with the prevailing financial reporting framework.	A defined spread exists and is applied to the NAV. Units can be bought at a premium to NAV and sold at a discount to NAV.	Similar to the classic dual priced model but in this instance a spread is established using the capitalisation and amortisation approach coupled with a defined redemption levy.
Pros	+ Protects against dilution + Acts as a deterrent against frequent trading	+ Readily understandable + Determined with reference to market standard financial reporting framework + May not result in immediate write off of the spread at investment in books of investor	+ Protects against dilution + Relatively simple + Well understood in some markets	+ Protects against dilution + Easier to market this model internationally + No subjectivity in the setting of a spread
Cons	Complex Distorts ability of investors to compare fund performance Not understood in all markets	Full exposure to dilution Not in line with economic fundamentals of underlying asset class	Challenging to market this model internationally Subjectivity in the setting of the spread Results in immediate write off of the spread at investment in books of investor	In an inactive fund, capitalised costs may be fully amortised Not as simple as the classic model

US market prefers single pricing approach

The approach in the US market, and how financial reporting and unit pricing for open end real estate funds is performed, is summarised below:

- Net Asset Value (NAV) for these funds is generally determined based on US GAAP, which writes off the transaction costs of acquiring real estate.
- This NAV forms the basis for the determination of unit pricing.
- A 'single price' is determined from this NAV with no adjustments made to the value of the underlying assets and liabilities of the fund.
- There are generally no supplementary adjustments performed for pricing purposes in order to negate dilutive effects on investors resulting from dealing costs.

The first and most obvious advantage of this approach to pricing is that it is simple. The basis for determining this unit price is a financial reporting framework that is familiar to all market participants in the jurisdiction. However, the most obvious drawback is that it takes no account of dealing costs and therefore the investors in the fund are fully exposed to dilution.

An assumption which is generally taken by US fund managers in arriving at this policy is that dilution is immaterial owing to these distinct factors:

1. Funds are bigger and therefore the relative impact of dilution may be less significant. On average funds are four times larger than their European counterparts.
2. Transaction costs for real estate assets in the US are lower. These vary by state but are generally lower than 1%.
3. The fund liquidity mechanisms and 'lock-in' features are generally tighter.

These assertions are valid in a US context and provide some alleviation from the issues of dilution. However, these assertions are not valid globally and, in jurisdictions outside the US, this form of unit pricing does not consistently protect investors from dilution as transaction costs can be materially higher.

European and Asia Pacific funds prefer dual pricing as impact of dilution is higher

In jurisdictions with low levels of real estate transaction costs the impact of dilution is immaterial. As such, it is unsurprising that the topic of pricing for open end real estate funds is greeted with confusion and/or less interest in these markets. However, in multi-country markets such as those of Europe and Asia Pacific, where investments frequently take place across multiple countries, the effects of dilution can be material and mechanisms are required at a unit pricing level to protect investors and ensure that all vintages of investors are treated fairly.

European and Asia Pacific real estate transaction taxes are much higher and holding structures generally more complex. Transaction costs attributable to a buyer of real estate assets in Europe are typically in the range of 4 to 6% but can be as high as 12% in some markets.

Additionally, the costs incurred to sell a real estate asset are typically in the range of 2 to 4%. These acquisition and disposal costs combine to form a significant 'dealing spread' on real estate as an asset class. The challenge faced is designing a policy that recognises this asset level 'dealing spread' within the pricing of units of the fund. Allowing investors to trade in units of a fund in a manner, and at a price, which is inconsistent with that of the fund's underlying trading in assets can have adverse effects for the fund

as a whole and for investors individually.

As such, the dilutive effect of transaction costs cannot be ignored on the grounds of materiality, although the impact of transaction costs may be mitigated on a case-by-case basis by exit strategies such as selling shares of asset holding entities rather than the asset itself.

Significant changes post-crisis

It is also important to consider the significant changes that have taken place in the European market following the economic crisis. Pricing policies and associated mechanisms utilised by 'pre-crisis' funds are generally less sophisticated than their 'post-crisis' counterparts. The reasons for this are clear. Firstly, the 'post-crisis' vintage of funds have benefited from lessons learned in the fallout of the crisis. Secondly, in the 'post-crisis' market real estate as an asset class has become more institutionalised, which has brought with it standardisation of terms expected by the market. This standardisation has been facilitated by the emergence of industry standards and 'market-practice' which have been codified by various trade organisations.

2. Both mechanisms protect against dilution

A comparative analysis of the merits and flaws of the principal types of alternate pricing policies applied by open end real estate funds was undertaken. A simplified financial model was constructed which allows the performance of a real estate fund to be tracked over a twenty-year period. The model simulates various outcomes and results for investors to be measured over any given time period. It also allows certain key inputs and assumptions to be flexed within the model for the purposes of stress testing.

The first case study of this project used the following inputs and assumptions in the modelling:

- | | |
|--|--|
| <ul style="list-style-type: none"> • The Fund has an opening Gross Asset Value of €1.25 billion and an opening Net Asset Value of €1.0 billion • Leverage of 25% is utilised • Growth in real estate values of 4% per annum is assumed • Net income of 4% per annum is generated by the real estate portfolio (after the impact of gearing) • 100% of net income is distributed as dividends • Real estate acquisition costs are assumed to be 5% • Real estate disposal costs are assumed to be 2% • The fund's portfolio consists of i) a cash portfolio and ii) a real estate portfolio – these two components have different returns • Subscriptions of €200 million every 2 years are assumed • Redemptions of €100 million every 2 years are assumed • Real estate disposals of €100 million every 2 years, starting in Year 2, are assumed | <ul style="list-style-type: none"> • Real estate acquisitions of €200 million in Year 1, €100 million in Year 2, €200 million in Year 3, etc., are assumed. <p>Note that the model is a simplified representation of reality and does not include features such as netting of subscriptions and redemptions, rebalancing or asset sales to repay debt, which will vary between funds and from year to year.</p> <p>The following outputs were measured over the assessment period for each of the pricing policies being compared:</p> <ul style="list-style-type: none"> • NAV per share • Redemption price per share • Ownership of the Seed Investor • Dividend yield • Capital return • Total return • Effective 'spread' applied to the intrinsic NAV under each policy |
|--|--|

The assessment includes the following three pricing policies:

- Trading off an intrinsic NAV (referred herein as the ‘base case’)**
Under this regime units are issued to, and redeemed by, investors directly at the financial reporting NAV. For the purposes of this analysis it is assumed that the reporting NAV is a fair representation of the intrinsic value of the underlying assets and liabilities. This policy makes no adjustment to the fund’s unit price to consider the cost of trading in underlying real estate assets.
- Classic dual pricing**
Under this regime a fixed spread is established. For convenience the model assumes that a subscription premium of 5% is charged on the issuance of new units and a redemption levy of 2% is charged on the redemption of units (5% is chosen as being representative of the level of transaction costs typically experienced in a pan-European fund. However, the acquisition costs on a geared portfolio, say 25% geared, can be higher than on an identical ungeared portfolio, and the spread can be adjusted from time to time as the portfolio composition changes or if transaction taxes change).
- Capitalisation and amortisation**
All acquisition costs incurred are capitalised and amortised over a period of five years. The costs capitalised are allocated to the account of the incoming vintage of investors. Should this group of

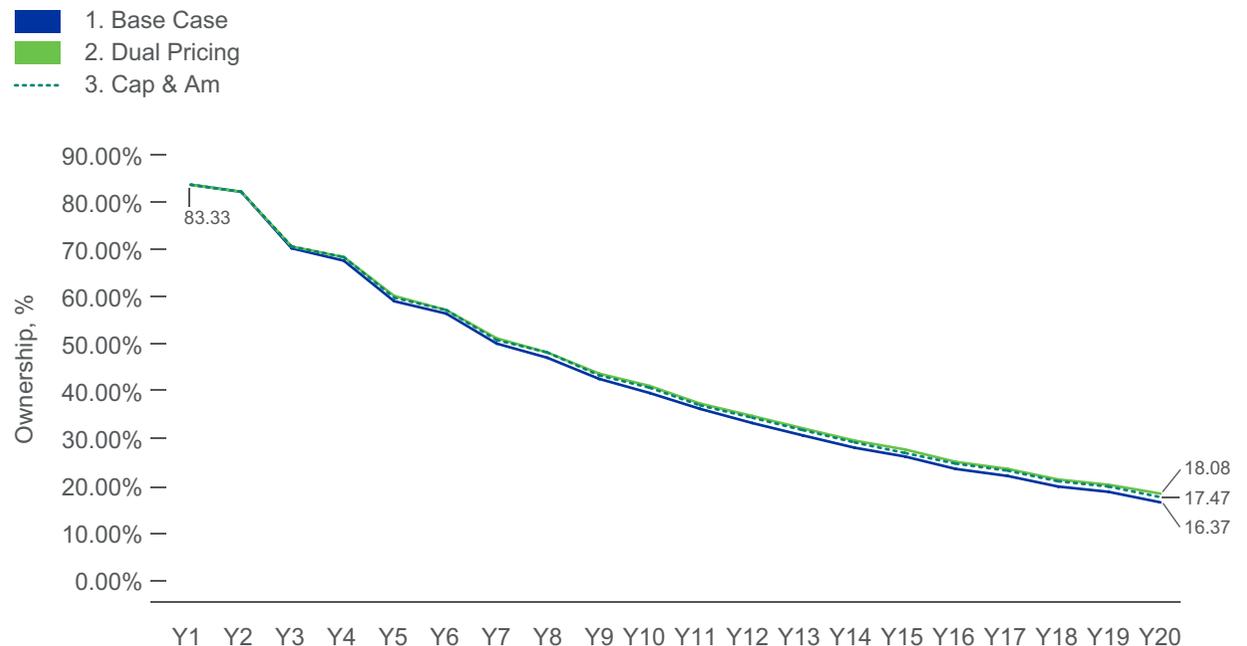
investors wish to leave within a period of five years they are charged the remaining unamortised balance on their account. Additionally, there is a standard redemption levy of 2% charged on all redemptions.

Dilution of long-term investors percentage holding

One of the key questions explored as part of this project is the effect that the pricing policy applied to subscriptions and redemptions

has on the percentage holding of the seed investor. An appropriately designed pricing policy should ensure that investor groups are not disproportionately impacted by the effects of other investors trading in units of the fund. Figure 1 provides an illustration of the evolution of the percentage holding of the seed investor under each of the pricing policies modelled using the parameters noted above for the model. As can be seen in Figure 1, the experience of the seed investor is similar under each of the three policies. The base case experiences the greatest dilution.

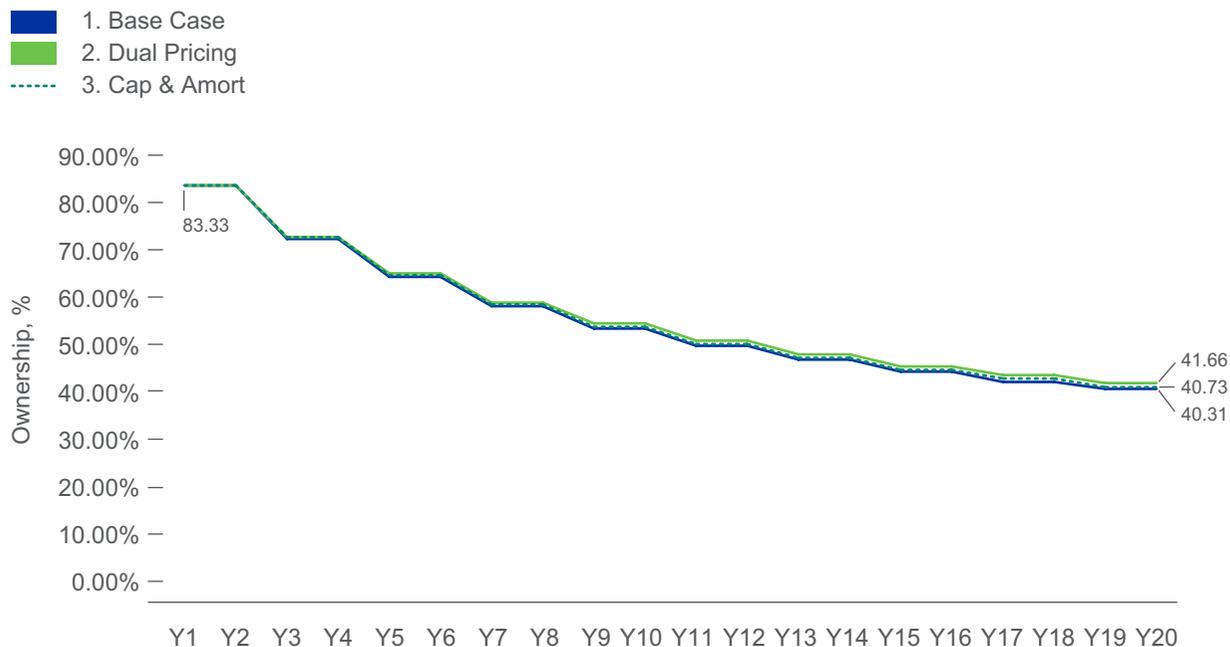
Figure 1: Ownership Seed Investor, %



Alternatively, if no redemptions are assumed over the life of the fund, the evolution would be as shown in Figure 2. Again, the experiences are closely aligned with the base case demonstrating the greatest dilution.

The model demonstrates that both of the pricing methods traditionally used in the European market, the classic dual pricing model and the capitalisation and amortisation model, when properly applied succeed in providing investors with comparatively similar protection from the effects of dilution.

Figure 2: Ownership Seed Investor, % (no redemptions)



Note: Results in Figures 1-2 derived from a simplified hypothetical model

3. Scenario analysis

The financial results (annualised) of the chosen scenario under each of the three pricing policies is illustrated below. The results are shown from the perspective of the seed investor and over the time horizon of 3, 9, 15 and 20 years, to model the impact of dilution on them leaving the fund at different points in time. This same trend is observed of long term investors entering the fund over its life.

Base case provides higher returns for the seed investor over the initial 3-year hold period

Using a three-year time horizon, the base case policy maximises total returns for the seed investor compared to both the dual pricing and cap & am policies. This is largely because no spread is charged on the former policy. Both dual pricing and Cap & Am charge a spread on subscription and redemption. These mechanisms are in place to protect investors’ interests. However, if an investor were to leave within three years from the initial subscription, the cost they have incurred through paying this spread when investing in

the fund results in their overall performance being lower than the base case. From a fund perspective, this can be viewed as a positive as it evidences that both dual pricing and Cap & Am discourage short term trading of units.

Dual pricing does better over nine years

The ranking of pricing policies changes as the time horizon moves to nine years. As expected, the base case underperforms as the costs of transactions not compensated by a spread weigh on the seed investor’s returns. Dual pricing performs slightly better over this period.

Table 2: Results over 3-year period

3-Year	Dividend Yield	Capital Return	Total Return
Base Case	4.64%	3.25%	7.89%
Dual Pricing	4.65%	2.80%	7.45%
Cap & Am	4.65%	2.96%	7.61%

Table 3: Results over 9-year period

9-Year	Dividend Yield	Capital Return	Total Return
Base Case	4.80%	3.47%	8.26%
Dual Pricing	4.86%	3.52%	8.38%
Cap & Am	4.83%	3.43%	8.27%

Slightly higher difference with 15-year hold period

At a fifteen-year time horizon, the performance observed at the nine-year interval is largely similar. The base case continues to underperform. A 22 bps annualised differential is observed between the performance of the dual pricing and the Cap & Am policy.

A 20-year period still shows differences

At a twenty-year time horizon, the ranking observed at the nine and fifteen-year intervals remains. The base case continues to underperform with the other two pricing policies showing better outcomes for long-term investors.

A 27 bps annualised differential is observed between the performance of the dual pricing and the Cap & Am policy. It should be noted, however, that other parameters can impact fund returns by similar or greater amounts (see initial model assumptions).

The base case shows that transaction costs incurred at a real estate level impact the relative performance of a fund for different investors' perspectives. Comparing this to the two alternative models demonstrates that performance for long-term investors is protected by introducing a pricing mechanism which compensates for this fact.

It should be noted that in this example the 5% spread used for the classic dual pricing exactly matches the 5% transaction costs at a real estate level.

The stress testing reveals that both models have comparative merits. Their relative

qualities are such that it is obvious why they enjoy popularity in their respective markets. The fixed nature of the classic dual pricing model makes it better suited to single jurisdiction funds. Both Cap & Am and Dual pricing methodologies provide reasonable protection from the effects of dilution and when appropriately implemented, total returns over the long term (20 years) diverge by less than 30 basis points.

'Classic dual pricing can be more effective when acquisition costs are known and stable'

Table 4: Results over 15-year period

15-Year	Dividend Yield	Capital Return	Total Return
Base Case	4.77%	3.51%	8.29%
Dual Pricing	4.89%	3.66%	8.55%
Cap & Am	4.83%	3.50%	8.33%

Table 5: Results over 20-year period

20-Year	Dividend Yield	Capital Return	Total Return
Base Case	4.67%	3.47%	8.14%
Dual Pricing	4.84%	3.65%	8.50%
Cap & Am	4.75%	3.48%	8.23%

The fixed nature of the spread in a classic dual pricing policy can lead to a mismatch between actual acquisition costs at asset level and acquisition costs levied at unit level. Introducing a dynamic quality to the spread would resolve this issue, and note that the dynamic qualities of the Cap and Am model contributes to its popularity in the market for internationally diversified funds.

‘Cap & Am can be more effective in internationally diversified funds’

Table 6: Seed Investor’s respective returns under Dual Pricing and Cap & Am methods over different levels of acquisition costs (in %).

5% acq. costs	Dual Pricing	Cap & Am	Difference
3-Year	7.45%	7.61%	-0.16%
9-Year	8.38%	8.27%	0.12%
15-Year	8.55%	8.33%	0.22%
20-Year	8.50%	8.23%	0.27%

7% acq. costs	Dual Pricing	Cap & Am	Difference
3-Year	7.19%	7.50%	-0.31%
9-Year	8.16%	8.13%	0.03%
15-Year	8.33%	8.19%	0.14%
20-Year	8.26%	8.07%	0.19%

9% acq. costs	Dual Pricing	Cap & Am	Difference
3-Year	6.93%	7.39%	-0.46%
9-Year	7.94%	8.00%	-0.06%
15-Year	8.11%	8.04%	0.07%
20-Year	8.03%	7.91%	0.12%

Note: the dealing spreads in the Dual Pricing model are not flexed as acquisition costs increase

‘Effectiveness of the Cap & Am method over classic dual pricing increases with variability of acquisition costs.’

It becomes clear that the relationship between the fixed spread and the actual transaction costs being incurred on underlying real estate transactions is critical to the comparative effectiveness of the classic dual pricing policy. The capitalisation and

amortisation policy automatically takes into account actual transaction costs incurred and as such the mechanism connects the spread imposed at a unit level with the costs incurred at an asset level.

The key message here is an obvious one. An ideal pricing policy must be designed to take into account the evolution of the level of transaction costs incurred and their variation: if these vary significantly over the lifetime of a product because of changing economic circumstances (e.g. an increase in stamp duty taxes), or because of changing portfolio allocations. This can either be achieved automatically by having a spread which is determined with reference to historical transactions, such as the capitalisation and amortisation model, or by introducing a level of governance to the spread setting process which caters for variability.

Interestingly, increasing the length of the amortisation period used under the capitalisation and amortisation policy improves its comparative effectiveness. When increased to a 7-year amortisation

period, the Cap & Am consistently outperforms the classic dual pricing method over each of a 3, 9, 15-year period and, in most cases, beyond.

This is not surprising. The increase in the amortisation period results in an increased unamortised balance on the trading NAV at any given point in time. Incoming investors are therefore charged a slightly higher ‘effective spread’. For this reason, extended amortisation periods have been considered by some as appropriate for certain types of funds.

‘Increasing the amortisation period improves the effectiveness of Cap & Am’

Table 7: Impact of amortisation period

	5Y Amort.		7Y Amort.		10Y Amort.		15Y Amort.	
	Dual Pricing	Cap & Am						
3-Year	7.06%	7.45%	7.06%	7.43%	7.06%	7.42%	7.06%	7.41%
9-Year	8.05%	8.07%	8.05%	8.25%	8.05%	8.48%	8.05%	8.51%
15-Year	8.22%	8.12%	8.22%	8.27%	8.22%	8.46%	8.22%	8.69%
20-Year	8.15%	7.99%	8.15%	8.15%	8.15%	8.34%	8.15%	8.58%

‘A downward market has no significant implications for the pricing mechanism’

The Cap & Am method seems to be slightly more responsive to changes in fund leverage as compared to the classic dual pricing model. However, open end core funds generally utilise

modest levels of debt, so the impact is not as pronounced as it might be for funds with higher levels of debt. This effect is illustrated in the Table 8.

The quantitative analysis performed so far was based on a constant rate of growth in real estate values. Within the real estate market cycle, modelling the recession phase where a decline in real estate values is expected can be of further interest. For illustration purposes, Table 9 highlights the annualised results of the seed investor over a twenty-year period when there is a decline in real estate values over this period. A capital decline of 2% per year was assumed.

As shown in Table 9, the Cap & Am model now performs relatively better than classic Dual Pricing, although the annualised differential of 2 bps is not significant.

Table 8: Impact of leverage

	25% leverage		40% leverage		50% leverage	
	Dual Pricing	Cap & Am	Dual Pricing	Cap & Am	Dual Pricing	Cap & Am
3-Year	7.27%	7.20%	7.76%	7.79%	8.08%	8.18%
9-Year	7.58%	7.29%	8.19%	7.96%	8.61%	8.41%
15-Year	7.09%	6.72%	7.81%	7.47%	8.31%	7.99%
20-Year	6.24%	5.83%	7.04%	6.66%	7.60%	7.24%

Table 9: Results over 20-year period considering downward market

20-Year	Dividend Yield	Capital Return	Total Return
Base Case	1.62%	-1.10%	0.53%
Dual Pricing	1.72%	-1.16%	0.56%
Cap & Am	1.74%	-1.15%	0.58%

Note: Results in Tables 2-9 derived from a simplified hypothetical model

4. Considerations for a hybrid pricing policy

The question is then, is it possible to take the positive factors from each of these pricing policies in order to arrive at a model that outperforms both of them?

Cap & Am comparative strengths include:	Classic Dual comparative strengths include:
It provides relative protection from the effects of dilution.	It provides relative protection from the effects of dilution.
It is derived with reference to historical transactions.	It is simple.
It is fluid and moves with reference to levels of debt and levels of acquisition costs.	Maintaining a spread outside of the NAV per unit is comparatively more effective than maintaining one within the NAV per unit.
It is readily understood by many market participants	
Cap & Am comparative weaknesses include:	Classic Dual comparative weaknesses include:
It can be complex	Lacks dynamism and can become inappropriate if not flexed to current trends.
Effectiveness of results depends on accuracy of implementation.	The effectiveness of results depends on the spread being in line with the actual asset level spread.

So what characteristics would an ideal pricing policy have?

- It would provide relative protection from the effects of dilution.
- It should be derived with reference to actual transaction costs for the portfolio.
- It should be fluid and capable of change when in the interest of all investors collectively.
- The process of altering the spread would be accompanied by robust governance.
- Key concepts would be universally understood by managers and investors alike.
- It would be mechanical and simple (provided the inputs to the mechanism are appropriately governed).
- It would be calculated and maintained outside of the underlying NAV thus increasing its effectiveness and making the fund NAV a pure representation of the intrinsic value of the underlying assets and liabilities.

As an example, another alternative pricing policy could be designed as follows:

- Track and record historical acquisition costs.
- Take the acquisition costs of the last 5 years and, rather than capitalising and amortising them, simply calculate the average % incurred over this period as % of purchase costs.
- Apply this as a spread on the issuance of new units.
- Track and record historical disposal costs.
- Take the costs of the last 5 years and calculate the average % of disposal costs incurred over this period.
- Apply this as a spread on the redemption of units.

This alternative policy, labelled ‘Dynamic Pricing’ was tested and compared with both the classic dual pricing and capitalisation and amortisation over a 20-year period with the following assumptions:

- An active fund with real estate acquisitions costs varying between 2% and 14% on given transactions over the period and;
- Real estate disposal costs varying between 0.5% and 2.5% on given transactions over the period.

The results reveal that in such an environment of regularly and materially varying levels of transaction costs, similar to that of a multi-jurisdictional fund, this dynamic spread strategy outperforms each of the other models at all time horizons except three years.

Table 10: Results of the alternative dynamic pricing

	Dual Pricing	Cap & Am	Dynamic Pricing
3-Year	7.26%	7.51%	7.45%
9-Year	8.22%	8.23%	8.33%
15-Year	8.36%	8.23%	8.52%
20-Year	8.28%	8.10%	8.49%

Note: Results in Table 10 derived from a simplified hypothetical model

Conclusions

Phase 1 of this project explored the impact of two common pricing mechanisms employed by institutional open end real estate funds.

The analysis found that there were certain differences in how the two models performed in certain scenarios (for example, when the investment period was extended or when the level of acquisition costs was increased). The analysis also found that under both models long term investors receive relatively similar returns and the seed investor is protected from large scale dilution.

To remediate these differences there are steps that can be taken to improve each of the two models individually to a point where the comparative differences are negligible. For instance, by increasing the amortisation period used under the capitalisation and amortisation approach to a point where it matches the average investor life, or by regularly re-setting the spread used based on actual transaction history or fund model portfolio for the classic dual pricing model. Such steps would need to take account of the specific strategies and market allocations of an individual fund and the pay-off between introducing complexity and change versus the materiality of potential outcomes given all the other potential variables that drive fund performance.

In all scenarios examined, it is imperative to clearly define an underlying 'intrinsic NAV' representing the underlying assets and liabilities of the fund. This is the NAV of the fund on which an appropriate pricing spread, if any, would operate.

The project also explored the possibility of combining the comparative qualities of the Classic Dual and the Cap & Am fund pricing models to provide improved results for investors.

There are of course many other aspects of this subject which merit attention. For example, there needs to be further exploration of whether alternative pricing models can be used in the same fund and the implications that arise. Further research and analysis would be also helpful regarding the governance over maintaining and resetting of spreads and whether it is appropriate to dis-apply pricing policies. These will be explored in Phase 2 of the project.

The key objective is to arrive at a policy which is consistent with the fund's investment strategy, fair to all investors, simple for investors to understand, provides flexibility to cater for variability in market conditions and is accompanied by an appropriate governance framework over the judgements and estimates of the underlying NAV and setting an appropriate pricing spread.

Appendix 1: Details of the pricing methods

Single price

- Swing – this is a form of single pricing that is far more common in financial funds and is less commonly seen within real estate funds. Effectively, it provides for a mechanism whereby the NAV is ‘swung’ upwards or downwards by a predetermined factor depending on whether the net capital flows are positive or negative. ‘Full’ or ‘Partial’ derivations of the policy exist. Proponents of this model argue that if properly designed, it protects against dilution and can act as a deterrent against frequent trading. However, many view this model as complex and difficult to explain to investors. Equally, it is not a model that is understood globally.
- NAV – another option is to simply trade directly based on the NAV of the fund. This provides for a single price that is readily understood by investors as it is determined with reference to a market standard financial reporting framework. The problem with this model is that investors are fully exposed to the impact of dilution, which can be material in some markets.

Dual

- Classic – under the classic dual price model a defined spread exists and is applied to the NAV. Units can be bought at a premium to NAV and sold at a discount to NAV. This premium is generally intended to represent the costs that have been incurred in establishing the underlying portfolio and/or the costs that must be incurred to deploy the invested capital. The discount is generally intended to represent the costs that must be incurred to sell an underlying asset in order to provide liquidity to the outgoing investor. A key point to consider in this model is how the spread is to be determined. Is it to be determined based on a fixed rate which reflects the cost of transaction in a given market? or is it based on a more dynamic approach reflecting actual historical acquisitions or an estimate of the cost of projected future acquisitions? The classic dual price model is effective in protecting against dilution but the judgement that can be applied in setting the spread is a matter that receives some criticism. The model is readily understandable but has been observed to present challenges in marketing to international investors who are not familiar with it.

- Capitalisation and amortisation – this model has been popular among the open end real estate funds launched in Europe in the post-crisis period. It is also a model that has been misunderstood by some within the market. Effectively this is not a single pricing model but a dual pricing model that spreads the costs of transactions out over a defined period. The starting point for this process is the establishment of a NAV that reflects the intrinsic value of the underlying assets and liabilities in accordance with the respective fund’s offering documents. After this, a ‘trading NAV’ is determined by capitalising costs incurred in acquiring new properties and amortising these over a defined period. The difference between the intrinsic NAV and the trading NAV serves as a spread. Many funds borrow principles from the INREV Guidelines in constructing this approach. To give an example:
 - Acquisition costs incurred by the fund are capitalised to the trading NAV and amortised over a period of five years.
 - New investors buying into the fund at this trading NAV are effectively charged a spread because the unamortised balance is included in the price they pay.

- This 'subscription premium' is charged over a period of five years as the amount amortises.
- However, should the investor wish to leave the fund prior to the completion of this five-year period they will generally be charged this unamortised balance. i.e. investors cannot exit the fund without paying this.
- In addition, there is generally a redemption levy applied to all redemptions to cover potential marketing and disposal costs which may result from significant redemption requests.
- These items combine to constitute a dealing spread that is determined with reference to a recognised industry standard.

Proponents of this model cite the facts that:

- it is a dual pricing model and is designed to protect investors from dilution,
- as the spread is derived with reference to actual historical transactions it removes subjectivity,
- as the principles are grounded in the INREV guidelines they are readily understood by European market participants,
- as the costs incurred in acquiring properties are capitalised it avoids the initial spike in NAV that can be experienced and is therefore more palatable to certain investor types.

Critics of this model point to the fact that it is more complex than a classic dual model. Additionally, if the fund were to go through a period of inactivity the capitalised costs could become fully amortised thereby allowing investors to buy units at intrinsic NAV with no spread. However, it is often argued that this may be beneficial as allowing investors to buy at NAV without a spread after a long period of inactivity could result in capital inflows to the benefit of the fund and investors collectively.

Appendix 2: Definitions

Fair value of vehicle according to INREV

Guidelines

Represents the NAV as reported by the manager in accordance with the INREV NAV module.

Fair value (IFRS definition)

IFRS defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The IFRS definition of fair value is assumed in the INREV Guidelines, except where specifically mentioned otherwise.

Net Asset Value – NAV

Reflects a vehicle's GAV less all liabilities as per the chosen valuation principles.

Open End

An investment vehicle with a variable and unlimited amount of capital which may be accepted and has an infinite life. Investors may purchase or redeem units or shares from the vehicle as outlined in contractual agreements.

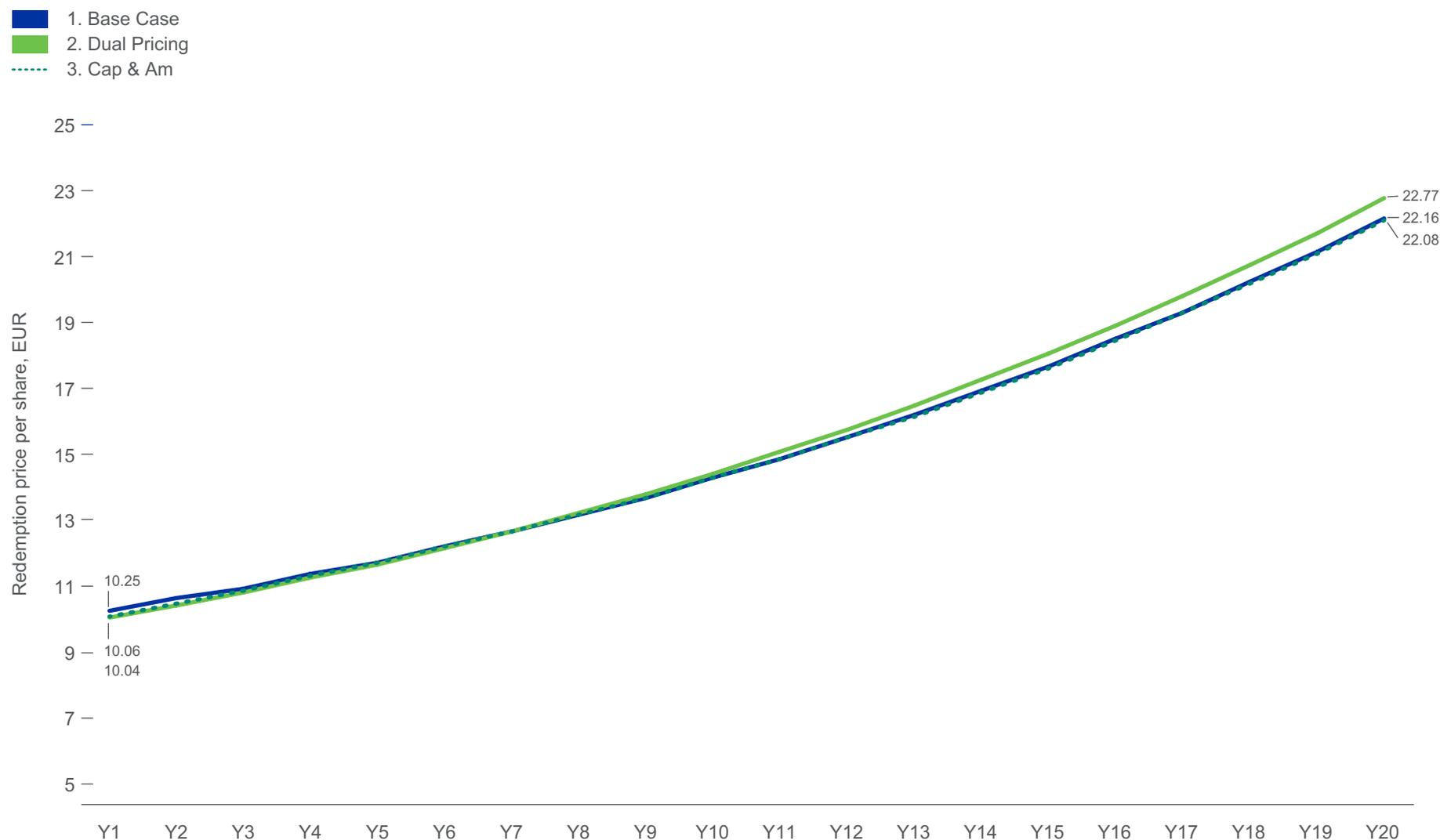
Open-end Commingled Fund

A commingled fund with an infinite life, which allows periodic entry and exit of investors, and typically engages in ongoing investment purchase and sale activities.

For more terms and definitions see [Global Definitions Database](#)

Appendix 3: Additional graphical representation of findings

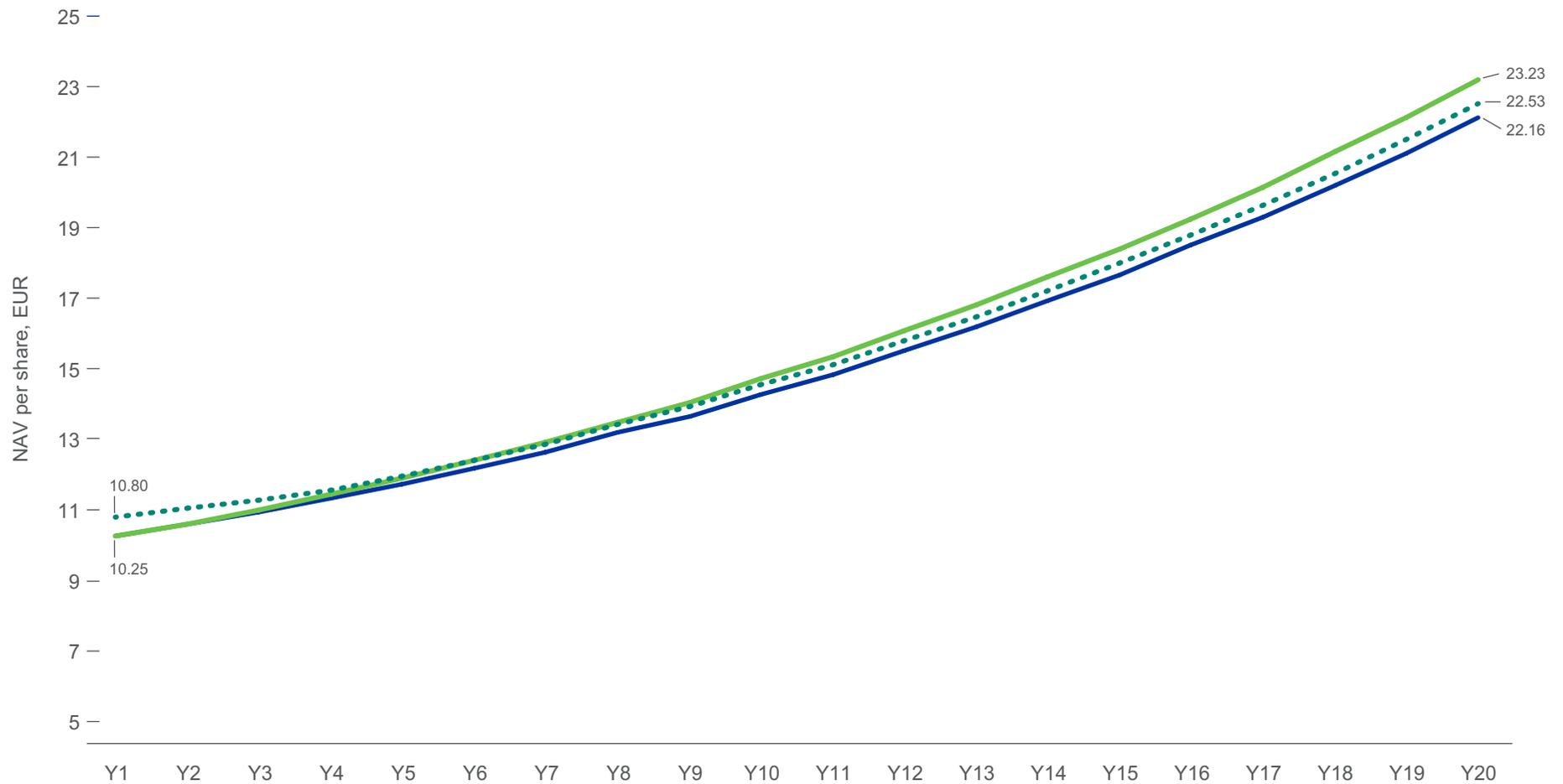
Figure 3: Redemption price per share, €



Note: Results derived from a simplified hypothetical model

Figure 4: NAV per share, €

- 1. Base Case
- 2. Dual Pricing
- ⋯ 3. Cap & Am



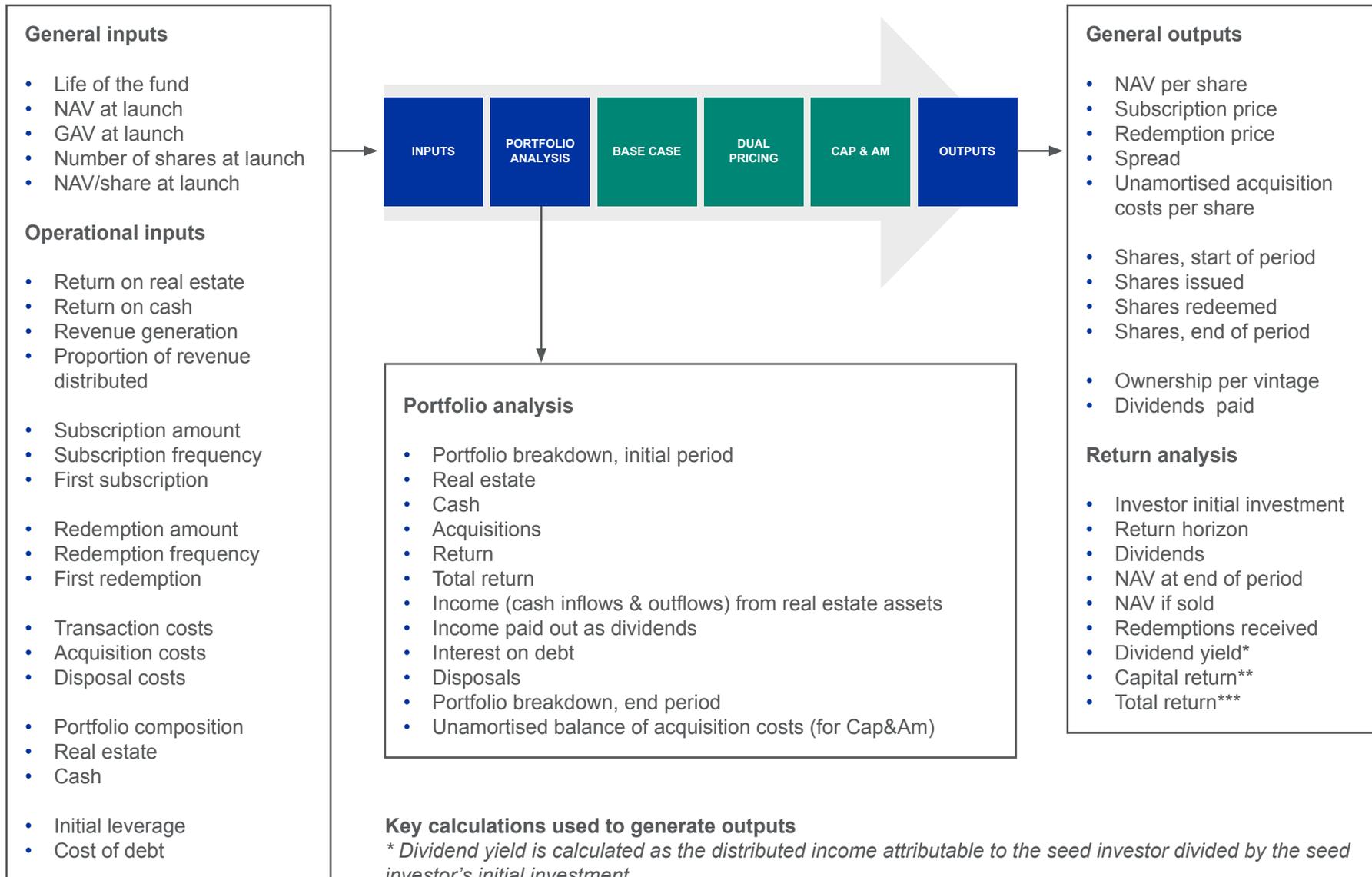
Note: Results derived from a simplified hypothetical model

Appendix 4: Open End Fund Pricing - Phase 1 – model build up

- The Phase 1 project set out to undertake a comparative analysis of the merits and flaws of the principal types of alternate pricing policies applied by open end real estate funds.
- To do this, a simplified financial model was constructed which allows the performance of a hypothetical real estate fund to be tracked over a twenty-year period.
- This model allowed for various outcomes and results for investors to be measured over any given time period.
- The model was used to assess the impact that alternate pricing policies have on the measured outputs providing a basis on which to comment on the relative qualities of the respective pricing policies.
- The model was built by a specialist team from EY in Luxembourg overseen by Robert White, Partner in EY's Real Estate Practice.
- The guiding principle behind this model is to keep all parameters consistent in order to isolate the effect that different pricing policies may have on investor experiences.
- Details on how the model works are provided on the next two pages.



- The financial model is structured as a series of worksheets as shown above.
- INPUTS and PORTFOLIO ANALYSIS feed into a BASE CASE, which calculates intrinsic NAV.
- INPUTS and PORTFOLIO ANALYSIS also feed into the modelling of DUAL PRICING and CAP&AM.
- Each of these worksheets feeds into OUTPUTS, which produces total return, dividend yield and capital return data.
- This dataset facilitates comparison between the seed investor's experience under different pricing models.
- The workings of INPUTS, PORTFOLIO ANALYSIS and OUTPUTS are described in more detail on the next page.
- The workings of BASE CASE, DUAL PRICING and CAP&AM are covered in the third page of this Appendix.
- The model is a simplified representation only and does not include features such as netting of subscriptions and redemptions, rebalancing or asset sales to repay debt, which will vary between funds and from year to year.
- The model is deterministic rather than probabilistic.
- The model is built in Microsoft Excel.



- General inputs**
- Life of the fund
 - NAV at launch
 - GAV at launch
 - Number of shares at launch
 - NAV/share at launch
- Operational inputs**
- Return on real estate
 - Return on cash
 - Revenue generation
 - Proportion of revenue distributed
 - Subscription amount
 - Subscription frequency
 - First subscription
 - Redemption amount
 - Redemption frequency
 - First redemption
 - Transaction costs
 - Acquisition costs
 - Disposal costs
 - Portfolio composition
 - Real estate
 - Cash
 - Initial leverage
 - Cost of debt

- Portfolio analysis**
- Portfolio breakdown, initial period
 - Real estate
 - Cash
 - Acquisitions
 - Return
 - Total return
 - Income (cash inflows & outflows) from real estate assets
 - Income paid out as dividends
 - Interest on debt
 - Disposals
 - Portfolio breakdown, end period
 - Unamortised balance of acquisition costs (for Cap&Am)

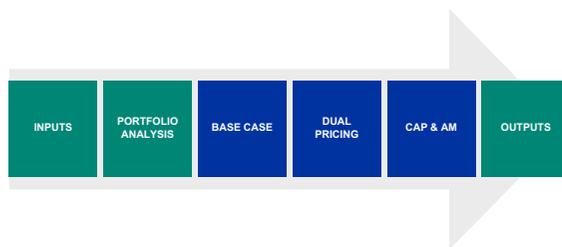
- General outputs**
- NAV per share
 - Subscription price
 - Redemption price
 - Spread
 - Unamortised acquisition costs per share
 - Shares, start of period
 - Shares issued
 - Shares redeemed
 - Shares, end of period
 - Ownership per vintage
 - Dividends paid
- Return analysis**
- Investor initial investment
 - Return horizon
 - Dividends
 - NAV at end of period
 - NAV if sold
 - Redemptions received
 - Dividend yield*
 - Capital return**
 - Total return***

Key calculations used to generate outputs

* Dividend yield is calculated as the distributed income attributable to the seed investor divided by the seed investor's initial investment.

** Capital return is calculated as the increase in fund NAV attributable to the seed investor

*** Total return = dividend yield + capital return



Note: Base Case is the same as Dual Pricing with one difference – Base Case has no redemption levy

Dual pricing

- New subscriptions
- NAV, initial period
- NAV, after subscriptions
- Outstanding shares, beginning and end
- Debt raised over the period
- Real estate acquired during period
- Annual acquisition costs
- Fund NAV after acquisitions
- Fund GAV after acquisitions
- Disposal costs
- Redemption levy
- Share redemptions
- Redemption vintage
- Outstanding shares after redemptions
- Fund NAV after redemptions
- Fund GAV after redemptions
- Dividend paid
- Cost of debt
- Fund NAV after income/dividend
- Fund GAV after income/dividend
- Fund GAV, end of period
- Fund NAV, end of period
- NAV per share, end of period
- Subscription price per share
- Redemption price per share

Cap&Am

- New subscriptions
- NAV, initial period (net of unamortised acquisition costs)
- NAV, after subscriptions
- Outstanding shares, beginning and end
- Debt raised over the period
- Real estate acquired during period
- Annual acquisition costs
- Unamortised balance of acquisition costs
- Fund NAV after acquisitions
- Fund GAV after acquisitions
- Disposal costs
- Redemption levy
- Share redemptions
- Redemption vintage
- Outstanding shares after redemptions
- Fund NAV after redemptions
- Fund GAV after redemptions
- Dividend paid
- Cost of debt
- Fund NAV after income/dividend
- Fund GAV after income/dividend
- Fund GAV, end of period
- Fund NAV, end of period
- Fund NAV, end of period (net of unamortised acquisition costs)
- NAV per share, end of period
- Subscription price per share