

STRUCTURED RETAIL PRODUCTS

Meeting a genuine customer need or luring savers
into gambling with their money?

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1) Introduction

The authors' first encounter with Structured Retail Products (SRPs) was in 2019 when a broker friend asked one of us for advice on whether he should offer a particular product (Exhibit 1 below) to his clients. The product was being promoted to him by a MiFID lead distributor.

The offer to investors seemed too good to be true. The promise was a return of their investment plus a minimum bonus of 40% if an index of European shares was above its starting level after five years. If the index ended up below its starting level, the downside was the percentage fall in the index, limited to 15%. This was at a time when interest rates were close to zero. The index was a bespoke one, designed by the investment bank underwriting the product. A chart in the brochure showed the bespoke index outperforming its benchmark, the EuroStoxx 50, by an average of 4.46% per annum since 2001.

Then we looked deeper and saw that the index had unique features which had a potentially significant impact on the customer proposition. Up to 50% of the stocks in the index at any time would consist of shares about to go ex-dividend in the following month. When a share goes ex-dividend, the price falls. The proportion of shares about to go ex-dividend at any time in the bespoke index was significantly higher than for an index without this constraint.

Our conclusion that the index could be expected to significantly underperform a "normal" index in future was completely at odds with its outperformance relative to its benchmark since 2001. Then we noticed that the index was launched in 2015, so performance in the 14 years prior to that date had been back-constructed. Our conclusions on future performance are supported by an analysis of the index's performance in the three years since the product was launched: – it has underperformed its benchmark by over 5% per annum.

The brochure included 1,304 hypothetical back-tests of the product, all showing investors getting at least the minimum return of 40% after five years, with not a single instance of them getting less than their money back. They did this by assuming a product launch on each trading day. However, the chosen back-testing period commenced in July 2009, post the financial crisis, and did not go back to 2001 as did the comparison of the index with its benchmark.

After advising the broker friend to avoid the product, we approached the Central Bank of Ireland with our concerns in the hope that they would intervene before the closing date to ensure that full information was provided to prospective investors. That didn't happen but we were pleased that, when the next version of the product was launched, the number of back-tests had been increased to 2,609 and now showed 830 or 32% with a capital loss. The Central Bank had clearly listened to us, as the new version's back-tests went back to August 2004 and caught the financial crisis. We still had principled objections to multiple overlapping back-tests and bespoke indices created with hindsight but we were satisfied that the Central Bank would clamp down on their potential to mislead.

Our next encounter with SRPs was on New Year's Day 2022, when one of us saw a front-page ad in the Irish Times from a well-known MiFID lead distributor, offering "5% a year, even in a falling market". The ad went on to say that the bond "pays a fixed coupon of 5% every year if an underlying European equity index has not fallen by more than 30% since the start date of the Bond." Capital would be secure provided the index hadn't fallen more than 50% from its starting level by the end of year 10.

A close study of the marketing material indicated that the offer was more nuanced than appeared at first sight and, to our dismay, it was showing 1,939 back-tests all with no loss of capital!

Once again, we approached the Central Bank of Ireland with our concerns. We received a sympathetic hearing and in April 2022 the Bank sent a "Dear CEO" letter to relevant firms largely echoing our concerns. Yet we saw no appreciable improvement in the marketing of these products. Therefore, we decided to investigate the product genre in more detail and to bring our concerns to a wider audience. Hence this paper.

2) Background

In the long-run equities perform better than deposits. But they are riskier – there is no free lunch. This is common sense and most retail investors understand it to be the case. There is a spectrum of risk appetite from those who can handle full equity investment through to those who want no risk at all to either their capital or indeed their interest.

In the early 1990s banks in particular recognised that there was a large target market of those for whom any risk to their capital was anathema but, arguably irrationally, they had a more cavalier attitude to future interest. The derivatives market was especially suited to meet this demand. The basic ingredient was the call option¹, especially on a popular index of shares. Call options are heavily geared instruments where there is a high likelihood of losing all the option premium but on the other hand there is the potential for gains of a multiple of that premium. Now with interest rates at, say, 5% p.a. the target market was happy to forego future interest and place it (after meeting expenses and profit) at the options table. These products were called Tracker Bonds in Ireland and were very popular in the '90s and early 2000's.

Many of these Tracker Bonds were wrapped in life insurance products and therefore actuaries were actively involved in their design and, more pertinently for the main thrust of this paper, in ensuring that marketing material did not have a distorting influence on Policyholder Reasonable Expectations (PRE).

Then, almost overnight, the party ended. Wholesale interest rates fell to near zero or even negative. Tracker Bonds as they had evolved were no longer viable. However, the culture of derivative-backed retail products which gave market upside had taken hold except that in the new reality the investor would need to accept some risk to capital.

As noted above the natural instinct of the target market was to be extremely averse to risk to capital. Earlier versions of this new breed of Structured Retail Products (SRPs) put caps on the extent of capital at risk at, say, 10% or 15%. This constrained the amount of upside potential that the derivatives market could provide on standard indices and led to the development of bespoke indices with structural downward biases to make the options cheaper. It also led to increasingly complex structures – necessity is the mother of invention. Some SRPs launched more recently have abandoned the cap on the risk to capital; yet from the brochures we have seen they seem to have been targeted at the same risk-averse market.

In our view the level of transparency in some SRP brochures did not adequately address this increased complexity and opacity or more importantly the level of risk of loss which could in some cases extend to the investor's entire capital. Furthermore, many appeared to demonstrate how the product would have performed in the past by showing thousands of multiple overlapping back-tests where the product never produced a capital loss.

The concept of PRE has been replaced by regulatory requirements such as to be "fair, clear and not misleading". In this paper we set out several anonymous exhibits of recent SRPs. Readers can make their own assessments of whether this objective has been achieved in all instances.

In section 3 we give examples of two quite different capital at risk propositions which sometimes look "too good to be true".

Section 4 shows how this illusion can be facilitated by bespoke indices with downward biases.

Section 5 highlights a particularly clinical example of this syndrome – fixed decrement indices.

In section 6 we show how multiple overlapping back-tests can disguise the true impact of these constructs.

Section 7 sets out the regulatory backdrop including recent initiatives by the Central Bank which we believe have not been fully effective.

Section 8 outlines ESMA thoughts on "good practice" which we believe would lead to full transparency.

The paper ends with conclusions (Section 9) and recommendations (Section 10).

¹ For example, the option but not the obligation to buy a share in 5 years' time at its current price.

3) Structured Retail Products

The usual architecture involves four parties. At the front end is the financial adviser advising the end investor and regulated under MiFID². The construct is usually put together and “distributed” to financial advisers by a firm specialising in the sector, which we call a “lead distributor” in this paper, employing the same term as was used in one prospectus for the underlying notes. The lead distributors are also regulated under MiFID. The underlying financial instrument might be in the form of notes provided by an investment bank, which is also the guarantor of the product. Finally, the instrument itself usually utilises some index. In the days of Tracker Bonds, the index or indices would be familiar at least to participants in the financial services industry. But in the low interest rate environment this role appears to be dominated by specially constructed indices, often with an inbuilt feature which makes options on them cheaper. We address this aspect more fully in the next section.

An earlier example of an SRP is given by Exhibit 1 which gave two options, with different minimum guarantees in relation to ultimate return of capital. We focus on one of the options:

Exhibit 1

If the index exceeds its initial level after 5 years the full upside is paid subject to a minimum of +40%. Otherwise, there is one-for-one participation in any fall in the index subject to a maximum loss of 15%, i.e., the investor is guaranteed at least 85% of their initial investment.

Note that the upside resembles a binary option. The index only has to exceed its initial level to pay a significant minimum percentage. Let us run a naïve slide rule over this proposition from the manufacturer’s perspective to get a sense of the odds. The costs are shown in the Key Information Document (KID)³ as 1.44% p.a.; let’s say 7% in total. Wholesale interest rates were in effect zero when this product was on offer so the “guarantee” of 85% of initial capital would have cost 85%. That leaves 8% to play with “at the tables”. With a minimum upside of 40% for the 8% stake that looks like the odds of the index being even just above its initial level in 5 years’ time need to be quite long.

It seems fairly clear that for these odds⁴ to make sense there must be a high likelihood of some capital loss even if it is relatively modest. In the jargon the product is a “high likelihood/low impact” capital at-risk proposition.

In passing, we note that the product brochure showed that in 1,304 back-tests (see section 6) performed by the product provider, the product would always have paid at least the minimum return of +40%.

We haven’t mentioned the index yet; that is for the next section. But we note that the brochure indicated that the index had very comfortably beaten its benchmark, the EuroStoxx 50, over the previous 18 years.

“Kick-out” bonds, exemplified by the next exhibit, present a “low likelihood/high impact” capital at risk proposition instead of the “high likelihood/low impact” one of Exhibit 1.

Exhibit 2

This has a product term from one to ten years. If the index finishes above 100% of its initial level in the first 5 years or, failing that, above 80% in the second 5 years (with quarterly observations) the product will “kick-out”, paying initial capital plus 10% p.a. simple for each quarter in force. If it has not kicked-out by the end of year 10 and if the index is still above 50% of its starting level, the initial capital is returned with no interest. Otherwise, the investor suffers the full hit to capital, implying a minimum loss of 50% of the initial investment after ten years.

Let us run the naïve slide rule over this proposition to get a sense of the “odds”. In Figure 1 below we model this product using stochastic methods⁵ but suffice to say that our model does not disagree substantially with the

² In the exhibits in this paper the main regulatory framework is the EU’s Marketing in Financial Instruments Directive (MiFID, see section 7)

³ KID is a statutory document required by the EU’s PRIIPS (Packaged Retail Insurance and Investment Products) regulations.

⁴ The option needs to pay >55% (over the guaranteed floor of 85%) for a premium of 8%. That is odds of 6/1 against the index being above its initial level after 5 years.

brochure’s back-tests on the upside potential (as opposed to the downside risk). The average upside, if payable, is +23% (c. 9 quarters at 10% p.a.) and the average loss, if suffered, is 70%, implying that the investor gets only 30% of their capital back on average in the event of a capital loss. Given the short average duration of the product, interest is not a major factor. Even so and making allowance for expenses and profit it can be seen that the odds of a capital loss can be much lower than for Exhibit 1 but given the scale of the losses those odds would be far from insignificant for the typical investor. This is a “low likelihood/high impact” proposition.

The provider is required under MiFID to ensure that the product meets an identified customer need. It is difficult to imagine a sizeable target market for a product that either (a) returns 10% per annum simple for less than three years on average or (b) causes the investor to lose around 70% of their investment on average after 10 years if it hasn’t kicked out previously and the index is below 50% of its initial level at the end of year 10. A passing observation from Figure 1 is that if the product “survives” three years the conditional probability that it will ultimately finish over the precipice⁶ is 145/363 or 40% – making for an anxious seven years!

Figure 1: 1,000 simulations⁵ of pay-outs on €1 units of Exhibit 2

Kick out after	Number	Pay-off/unit
Year 1	476	€1.10
Year 2	118	€1.20
Year 3	43	€1.30
Year 4	37	€1.40
Year 5	23	€1.50
Year 6	76	€1.60
Year 7	19	€1.70
Year 8	10	€1.80
Year 9	8	€1.90
Year 10 above -15%	3	€2.00
Year 10 above -50%	42	€1.00
Year 10 below -50%	145	€0.30

The brochure for Exhibit 2 showed that in 2,639 back-tests there were no occasions of a capital loss.

⁵ We used a typical lognormal model for any stochastic analysis. This involved the same 1,000 10-year simulations. The average total return (before decrements) was 6.2% p.a. over the 10 years and the standard deviation of one-year returns was 19.4%.

⁶ Harking back to the scandal of “precipice bonds” in the UK at the start of the millennium where customers faced a situation that if an index was above a certain level all was well but if it was even a slight bit below that level they incurred a serious loss.

4) Bespoke Indices

As mentioned in the previous section we have found that, in Ireland anyway, these constructs usually make use of, for want of a better term, bespoke indices and not the usual “household names”. The primary purpose of the original indices was to provide informative barometers for the performance of stock markets. Their use by Tracker Bonds was a derived one. The primary purpose of the bespoke indices is to be the instrument backing SRPs or similar products.

An entire industry has grown up of firms specialising in facilitating bespoke indices either for “white labelling” or in providing their own smorgasbord of variants. At time of writing, one firm, which would be virtually unknown outside the world of index providers, shows on its website that it is facilitating more than 6,000 indices.

Often the ostensible purpose of the bespoke index is to meet some demand for, say, ESG based products and that may be all that there is to it. However, in the two exhibits mentioned in the previous section, a factor in the choice of index is that it makes for cheaper options than more familiar indices, a point that was openly explained to professional financial advisors in the case of Exhibit 1. This is achieved by including some downward bias in the construction of the index.

Exhibit 1 involved the investment bank developing a particularly innovative construct to make options on the index cheaper. As the introduction recalls, this is what set the authors off on this journey. In the above-mentioned presentation to professional financial advisers, the methodology was described as “low volatility/next dividend”. It began by explaining how “low volatility” meant cheaper options which is of course usually the case though a bit surprising that it would be the case for the options hedging Exhibit 1⁷.

The “next dividend” aspect of the methodology was especially novel. In addition to focusing on dividend paying stocks, the index of 50 stocks is rebalanced each month to target that up to 25 will be going ex-dividend in the next month. As the index is “price-only” this creates a structural downward bias versus more conventional price-only indices. The above-mentioned presentation stated that on average a quarter⁸ of the stocks in the index each month are about to go ex-dividend. In a note to the Central Bank on this product we estimated the resulting “drag” on the index at c.1.5% p.a.

There was of course considerably more to the index’s construction. For example, the presentation to professional advisers pointed out that dividend-paying stocks are a signal to investors of a strongly performing company and not merely a device for making options cheaper. There are a number of other filters in the algorithm for construction and maintenance of the index. The index was launched in July 2015, but it was “back constructed” to mimic the algorithm back to February 2001. In those 14 years prior to its actual launch the algorithm achieved a remarkable outperformance over its EuroStoxx 50 benchmark of 5.4% per annum, despite the structural downward bias.

In passing, we observe that the index has underperformed its benchmark since its actual launch date in 2015 by 3.0% p.a.⁹ We acknowledge that stocks in the index would not have been chosen to align with the benchmark (as would be the case with passive investment funds) so deviations from the benchmark could be expected to be greater than for one aiming to align to a benchmark.

⁷ It is a well-known feature of the Black Scholes formula that the price of vanilla options increases with an increase in volatility of the underlying stock/index and vice versa. The presentation was in the context of the index without reference to any particular product. As noted in the last section, Exhibit 1 is in effect a “binary” option so far as the upside is concerned. Now low volatility will only make the option hedging this product cheaper if it is expected not to pay out, i.e. if it is “out the money”.

⁸ Because dividend dates tend to be concentrated at certain times of the calendar year it would not be practical to, for example, have the maximum allowable (50%) going ex-dividend each month.

⁹ To October 14th 2022. The 3% per annum underperformance is considerably more than the figure of 1.5% per annum in our 2019 note to the Central Bank, which was a conservative estimate.

5) Fixed Decrement Indices

Exhibit 2 used a Fixed Decrement index. Fixed Decrement indices drew particular comment from the Central Bank in its “Dear CEO” letter of April 2022 (see section 7).

Perhaps the use of Fixed Decrement indices is best illustrated by the following example of a product which was launched in September 2022:

Exhibit 3.

Investors get a 5% coupon each year the underlying index is above 50% of its starting level; the product kicks-out, repaying 100% of capital, if the underlying index is above 85% of its starting level at year-end, from year 3 to year 10; if the product has not kicked-out by the end of year 10 either (a) the underlying index is above 50% of its initial level, in which case 100% of capital is returned plus the balance of 50% in coupons, or (b) the underlying index has fallen by more than 50% from its initial level, in which case the investor suffers the full loss in the underlying index.

The underlying index was launched on 20th December 2021 at 1,000. Actual dividends would be reinvested i.e., it started off as a Total Return index. A fixed decrement of 50 per annum, i.e., initially 5%, is deducted in lieu of dividends which would normally be excluded from a price-only index. S&P explains that a fixed decrement could be a good proxy for dividends that tend to retain their monetary level as opposed to moving with the price of the stock. However, the brochure for Exhibit 3 explains that in this case the decrement is likely to exceed actual dividend payments.

The underlying index had fallen to 806.06 by the time the brochure for Exhibit 3 was printed on 21st September 2022. This would imply that the impact of the 50 per annum fixed decrement was then running at 6.2% p.a. As the index falls the effect of the fixed decrement increases as a percentage. Indeed, if the underlying index approaches the critical point of being 50% of its value at the product’s start date, the percentage effect of the fixed decrement doubles to 12.4% (assuming no change in the index level from the time of printing the brochure to the product’s start date). Of course, the reverse would happen if the index were to rise in value but as the product would kick-out in that scenario the overall effect is asymmetric. In this way, the option backing the product is cheaper than if a percentage decrement or simply a price-only approach had been used. The results of our stochastic model⁵ of this product were as follows:

Figure 2: 1,000 simulations of pay-outs on €1 units of Exhibit 3

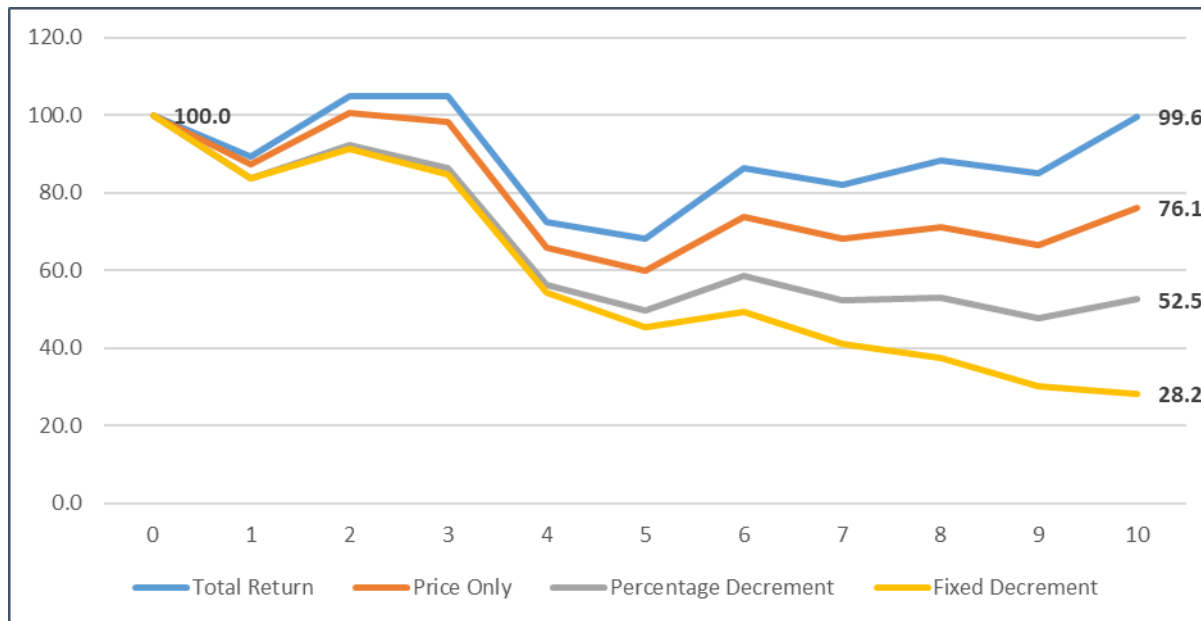
Kick out after	Number	Pay-off/unit
Year 1	0	€1.05
Year 2	0	€1.10
Year 3	641	€1.15
Year 4	52	€1.20
Year 5	30	€1.25
Year 6	21	€1.30
Year 7	6	€1.35
Year 8*	13	€1.40
Year 9	2	€1.45
Year 10 above capital barrier	59	€1.50
Year 10 below capital barrier	176	€0.53

**Note that there is an element of simulation randomness in the above results with Year 8 “inconsistent” with the trend in numbers of simulated pay-outs.*

Figure 2 above shows a 17.6% probability of suffering a capital loss. The average pay-out of 53%, if the product ends up below the -50% barrier, consists of just 26% in return of capital and 27% in earlier payment of coupons. The brochure presented 2,142 back-tests all showing no capital loss.

Figure 3 looks at one of the simulations which gave rise to a mid-range capital loss and examines how different indices of the same simulated performance compare.

Figure 3: Comparison of different indices on the same stock performance



The Total Return in the simulation finishes at 99.6% of its initial level after 10 years.

A Price-Only index – typical of indices familiar to investors and their financial advisers - finishes at 76.1% of its initial level.

A 6.2% p.a. percentage decrement on the Total Return finishes at 52.5% of its initial level and misses the “precipice” of -50%.

The Fixed Decrement finishes at 28.2% of its initial level and has not “kicked-out” prior to the 10-year maturity date. At this index level the fixed decrement is running at 22% p.a. and the index is effectively in a “death spiral”. Note that despite a market bounce in the last year of this simulation the Fixed Decrement index still falls, unlike the other versions. The fact that the index finishes at less than 50% of its starting level means that the investor suffers the full capital loss of 71.8%¹⁰. This is a situation where total returns have moved “sideways” after a late bounce and the investor might find it very difficult to reconcile their outcome with the results in the brochure showing 2,142 back-tests with no instance of a capital loss.

If the simulations are run with a constant percentage decrement of 6.2% p.a., the probability of suffering a capital loss almost halves, from 17.6% to 9.0%. This is because a percentage decrement falls in absolute terms as the index falls but a fixed decrement increases in percentage terms in that situation. Similarly, if the index is of the more normal price-only type the probability of suffering a capital loss falls to 3.1%. Given that the first calls on the Put¹¹ are expenses and profit it can be seen that no viable product could be constructed with these alternative indices.

This shows the significance of a fixed decrement in reducing the price of the hedging option instruments for this product but of course also in having the effect of greatly increasing the risk of significant capital loss.

¹⁰ Mitigated in this version by potentially some early payment of coupons

¹¹ The product is effectively selling the downside risk, in derivatives jargon a Put

6) Back-tests

The table below shows summary facts for four recently available SRPs (all launched after the Central Bank “Dear CEO” letter – see section 7). They involve three different lead distributors with two different investment banks providing the underlying notes.

Table: Comparison of KID figures with the brochure back-tests

Exhibit	Type/Term	SRI	Unfavourable Scenario (i.e. 10% worst)	Number of back-tests	Back-tests with capital loss
2	Kick-out/10	5	-67%	2,639	0
3	Kick-out/10	4	-42%	2,142	0
4	Kick-out/5	6	-98%	1,304	0
5	Floored/5	2	-10%	4,518	0
6	EuroStoxx 50	4	+3%	2,501	56

Brief description of Exhibits:

Exhibit 2 – see section 3)

Exhibit 3 – see section 5)

Exhibit 4 – kicks out with 12% p.a. bonus if all of 3 stocks are above 70% at each anniversary; if it survives 5 years and the loss on any of the 3 stocks is more than 40%, the loss on the worst performing stock is deducted

Exhibit 5 – 125% of return in index added to capital but overall return floored at 90% initial capital

Exhibit 6 – EuroStoxx 50 price-only index 5 year straight investment, observed in 10 year period beginning January 1st 2010; it is included here as a sort of benchmark

The table shows the back-test information provided in the marketing brochures, to contrast with the statutory information required in the Key Information Document (KID). A word of explanation is needed for the KID. Its presentation of future possible scenarios and future risks is essentially forward looking though it does use historical data to calibrate the parameters of the lognormal based stochastic model underlying the KID. For Category 3 PRIIPS³ the process of simulating the future is done by “bootstrapping” from past data – a process which has drawn the obvious criticism that it is an affront to the rubric that “the past is not necessarily a good guide to the future”. This is plainly the case for the first moment, i.e. the actual performance, but intuitively the higher moments which measure variability might be less sensitive to experience bias and we found that the KID did give a reasonable sense of the riskiness of the exhibits we examined.

The Statutory Risk Indicator (SRI) is an overall measure of riskiness and is calibrated as follows: The worst 2.5% outcome or Value at Risk (Var) from the forward-looking simulations is matched to that of a straightforward investment to find an equivalent volatility, the so-called Var Equivalent Volatility or VEV. The following table is then used to assign an SRI to the product.

Table: PRIIPS classification of risk on retail investment products

Var Equivalent Volatility (VEV)	Summary Risk Indicator (SRI)
<0.5%	1
0.5% - 5%	2
5% - 12%	3
12% - 20%	4
20% - 30%	5
30% - 80%	6
>80%	7

The other useful information in the context of this paper is the Unfavourable Scenario. This is the return, at the end of the recommended term of the product, which would be the worst 10% outcome of the simulated forward-looking scenarios.

It should be noted that the SRI tends to be shown in marketing brochures but in none of the exhibits that we examined did we find reference in the marketing brochures to the Unfavourable Scenarios. The KID is recognisably a statutory document; and might be perceived by some investors as somewhat akin to the leaflet in a packet of Paracetamol, and would in our estimation be a much less significant factor in the sales process than the brochure.

SRPs can be very poorly suited to the standard methodology for forward simulating these scenarios. For example, the term for the scenarios in Exhibit 2 is taken to be 10 years, even though the expectation is that the majority will kick-out within 3 years. Another example is that a floor of 90% will always get an SRI rating of 2 even if there is a zero chance of it delivering in excess of that! On the other hand, kick-out versions tend to get the rating of a fully equity exposed product because the worst 2.5% of outcomes will be of that order, and they thus get no reduction for the level of “soft protection” provided by the kick-out mechanism.

Despite these reservations with the KID methodology, we cannot quibble with the SRI ratings of the exhibits in the Table. Of interest is Exhibit 3 which gets a lower SRI than Exhibit 2 despite the fact that its 2.5% worst underlying index outcome would be similar. The difference is that Exhibit 3 has the possibility of paying coupons along the way to maturity.

Nor can we quibble with the Unfavourable Scenarios which reflect the 10% worst outcome in the simulations. Again, it can be seen that Exhibit 3 benefits from the possibility of early payment of coupons compared to Exhibit 2. We also note that the figure for Exhibit 2 is consistent with the results of our model shown in Figure 1 that there would be a 14.5% chance of some capital loss.

Exhibit 5, having a floor of 90%, naturally cannot have a worse scenario than -10%.

Exhibit 4 returns 2% or less on 10% of simulations and truly earns its SRI rating of 6.

As mentioned above, these forward-looking scenarios have not been shown in the marketing brochures for the examples we have seen, which is regrettable. But a section on back-tests is ubiquitous. Whilst there are plenty of statutory-type warnings that capital is at risk, investors in kick-out bonds in particular will have one question uppermost in their thoughts: what are the actual chances of that scale of capital loss? And of course, it is a MiFID requirement for firms to ensure that investors are reasonably able to understand the nature and scale of the risk of capital loss that the product entails. The back-tests are the only items of information in the brochures that give any quantifiable sense of the risks involved.

However, there appears to be something very strange with the back-tests. We know that we have been enjoying a long period of broadly favourable stock market performance (at least until recently). There can be no serious objection to showing how the product would have performed in the recent past. Investors hardly need to be warned that “the past is not a reliable guide to the future” and they will be aware of the broadly benign backdrop and will make mental adjustments for that. But there is really only scope to show one or two independent back-tests. The providers show thousands of back-tests by assuming a product launch on each trading day. Now, if a five-year product launched on Monday does not produce a capital loss in 5 years’ time., then most likely neither will one launched on Tuesday – in the jargon they are not independent observations.

But there must be something more than mere lack of independence in the overlapping back-tests. Our benchmark, EuroStoxx 50, performed well in its 10-year observation period. Indeed, despite being a price-only index, the 10% worst outcome for 5-year products starting on each of the 2,501 trading days in the first 5 years of the observation period was a positive +3%. Despite that overall good performance, 56 of the back-tests would have shown the index falling over a 5-year period. That would still be a very flattering result in the context of forward simulations. We are confident that if we chose 50 stocks at random to form a bespoke index, we would get similar results. To get zero failures would be a truly remote possibility, even allowing for the lack of independence in overlapping tests drawn from the same strongly performing market.

And yet we see that, for all of our exhibits, not one overlapping back-test produced a loss of capital. As mentioned before, Exhibit 1 (not in the Table) had 1,304 overlapping back-tests, all showing a minimum +40% return. Reflect that Exhibit 4 had a 10% chance of delivering capital losses of 98% or more and yet all 1,304 (coincidentally the same number as for Exhibit 1) of its back-tests produced no capital loss.

Now, despite the warning in the rubric, past performance does have some relevance for the future. The whole active investment management industry depends on there being a linkage. Yet we agree with the sentiments of the below caveat which was included in the brochure for Exhibit 4.

Limited Usefulness of Past Performance and Back Testing

Past Performance and Back Testing are useful for information purposes only. The analysis of the past performance of any investment asset(s) or the back testing of any investment product is purely academic and has no bearing on, or provides limited benefit in, the assessment of the future performance potential of the investment asset(s) or the investment product in question. The future performance of any investment asset(s) or investment product depends solely on future events and circumstances that cannot be known in advance and that are not necessarily informed by or influenced by what has happened in the past, more recently or otherwise.

So, we ask why does a clean sheet on back-tests seem so necessary in constructing the product and why is the information presented in the marketing brochures?

7) Consumer Protection

The Central Bank wrote to the authors in January 2022, clarifying that the Consumer Protection Code, which applied to the Tracker Bonds sold in the 1990's, did not apply to firms subject to MiFID.

“The Consumer Protection Code does not apply to MiFID firms, when selling financial instruments, as defined in MiFID II. These products/ financial instruments are governed instead by the requirements set out in MiFID II”.

MiFID II was implemented in Ireland by Statutory Instrument 375 of 2017. Regulation 32 deals with consumer protection.

Regulation 32(1) states that an investment firm should ensure that financial instruments are designed to meet the needs of an identified target market of end clients, that the distribution strategy is compatible with the identified target market and that the firm takes reasonable steps to ensure that the financial instruments are distributed to the target market.

Regulation 32(2) requires an investment firm to understand the instruments it offers or recommends, to assess the compatibility of the financial instruments with the needs of the clients and to ensure that financial instruments are only offered or recommended when it is the client's interest.

Regulation 32(3) requires an investment firm to ensure that **all** (our emphasis) marketing information to clients or potential clients is **fair, clear, and not misleading**.

Regulations 32(4) to 32(10) require investment firms to provide appropriate information, guidance, and warnings on the risks involved, in such a manner that clients or potential clients **are reasonably able to understand the risks involved and, consequently, to take investment decisions on an informed basis**.

The Central Bank of Ireland is responsible for ensuring that firms comply with the Regulations.

In April 2022 the Bank issued a “Dear CEO” letter expressing concerns on some aspects of firms' compliance with the Regulations. It made useful comments on aspects like the identification of the target market, a particular call-out on fixed decrement indices and strong reservations about multiple overlapping back-tests. Key extracts are as follows:

On Fixed Decrement indices:

A ‘decrement index’ is one such example observed in the market of a complex SRP feature.

and in a footnote:

A decrement index periodically deducts a fixed dividend from the underlying index, either in percentage terms or a fixed point value. Where this fixed dividend is higher than the actual dividend paid, this acts as a downward ‘drag’ on performance. In the case of a fixed point dividend, this negative impact is accelerated where the index falls below its initial level

On multiple overlapping back-tests:

Presentation of Past Performance (back-testing) information

Firms must ensure that the presentation of historical data is not misleading, particularly where it uses overlapping periods with a large number of simulations in only positive market conditions, as there is a heightened risk of creating an unrealistic or unfair perception of the risk of capital loss. The risk of capital loss must not in any way be diminished, downplayed or masked by the firm's presentation of past performance information.

Firms must ensure that all information presented is balanced, accompanied by prominent and clear warnings, and consistent with the risk profile of the product.

Unfortunately, firms continued to use Fixed Decrement indices after the “Dear CEO” letter without, in our view, providing anything near adequate explanation and continued to publish the results of multiple overlapping back-tests.

8) ESMA recommendations for “good practice”

The European Securities and Marketing Authority (ESMA) issued an Opinion on SRPs in 2014. This was aimed at the “competent authorities”, in Ireland’s case the Central Bank, pointing out that they considered that “competent authorities” should promote, in their supervisory approaches, the examples of good practices set out in the opinion’s annex. The following extracts from that annex are worth noting (our emphasis).

*12. It is good practice for manufacturers to use modelling and statistical test analysis when designing SRPs. This implies that, prior to issuance, manufacturers conduct robust, unbiased and arbitrage-free testing so as to **allow for an external party to adequately challenge the SRP’s pricing, valuation, and risk/reward trade-off relative to the target market.***

15. It is good practice for manufacturers to consider the characteristics (especially the risk characteristics) of the SRP (such as illiquidity and riskiness of the underlying asset(s)) and to have an understanding of the model and input parameters as well as the assumptions built into the valuation of the SRP (e.g. the expected returns, the pay-off structure, its fair value).

*16. It is good practice for manufacturers to back test the SRP to understand how it would have performed in the past. **It is good practice for manufacturers to undertake simulations of future performance scenarios to assess whether likely outcomes of the SRP would meet the investment objectives of the target market.** Product testing assumptions are objective and enable manufacturers to assess whether the risk/reward trade-off of the SRP is fair for its target market. Such assessments take into account all relevant fees and costs (including implicit premiums or mark-ups and explicit fees on top of the intrinsic value) in order to verify how these fees and costs affect investors’ final expected return.*

17. It is good practice for tests to be done in an independent manner (i.e. apart from the trading or hedging unit) and for manufacturers to keep an audit trail of the results of the testing. Those results should be available on request to competent authorities. Testing should include model and operational risks. Risk management methods used by a firm when manufacturing an SRP should be consistent with the firm’s internal risk management framework. It is good practice for testing to also consider extreme economic environments (‘stress testing’) and include quantitative assessments of external (primarily financial) risks.

18. It is good practice for distributors to ensure they are aware and understand the results of such tests as well as the simulations of performance scenarios undertaken by the manufacturer. This implies that distributors at a minimum adopt adequate arrangements to examine critically those results and scenarios and, if needed, employ an independent third-party with the relevant expertise. It is therefore good practice for manufacturers to make the results of those tests and the scenarios available to the distributors.

We have highlighted the key points. Paragraph 12 emphasises the need for transparency in these complex products to be underpinned by external scrutiny. This is reinforced by paragraph 18, which recognises that financial advisers might need access to expert independent support in that regard. Paragraph 16 emphasises the need for forward-looking simulations in assessing the customer proposition. Undoubtedly there are those who will seize on the first sentence of this paragraph as evidence of ESMA support for back-tests. This is clearly not an endorsement of multiple overlapping back-tests.

9) Conclusion

The paper studies recent developments in Structured Retail Products (SRPs) and identifies several aspects in their design and in how they are presented to retail investors that merit close consideration by regulators.

The core problem is that, in a low interest environment, interest foregone can no longer be used to fund potential upside, as was possible with old-style Tracker Bonds. Some of an investor's capital must be put at risk in order to create an upside potential.

Two varieties of SRPs have emerged to address the challenge of appealing to investors who place a premium on capital security but who also want upside potential. The first variety limits the amount of capital at risk but if there is to be meaningful upside potential the risk of a loss event must be high. The second variety reduces the risk of capital loss but the amount of the loss, if it occurs, must be significantly higher. At the extreme, under the second variety the investor risks losing their entire capital.

Given that the target market is highly risk averse, the challenge for the Central Bank is to take action to minimise the possibility of providers of both varieties of SRPs presenting their products in a manner that downplays the risk of capital loss and, for the second variety in particular, of presenting them in a manner that downplays the extent of the possible loss.

For the examples of SRPs we have seen, it is almost impossible for an independent third party, even one well versed in such products, to assess the risks. This applies both to the upside potential but, more seriously, to the risk of a loss event occurring, particularly for the second variety. It is not merely that the structures themselves are often complex, particularly for products aimed at the retail market. The underlying index is usually opaque and may include an inbuilt structural downward bias. It is impossible for an external observer to model these indices without the detailed information that the product manufacturer has available to it, especially in relation to the cost of the financial instruments used to hedge the manufacturer's liability. In this paper we have made the sweeping assumption that the underlying stocks can be modelled in a similar way to their benchmark or to another index for which data are publicly available.

In every example we studied, the difficulties for prospective investors in trying to make an accurate assessment of the range of possible product outcomes are greatly exacerbated by the practice of presenting thousands of overlapping back-tests, all showing no instance of capital loss. The combination of inherent opacity together with potentially misleading back-tests creates an acute asymmetry between manufacturers and lead distributors on the one hand and not only retail investors but also their financial advisers on the other hand.

The job of regulators is to address asymmetries of this nature. The Central Bank of Ireland's approach of requiring warnings and disclaimers is inadequate, in our view.

Despite its well-aided failings, the Key Information Document does provide meaningful information for the examples we studied. However, given the uneasy fit of Category 3 PRIIPS (the technical category for SRPs) with the KID methodology, this will not always be the case.

10) Recommendations

Before detailing our recommendations, it is worth mentioning one recommendation we considered but decided not to include.

It is reasonable to argue, and some do, that there is no valid target market for products of the low probability/ high impact variety, and that they should therefore be banned, as happened with “binary options”, which were banned a few years ago by the Central Bank. We believe that our recommendations for full and fair transparency, if implemented, will substantially address the risk of inappropriate sales of such products.

We decided to restrict our recommendations to correcting what we see as serious shortcomings in the marketing materials for such products. The Central Bank should of course ensure that products satisfy the MiFID requirement of meeting the needs of a clearly identified target group of end clients.

Our recommendations are as follows:

1. The MiFID regulations are straightforward and good. Their core requirements, that all marketing material should be fair, clear and not misleading; that potential clients should be reasonably able to understand the risks involved, and consequently, that they should be able to take investment decisions on an informed basis, are essentially all we’re asking for. Rigorous and common-sense enforcement by the Central Bank would eliminate the most egregiously misleading content in brochures and would address most of our concerns.
2. The Central Bank should follow the ESMA recommendation for “competent authorities” (the Central Bank in Ireland’s case) to promote examples of good practice set out in its opinion of SRPs. Two such practices are outlined in recommendations 6 and 7 below.
3. The current KID Unfavourable Scenario should be highlighted in marketing material. It should be clearly stated that there is a 10% chance of this or a worse outcome. If the KID methodology produces a misleading Unfavourable Scenario, the Central Bank should require providers to make this clear to prospective clients, and to provide them with a more meaningful scenario of capital at risk.
4. Overlapping back-tests should not be allowed in brochures. Historic performance, including non-overlapping back-tests, may of course be permitted, in which case the standard warning that the past does not necessarily provide a good guide for the future should be sufficient.
5. If the Central Bank decides not to ban overlapping back-tests completely, they should insist that the gap between overlaps should be a minimum of one year.
6. Following the ESMA Opinion on “good practice”, providers should be required to give forward looking assessments of the risk of capital loss and the upside potential, if necessary by stochastic simulation. The terms of any hedging instruments should be reflected in this disclosure and the calculations should be made available for external expert scrutiny.
7. Again following the ESMA Opinion, financial advisors should be required to be fully aware of and understand the forward looking assessments, if necessary by taking expert advice.