

A Guide to S&P Decrement Indices

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INTRODUCTION

Decrement indices have gained popularity as the underlying assets of equity-linked structured products in Europe and Asia. According to Structured Retail Products, among the 318 products across asset classes in France that matured or autocalled between April 2018 and March 2019, more than 32 were linked to decrement indices.¹

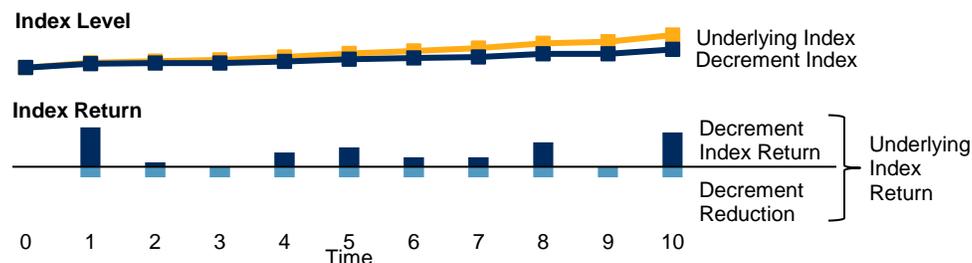
One of the reasons behind this recent popularity is the low interest rate environment that has emerged since the 2008 Global Financial Crisis, which has posed challenges for structured product issuers to design attractive products. This environment triggered a search for new underlying assets or strategies that might deliver cheaper optionality. Decrement indices aim to provide a solution to this challenge. S&P DJI has developed a flexible, transparent, and rules-based decrement index framework, which features:

- Globally accepted, independent underlying indices such as the [S&P 500®](#);
- Transparent methodology based on the S&P DJI decrement framework; and
- Customization options in underlying index and decrement parameters.

How Decrement Indices Work

A decrement is an overlay applied to an underlying index. It is constructed by periodically deducting a predefined fee, either in the form of a fixed percentage or index points, from the underlying index (see Exhibit 1).

Exhibit 1: Decrement Index Construction



Source: S&P Dow Jones Indices LLC. The example is based on a daily fixed percentage subtracted from the return. Chart is provided for illustrative purposes.

¹ Structured Retail Products, Structured Products Performance Review, France, April 2018 to March 2019. Retrieved from <https://afpdb.org/wp-content/uploads/2019/12/France-Performance-Report.pdf>.

Decrement indices can be calculated in different ways, depending on which parameters are chosen.

Given an underlying index, decrement indices can be calculated in different ways, depending on which parameters are chosen (see Exhibit 2). All the parameters can be customized. Decrement type and application are the most important parameters, as they primarily determine the amount of decrement deduction and how it is applied to an underlying index.

Exhibit 2: Decrement Parameters

DECREMENT TYPE	DECREMENT APPLICATION	DECREMENT FREQUENCY	FEE CALCULATION METHOD	DAY-COUNT CONVENTION
Fixed percentage	Subtracted from return	Daily	Simply pro-rated	Actual/N
Fixed point	Multiplying index level	Less than daily	Exponentially pro-rated	No regard for day counts

Source: S&P Dow Jones Indices LLC. For more information, please refer to the "Fee Indices/Decrement Indices" section of the [Index Mathematics Methodology](#). Table is provided for illustrative purposes.

Decrement Type

The performance reduction applied to an underlying index can be either fixed percentage or fixed point.

The performance reduction applied to an underlying index can be either fixed percentage or fixed point. The logic of the fixed-percentage decrement is that dividend yield tends to be stable over the long term. During the past 10 years, the trailing 12-month dividend yield for the S&P 500 was relatively stable, at about 2%. On the other hand, a fixed-point deduction assumes a relatively high level of stability in dividend amounts in the short term, as companies are inclined to maintain more stable dividend policies compared with their earnings.

Decrement Application

Subtracting from return is the most popular type of decrement application, and it can be combined with both fixed-percentage decrement and fixed-point decrement.

The fixed-percentage deduction subtracts a fixed percentage from the returns. The calculation formula² is:

$$\text{Decrement index daily return} = \text{underlying index daily return} - X\%/365$$

The fixed-point deduction subtracts a fixed number of index points. The calculation formula is:

$$\text{Decrement index daily return} = \text{underlying index daily return} - (X \text{ points}/365)/\text{decrement index level}$$

Subtracting from return is the most popular type of decrement application, and it can be combined with fixed-percentage and fixed-point decrement.

These two methods often lead to similar returns when the market is stable, but they could display significant differences depending on the movement of the underlying index level. Specifically, the performance deduction from the underlying index return is constant for fixed-percentage deduction; and

² The following formulae are simplified examples based on a daily decrement. For other choices of parameters, please refer to Exhibit 2.

variable for fixed-point deduction, depending on the market movement direction (see Exhibit 3).

Besides subtraction from return, there is another way to apply a decrement: multiplying the index level with a fixed percentage.

Exhibit 3: Fixed Percentage versus Fixed Point Subtracted from Return

SCENARIO	EFFECTIVE DAILY RETURN DEDUCTION	
	FIXED PERCENTAGE (4% DECREMENT INDEX)	FIXED POINT (40 POINT DECREMENT INDEX)
Market at Initial Level = 1,000	4%/365	4%/365
Market Goes Up = 1,500	4%/365	2.7%/365
Market Goes Down = 500	4%/365	8%/365

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

Besides subtraction from return, there is another way to apply a decrement: multiplying the index level with a fixed percentage. Taking daily decrement as an example, a fixed proportion of underlying index level is deducted by using the formula:

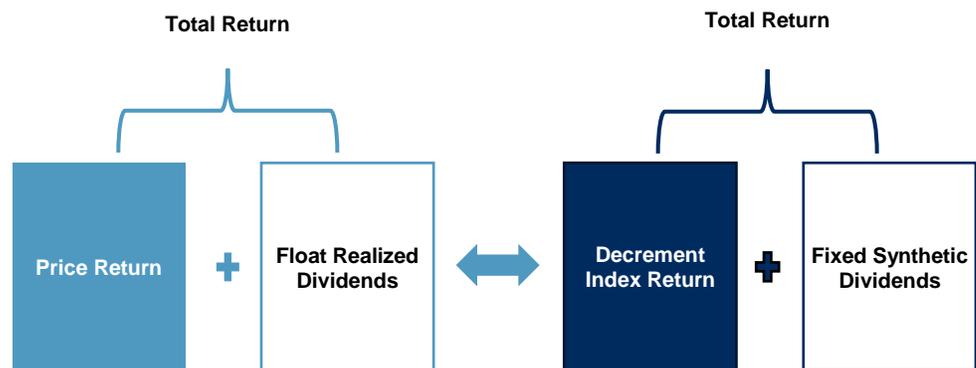
$$\text{Decrement index level today} / \text{Decrement index level previous day} = (\text{underlying index level today} / \text{underlying index level previous day}) * (1 - X\% / 365)$$

One of the most important applications of decrement indices is their use as benchmarks for structured products.

Applying a Decrement Index Strategy

One of the most important applications of decrement indices is their use as benchmarks for structured products. In many such cases, a decrement index is also referred as a synthetic dividend index, which applies a decrement strategy to the total return version of an underlying equity index. As total return can be broken down into price return and realized dividends, a parity relation exists between price return and decrement index return with dividends added (see Exhibit 4).

Exhibit 4: Decrement Index versus Price Return Index



Source: S&P Dow Jones Indices LLC. Chart is provided for illustrative purposes.

A decrement index is also referred as synthetic dividend index, which applies a decrement strategy to the total return version of an underlying equity index.

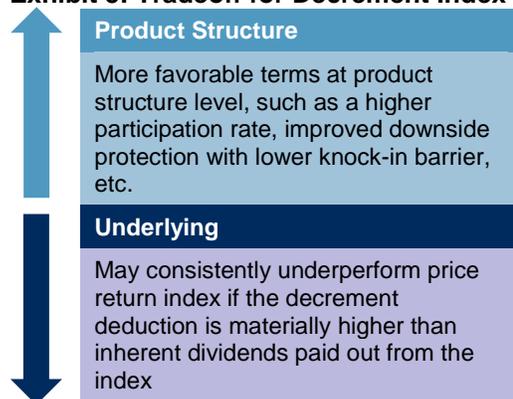
Depending on whether the fixed synthetic dividend (right-hand side of Exhibit 4) is greater or less than the actual realized dividends received (left-hand side of Exhibit 4), the decrement index could underperform or outperform the corresponding price return index. To deliver comparable

returns to the original price return index, the predefined dividend markdown needs to be roughly the same as the realized dividends.

The decrement index could underperform or outperform the corresponding price return index...

As a result, although decrement indices are used by issuers to provide more favorable terms at the structural level with potentially cheapened optionality and eliminated dividend risk, there is a risk that they may consistently underperform conventional indices when the decrement deduction is materially higher than inherent dividends paid out from the index (see Exhibit 5)

Exhibit 5: Tradeoff for Decrement Index-Linked Products



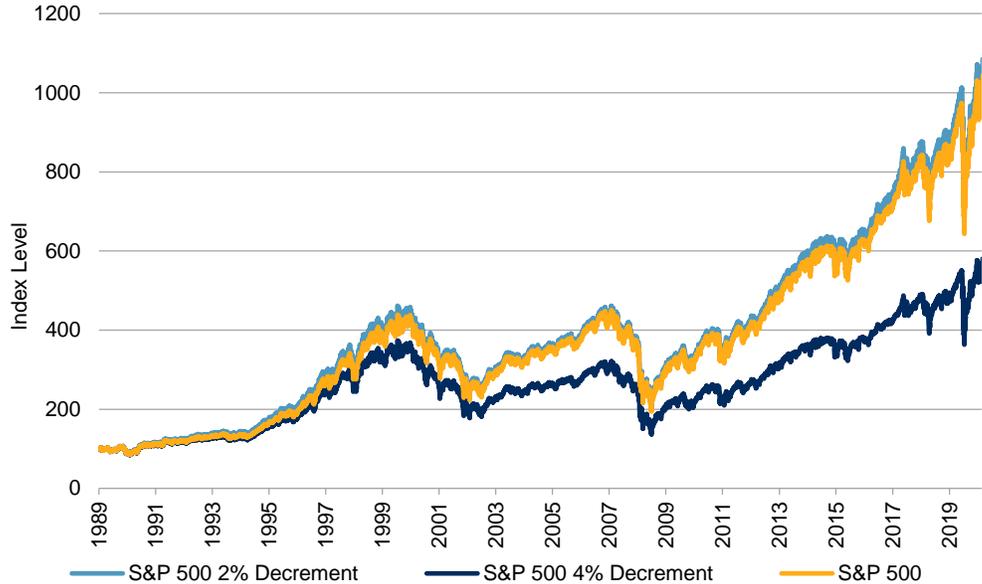
...depending on whether the fixed synthetic dividend is greater or less than the actual realized dividends received.

Source: S&P Dow Jones Indices LLC. Chart is provided for illustrative purposes.

To illustrate the effect at the underlying level, we constructed two decrement concept indices based on the S&P 500 TR, using the fixed percentage subtracted from return method and applying different percentages of deduction (see Exhibit 6). As the historical dividend yield of the S&P 500 has been roughly stable, at about 2%, the 2% decrement version closely tracked the price return of the S&P 500, while the 4% decrement version consistently underperformed. Therefore, market participants may want to be aware of an index's historical dividend yield when considering a decrement index-linked structured product.

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Exhibit 6: Fixed Percentage Decrement Indices Based on the S&P 500 Total Return



The decrement strategy is an index innovation that aims to solve specific challenges presented by structured products.

The S&P 500 2% Decrement and S&P 500 4% Decrement are hypothetical indices. Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2020. Indices were rebased to 100 on Sept. 11, 1989. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

CONCLUSION

Despite the simple construction, there are nuances that market participants may want to understand.

The decrement strategy is an index innovation that aims to solve specific challenges structured products are facing—a low interest rate environment and the need to hedge dividend risk. Despite the simple construction, there are nuances that market participants may want to understand, such as different types of decrement and the risk of underperformance.

For more information on the S&P Decrement Indices, please refer to the “Fee Indices/Decrement Indices” section of the [Index Mathematics Methodology](#), as well as the [S&P Dow Jones Decrement Indices Parameters](#).

APPENDIX: LIST OF DECREMENT INDICES

Exhibit 8: S&P Fixed Percentage Decrement Indices	
REGION	INDEX NAME
U.S.	S&P 500 2% Decrement Index
	S&P 500 3% Decrement Index
	S&P 500 Smallest 200 Equal Weight 4% Decrement Index
	S&P 500 NTR 10% Dynamic Rebalancing Risk Control 2% Decrement Index (EUR)
	S&P 500 Futures KRW Hedged (Fed Funds) 2% Decrement Index
	S&P U.S. Multi-Asset Riskcasting 4% Target Volatility with 0.50% Decrement Index (USD)
	S&P 500/S&P SmallCap 600 130/30 0.30% Decrement Index
	S&P SmallCap 600/S&P 500 130/30 0.30% Decrement Index
	S&P 500/S&P SmallCap 600 150/50 0.40% Decrement Index
	S&P SmallCap 600/S&P 500 150/50 0.40% Decrement Index
	S&P 500 150/50 Quality 0.30% Decrement Index
	S&P 500 150/50 Inverse-Quality 0.30% Decrement Index
	S&P 500 130/30 Quality 0.30% Decrement Index
	S&P 500 130/30 Inverse-Quality 0.30% Decrement Index
Canada	S&P/TSX 60 2% Decrement Index (CAD)
	S&P/TSX 60 3% Decrement Index (CAD)
Europe	S&P France LargeMidCap Equal Weight 5% Decrement Index
	S&P Italy LargeMidCap 5% Decrement Index
	S&P Spain LargeMidCap 5% Decrement Index
	S&P Euro 50 Equal Weight 3.5% Decrement Index
	S&P Euro 75 Equal Weight 5% Decrement Index
	S&P Europe 350 Equal Weight 5% Decrement Index
	S&P Europe 50 ESG Select Equal Weight (BEL, DEU, FRA, NLD) 5% Decrement Index
S&P Eurozone 30 ESG-Momentum Select Equal Weight 4% Decrement Index (EUR) TR	
Transatlantic	S&P EuroUSA 50 ESG Select Equal Weight 5% Decrement Index
Global	S&P Balanced Global Bond and Equity Futures 0.4% Decrement Index
	S&P Global Water 3.5% Decrement Index
	S&P Kensho New Economies Sector Rotator Daily RC2 5% - 0.85% Decrement Index (USD)
	S&P Kensho New Economies Sector Rotator Daily RC2 7% - 0.85% Decrement Index (USD)

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

Exhibit 9: S&P Fixed Point Decrement Indices	
REGION	INDEX NAME
U.S.	S&P 500 Smallest 200 Equal Weight 40 Point Decrement Index
	S&P France 50 ESG 50 Point Decrement Index (EUR)
Europe	S&P France 60 Equal Weight 50 Point Decrement Index (EUR)
	S&P France 60 ESG Equal Weight 50 Point Decrement Index (EUR)
	S&P France 80 50-Point Decrement Index (EUR)
	S&P France 20 & Germany 20 Equal Weight 50 Point Decrement Index (EUR)
	S&P France 20 & Germany 20 ESG Equal Weight 50 Point Decrement Index (EUR)
	S&P Europe 50 ESG Select Equal Weight (BEL, DEU, FRA, NLD) 50 Point Decrement Index
	S&P Europe 50 ESG Select Equal Weight (BEL, DEU, FRA, NLD) 50 Point Decrement Index (Series 2) (EUR) TR
	S&P Europe 50 ESG Select Equal Weight (BEL, DEU, FRA, NLD) 50 Point Decrement Index (Series 3) (EUR) TR
	S&P Euro 75 Equal Weight 50 Point Decrement Index
	S&P Eurozone 30 ESG-Momentum Equal Weight 50-Point Decrement Index (EUR) TR
	S&P Eurozone 30 ESG-Momentum Equal Weight 50-Point Decrement Index (Series 2) (EUR) TR
	S&P Eurozone 30 ESG-Momentum Select Equal Weight 50-Point Decrement Index (EUR) TR
	S&P Eurozone 30 ESG-Momentum Select Equal Weight 50-Point Decrement Index (Series 2) (EUR) TR
	S&P Eurozone 100 50-Point Decrement Index (EUR)
	S&P Eurozone 100 Equal Weight 50 Point Decrement Index (EUR)
	S&P Eurozone 100 ESG Equal Weight 50 Point Decrement Index (EUR)
	S&P Eurozone Equal Sector 50 50-Point Decrement Index (EUR)
	Transatlantic
S&P EuroUSA 50 ESG Select Equal Weight 50 Point Decrement Index (Series 2) (EUR) TR	
S&P EuroUSA 50 ESG Select Equal Weight 50 Point Decrement Index (Series 3) (EUR) TR	
S&P Transatlantic 40 ESG-Momentum Tilted Equal Weight 50-Point Decrement Index (EUR)	

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

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