# Much Ado About Dividends

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## Introduction

## 1. Literature Review

### *1.1. Introduction*

The debate surrounding the relevance of dividends in firm valuation has been a longstanding topic in finance literature. Pioneered Miller & Modigliani (1961), with the irrelevance of dividends theory (MM theory) posits that, in a perfect market, investors should be indifferent to receiving dividends as firm value is derived from earnings resulting from investment policy. However, critics have challenged this school of thought, by considering investor preferences and information asymmetries. Their findings offers insights into the significance of dividends in conveying information to investors about company prospects. Empirically,we find studies that conform to literature pertaining to the bird in the hand theory, signalling theory and agency cost theory. We find that high dividend yield and dividend growth ratios could be used to proxy value for our dividend paying companies, showing predictive power of dividend metrics on stock returns. By synthesizing and analyzing these studies, we gain a deeper understanding of the role of dividends in firm valuation and investor decision-making processes.

### *1.2. Dividend Theories*

The debate surrounding the irrelevance of dividends pioneered by Miller & Modigliani (1961), gave insight into firm valuation. He posited that in a perfect market, one that is free from market frictions and transaction costs, investors should be indifferent to receiving dividends, as firm value is derived from earnings which result from investment policy. They reinforced the dividend irrelevance theorem by arguing that if the dividend practice adopted by any firm corresponds to the dividend preference of its shareholders each firm would attract its clientele based on its dividend policy practice. Moreover given their assumptions, a change in dividend policy will not materially affect any firm valuation because with the existence of several competing firms, a firm that changes dividend policy may not act by the preference of some shareholders to simply induce a movement across firms as investors try

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to align with firms whose dividend practice corresponds with their dividend preference. Consequently, in the long run, equilibrium in terms of choice of investment and dividend preference will be attained and shareholders valuation of the firm will not be different from those of firms with different dividend policy.

Miller & Modigliani (1961) shortfalls emanates from unrealistic assumptions resulting in opposing arguments. Firstly, the bird in the hand theory, a common argument that is used to make a case for investor preferences for dividend payment, Walter (1963) suggests that investors prefer dividends to capital gains because the nature payment of dividends effectively guarantees income towards investors against some probability of receiving capital gains at some point during an investment holding period. This implies that investors prefer to receive dividends now so that they can reinvest and earn a further return. Buttressing this, Lintner (1956) argued that dividend are desired because it helps to reduce the level of information asymmetry, a firm that pays dividend assures investors that the firm is performing well. Moreover, Gordon (1963) saw dividend as preferred to capital gains because dividend payment reduces risks associated with investments because it is more certain. Therefore, the major implication of the bird in the hand theory sees risk in the reinvestment of company profits through keeping it as retained earning. Consequently, investors expect a higher expected return with the payment of dividend which ultimately raises the costs of capital from investors.

Secondly, Lintner (1956) suggested that information asymmetry between shareholders and management, brings into focus management decisions and their impact on firm prospects. Cognizant of this, managers of dividend paying companies are more willing to raise rather than reduce dividend levels, and this is construed to mean that given dividend payment history decreases are associated with negative signals while dividend increases signal positive news signal positive news. More formally, Bhattacharyya (1979) presents a signaling model where the liquidation of the firm is related to the actual dividend paid and any change in dividend alters the liquidation value of the firm. The liquidation value represents the amount of money shareholders would receive if the company were to be dissolved, of which dividends can affect this value by depleting the firm's cash reserves by distributing earnings to shareholders. The distribution the firm reduces its financial cushion during financial hardships. Consequently, dividend payments can influence investors' perceptions of the firm's risk profile and future prospects.Changes in dividend under the signalling model convey important information about a firm's outlook. for the quality of firms assets.

Lastly, Jensen & Meckling (1976) argued for agency costs, managerial behavior and ownership structure in advocating for the relevance of dividend payments. The separation of control and ownership gives rise to a principle-agent problem because managers have the responsibility of acting in the best interest of the owners, however, there are possibilities for conflicts between the managers and shareholders. A high level of retained may motivate managers to pursue decisions that promote their own self interests, therefore shareholders mimimize the amount of retained earnings on hand available to managers to mitigate the risk of acting out of self interest. Jensen & Meckling (1976) proposes a free cash flow model that states "when a firm has financed all its positive net present value investments, it should distribute all its free cash flow as dividends". This prescription should reduce agency costs. The insights gained from these opposing theories to Miller & Modigliani (1961) do make thought interesting arguments to the issuance of dividends by companies.

*1.3. Empirical studies and their return predictive signal*

Empirical studies we asesss are concerned with finding factors that influence dividend policy, thus relating them underlying theories in section 1.2. Baker & Wurgler (2006) show that investor sentiment is a significant determinant of dividend policy. Their study suggests that waves of investor sentiment have differential effects on stock returns, particularly for stock that are difficult to arbitrage and have valuations that are highly subjective. In reaction, management may adjust their dividend policy in response to prevailing market sentiment, potentially paying dividends to signal confidence during periods of high sentiment and conserving cash during times of market uncertainty. With regard to category of stock and performance, they also find that during periods of low sentiment, returns are high for small size, young firms, unprofitable stock, non dividend paying, extreme growth and distressed stocks. During periods of high sentiment this group of stock experiences low returns.

Grullon, Larkin & Michaely (2019) analyse managerial decisions to distribute cash flows in industries with varying levels of competitiveness. Although this study was conducted in the manufacturing sector, its insight indicates that firms operating in competitive industries tend to have lower payout ratios.Thus firms in highly competitive environments prioritize investment and innovation over dividend payments, moreover whose overall characteristics suggest that lower agency costs and less likely to be a target of predation. In other words, dividends act as a tool to reduce agency costs. Interestingly, the authors allude to disciplinary forces that follow Jensen & Meckling (1976) free cash flow theory, that states, managers in competitive industries payout excess cash and with the idea that corporate payouts are the "outcome" of external factors. Denis & Osobov (2008) provide cross-country evidence on the determinants of dividend policy, revealing that larger, more profitable firms with higher retained earnings are more likely to pay dividends across US, Canada, UK, Germany, France, and Japan. In each country, aggregate dividend payments concentrated among the largest, most profitable firms. Outside of the US there is little evidence of a systematic positive relation between relative prices of dividend paying and non-paying firms and the propensity to pay dividends. These reconcile with Jensen & Meckling (1976) & Lintner (1956) as these studies posit that firms with strong financial performance and stability are more inclined to pay dividends to signal quality and mitigate agency conflicts.

Baker & Wurgler (2006), Grullon *et al.* (2019) & Denis & Osobov (2008) show that dividend paying companies usually comprise of larger more profitable firms. An intuitive proxy for why companies with high dividend yields might outperform non dividend paying companies, is that dividend yield proxies for the value factor (Basu, 1977). Consider the equation below to understand this arguemnet:

$$DY = \frac{EPS}{\text{Price}} \times \text{Payout Ratio}$$

Assuming a constant payout ratio, dividend yield (DY) would simply become a function of changes in earnings yield. From the equation, holding earnings per share (EPS) constant, price has a inverse relation to DY. This implies that studies identifying return predictive signal DY verify the existence of the value-signal [1]. Notably, Cornell (2014) studied the predictive power of dividend-price ratios

[1] Value as an investment factor dates back to Basu (1977), who used the price-earnings ratio of companies to compare

using US data. Their findings revealed that higher dividend-price ratios are associated with higher future stock returns, suggesting stock-return predictability based on dividend-price ratios. This implies that investors may be able to leverage dividend-price ratios as an informational tool to make informed investment decisions and potentially earn above-average returns. Similarly, Conover, Jensen & Simpson (2016) explored the investment benefits of dividend-paying stocks by analyzing dividend yield and its correlation with stock returns. The study uncovered that high-dividend-paying stocks tend to exhibit lower risk and higher returns compared to non-dividend-paying stocks. Specifically, high-dividend payers outperformed non-dividend payers by over 1.5% per year on average. Other studies used growth in dividends to capture second order characteristics of dividend payers, Chen (2009) delved into the predictive power of dividend growth for future stock returns, focusing on historical data from the prewar period of the early 1900s. The study identified strong predictive power in dividend growth during this historical period, suggesting that changes in dividend growth rates can serve as valuable signals for predicting future stock returns. However, the predictive power of dividend growth appeared to diminish in the postwar years, highlighting the importance of historical context and market dynamics in assessing the effectiveness of dividend-based investment strategies.

stock performance. Since then, many studies have confirmed the existence of a value premium, where cheap stocks outperform their more expensive counterparts over time.

## Data and Methodology

### *1.4. Data for Globally Traded Dividend Indexes*

We utilize historical price data for globally traded dividend indexes spanning from January 1, 2003, to January 1, 2023, constituting a 20-year sample period. These indexes are constructed in gross total return and denominated in the same currency, the full list of names and tickers are given in 1.6. We MSCI ,Standard and Poor's (S&P) and FTSE High Yield and Dividend Growth constructed indexes. S&P Dividend Aristocrats indexes: these indexes measure the performance of companies that have a history of consistently increasing dividends on an equal weighted basis and years of required dividend growth varies across countries. MSCI High Dividend Yield indexes: indexes are designed to measure the performance of companies with high dividend yields. The indexes exclude companies that do not exhibit dividend sustainability, persistence and quality. Constituents are first screened for deteriorating fundamentals, thus attempting to explicitly avoid associated 'yield traps'. Constituents are then weighted by size. FTSE Dividend Plus indexes (UK and SA only): the constituents of the Divi Plus indexes are chosen based on the one-year dividend per share forecast. Constituent weights are determined by forward dividend yields. The UK index comprises of 50 constituents whereas the SA index comprises of 30 constituents.

Our metric of interest are annualized excess returns of individual indexes to their respective benchmarks following Bacon (2023). To acheive this, we scale observations to an annual scale by raising the compound return to the number of periods in a year, following this we take the root of total observations:

$$\text{AnnualizedReturn} = \sqrt[n]{\text{prod}\,(1 + R_a)^{\text{scale}}} - 1$$

where $R_a$ is the return on the asset, *scale* is the number of periods in a year, $n$ is the total number of periods. Following this, we simply take the difference of annualized return to get our excess return:

$$ER_a = R_a - R_b$$

where $R_a$ are annualized return on the asset and $R_b$ are annualized return of the benchmark. From our excess return metrics, we calculate second moments and third moments to describe distributional properties. Moreover we make other transformations to our international portfolio sample to get a nuanced perspective on performance during different time periods. For interest rate regime cycles we use interest rate schedules from central banks of country of domicile for the index. That is, to proxy periods of high and low interest rates we stratify our sample interest rate hiking and cutting cycles where periods of sustained changes rate changes occur at least every five quarters. Likewise, we use proxies for volatility such as the VIX index in the United States, V2X in Europe and JALSH RV in South Africa that consider implied and realized equity market volatilities to proxy for different periods of market stability. After stratification, we geometrically chain the excess returns for the different periods before annualizing. To stratify amount of daily data for the respective interest rate cycles has to be large enough to annualized, however, if our proxies for volatility breach the top or bottom quintile for less than 50 trading days, the period is excluded in order to avoid annualizing small frequencies.

*1.5. Local Dividend Portfolio Construction*

We use historical daily price data in table 1.6 from January 1 2003 to July 7 2023, a roughly 20 year sample period for equity listed in the Johannesburg Stock Exchange and retrieve dividend yield ratios, dividend cover ratio, price momentum, price to earnings ratio, dividend growth per share from Bloomberg to construct dividend portfolios.

We construct 4 factor portfolios namely; Divi1, Divi2, Divi3 and Divi4 using ranked signals on fundamental and statistical factors . Divi1 is created through the conditional signal that adds 15% or 35% of dividend coverage or price momentum or both if it ranks in the bottom quantile in its own factor ranking to 2/3 DY(Fwd_3) and 1/3 DY(Fwd_9). Divi2 ranks based on the signal 67.7% DY(Fwd_3) and 33.3% DY(Fwd_9). Divi3 ranks based on the signal Price to Earnings Ratio and Divi4 ranks based on the signal Dividend Per Share Growth_1Y = 40% (DPS_Growth), DPS_Growth_3Y = 30%, Fwd_3 = 20% and Fwd_9 = 10%. Ranking score ranges from 0 to 100. We feed ranked signals in our optimizer, which does a aplha transformation on the signal. Our optimizer makes modifications to the mean variance portfolio that considers risk preferences of investors (Markowitz, 1959). We define risk of $n$ assets as $\sigma^2$ based on individual asset returns $R_a$. We decompose returns into common factor $X_f$ and specific return $u$. Our covariance matrix is then defined as:

$$XFX^T + D$$

where:

$X : n \times k$ matrix of asset exposures to the factors,

$F : k \times k$ positive semi-definite factor covariance matrix, and

$D : n \times n$ positive semi-definite covariance matrix representing a forecast of asset-specific risk.

For optimization purposes, our $\sigma^2$ is considered in two forms: total risk, where only portfolio holdings are considered (benchmark holdings are irrelevant for the optimization process), and active risk, which takes into account the difference between portfolio holdings and benchmark holdings defined as:

$$\begin{aligned} \text{Total Risk:} \quad & h^T(\lambda_F XFX^T + \lambda_D D)h \\ \text{Active Risk:} \quad & (h - h_B)^T(\lambda_F XFX^T + \lambda_D D)(h - h_B) \end{aligned}$$

where:

$\lambda_F$ : common factor risk aversion parameter,

$\lambda_D$ : specific risk aversion parameter,

$h : n \times 1$ vector of managed portfolio's holdings, and

$h_B : n \times 1$ vector of normal (benchmark) portfolio's holdings

The following accounts for practical considerations in constructing our portfolios. We use the Capped SWIX as our benchmark and $\lambda_F$ and $\lambda_D$ are set to 0.0075 and 1, respectively, with active risk have an upper limit of 5%. For our box constraints, sector exposure can deviate from a range of 10% relative to the Capped SWIX and individual asset exposure is limited to 15%. Our portfolio turnover is limited to 10% and we exclude the property sector from our portfolios.

## Results

*1.6. Globally traded portfolios performance results*

Figure 1.1 shows the cumulative monthly excess returns of the selected indexes relative to the universe benchmark from which constituents are chosen. The indexes start on different dates of inception, therefore cumulative excess returns for the period are not comparable across all indexes for the respective plot duration. Note the blue indexes are constructed using DY ratios, while the red lines constitute DPSG. The figure below is not entirely suggestive of a clear and consistent out performance of dividend strategies over the entire considered period, whether using DY or DPSG, globally. From 1.1 we notice that two indices being SPDAEET and SPDAUDT over the investment horizon return multiples in excess of 1 suggesting that some benefit over holding the parent index.

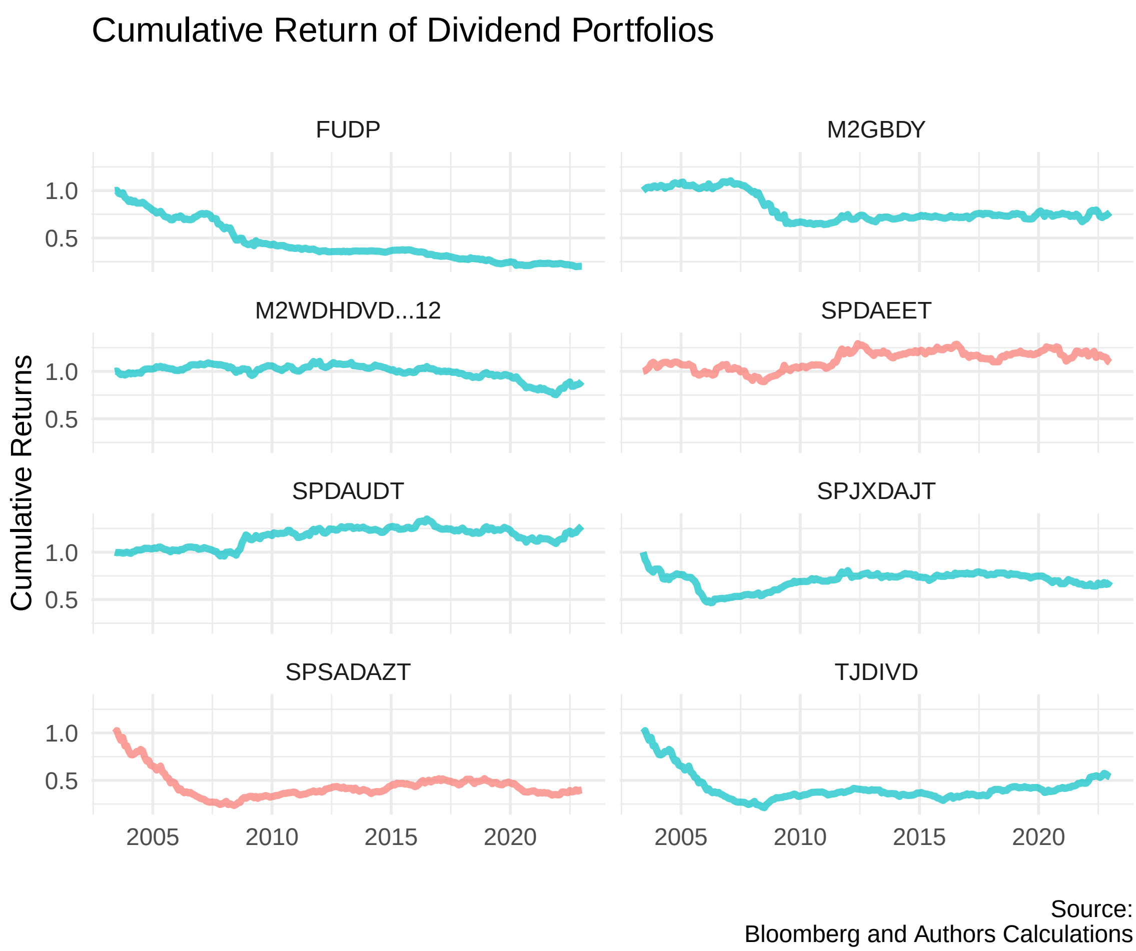


Figure 1.1: Full Sample Cumulative Returns

The table below shows greater detail to full sample performance. Firstly, SPDAEET and SPDAUDT represent the indexes that gave positive excess returns 1.6% and 0.78%, respectively. Coupled to this, their respective tracking error were the amongst the lowest at 5.4% and 6.8%. Amongst the indexes that over the period return cumulative returns of less than 1, their respective annualized excess return were negative and tracking error were high, namely for the TJDIVD and SPSADAZT which are domiciled in SA at 20% individually. Developed market indexes over the period had tracking error within a range of 5.6% to 8.6%. Interestingly, SPDAJXT had a tracking error of 15%.

| index | Country | Cumulative Return | Ann. Excess Return | Tracking Error |
|---|---|---|---|---|
| SPDAUDT | UK | 1.3 | 1.6% | 5.6% |
| SPDAEET | EU | 1.1 | 0.78% | 6.8% |
| M2WDHDVD...12 | UK | 0.9 | -0.39% | 6.4% |
| M2GBDY | UK | 0.77 | -1.5% | 8.6% |
| SPJXDAJT | JP | 0.69 | -1.2% | 15% |
| TJDIVD | SA | 0.54 | -2.4% | 20% |
| SPSADAZT | SA | 0.4 | -3.8% | 20% |
| FUDP | US | 0.2 | -8.4% | 7.9% |

Table 1.1: Full Sample Period Absolute and Relative Return of Dividend Indexes

Once we stratify excess return by time period we see different results. The table below shows stratified performance according to high market volatility. TJDIVD, SPSADAZT and SPDAEET exhibited strong excess positive annualized excess returns at 24.5%,18.9% and 14.4% respectively. These represent DPGS signal and a DY signal. Their respective tracking error were the amongst the lowest at 5.4% and 6.8%. Other indices with negative annual excess returns were in were indices domicile in developed markets.

| Index | Country | Ann. Excess Return | Tracking Error | Signal |
|---|---|---|---|---|
| SPDAEET | EU | 24.5% | 2.6% | DGPS |
| TJDIVD | SA | 18.9% | 3.3% | DY |
| SPSADAZT | SA | 14.4% | 4.9% | DGPS |
| SPJXDAJT | JP | -0.7% | 2.1% | DY |
| FUDP | US | -2.8% | 2.2% | DY |
| SPDAUDT | UK | -3.5% | 1.6% | DY |
| M2WDHDVD...12 | UK | -8.5% | 2.1% | DY |
| M2GBDY | UK | -12.6% | 3.4% | DY |

Table 1.2: Dividend Indexes Performance During High Volatility Periods

A similar result is noticable when we consider low volatility periods. TJDIVD, SPSADAZT make up the top performing at 27.37% and 5.84%, albeit their difference in performance has greater disparity than in the high volatility market cycle. These represent DY signal and DGPS signal. Their respective tracking error were the amongst the lowest at 5.4% and 6.8%. Other indices with negative annual excess returns were in were indices domiciled in developed markets.

| Index | Country | Ann. Excess Return | Tracking Error | Signal |
|---|---|---|---|---|
| TJDIVD | SA | 27.37% | 4.04% | DY |
| SPSADAZT | SA | 5.84% | 3.55% | DGPS |
| SPDAUDT | UK | 0.08% | 1.11% | DY |
| M2GBDY | UK | -2.11% | 1.06% | DY |
| M2WDHDVD...12 | UK | -4.04% | 0.64% | DY |
| FUDP | US | -14.22% | 1.55% | DY |
| SPDAEET | EU | -15.73% | 1.64% | DGPS |
| SPJXDAJT | JP | -28.43% | 3.90% | DY |

Table 1.3: Dividend Indexes Performance During Low Volatility Periods

Next we consider interest rate hiking and cutting regimes with countries of domicile for the selected indexes. The table below shows stratified performance according to interest rate cutting. Firstly, here we notice a tight positive perfromance amongst a larger group of indexes, with a tight range range from 1.54% to 5.27%. Amongst these indexes, there domiciled in developed markets constructed using DY signals. Amongst the negative excess return series, the range is similarly tight at -0.61% to -3.19%. Amongst them, there is a mix of DGPS and DY, of either deveoping markets and emerging market (SA).

| Index | Country | Ann. Excess Return | Tracking Error | Signal |
|---|---|---|---|---|
| SPJXDAJT | JP | 5.27% | 1.4% | DY |
| M2WDHDVD...12 | UK | 4.39% | 1.2% | DY |
| SPDAUDT | UK | 2.19% | 2.1% | DY |
| SPDAEET | EU | 1.54% | 1.3% | DGPS |
| M2GBDY | UK | -0.61% | 2.3% | DY |
| TJDIVD | SA | -2.40% | 3.3% | DY |
| FUDP | US | -2.84% | 2.2% | DY |
| SPSADAZT | SA | -3.19% | 3.5% | DGPS |

Table 1.4: Dividend Indexes Performance During Cutting Interest Rate Periods

The table below shows stratified performance according to interest rate hiking cycles. Again, there is a tight positive performance amongst a larger group of indexes, ranging from 1.03% to 3.83%. However, there is a variation in country of domcile in developed markets and with 2 indexes constructed form DY and 2 indexes constructed from DGPS. Amongst the negative excess return series, the range is similarly tight at -0.61% to -3.19%. Amongst them, there is a mix of DGPS and DY, of either deveoping markets and emerging market (SA).

| Index | Country | Ann. Excess Return | Tracking Error | Signal |
|---|---|---|---|---|
| M2WDHDVD...12 | UK | 3.83% | 1.2% | DY |
| SPDAUDT | UK | 2.12% | 1.1% | DY |
| SPSADAZT | SA | 1.54% | 4.4% | DGPS |
| SPDAEET | EU | 1.08% | 2.5% | DGPS |

Continued on next page

| Index | Country | Ann. Excess Return | Tracking Error | Signal |
|---|---|---|---|---|
| M2GBDY | UK | -1.74% | 1.8% | DY |
| TJDIVD | SA | -3.87% | 3.8% | DY |
| SPJXDAJT | JP | -8.43% | 3.5% | DY |
| FUDP | US | -15.70% | 2.4% | DY |

Table 1.5: Dividend Indexes Performance During Hiking Interest Rate Periods

### *1.7. Locally Constrcucted portfolio results*

## Discussion

## Conclusion

## Appendix

| Ticker | Name |
|---|---|
| FUDP | FTSE UK Dividend+ Index |
| M2EFDY | MSCI EM HY Gross Total Return USD Index |
| M2GBDY | MSCI UK HY Gross Total Return USD Index |
| M2JPDY | MSCI Japan HY Gross Total Return USD |
| M2USADVD | MSCI USA HY Gross Total Return USD Index |
| M2WDHDVD | MSCI World HY Gross Total Return Total Return USD Index |
| SPDAEET | S&P EU 350 Dividends Aristocrats Total Return Index |
| SPJXDAJT | S&P/JPX Dividend Aristocrats Total Return Index |
| SPDAUDT | S&P 500 Dividend Aristocrats Total Return Index |
| SPSADAZT | S&P South Africa Dividend Aristocrats Index ZAR Gross TR |
| TJDIVD | FTSE/JSE Dividend+ Index Total Return Index |
| M2EUGDY | MSCI Europe Ex UK HYGross Total Return USD Index |
| TUKXG | FTSE 100 Total Return Index GBP |
| GDUEEGF | MSCI Daily TR Gross EM USD |
| GDDUUK | MSCI UK Gross Total Return USD Index |
| TPXDDVD | Topix Total Return Index JPY |
| GDDUUS | MSCI Daily TR Gross USA USD |
| GDDUWI | MSCI Daily TR Gross World USD |
| SPTR350E | S&P Europe 350 Gross Total Return Index |
| SPXT | S&P 500 Total Return Index |
| SPXT | S&P 500 Total Return Index |
| JALSH | FTSE/JSE Africa All Share Index |
| JALSH | FTSE/JSE Africa All Share Index |
| GDDUE15X | MSCI Daily TR Gross Europe Ex UK USD |

Table 1.6: Index Names

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