

# JOURNAL OF TRADING

WWW.IIJOT.COM

SUMMER 2015 VOLUME 10 NUMBER 3



## Understanding ETFs: *Trading and Valuation*

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The exchange-traded fund (ETF) market has continued its rapid growth in recent years. There are a variety of ways to assess the growth of the industry. The most basic assessment comes from looking at growth in the number of products and the assets under management, or AUM, in those products. As Exhibit 1 shows, as of December 31, 2014, there were more than \$2.5 trillion in assets globally in more than 5,000 products. The United States is responsible for a large portion of the global assets, capturing almost 70% of the total. Even so, the number of products listed in the United States is only 30% of the global total.

When trying to understand this growth, it helps to dig a little deeper into the product set to understand some of the other characteristics of the products. Because an important characteristic of these products is their exchange-listing feature, the trading characteristics provide insight into the product set that are difficult to understand by looking at other measures, such as asset class or type of exposure.

## ETF TRADING VOLUMES

One way to look at product set growth is by breaking up the entire universe of products into 30-day average daily volume

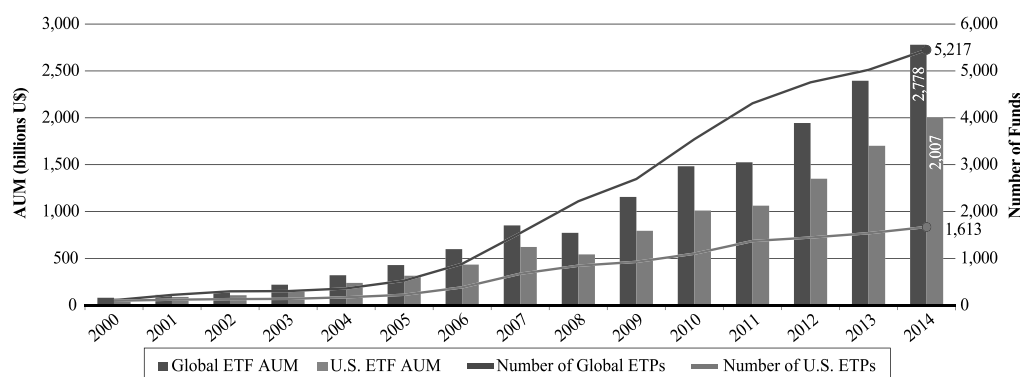
(ADV) buckets.<sup>1</sup> I have done this utilizing six buckets:

1. Less than 50,000 share ADV (<50 k)
2. Between 50,000 and 100,000 share ADV (50 k  $\Leftarrow$   $\times$   $\Leftarrow$  100 k)
3. Between 100,000 and 500,000 share ADV (100 k  $\Leftarrow$   $\times$   $\Leftarrow$  500 k)
4. Between 500,000 and 1 million share ADV (500 k  $\Leftarrow$   $\times$   $\Leftarrow$  1 M)
5. Between 1 million and 10 million share ADV (1 M  $\Leftarrow$   $\times$   $\Leftarrow$  10 M)
6. Greater than 10 million share ADV (>10 M).

Once the funds are parsed, the set looks like the graph in Exhibit 2. The chart shows two segments of data, for December 31, 2010, and March 6, 2015, for U.S.-listed ETFs only.<sup>2</sup> It is clear that a large number of U.S. ETFs trade fewer than 50,000 shares a day, on average. As of the end of February 2015, roughly 56% of the funds listed in the United States traded fewer than 50,000 shares a day, on average. This is up from approximately 53% at the end of 2010. This is the volume bucket with the highest growth rate over the period. The growth in the under-50,000 ADV bucket represents the fast pace of listings over the last several years. On the other side of the spectrum, we see steadiness in the highest-volume bucket. The number

## EXHIBIT 1

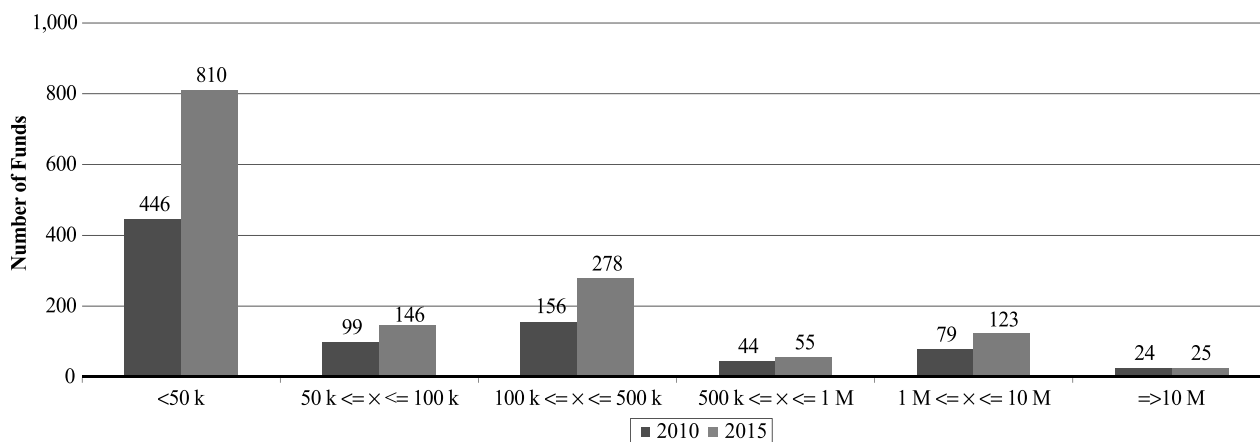
### Assets under Management and Products—Global and U.S. Exchange-Traded Products (ETPs)



Source: BlackRock ETP Landscape, as of December 31, 2014.

## EXHIBIT 2

### Number of Funds by Volume Bucket, 2010 and 2015



Source: Bloomberg as of March 6, 2015.

of funds trading more than 10 million shares per day on average has remained the same over four years. Only 25 funds are in that bucket, currently making up only 1% of outstanding product.

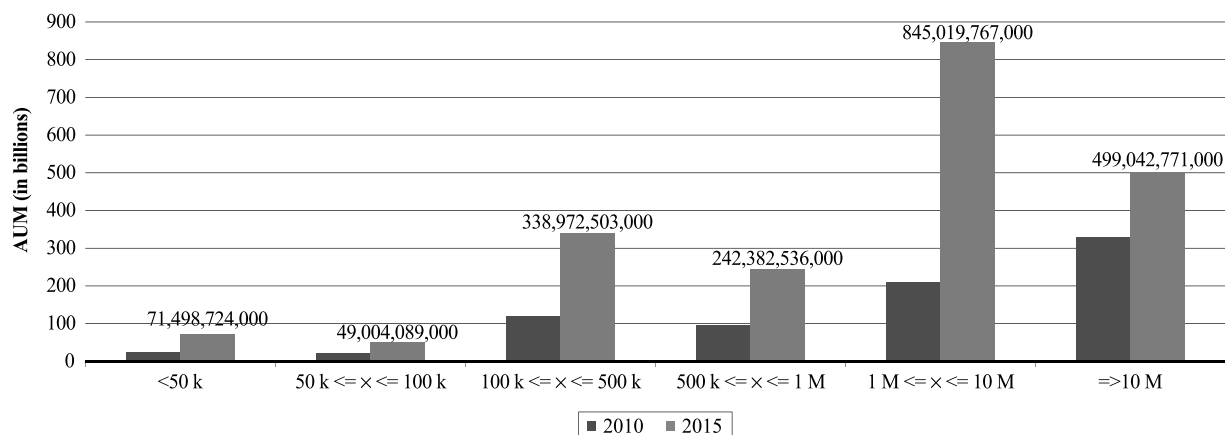
In the buckets where the funds trade more than 50,000 shares a day, running up to 1 million shares per day, we see growth averaging 50% over the period. These middle buckets, in terms of average daily volume, represent what I consider to be the trading middle, where a broader swath of investors have grown comfortable enough with on-screen volumes to be willing and able to utilize those funds in their portfolios. ETF issuers

cannot specifically launch funds into the middle-volume buckets. Funds typically get to these middle volumes on the back of investor interest, as the funds mature from trading fewer than 50,000 shares per day. ETFs usually launch in the same manner, starting at zero in terms of daily volume. What is interesting is the way asset growth has changed in relation to trading volumes.

Another way to look at the ETF industry, again broken down by volume buckets, is to assess assets under management by bucket as of today and over time. Exhibit 3 shows the same universe of ETFs broken down into average daily volume buckets by assets

## EXHIBIT 3

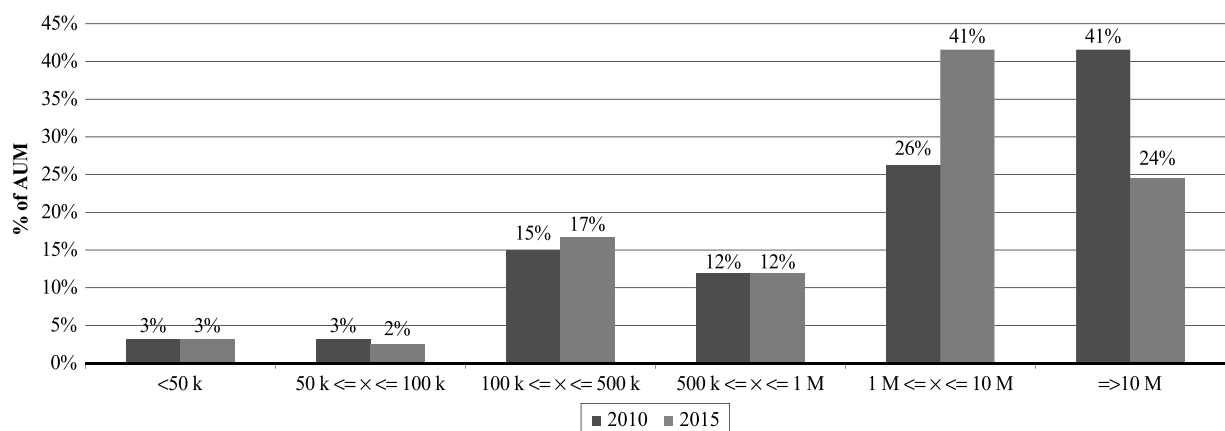
### AUM by Volume Bucket, 2010 and 2015



Source: Bloomberg as of March 6, 2015.

## EXHIBIT 4

### Percent of AUM by Volume Bucket



Source: Bloomberg as of March 6, 2015.

under management, again for December 31, 2010, and March 6, 2015.

Exhibit 3 is quite possibly one of the most definitive charts in the ETF industry. It shows growth of assets in the middle ADV buckets. This tells an important story about advances in investor education. It highlights the growth of the product set as an investment vehicle and not one designed only for portfolio hedging by hedge funds and high-frequency traders. The two middle bars on the chart show almost \$600 billion in assets invested in ETFs that trade, on average, between 100,000 and

1 million shares per day. The assets are broadening along the spectrum of available funds: In 2010, more than 40% of the assets in U.S.-listed ETFs were concentrated in the funds that traded more than 10 million shares per day, only 24 products. Now, the most frequently traded funds represent less than 25% of the assets of the product set. Clearly, the years of educating investors about how ETFs work, ways to execute ETF order flow, and ways to position the funds in portfolios are having a strong impact, enabling investors to use many more of

the available products. Exhibit 4 shows the percentage view of this data.

Several years ago, the high number of ETFs with low trading volumes might have been perceived as a problem in the product set. More recently, however, the products have become better understood as investment vehicles that can be used in portfolios without daily trading characteristics. A typical client for an ETF today would be someone who buys an ETF, keeps it in a portfolio, and doesn't make any position changes for a time period that can reach into months or years. This approach differs dramatically from even the early 2000s, when the more common use of ETFs seems to have been as a method of attaining fast, but brief, market exposure.

Exhibit 5 shows a breakdown of a number of ETFs and their percent of assets by family broken down into volume buckets. As the industry continues to mature, a bell curve continues to form, showing that the majority of products will trade in the range of 100,000 to 1 million average shares per day.

### ETF IMPLIED LIQUIDITY<sup>3</sup>

A way to understand where the comfort comes from for an increasing amount of assets into ETFs that on the outset present low trading volume characteristics is an assessment of the ETF implied liquidity. ETF implied liquidity is an assessment of the underlying assets in the ETF and their volume profile, quantified into ETF share terms. This has become the most popular measure for understanding what liquidity might exist in an ETF beyond its average daily trading volume, which merely represents what has happened in the past. Bloomberg calculates the original measure of ETF implied liquidity and makes it available via Bloomberg systems. Currently, there are almost 950 ETFs with a calculated implied liquidity metric, including all ETFs with equities underlying that make their baskets available daily. The range of ETFs that present high liquidity characteristics is quite different from those that present high trading volumes. An example is shown in Exhibit 6.

Although DGRW only trades about 20,800 shares per day on average, as seen in Exhibit 6, the basket is composed of a highly liquid set of holdings, and based on

those holdings, DGRW could potentially trade a large amount of volume during moments of asset allocation.

The ETF implied liquidity measure presents ETF liquidity in the same format (volume) but demonstrates the potential volume that can be generated in a particular ETF. It shows quite different characteristics of the ETF product set than might be seen by looking only at volume traded. For example, as Exhibit 7 shows, approximately 94% of ETFs with an implied liquidity present an implied liquidity of between 250,000 and 100 million shares per day. Those ETFs represent almost 93% of the assets of ETFs with a calculated implied liquidity—and approximately 75% of the assets of the entire product set.

### TRADING ETFs

The trading of ETFs has evolved quickly as use of this product set has evolved. Most ETF trading happens via the use of an ETF liquidity provider, typically called a market maker. When making large trades in a low-volume ETF, it is essential to use an ETF liquidity provider as an intermediary to facilitate the transfer of liquidity from the underlying basket to the ETF. The advancing knowledge of this process is clearly demonstrated by the asset growth in lower-volume ETFs.

There are several basic guidelines when placing orders in ETFs. Investors should use limit orders whenever possible. When sending a market order, an investor is subject to the whims of the marketplace. If the size of the order is larger than the displayed size in an ETF, it is preferable to use an ETF liquidity provider. Many of the custody platforms have developed advanced skills in executing ETF order flow and utilizing ETF liquidity providers in this process on investors' behalf. The trading desks are designed to facilitate order flow and are well versed in sourcing ETF liquidity. When speaking to a liquidity provider directly, investors have the option of getting an execution in the ETF based on where it is trading in the market or based on the underlying basket (for most products). There is a wide, and growing, set of ways to execute ETF order flow, and investors should discuss techniques and methods with their trading teams and their liquidity providers before execution.

## EXHIBIT 5

### Funds and Percent of AUM by Family and Volume Bucket

|                              | <50 k   | 50 k <= x <= 100 k | 100 k <= x <= 500 k | 500 k <= x <= 1 M | 1 M <= x <= 10 M | =>10 M |
|------------------------------|---------|--------------------|---------------------|-------------------|------------------|--------|
| Alpha Architect              | 2/100%  |                    |                     |                   |                  |        |
| Alps                         | 10/5%   | 1/1%               | 3/16%               |                   | 1/77%            |        |
| ARK ETFs                     | 4/100%  |                    |                     |                   |                  |        |
| ArrowShares                  | 1/50%   |                    | 1/50%               |                   |                  |        |
| BioShares Biotechnology ETFs | 2/100%  |                    |                     |                   |                  |        |
| Calamos Advisors             | 1/100%  |                    |                     |                   |                  |        |
| Cambria ETFs                 | 4/81%   | 1/19%              |                     |                   |                  |        |
| Columbia ETFs                | 5/100%  |                    |                     |                   |                  |        |
| Compass ETFs                 | 5/100%  |                    |                     |                   |                  |        |
| DB ETFs                      | 16/3%   | 1/1%               | 3/12%               |                   | 1/84%            |        |
| Direxion ETFs                | 28/6%   | 6/5%               | 8/11%               | 1/5%              | 15/56%           | 2/17%  |
| EGShares ETFs                | 6/7%    | 2/7%               | 2/86%               |                   |                  |        |
| ETF Securities               | 6/81%   | 2/19%              |                     |                   |                  |        |
| Exchange Traded Concepts     | 9/43%   | 2/46%              | 1/11%               |                   |                  |        |
| Falah ETFs                   | 1/100%  |                    |                     |                   |                  |        |
| Fidelity ETFs                | 4/25%   | 3/10%              | 7/64%               |                   |                  |        |
| First Trust                  | 52/7%   | 10/10%             | 24/56%              | 3/11%             | 5/16%            |        |
| Flexshares                   | 12/28%  | 3/19%              | 1/53%               |                   |                  |        |
| Franklin Advisors ETFs       | 1/100%  |                    |                     |                   |                  |        |
| Global X                     | 26/16%  | 6/12%              | 8/66%               |                   | 1/6%             |        |
| GreenHaven                   |         | 1/100%             |                     |                   |                  |        |
| Guggenheim                   | 41/17%  | 11/9%              | 17/36%              | 1/1%              | 1/37%            |        |
| Horizons                     | 3/100%  |                    |                     |                   |                  |        |
| Huntington                   | 2/100%  |                    |                     |                   |                  |        |
| IndexIQ                      | 9/21%   | 1/8%               | 1/71%               |                   |                  |        |
| InfraCap ETFs                | 1/100%  |                    |                     |                   |                  |        |
| iShares                      | 130/3%  | 31/2%              | 67/15%              | 24/16%            | 39/44%           | 9/20%  |
| JP Morgan ETFs               | 3/100%  |                    |                     |                   |                  |        |
| KraneShares                  | 3/29%   |                    | 1/71%               |                   |                  |        |
| LocalShares                  | 1/100%  |                    |                     |                   |                  |        |
| Market Vectors               | 31/6%   | 9/8%               | 8/23%               | 2/11%             | 2/6%             | 3/46%  |
| Merk                         |         | 1/100%             |                     |                   |                  |        |
| Pimco                        | 11/9%   | 2/3%               | 3/55%               | 1/32%             |                  |        |
| PowerShares DB               | 1/1%    | 3/4%               | 3/7%                | 1/12%             | 3/76%            |        |
| PowerShares                  | 78/8%   | 12/3%              | 27/27%              | 1/3%              | 4/16%            | 1/43%  |
| Precidian                    |         |                    | 1/100%              |                   |                  |        |
| ProShares                    | 84/14%  | 7/3%               | 20/18%              | 2/4%              | 18/54%           | 2/6%   |
| PureFunds                    | 1/1%    |                    |                     | 1/99%             |                  |        |
| Pyxis Capital                |         | 1/100%             |                     |                   |                  |        |
| QuantShares                  | 5/100%  |                    |                     |                   |                  |        |
| Reality Shares ETFs          | 1/100%  |                    |                     |                   |                  |        |
| Recon Capital                | 2/100%  |                    |                     |                   |                  |        |
| Renaissance                  | 2/100%  |                    |                     |                   |                  |        |
| RevenueShares                | 7/100%  |                    |                     |                   |                  |        |
| Schwab                       | 4/2%    | 5/6%               | 8/41%               | 4/51%             |                  |        |
| Source                       | 1/100%  |                    |                     |                   |                  |        |
| State Street                 | 85/2%   | 11/1%              | 20/4%               | 6/6%              | 18/34%           | 5/53%  |
| Teucrium                     | 3/9%    | 2/91%              |                     |                   |                  |        |
| United States Commodities    | 7/1%    | 1/16%              | 3/7%                |                   |                  | 2/76%  |
| Validea Capital Management   | 1/100%  |                    |                     |                   |                  |        |
| Vanguard                     | 15/1%   | 5/1%               | 28/20%              | 8/13%             | 10/55%           | 1/10%  |
| VelocityShares               | 3/100%  |                    |                     |                   |                  |        |
| WBI ETFs                     | 10/100% |                    |                     |                   |                  |        |
| WisdomTree                   | 50/11%  | 6/10%              | 10/19%              |                   | 3/59%            |        |

Source: Bloomberg as of March 6, 2015.

## EXHIBIT 6

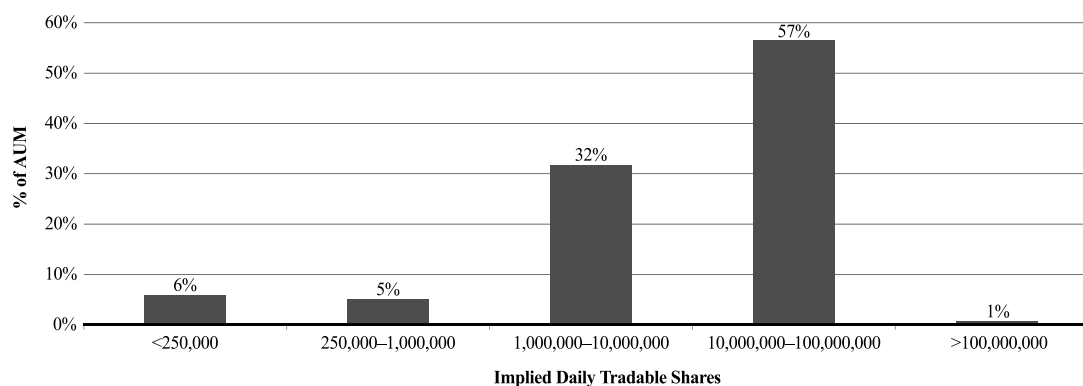
DGRW—WisdomTree U.S. Dividend Growth Fund: ADV = 20,800 Implied Liquidity = 79,500,000



Source: Bloomberg, as of September 8, 2014.

## EXHIBIT 7

ETF-Implied Liquidity, Percent of AUM



Source: Bloomberg as of March 6, 2015.

## SUMMARY

Looking at the trading characteristics of the ETF product set enables investors to understand how growth is spreading out among a wider variety of products. This is happening because investors have learned more about the mechanisms underlying ETFs and are now able to use more of the ETF product set. Having metrics like ETF implied liquidity enables investors to see potential ETF liquidity in a quantitative manner and expand the investment options in their portfolios. This leads to a final point about trading—that understanding the nuances of executing ETFs efficiently is critical as investors move beyond the small number of ETFs that present high average daily trading volumes and utilize products with high implied liquidity but lower volumes.

### The 10 Keys to Trading ETFs Can Help You to Navigate That Process<sup>4</sup>

1. Understand the fair value of the product you intend to trade.
2. Try not to trade during the first 15 minutes and last 15 minutes of trading.
3. Try to focus trading of ETFs with various underlying assets at times when those assets are trading and overlapping with U.S. trading hours.
4. Utilize the full arsenal of trade types when available.
5. Place limits within reasonable range of fair value, where they can realistically expect to be executed.
6. Utilize ETF liquidity providers for blocks of more than 5,000 shares or 25% of ADV.
7. Get a feeling for how much of an impact in the market your trade might create as compared with other trades of similar, or larger size, in the past.

8. Understand when you need to use risk capital from traders versus when you can have them trade the basket on your behalf.
9. Develop a relationship with your execution platform or liquidity provider. An open, trusting relationship helps them to understand your goals and helps you to achieve them by navigating a complicated ETF trading landscape.
10. Do not undervalue the true cost of not paying attention to the execution of your ETF positions. Executing efficiently in the ETF markets is critical for the performance of your portfolios and can be easily achieved with a small amount of work.

## ENDNOTES

<sup>1</sup>Average daily volume is the dollar amount traded over the course of a single trading day.

<sup>2</sup>The December 31, 2010, date was chosen because this date was the earliest for which end-of-year data was available from previous research. The March 6, 2015, date was chosen due to recent research being pulled on that date.

<sup>3</sup>ETF implied liquidity or implied daily tradable shares (IDTS): A representation of how many shares can potentially be traded daily in an ETF as portrayed by the creation unit. The formula is as follows: (30-Day ADV × Variable percentage)/Shares per creation unit × Creation unit size.

<sup>4</sup>This list is from *Visual Guide to ETFs* by David Abner (Bloomberg Press, 2013).

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**Average daily volume:** Average dollar amount traded over the course of a single trading day.

**Hedging:** Applying strategies meant to mitigate the impact of currency movements on equity returns.

**Bell curve:** Created when a line is plotted using the data points for an item that meet the criteria of “normal distribution”.

**ETF Implied Liquidity or implied daily tradable shares (IDTS):** A representation of how many shares can potentially be traded daily in an ETF as portrayed by the creation units. The formula is: (30-day average daily volumes \* variable percentage) / shares per creations unit)\* creation unit size.

**Liquidity:** The degree to which an asset or security can be bought or sold in the market without affecting the asset’s price. Liquidity is characterized by a high level of trading activity. Assets that can be easily bought or sold are known as liquid assets.

**Market maker:** Someone who quotes a buy and a sell price in a financial instrument.

**Order flow:** The collective orders to either buy or sell specific securities.

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On or about August 31, 2015, the WisdomTree Dividend Growth Fund (DGRW) changed its name to the WisdomTree U.S. Quality Dividend Growth Fund (DGRW). WisdomTree has not made any changes to the Fund’s objective, policies or strategies of the Fund.

WTPR-0026