DIVIDEND INVESTING AND A LOOK INSIDE THE S&P DOW JONES DIVIDEND INDICES

1: INTRODUCTION

Dividends have fascinated investors and theorists since the origins of modern financial theory. Voluminous research has been written on the various topics related to dividends and dividend-paying firms. Despite inconclusive evidence of whether dividend-paying firms are better investment options or whether dividends are more important risk factors than size, sector or other fundamental metrics, one fact remains undisputable. Dividends yield is an important component of total return. This is particularly true in light of the financial crisis in 2008, continuing volatility in the equity markets and the current low interest rates environment. Dividend yield-based strategies, which focus on both income and capital appreciation, have proven to produce stable income streams and provide downside protection during market downturns.

The first section of this paper establishes the historical importance and benefits of dividends. Dividend-based equity investing has become one of the most discussed investment topics in recent years. Consequently, it is important to distinguish between yield-based strategies versus those that focus on both income and stable growth. In that light, the second section of the paper focuses on the S&P Dow Jones Dividend Indices family, which is divided into three sub-families, to capture all aspects of the benefits of dividends. The rest of the paper provides comparative analysis of the two sub-families in the income and stable growth category. We use risk and return, factor exposure, constituent quality and the sector representation metrics in our analysis to compare and differentiate between the two sub-families.

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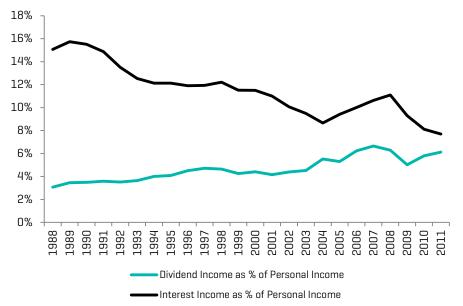
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2: THE IMPORTANCE OF DIVIDENDS

2.1: Dividends are an important and growing portion of personal income.

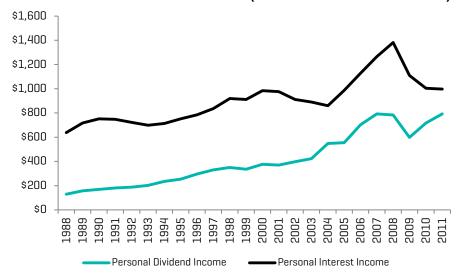
The percentage of the dividend income, as part of personal income, has steadily increased over time, making dividends an importance source of income. In 2011, dividend income was 6.12% of per capita personal income in the U.S., compared with 4.16% the previous 10 years and 3.58% 20 years prior. During the same period, interest (the source of income from capital markets), has steadily shrunk to 7.7% in 2011 from 14.87% in 1991. The value of total dividend income in 2000 dollars has significantly increased to \$792.9 billion in 2011 from \$180.3 billion in 1990, representing over 300% growth. On the other hand, interest income has grown less than 100% during the same period. Exhibits 1 and 2 track the growing importance of dividend income vis-à-vis interest income. Emphasis on personal dividend will only heighten as equity ownership becomes even more ubiquitous, and a growing number of retiring Americans seek income-generating assets.

Exhibit 1: Dividend Income as a Percentage of Personal Income



Source: Bureau of Economic Analysis. National Income Product Accounts. Data from 12/31/1988 – 12/31/2011. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results.

Exhibit 2: Dividend and Interest Income (in Billions of 2000 U.S. Dollars)



Source: Bureau of Economic Analysis. National Income and Product Accounts. Data from 12/31/1988 – 12/31/2011. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results.

2.2: More than a third of long-term total return from equity can be attributed to dividends.

Historically, dividends contribute approximately a third of equity return, making them a significant source of total return. From December 1926 to December 2012, dividend income constituted 34% of the monthly total return of the S&P 500. Exhibit 3 plots the contribution of dividends to the average monthly total return of the S&P 500 through several decades. In some decades, such as the 1940s and 1970s, dividend income accounted for more than half of total return, whereas during the 1990s, dividends accounted for as little as 14%, with capital appreciation making up the bulk of the equity return. Exhibit 3 excludes the dividend income during the 2000s, during which it comprised more than 100% of total return.

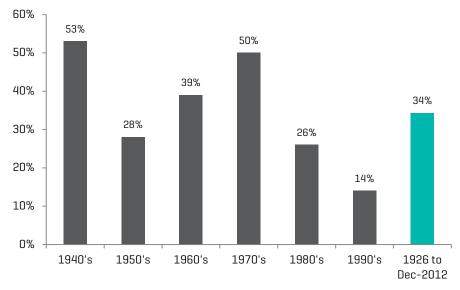


Exhibit 3: Dividend Income as a Percent of Monthly Total Return of the S&P 500

Source: S&P Dow Jones Indices LLC. Data from December 31, 1925 – December 31, 2012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results.

2.3: Dividends Offer the Potential for Downside Protection

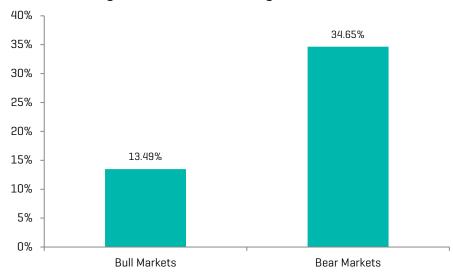
In addition to providing a steady source of income for investors, dividends also play another important role during periods of volatility. While price returns can be either positive or negative, dividend incomes are by definition positive. Therefore, dividends provide investors with the opportunity to capture the upside potential while providing some level of downside protection in negative markets.

Fuller and Goldstein² examined the return behavior of dividend paying and non-dividend paying firms in both up and down markets, from January 1970 to December 2007. The authors found that dividend paying firms outperformed non-dividend paying firms more in down markets than they did in up markets, with the results showing outperformance of 1% to 2% per month. This property of dividend income can be observed by examining the returns of the S&P 500 during the last three bull and bear market cycles ending 2012. In our analysis, an up market is defined as a time period of one calendar year or more during which market returns are positive. A down market is defined as a time period of one calendar year or more during which market returns are negative. Returns for periods longer than one year are annualized. Dividend yield contributed an average of 13.49% of the total return during the up markets studied while accounting for 34.65% of the total return during the bear markets (see Exhibit 4).

¹ The S&P 500 did not actually have 500 stocks prior to 1957, and was known as the S&P Composite Index. However, for simplicity's sake we use the term "S&P 500" throughout this paper.

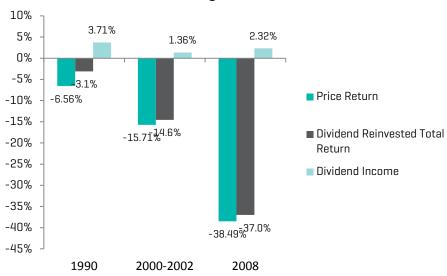
²Fuller, Kathleen P. and Michael A. Goldstein . 2011. "Do Dividends Matter More in Declining Markets?" *Journal of Corporate Finance*, vol. 17, issue 3 (June).

Exhibit 4: Average Dividend Return during Bull and Bear Markets



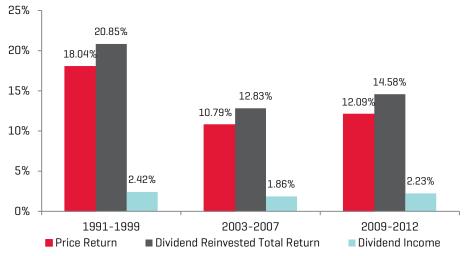
Source: S&P Dow Jones Indices LLC. Data from December 31, 1989 to December 31, 2012. Charts are provided for illustrative purposes. For our review, Bull markets included the period of 1991-1999, 2003-2007, and 2009-2012. The Bear Markets included 1990, 2000-2002, and 2008. Past performance is not a guarantee of future results.

Exhibit 5: Dividend Income During Down Markets



Source: S&P Dow Jones Indices LLC. Data from December 31, 1989 to December 31, 2012. Charts are provided for illustrative purposes. For our review, Bull markets included the period of 1991-1999, 2003-2007, and 2009-2012. The Bear Markets included 1990, 2000-2002, and 2008. Past performance is not a guarantee of future results.

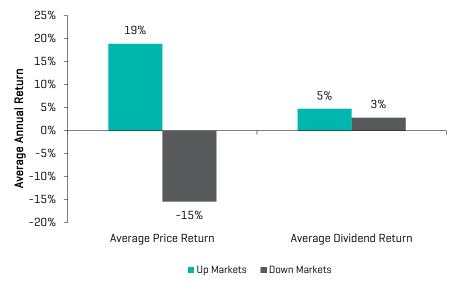
Exhibit 6: Dividend Income During Up Markets



Source: S&P Dow Jones Indices LLC. Data from December 31, 1989 to December 31, ²012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results.

The average price return and the dividend return of the S&P 500 during the up and down markets are computed using annual returns from 1927 to 2012. The data shows that over the entire period the S&P 500 return data is available, average annual dividend return in an upmarket is at 5%, while an average annual price return is approximately 19%. During market downturns, average annual dividend return is 3%, while that of price return clocks in at -15%.

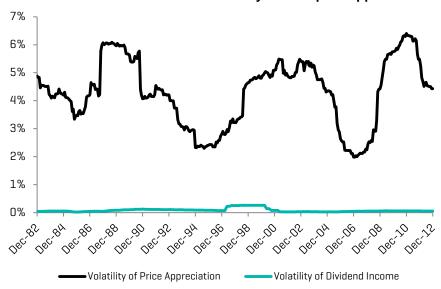
Exhibit 7: Dividends Act as a Cushion during Negative Equity Markets



Source: S&P Dow Jones Indices LLC. Data from 1927 to 2012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results.

Not only are dividends positive, they are relatively stable through time. Wide swings in stock prices can be partly attributed to speculation and market sentiments; whereas dividend income, as a component of a company's earnings, is less subject to speculation. Over the past 30 years ending December 2012, the annualized standard deviation of price returns is 15.46%. In contrast, the standard deviation of dividend return is 0.47% over the same investment period. Exhibit 8 illustrates the constant volatility of dividend income from December 1982 to December 2012 using rolling three-year standard deviation of monthly returns. The lower volatility makes dividend income more stable over different market cycles.

Exhibit 8: Dividends have Lower Volatility than Capital Appreciation

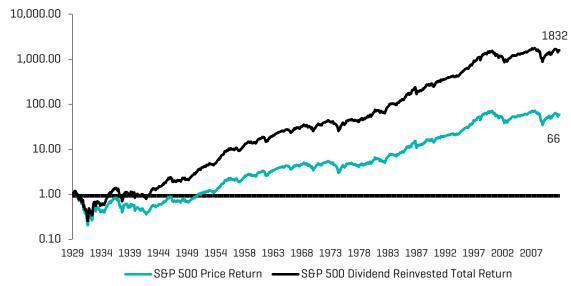


Source: S&P Dow Jones Indices LLC. Data from December 1982-December 2012. The volatility of price appreciation and the volatility of dividend income are calculated using the price return and total return data of the S&P 500. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results.

2.4: The Compounding Effect of Dividend Income

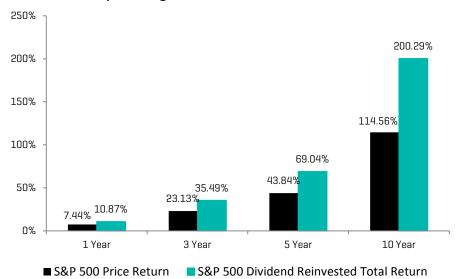
Another important feature of dividends can be observed through the effect of compounding over an extended investment timeframe (see Exhibits 9 and 10). Excluding dividends, the S&P 500 price return index with the value of 1 on Jan. 1, 1930, would have grown to 66.48 by the end of 2012. During the same time period, a total return index with dividends reinvested would have yielded the index value of 1,832.45. Exhibit 10 plots this compounding effect for the S&P 500 over several time periods. The plot figures are averages for every continuous investment horizon, over each time period, based on the monthly data for the past 50 years, ending 2012.

Exhibit 9: S&P 500 Cumulative Return from 1930 - 2012



Source: S&P Dow Jones Indices LLC. Data from 12/31/1930 – 12/31/2012. It is not possible to invest directly in an index. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results. This chart does not take into account any fees or charges that an investor would face in buying and selling shares of any investment.

Exhibit 10: Compounding Effect



Source: S&P Dow Jones Indices LLC. Average returns calculated from monthly 1, 3, 5, 10 year returns from 12/31/1961 – 12/31/2012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results.

2.5: An Alternative to Low Interest Rates for Income Seekers

The current low interest rates environment, combined with a changing demographic trend, have made dividend investing a compelling strategy. As millions of baby boomers enter retirement, the demand for income producing securities and dividend strategies-based investment products are expected to increase.

Currently, the yields on the 10-year Treasury are at their lowest levels in 20 years (see Exhibit 11). Compared to traditional fixed income options that are available to income-seeking investors, equities- and dividend-based strategies offer higher yields. Exhibit 12 compares the current yields on the short- and long-term fixed income instruments to equities and a portfolio of high dividend-paying securities. For income-oriented investors, low bond yields would be detrimental to cash flow needs. With inflation measuring at 2%³, investors are faced with low nominal yields and negative real yields.

It is often stated in the financial press that dividend stocks provide protection against inflation. Earnings, which are nominal, tend to rise in tandem with inflation. Dividend payout policies that are maintained as a percentage of earnings should thereby rise in line with inflation. However, empirical research has shown that inflation hedging ability of dividend stocks is weak. Ang, Briere and Signon⁴ demonstrated that the inflation betas of dividend growth and price return components of high dividend stocks are statistically insignificant. While the debate continues on whether or not dividend paying securities offer a true inflation hedge, it is, nevertheless, apparent that dividend paying stocks offer higher yields than traditional fixed income investments.

³ Inflation is represented by the 12-month change in the Consumer Price Index (CPI) for all items less food and energy as of September 2012, as reported by the Bureau of Labor Statistics.

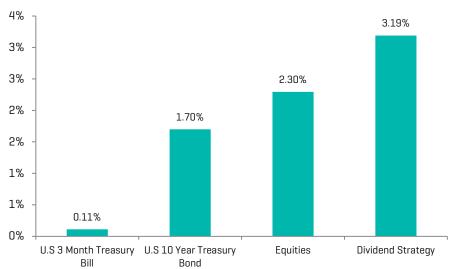
⁴ Ang, Andrew, Marie Briere, and Ombretta Signon. 2012. "Inflation and Individual Equities." Financial Analysts Journal, vol. 68, no. 4 (July/August).

Exhibit 11: 10-Year Treasury Yields through Time



Source: FactSet. Data as of 12/31/2012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results.

Exhibit 12: Bond Yield Versus Stock Yield



Source: S&P Dow Jones Indices LLC, FactSet. Data as of 12/31/2012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results. Equities yield is represented by the yield on the S&P 500. Dividend Strategy yield is presented by the yield of the S&P High Yield Dividend Aristocrats Index.

2.6: Dividend Strategies in a Portfolio Context

The benefits of dividend investing can be observed in an asset allocation framework. To illustrate, we consider the growth of three hypothetical portfolios with the starting base value of 10,000.

- Portfolio1 (equities)—which comprises broad market equities only
- Portfolio 2 (equities and bonds)—which makes an allocation of 60% to broad market equities and 40% to fixed income
- Portfolio 3 (equities and bonds with dividends)—which allocates 40% to broad market equities. 20% to a dividend strategy and the remaining 40% to fixed income

The only portfolio for equities is presented using the monthly total returns of the S&P 500. The equities and bonds portfolio is presented using the monthly total returns of the S&P 500 and the Barclays Capital U.S. Aggregate Bond Index. The equities and bonds with dividends portfolio is presented using the monthly total returns of the S&P High Yield Dividend Aristocrats index. The investment horizon is from Nov. 30, 1999, to Dec. 31, 2012, based on the earliest date where index performance data is available for all three indices. Each portfolio is rebalanced on a quarterly basis. Maintaining the same 40% allocation to bonds, but re-allocating 20% of the equities portion into a dividend strategy, results in the highest accumulation of investment capital for the hypothetical Portfolio 3 (see Exhibit 13).

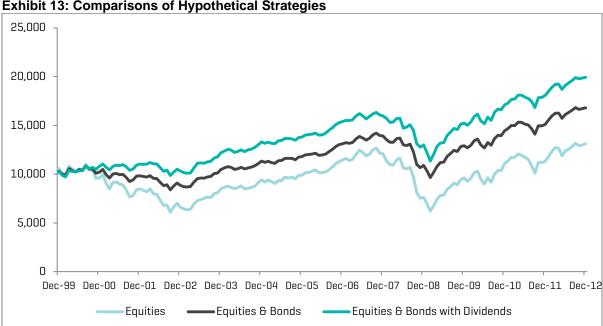


Exhibit 13: Comparisons of Hypothetical Strategies

Source: S&P Dow Jones Indices LLC, Barclays. Data presented using monthly returns from Nov. 30, 1999 - Dec. 31, 2012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results. Equities portfolio is presented using the monthly total returns of the S&P 500. Equities & Bonds portfolio is presented using the monthly total returns of the S&P 500 and the Barclays US Aggregate Bond Index. Equities & Bonds with Dividends portfolio is presented using the monthly total returns of the S&P High Yield Dividend Aristocrats Index.

3: A REVIEW OF THE S&P DOW JONES DIVIDEND INDICES

As a recap, the first section of this paper established the importance of divided investing using empirical analysis. While it can be stated that dividend yield is an important source of total return, it should be noted that not all dividend strategies are constructed with the same investment objective. While some strategies seek the absolute highest yield possible, others seek a combination of consistent income and dividend growth.

In this section, we introduce the S&P Dow Jones Dividend Indices family and the sub-families. The S&P High Yield Dividend Aristocrats index and the Dow Jones U.S. Select Dividend Index, the two headline indices that belong to the income and stable growth category, are then compared using risk and return, factor exposure, constituent quality and the sector composition metrics.

3.1: The S&P Dow Jones Dividend Indices Offerings

The S&P Dow Jones Dividend Indices offer a suite of benchmarks that measure the yield-based investment strategies. These strategies are designed for measuring high yielding and stable payout securities. Three sub-families are available to capture dividends' capabilities. Constituents of the indices in all the sub-families must meet their individual liquidity, exchange listing, tradability and investability criteria. The three sub-families are:

- 1. S&P Dividend Aristocrats The S&P Dividend Aristocrats Indices are designed to measure the performance of companies around the world that have followed a managed dividend policy of consistently increasing dividends every year for a set number of consecutive years.
- 2. Dow Jones Select Dividend The Dow Jones Select Dividend Indices represent the performance of a country's top highest yielding securities. Constituents must meet a set number of increasing dividends, as well as the dividend sustainability criteria to avoid the value trap.
- 3. S&P Global Dividend Opportunities Index The S&P Dividend Opportunities Indices are designed to serve as benchmarks for global income seeking investors. The indices seek to measure the highest yielding common stocks from around the world while meeting sector and country diversification, tradability, investability and profitability criteria.

Exhibit 14 summarizes the index mechanics behind the construction of the S&P High Yield Dividend Aristocrats and the Dow Jones U.S. Select Dividend Index.

Exhibit 14: A Review of Index Mechanics					
	S&P High Yield Dividend Aristocrats	Dow Jones US Select Dividend Index			
Universe Coverage	S&P 1500	Dow Jones US Index			
Dividend Consistency Criteria	Consistently increase dividends every year for at least 20 years	Paid dividends in each of the previous 5 years			
Dividend Sustainability Criteria	None	5 year DPS growth rate > 0, dividend payout ratio <= 60%			
Number of Constituents	Floating - 81	Fixed - 100			
Weight Scheme	Indicated Annual Dividend Yield	Indicated Annual Dividend Yield			
Rebalancing Frequency	Annual review in January	Annual review in December			
Maximum Security Weight	The lower of basket liquidity weight (3M ADVT/US\$ 2 Billion) or 4%	Capped at 10%			

Source: S&P Dow Jones Indices LLC.

3.2: Risk/Return Characteristics

Numerous academic research has shown that dividend paying stocks tend to produce comparable or better risk-adjusted returns than the broad market over a long-term investment horizon. (See Exhibit 15 for the risk and return profiles of the Dow Jones U.S. Select Dividend Index and the S&P High Yield Dividend Aristocrats.) Both indices enjoy higher Sharpe ratios than the broad market over a medium- to long-term investment period. However, there may be periods when their performance may lag behind the market or the volatility may spike higher.

Exhibit 15: Risk/Return Profile			
	Dow Jones US Select Dividend Index	S&P High Yield Dividend Aristocrats	S&P 500
Annualized Return (%)			
1 Year	10.84	11.88	16.00
3 Year	13.81	12.04	10.87
5 Year	2.49	5.19	1.66
10 Year	7.42	7.93	7.10
Annualized Standard Deviation (%)			
3 Year	11.66	12.51	15.30
5 Year	19.41	19.07	19.04
10 Year	15.22	14.72	14.77
Sharpe Ratio			
3 Year	1.175	0.954	0.704
5 Year	0.111	0.254	0.069
10 Year	0.377	0.425	0.367

Source: S&P Dow Jones Indices LLC. Data as of 12/31/2012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results. The inception date of the Dow Jones US Select Dividend Index is November 3, 2003. The inception date of the S&P High Yield Dividend Aristocrats is November 9, 2005. All information presented prior to this date is back-tested. Please see the Performance Disclosure at the end of this paper for more information on the inherent limitations associated with back-tested performance.

3.3: Risk Exposures

The factor exposures of the S&P Dow Jones Dividend Indices using the traditional Fama-French Three Factor model framework are summarized in Exhibit 16. The historical monthly returns of the S&P High Yield Dividend Aristocrats and the Dow Jones U.S. Select Dividend Index from January 2001 to September 2012 are regressed against the historical values of (1) the excess returns on the market (RM-RF), (2) the performance of small stocks relative to large stocks (SMB) and (3) the performance of value stocks relative to growth stocks (HML).⁵

The Dow Jones U.S. Select Dividend Index has a slightly higher exposure to market and value factors. The higher value bias is to be expected as the additional dividend sustainability screens, such as the dividend payout ratio and the positive five-year dividend per share growth, imposed by the index results in an inherent valuation tilt. The market and value coefficients for both indices are statistically significant.

Exhibit 16: Factor Exposures of S&P Dow Jones Dividend Indices				
	Fama French Factor Loadings			
Factors	DJ U.S. Select Dividend	S&P HY Dividend Aristocrats		
Market	0.78	0.72		
t-stat	18.64	17.71		
Size (SMB)	-0.05	0.02		
t-stat	-0.66	0.28		
Value (HML)	0.61	0.53		
t-stat	8.31	7.44		
R Square	0.81	0.79		

Source: S&P Dow Jones Indices LLC. Data from January 2001 – December 2012. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results. Please see the Performance Disclosure at the end of this paper for more information on the inherent limitations associated with back-tested performance.

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⁵ Historical values for the Fama-French factors are obtained at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

3.4: Index Constituent Quality

In addition to risk-return characteristics, it is essential to evaluate the quality of the composition of a dividend strategy in order to determine the quality of the dividend stream. The Dow Jones U.S. Select Dividend and S&P High Yield Dividend Aristocrats indices require increasing or consistent dividend payout as one of the eligibility criteria. The ability of management to maintain stable or increasing dividends indicate the quality of the firm's earnings and its growth prospects. The S&P Capital IQ Earnings and Dividend Rankings, commonly referred to as Quality Rankings, reflect the variability of the long-term growth and stability of a company's earnings and dividends.

Moreover, the effect of quality on stock returns has been studied and shown that Quality Rankings can be used as a proxy for risk, as there is a close relationship between a stock's ranking and its beta. Soe $(2010)^6$ found that stocks with above-average or higher quality rankings outperform those with below-average or lower quality rankings during periods of high volatility, widening credit spreads and steepening of the yield curve. The rankings breakdown indicate that roughly 47% of Dow Jones U.S. Select Dividend Index constituents and 66% of the S&P High Yield Dividend Aristocrats constituents have above-average or higher quality (see Exhibit 17).

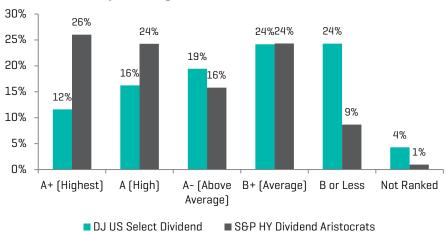


Exhibit 17: Quality Rankings of the S&P Dow Jones Dividend Indices

Source: S&P Dow Jones Indices LLC. Data as of 12/31/2012. Charts are provided for illustrative purposes. Quality Rankings are based on S&P Capital IQ Quality Rankings (a/k/a S&P Capital IQ Earnings and Dividends Rankings). S&P Capital IQ is analytically and editorially separate and independent from S&P Dow Jones Indices.

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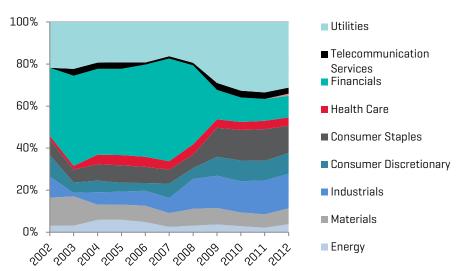
⁶ Soe, Aye and Srikant Dash. 2010. "Is High Quality Better?" S&P Dow Jones Indices.

3.5: Sector Composition

Dividend strategies constructed simply on the basis of highest dividend yields tend to be dominated by utilities and financials securities. This exposes the portfolio to sector concentration risk arising from sector-specific risk factors, such as adverse interest rate movements. It is, therefore, imperative that sector diversification be considered without sacrificing the yield.

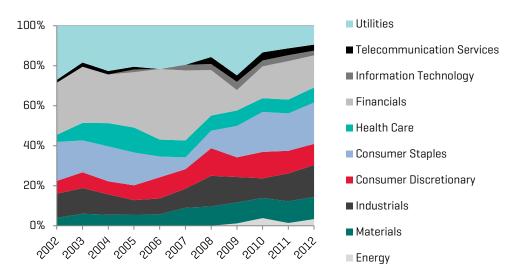
Exhibits 18 and 19 map the sector compositions of the S&P Dow Jones Dividend Indices from year-end 2002 to year-end 2011. The financials and utilities sectors constitute a healthy portion of both indices, but all or nearly all of the sectors are also represented. The sector diversification can be attributed to the index eligibility criteria pertaining to the dividend payment consistency and sustainability. Both indices draw the constituents from a broad spectrum of industries, as companies across sectors may follow a managed dividend policy and can exhibit consistent dividend growth.

Exhibit 18: Dow Jones US Select Dividend Index - Sector Composition



Source: S&P Dow Jones Indices LLC. Data as of Dec. 31 of each year. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results. The inception date of Dow Jones US Select Dividend Index is November 3, 2003. Please see the Performance Disclosure at the end of this paper for more information on the inherent limitations associated with back-tested performance.

Exhibit 19: S&P High Yield Dividend Aristocrats Index- Sector Composition



Source: S&P Dow Jones Indices LLC. Data as of Dec. 31 of each year. Charts are provided for illustrative purposes. Past performance is not a guarantee of future results. The inception date of the S&P High Yield Dividend Aristocrats is November 9, 2005. Please see the Performance Disclosure at the end of this paper for more information on the inherent limitations associated with back-tested performance.

4: CONCLUSION

Dividend-based equity investing has become one of the most discussed investment topics in recent years. Our analysis adds to the discussion by highlighting the role of dividends in generating total return.

Not all dividend strategies are constructed with the same investment objective. While some may focus on absolute current income, others may be designed to offer stable growth and income. The S&P Dow Jones Dividend Indices offer a suite of benchmarks designed to accommodate both high-yield seeking investors and those looking for stable payouts. Our comparative analysis of the two headline indices belonging to the stable growth and income category illustrate how risk-adjusted returns, value tilt and sector diversification, and the earnings and dividend quality all should play a part in reviewing types of indices.

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ABOUT S&P DOW JONES INDICES

S&P Dow Jones Indices LLC, a subsidiary of The McGraw-Hill Companies is the world's largest, global resource for index-based concepts, data and research. Home to iconic financial market indicators, such as the S&P 500[®] and the Dow Jones Industrial AverageSM, S&P Dow Jones Indices LLC has over 115 years of experience constructing innovative and transparent solutions that fulfill the needs of institutional and retail investors. More assets are invested in products based upon our indices than any other provider in the world. With over 830,000 indices covering a wide range of assets classes across the globe, S&P Dow Jones Indices LLC defines the way investors measure and trade the markets. To learn more about our company, please visit www.spdji.com.

PERFORMANCE DISCLOSURE

The inception date of the S&P High Yield Dividend Aristocrats Index was November 9, 2005, at the market close. All information presented prior to the index inception date is back-tested. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect when the index was officially launched. Complete index methodology details are available at www.spindices.com.

The inception date of the Dow Jones US Select Dividend Index was November 3, 2003, at the market close. All information presented prior to the index inception date is back-tested. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect when the index was officially launched. Complete index methodology details are available at www.spindices.com.

Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown. The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com or www.spindices.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations. It is not possible to invest directly in an Index.

Another limitation of back-tested hypothetical information is that generally the back-tested calculation is prepared with the benefit of hindsight. Back-tested data reflect the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities (or fixed income, or commodities) markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

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