

Introduction

In modern-day financial discussions, a debate persists regarding whether young investors should prioritize dividend-paying stocks or broad market ETFs. The broad market ETF enjoys significant support due to its historical double-digit average returns. Comprehensive research spanning 20, 50, and even 100 years consistently highlights the stock market's impressive long-term growth. However, dividend-paying stocks present a different dynamic. These stocks offer dividends, which, although potentially lucrative, are not guaranteed and can introduce additional risk to an investor's portfolio.

This project investigates whether the potential risks associated with dividend-paying stocks are outweighed by their rewards. It involves a comprehensive comparison of the performance of dividend-paying stocks against a broad market ETF, using historical data to evaluate returns and stability. Additionally, the project incorporates predictive modeling to forecast which companies might achieve the prestigious status of Dividend Aristocrats in the future. By combining performance analysis with predictive insights, this study provides a multifaceted view of dividend investing, highlighting both historical performance and future potential. ***This analysis is conducted purely for academic purposes, and investment decisions should be based on thorough personal research or consultation with a financial advisor.***

Index Funds

The introduction of index funds in 1976 by John Bogle, the visionary founder of The Vanguard Group, marked a pivotal moment in investment history. By creating the first index investment trust, Bogle democratized access to market performance, offering investors a low-cost, efficient way to invest in a broad range of stocks. This innovation transformed investing by emphasizing market tracking over individual stock selection. Building on this groundbreaking concept, the SPY ETF was launched in 1992 by State Street Global Advisors. Designed to mirror the performance of the S&P 500 Index, SPY has become the most widely traded ETF in the world, reflecting its popularity and the robustness of index investing. For this project, the SPY ETF serves as a benchmark for evaluating broad market performance and is included as one of the portfolios in our analysis.

Dividend Aristocrats

Dividend Aristocrats are a select group of S&P 500 companies that have paid and increased their dividends for at least 25 consecutive years. These companies are regarded as reliable and stable investments, particularly appealing to income-focused investors seeking consistent cash flows. Their commitment to returning capital to shareholders, even during economic downturns, makes them attractive for long-term wealth accumulation through reinvested dividends. This study uses the list of Dividend Aristocrats as of December 31, 2023. A comprehensive list can be found in Appendix A.

Dividend investing, however, is sometimes criticized for underperforming growth-oriented strategies, especially during periods of strong market expansion. Growth stocks typically generate higher capital appreciation, while dividend-paying companies may lag in total returns during booming markets. This study examines whether the criticism that dividend strategies, particularly using Dividend Aristocrats, underperform compared to broader market indices like the S&P 500, is justified.

Methodology

Each portfolio was managed consistently with the following approach:

Initial Investment: An initial investment of \$10,000 was equally distributed among the stocks within each portfolio.

Dividend Reinvestment: Dividends were reinvested into the same stocks (Dividend Reinvestment Plan, or DRIP), and stock splits were factored into the calculations.

Study Period: The analysis covers the period from 1993 to 2023, with historical price data, dividends, and stock splits collected using the Yahoo Finance API through Python's *yfinance* library.

Code Explanation

To conduct the analysis, a function was created to fetch historical data for each stock in a given portfolio. This function retrieves price, dividend, and stock split data, adjusts for stock splits, and calculates dividend reinvestments. Here is an overview of the process:

Price Data: Historical closing prices were adjusted for stock splits to ensure accurate performance reflection.

Dividends: Dividend payments were reinvested, and additional shares acquired through DRIP were calculated.

Reinvested Dividends: DRIP logic reinvests dividends for selected stocks, tracking the number of additional shares acquired.

Stock Splits: Adjustments were made to reflect changes in share quantity and price due to stock splits.

Portfolio Composition

The portfolios analyzed were composed as follows:

Portfolio 1: Includes a selection of Dividend Aristocrats, such as 3M (MMM), AbbVie (ABBV), A. O. Smith (AOS), Archer Daniels Midland (ADM), AT&T (T), Cardinal Health (CAH), Cincinnati Financial (CINF), Cintas (CTAS), Coca-Cola (KO), and Colgate-Palmolive (CL).

Portfolio 2: Features a different set of Dividend Aristocrats, including Chevron (CVX), Dover Corporation (DOV), Ecolab (ECL), Edwards Lifesciences (EW), Essex Property Trust (ESS), Fastenal (FAST), Fifth Third Bancorp (FITB), Franklin Templeton (BEN), General Dynamics (GD), and Genuine Parts Company (GPC).

Portfolio 3: Comprises another unique group of Dividend Aristocrats, with Hormel Foods (HRL), Illinois Tool Works (ITW), Johnson & Johnson (JNJ), Kroger (KR), Leggett & Platt (LEG), Linde plc (LIN), Lowe's (LOW), McDonald's (MCD), Medtronic (MDT), and Nucor Corporation (NUE).

Portfolio 4: Contains a randomly selected set of Dividend Aristocrats, including PepsiCo (PEP), Procter & Gamble (PG), Sherwin-Williams (SHW), Stanley Black & Decker (SWK), Sysco Corporation (SY), Target Corporation (TGT), Walgreens Boots Alliance (WBA), Walmart (WMT), Waste Management (WM), and 3M (MMM).

Portfolio 5: Represents a comprehensive collection of all Dividend Aristocrats used in the study, combining the stocks from Portfolios 1 through 4: 3M (MMM), AbbVie (ABBV), A. O. Smith (AOS), Archer Daniels Midland (ADM), AT&T (T), Cardinal Health (CAH), Cincinnati Financial (CINF), Cintas (CTAS), Coca-Cola (KO), Colgate-Palmolive (CL), Chevron (CVX), Dover Corporation (DOV), Ecolab (ECL), Edwards Lifesciences (EW), Essex Property Trust (ESS), Fastenal (FAST), Fifth Third Bancorp (FITB), Franklin Templeton (BEN), General Dynamics (GD), Genuine Parts Company (GPC), Hormel Foods (HRL), Illinois Tool Works (ITW), Johnson & Johnson (JNJ), Kroger (KR), Leggett & Platt (LEG), Linde plc (LIN), Lowe's (LOW), McDonald's (MCD), Medtronic (MDT), Nucor Corporation (NUE), PepsiCo (PEP), Procter & Gamble (PG), Sherwin-Williams (SHW), Stanley Black & Decker (SWK), Sysco Corporation (SY), Target Corporation (TGT), Walgreens Boots Alliance (WBA), Walmart (WMT), and Waste Management (WM).

SPY Portfolio: Contains only the SPY ETF, which serves as the benchmark for comparing the performance of the Dividend Aristocrats against the broader market index, specifically the S&P 500.

Each portfolio's performance was assessed through total return, encompassing both capital appreciation and dividends.

Performance Comparison Discussion

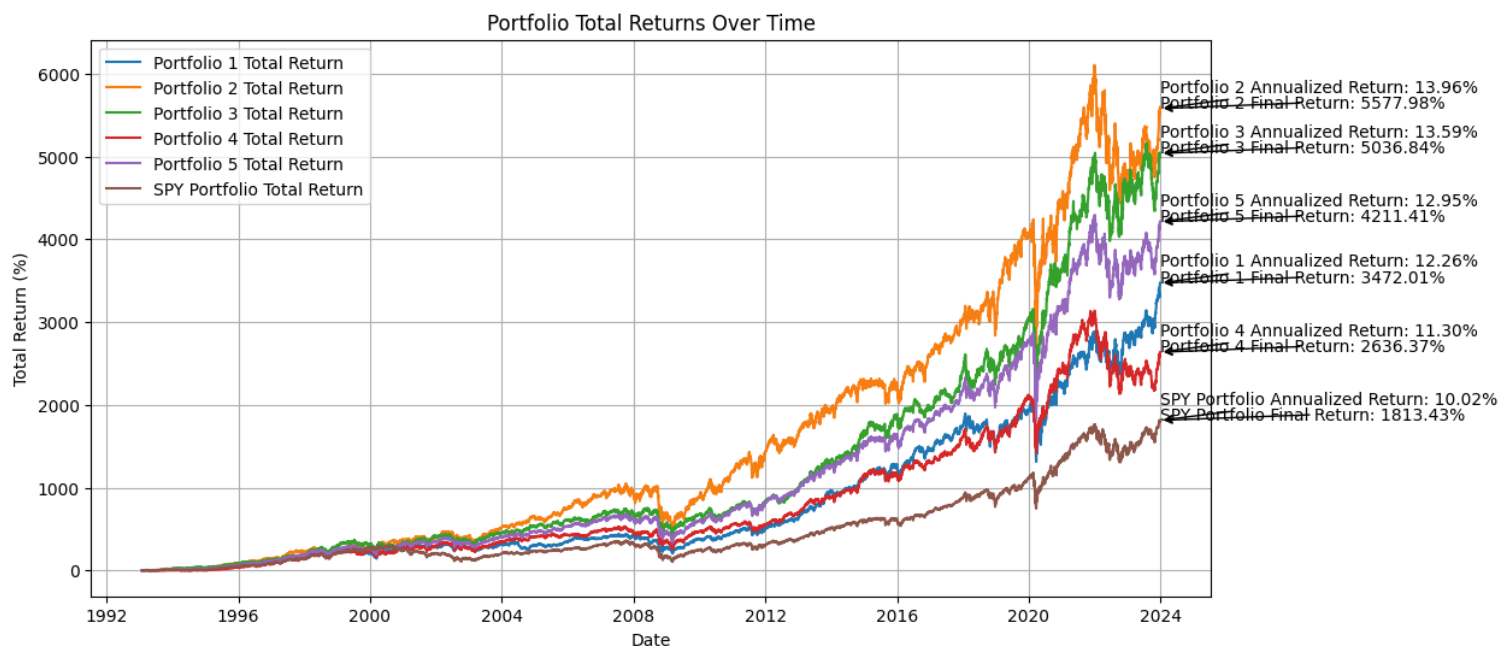
The analysis of the six portfolios highlights notable performance differences between Dividend Aristocrats and the SPY ETF:

Portfolio	Annualized Return
Portfolio 1	12.26%
Portfolio 2	13.96%
Portfolio 3	13.59%
Portfolio 4	11.30%
Portfolio 5	12.95%
SPY Portfolio	10.02%

Dividend Aristocrats portfolios generally outperformed the SPY portfolio in annualized returns, with Portfolio 2 achieving the highest return at 13.96%. Portfolio 4 and Portfolio 5 also exceeded SPY's return, though to a lesser extent.

Portfolio	Total Return
Portfolio 1	3472.01%
Portfolio 2	5577.98%
Portfolio 3	5036.84%
Portfolio 4	2636.37%
Portfolio 5	4211.41%
SPY Portfolio	1813.43%

Total return figures further emphasize the superior performance of Dividend Aristocrats portfolios. Portfolio 2's total return of 5577.98% indicates exceptional growth. In contrast, SPY's total return of 1813.43% lags significantly.



Analysis

The superior performance of Dividend Aristocrats portfolios, particularly Portfolios 2 and 3, suggests that a carefully selected group of Dividend Aristocrats can yield significant long-term gains and competitive returns compared to a broad market ETF like SPY. Portfolio 4's lower return compared to other Dividend Aristocrats portfolios suggests that a random selection may not always capture the best opportunities, while Portfolio 5 reflects the cumulative strength of the entire group. SPY's performance indicates that while it is stable and lower-risk, it may not always outperform a well-curated selection of Dividend Aristocrats.

Modeling and Prediction

Overview

In the quest to identify potential future Dividend Aristocrats, we undertook a predictive modeling approach leveraging historical financial data from S&P 500 companies. Dividend Aristocrats are distinguished by their consistent track record of increasing dividends for at least 25 consecutive years. To predict which companies might achieve this elite status in the future, we used a Random Forest Classifier to analyze companies that have been paying dividends for 5 and 20 years. This period was chosen to capture a range of dividend-paying behaviors and identify early indicators of long-term dividend reliability.

Our approach involved two main phases:

1. Feature Selection and Data Preparation:

Feature selection and data preparation involved analyzing both 5-year and 20-year dividend data to capture a range of insights into dividend reliability. The 5-year dividend data focused on companies with a recent history of paying dividends, aiming to identify current trends and indicators that might predict future Aristocrat status. In contrast, the 20-year dividend data provided a long-term perspective, examining companies with a more extended track record of dividend payments to gauge their enduring reliability and stability.

2. Model Training and Evaluation:

We trained Random Forest Classifiers on these datasets to differentiate between current Dividend Aristocrats and other companies. The goal was to assess which financial metrics are most predictive of a company's likelihood of becoming a Dividend Aristocrat.

Modeling with 5-Year Dividend Data

Data Preparation: The integration of 5-year dividend data with historical financial metrics aimed to capture the most recent trends and indicators that could predict future Dividend Aristocrats. By aggregating financial metrics such as dividend yield, payout ratio, and market cap, we formed a robust feature set. This approach assumes that companies demonstrating consistent dividend payments over the past 5 years are likely to exhibit attributes that could signal their future potential as Dividend Aristocrats. However, this period might be too short to fully capture long-term sustainability factors, and the data aggregation might obscure company-specific trends.

Model Training: The Random Forest Classifier was chosen for its ability to handle high-dimensional data and capture non-linear relationships between features. Despite its power, the model's performance highlights some limitations. The high accuracy of 93.18% suggests that the model is effective at distinguishing between Dividend Aristocrats and non-Aristocrats, particularly for the latter. However, the ROC-AUC score of 0.77 indicates that the model is

somewhat better at identifying non-Aristocrats compared to Aristocrats. This discrepancy could imply that the model finds it challenging to identify the more subtle indicators of long-term dividend reliability.

Evaluation

Accuracy: The model's high accuracy (93.18%) underscores its effectiveness in classifying most companies correctly. However, this metric alone does not reflect the model's performance in identifying true Dividend Aristocrats, which is crucial for practical application.

ROC-AUC Score: The ROC-AUC score of 0.77 is relatively high, suggesting that the model performs reasonably well in distinguishing between the classes. Yet, the moderate performance in identifying actual Aristocrats raises concerns about the model's robustness in predicting future Aristocrats.

Classification Report: The model's high precision and recall for non-Aristocrats (0.95 and 0.97, respectively) indicate strong performance in classifying companies that are not future Aristocrats. The moderate performance for Aristocrats (precision of 0.67 and recall of 0.50) suggests that the model might miss some potential Aristocrats, which is a critical shortcoming.

Feature Importances

Dividend Yield: As the most significant predictor, Dividend Yield aligns with the fundamental premise that consistent dividend payouts are crucial for Aristocrat status. However, over-reliance on this feature might overshadow other important factors.

Close Price and Price Volatility: These features, while significant, may not fully capture the stability and growth potential required for becoming an Aristocrat. The influence of market sentiment and short-term price movements could distort the model's predictions.

Top Predicted Companies: The list of companies with the highest predicted probabilities of becoming Dividend Aristocrats provides actionable insights but must be viewed critically. The top 5 most likely candidates are:

1. **Verizon Communication (VZ)** - Probability: 0.53
2. **Peabody Energy (BTU)** - Probability: 0.43
3. **Kohl's Corporation (KSS)** - Probability: 0.36
4. **Williams Companies (WMB)** - Probability: 0.30
5. **OneMain Holdings (OKE)** - Probability: 0.28

Modeling with 20-Year Dividend Data

Data Preparation: We combined 20-year dividend data with historical metrics aimed to provide a more comprehensive view of long-term dividend sustainability. This extended period is expected to offer a clearer picture of a company's ability to maintain and grow dividends over

time. However, the data's aggregation might still obscure important temporal trends and company-specific nuances that could affect future performance.

Model Training: The use of a Random Forest Classifier with a 20-year dataset should theoretically enhance the model's ability to predict future Aristocrats by incorporating long-term dividend behavior. Despite this, the model's performance suggests some limitations.

Evaluation

Accuracy: At 90.91%, the model shows good overall classification accuracy. However, this figure needs to be contextualized with its ability to identify true Dividend Aristocrats.

ROC-AUC Score: The significantly lower ROC-AUC score of 0.50 indicates that the model performs almost no better than random chance in distinguishing between Aristocrats and non-Aristocrats. This suggests that the longer-term data might introduce complexity or noise that the model struggles to handle effectively.

Classification Report: The high precision for non-Aristocrats (0.91) contrasts sharply with the zero recall for Aristocrats, highlighting a critical weakness in detecting potential Aristocrats. This issue points to possible data imbalance or inadequacies in the feature set.

Feature Importances

Market Cap and Price-to-Book Ratio: The emphasis on these features suggests that larger and well-valued companies might have better chances of becoming Aristocrats. However, these features alone might not capture all dimensions of dividend reliability, such as company-specific strategies and market dynamics.

Top Predicted Companies: The top companies predicted to become Dividend Aristocrats, based on the model's output, are:

1. **Patterson Companies (PDCO)** - Probability: 0.36
2. **Kimberly-Clark (KMB)** - Probability: 0.32
3. **Verizon Communications (VZ)** - Probability: 0.30
4. **United States Steel Corporation (X)** - Probability: 0.28
5. **Eli Lilly and Company (LLY)** - Probability: 0.27

The 5-year model showed better predictive performance compared to the 20-year model, suggesting that recent data may provide more actionable insights for forecasting future Dividend Aristocrats. Dividend Yield was consistently important in the 5-year model, highlighting its relevance in short-term dividend reliability. In contrast, Market Cap and Price-to-Book Ratio emerged as key predictors in the 20-year model, reflecting different valuation dynamics over a longer horizon. To enhance prediction accuracy, future efforts could explore additional data sources, more sophisticated modeling techniques, and incorporate economic indicators to better capture the nuances of dividend-paying behavior.

The insights from these models offer a strategic perspective for investors seeking to identify potential Dividend Aristocrats, aiding in making informed investment decisions based on projected dividend stability and growth.

Conclusion

This study comprehensively examined the performance of Dividend Aristocrats versus a broad market ETF, SPY, to evaluate whether the potential risks associated with dividend-paying stocks are justified by their rewards. The analysis, spanning from 1993 to 2023, reveals several key insights.

Performance Comparison: Dividend Aristocrats portfolios consistently outperformed the SPY ETF in both annualized returns and total returns. Specifically, Portfolios 2 and 3, which consisted of well-curated Dividend Aristocrats, exhibited exceptional growth, with Portfolio 2 achieving the highest annualized return of 13.96% and a total return of 5577.98%. In contrast, SPY's annualized return stood at 10.02%, with a total return of 1813.43%. These findings suggest that a focused selection of Dividend Aristocrats can indeed yield significant long-term gains and offer competitive returns compared to a broad market ETF.

Modeling and Prediction: The predictive modeling component provided insights into potential future Dividend Aristocrats. The Random Forest Classifier, trained on 5-year and 20-year dividend data, highlighted Dividend Yield as a crucial predictor in the short term. However, the models faced challenges in accurately identifying potential Aristocrats, with the 5-year model performing better in this regard compared to the 20-year model. The limitations observed underscore the complexity of predicting long-term dividend reliability and the need for refined models incorporating additional economic indicators and data sources.

Strategic Implications: For young investors and those considering dividend-focused strategies, the results indicate that Dividend Aristocrats can be a viable alternative to broad market ETFs like SPY. The superior performance of Dividend Aristocrats, particularly when carefully selected, demonstrates the potential for enhanced returns through a dividend-focused investment approach. However, it is crucial to recognize that investing in Dividend Aristocrats involves careful consideration of individual stock performance and market conditions.

Future Research: Future research could benefit from exploring more sophisticated modeling techniques and incorporating a broader set of economic indicators to improve predictive accuracy. Additionally, expanding the analysis to include other dividend strategies and market conditions could provide a more comprehensive view of dividend investing's potential.

In conclusion, while broad market ETFs like SPY offer stability and lower risk, Dividend Aristocrats have proven their ability to deliver superior returns over the long term. Investors should weigh these findings against their individual investment goals and risk tolerance, and consider consulting with a financial advisor to tailor their investment strategies accordingly.

Appendix A – List of Dividend Aristocrats

Symbol	Company Name
MMM	3M Company
ABBV	AbbVie Inc.
AOS	A. O. Smith Corporation
ADM	Archer Daniels Midland
T	AT&T Inc.
CAH	Cardinal Health Inc.
CINF	Cincinnati Financial Corp.
CTAS	Cintas Corporation
KO	The Coca-Cola Company
CL	Colgate-Palmolive Company
CVX	Chevron Corporation
DOV	Dover Corporation
ECL	Ecolab Inc.
EW	Edwards Lifesciences Corp.
ESS	Essex Property Trust, Inc.
FAST	Fastenal Company
FITB	Fifth Third Bancorp
BEN	Franklin Templeton Investments
GD	General Dynamics Corporation
GPC	Genuine Parts Company
HRL	Hormel Foods Corporation
ITW	Illinois Tool Works Inc.
JNJ	Johnson & Johnson
KR	The Kroger Co.
LEG	Leggett & Platt Inc.
LIN	Linde plc
LOW	Lowe's Companies, Inc.
MCD	McDonald's Corporation
MDT	Medtronic plc
MKC	McCormick & Company Inc.
NKE	Nike, Inc.
PEP	PepsiCo, Inc.
PPL	PPL Corporation
SYN	Sysco Corporation
TROW	T. Rowe Price Group, Inc.

Symbol Company Name

UNP Union Pacific Corporation

WMT Walmart Inc.

Data Source: Yahoo Finance (as of December 31, 2023)

Appendix B – List of S&P500 Companies

Symbol Company Name

ACE Chubb Limited

ABT Abbott Laboratories

ANF Abercrombie & Fitch Co.

ACN Accenture plc

ADBE Adobe Inc.

AMD Advanced Micro Devices, Inc.

AES The AES Corporation

AET Aetna Inc.

AFL Aflac Incorporated

A Agilent Technologies, Inc.

GAS AGL Resources Inc.

APD Air Products and Chemicals, Inc.

ARG Airgas, Inc.

AKAM Akamai Technologies, Inc.

AA Alcoa Corporation

ALXN Alexion Pharmaceuticals, Inc.

ATI Allegheny Technologies Inc.

AGN Allergan plc

ALL Allstate Corporation

ANR Alpha Natural Resources, Inc.

ALTR Altair Engineering, Inc.

MO Altria Group, Inc.

AMZN Amazon.com, Inc.

AEE Ameren Corporation

AEP American Electric Power Company

AXP American Express Company

AIG American International Group, Inc.

AMT American Tower Corporation

AMP Ameriprise Financial, Inc.

ABC AmerisourceBergen Corp.

AMGN Amgen Inc.

APH Amphenol Corporation

APC Anadarko Petroleum Corporation
ADI Analog Devices, Inc.
AON Aon plc
APA Apache Corporation
AIV Apartment Investment and Management Co.
APOL Apollo Group Inc.
AAPL Apple Inc.
AMAT Applied Materials, Inc.
AIZ Assurant, Inc.
ADSK Autodesk, Inc.
ADP Automatic Data Processing, Inc.
AN AutoNation, Inc.
AZO AutoZone, Inc.
AVB AvalonBay Communities, Inc.
AVY Avery Dennison Corporation
AVP Avon Products, Inc.
BHI Baker Hughes Incorporated
BLL Ball Corporation
BAC Bank of America Corporation
BK Bank of New York Mellon Corp.
BCR C.R. Bard, Inc.
BAX Baxter International Inc.
BBT Truist Financial Corporation
BEAM Beam Global Spirits & Wine, Inc.
BDX Becton, Dickinson and Company
BBBY Bed Bath & Beyond Inc.
BMS Bemis Company, Inc.
BRK.B Berkshire Hathaway Inc.
BBY Best Buy Co., Inc.
BIG Big Lots, Inc.
BIIB Biogen Inc.
BLK BlackRock, Inc.
HRB H&R Block, Inc.
BMC BMC Software, Inc.
BA Boeing Co.

BWA BorgWarner Inc.
BXP Boston Properties, Inc.
BSX Boston Scientific Corporation
BMY Bristol-Myers Squibb Company
BRCM Broadcom Inc.
BF.B Brown-Forman Corporation
CHRW C.H. Robinson Worldwide, Inc.
CA CA, Inc.
CVC Cincinnati Bell Inc.
COG Cabot Oil & Gas Corporation
CAM Cameron International Corporation
CPB Campbell Soup Company
COF Capital One Financial Corp.
CFN CareFusion Corporation
KMX CarMax, Inc.
CCL Carnival Corporation
CAT Caterpillar Inc.
CBG CBRE Group, Inc.
CBS CBS Corporation
CELG Celgene Corporation
CNP CenterPoint Energy, Inc.
CTL CenturyLink, Inc.
CERN Cerner Corporation
CF CF Industries Holdings, Inc.
SCHW Charles Schwab Corporation
CHK Chesapeake Energy Corporation
CMG Chipotle Mexican Grill, Inc.
CB Chubb Limited
CI Cigna Corporation
CTXS Citrix Systems, Inc.
CLF Cleveland-Cliffs Inc.
CLX Clorox Company
CME CME Group Inc.
CMS CMS Energy Corporation
COH Coach Inc.

CCE Coca-Cola Enterprises, Inc.
CTSH Cognizant Technology Solutions
CMCSA Comcast Corporation
CMA Comerica Incorporated
CSC Computer Sciences Corporation
CAG ConAgra Foods, Inc.
COP ConocoPhillips
CNX CONSOL Energy Inc.
ED Consolidated Edison, Inc.
STZ Constellation Brands, Inc.
CBE Colgate-Palmolive Company
GLW Corning Incorporated
COST Costco Wholesale Corporation
CVH Coventry Health Care, Inc.
COV Covidien
CCI Crown Castle International Corp.
CSX CSX Corporation
CMI Cummins Inc.
CVS CVS Health Corporation
DHI D.R. Horton, Inc.
DHR Danaher Corporation
DRI Darden Restaurants, Inc.
DVA DaVita Inc.
DF Dean Foods Company
DE Deere & Company
DELL Dell Technologies Inc.
DNR Denbury Resources Inc.
XRAY Dentsply Sirona Inc.
DVN Devon Energy Corporation
DV Devon Energy Corporation
DO Diamond Offshore Drilling, Inc.
DTV DirecTV
DFS Discover Financial Services, Inc.
DISCA Discovery, Inc.
DLTR Dollar Tree, Inc.

D Dominion Energy, Inc.
RRD R.R. Donnelley & Sons Company
DOW Dow Inc.
DPS Dr Pepper Snapple Group
DTE DTE Energy Company
DD DuPont de Nemours, Inc.
DUK Duke Energy Corporation
DNB Dun & Bradstreet Corporation
ETFC E*TRADE Financial Corporation
EMN Eastman Chemical Company
ETN Eaton Corporation
EBAY eBay Inc.
EIX Edison International
EA Electronic Arts Inc.
EMC EMC Corporation
ESV Ensco plc
ETR Entergy Corporation
EOG EOG Resources, Inc.
EQT EQT Corporation
EFX Equifax Inc.
EQR Equity Residential, Inc.
EL Estée Lauder Companies, Inc.
EXC Exelon Corporation
EXPE Expedia Group
EXPD Expeditors International of Washington, Inc.
ESRX Express Scripts Holding Company
FFIV F5 Networks, Inc.
FDO Family Dollar Stores, Inc.
FII Federated Investors, Inc.
FDX FedEx Corporation
FIS Fidelity National Information Services
FHN First Horizon National Corporation
FSLR First Solar, Inc.
FE FirstEnergy Corp
FISV FISV Inc.

FLIR FLIR Systems, Inc.
FLS Flowserve Corporation
FLR Fluor Corporation
FMC FMC Corporation
FTI FMC Technologies
F Ford Motor Company
FRX Forest Laboratories, Inc.
FOSL Fossil Group, Inc.
FCX Freeport-McMoRan Inc.
FTR Frontier Communications Corporation
GME GameStop Corp.
GCI Gannett Co.
GPS Gap Inc.
GE General Electric Company
GIS General Mills, Inc.
GNW Genworth Financial, Inc.
GILD Gilead Sciences Inc.
GS Goldman Sachs Group Inc.
GT Goodyear Tire & Rubber Co.
GOOG Alphabet Inc.
GWW Grainger (W.W.) Inc.
HAL Halliburton Company
HOG Harley-Davidson, Inc.
HAR Harman International Industries, Inc.
HRS Harris Corporation
HIG Hartford Financial Services Group
HAS Hasbro, Inc.
HCP Healthpeak Properties, Inc.
HCN Healthpeak Properties, Inc.
HNZ Heinz (H.J.) Company
HP Helmerich & Payne, Inc.
HES Hess Corporation
HPQ Hewlett-Packard Company
HD Home Depot, Inc.
HON Honeywell International Inc.

HSP Hospira Inc.
HST Host Hotels & Resorts, Inc.
HCBK Hudson City Bancorp, Inc.
HUM Humana Inc.
HBAN Huntington Bancshares Inc.
IR Ingersoll-Rand plc
TEG Integrys Energy Group, Inc.
INTC Intel Corporation
ICE Intercontinental Exchange, Inc.
IBM International Business Machines Corporation
IFF International Flavors & Fragrances Inc.
IGT International Game Technology
IP International Paper Company
IPG Interpublic Group of Companies, Inc.
INTU Intuit Inc.
ISRG Intuitive Surgical, Inc.
IVZ Invesco Ltd.
IRM Iron Mountain Incorporated
JBL Jabil Inc.
JEC Jacobs Engineering Group Inc.
JDSU JDS Uniphase Corporation
JCI Johnson Controls International plc
JOY Joy Global Inc.
JPM JPMorgan Chase & Co.
JNPR Juniper Networks, Inc.
K Kellogg Company
KEY KeyCorp
KMB Kimberly-Clark Corporation
KIM Kimco Realty Corporation
KMI Kinder Morgan, Inc.
KLAC KLA Corporation
KSS Kohl's Corporation
KFT Kraft Foods Group
KR Kroger Co.
LLL L-3 Communications Holdings, Inc.

LH LabCorp
LRCX Lam Research Corporation
LM Legg Mason, Inc.
LEG Leggett & Platt, Inc.
LEN Lennar Corporation
LUK Leucadia National Corporation
LXX Lexmark International, Inc.
LIFE Life Technologies Corporation
LLY Eli Lilly and Company
LTD Limited Brands, Inc.
LNC Lincoln National Corporation
LLTC Linear Technology Corporation
LMT Lockheed Martin Corporation
L Loews Corporation
LO Lorillard, Inc.
LSI LSI Corporation
MTB M&T Bank Corporation
MRO Marathon Oil Corporation
MPC Marathon Petroleum Corporation
MAR Marriott International, Inc.
MMC Marsh & McLennan Companies, Inc.
MAS Masco Corporation
MA Mastercard Incorporated
MAT Mattel, Inc.
MKC McCormick & Company, Inc.
MHP McGraw Hill Financial, Inc.
MCK McKesson Corporation
MJN Mead Johnson Nutrition Company
MWV MeadWestvaco Corporation
MRK Merck & Co., Inc.
MET MetLife, Inc.
PCS Premier Communications, Inc.
MCHP Microchip Technology Inc.
MU Micron Technology, Inc.
MSFT Microsoft Corporation

MOLX Molex Incorporated
TAP Molson Coors Beverage Company
MON Monsanto Company
MNST Monster Beverage Corporation
MCO Moody's Corporation
MS Morgan Stanley
MOS Mosaic Company
MSI Motorola Solutions, Inc.
MUR Murphy Oil Corporation
MYL Mylan N.V.
NBR Nabors Industries, Inc.
NDAQ Nasdaq, Inc.
NOV National Oilwell Varco Inc.
NTAP NetApp Inc.
NFLX Netflix, Inc.
NWL Newell Brands
NFX Newfield Exploration Company
NEM Newmont Corporation
NWSA News Corporation
NEE NextEra Energy, Inc.
NKE Nike, Inc.
NI NiSource Inc.
NE Noble Corporation
NBL Noble Energy, Inc.
JWN Nordstrom, Inc.
NSC Norfolk Southern Corporation
NTRS Northern Trust Corporation
NOC Northrop Grumman Corporation
NU NiSource Inc.
NRG NRG Energy, Inc.
NUE Nucor Corporation
NVDA NVIDIA Corporation
NYX NYSE Euronext
ORLY O'Reilly Automotive, Inc.
OXY Occidental Petroleum Corporation

OMC Omnicom Group Inc.
OKE ONEOK, Inc.
ORCL Oracle Corporation
OI Owens-Illinois Inc.
PCAR PACCAR Inc.
PLL Pall Corporation
PH Parker-Hannifin Corporation
PDCO Patterson Companies Inc.
PAYX Paychex, Inc.
BTU Peabody Energy Corporation
JCP J.C. Penney Company, Inc.
PBCT People's United Financial, Inc.
POM Pepco Holdings, Inc.
PKI PerkinElmer Inc.
PRGO Perrigo Company plc
PFE Pfizer Inc.
PCG PG&E Corporation
PM Philip Morris International Inc.
PSX Phillips 66
PNW Pinnacle West Capital Corporation
PXD Pioneer Natural Resources Inc.
PBI Pitney Bowes Inc.
PCL Plum Creek Timber Company
PNC PNC Financial Services Group
RL Ralph Lauren Corporation
PPG PPG Industries, Inc.
PPL PPL Corporation
PX Praxair, Inc.
PCP Precision Castparts Corp.
PCLN Priceline Group Inc.
PFG Principal Financial Group
PGR Progressive Corporation
PLD Prologis Inc.
PRU Prudential Financial, Inc.
PEG Public Service Enterprise Group

PSA Public Storage
PHM PulteGroup, Inc.
QEP QEP Resources, Inc.
PWR Quanta Services, Inc.
QCOM Qualcomm Incorporated
DGX Quest Diagnostics Incorporated
RRC Range Resources Corp.
RTN Raytheon Technologies Corporation
RHT Red Hat Inc.
RF Regions Financial Corporation
RSG Republic Services, Inc.
RAI Reynolds American Inc.
RHI Robert Half International Inc.
ROK Rockwell Automation, Inc.
COL Rockwell Collins, Inc.
ROP Roper Technologies, Inc.
ROST Ross Stores, Inc.
RDC Rowan Companies plc
R Ryder System, Inc.
SWY Safeway Inc.
SAI SAIC Inc.
CRM Salesforce.com, Inc.
SNDK SanDisk Corporation
SCG SCANA Corporation
SLB Schlumberger Limited
SNI Scripps Networks Interactive, Inc.
STX Seagate Technology Holdings plc
SEE Sealed Air Corporation
SHLD Sears Holdings Corporation
SRE Sempra Energy
SHW Sherwin-Williams Company
SIAL Sigma-Aldrich Corporation
SPG Simon Property Group, Inc.
SLM SLM Corporation
SJM The J.M. Smucker Company

SNA Snap-on Incorporated
SO Southern Company
LUV Southwest Airlines Co.
SWN Southwestern Energy Company
SE SeaWorld Entertainment, Inc.
S Sprint Corporation
STJ St. Jude Medical, Inc.
SPLS Staples, Inc.
SBUX Starbucks Corporation
HOT Starwood Hotels & Resorts Worldwide, Inc.
STT State Street Corporation
SRCL Stericycle, Inc.
SYK Stryker Corporation
SUN Sunoco LP
STI SunTrust Banks, Inc.
SYMC Symantec Corporation
TROW T. Rowe Price Group, Inc.
TEL TE Connectivity Ltd.
TE TE Connectivity Ltd.
THC Tenet Healthcare Corp.
TDC Teradata Corporation
TER Teradyne Inc.
TSO Tesoro Corporation
TXN Texas Instruments Incorporated
TXT Textron Inc.
HSY The Hershey Company
TRV The Travelers Companies, Inc.
TMO Thermo Fisher Scientific Inc.
TIF Tiffany & Co.
TWX WarnerMedia, LLC
TWC Time Warner Cable Inc.
TIE Titanium Metals Corporation
TJX TJX Companies, Inc.
TMK Torchmark Corporation
TSS Total System Services Inc.

TRIP TripAdvisor Inc.
TSN Tyson Foods, Inc.
TYC Tyco International plc
USB U.S. Bancorp
UNP Union Pacific Corporation
UNH UnitedHealth Group Incorporated
UPS United Parcel Service
X United States Steel Corporation
UTX United Technologies Corporation
UNM Unum Group
URBN Urban Outfitters, Inc.
VFC VF Corporation
VLO Valero Energy Corporation
VAR Varian Medical Systems, Inc.
VTR Ventas, Inc.
VRSN VeriSign, Inc.
VZ Verizon Communications Inc.
VIAB Viacom Inc.
V Visa Inc.
VNO Vornado Realty Trust
VMC Vulcan Materials Company
WAG Walgreen Co.
DIS The Walt Disney Company
WPO Washington Post Company
WAT Waters Corporation
WPI Watson Pharmaceuticals, Inc.
WLP WellPoint, Inc.
WFC Wells Fargo & Co.
WDC Western Digital Corporation
WU Western Union Company
WY Weyerhaeuser Company
WHR Whirlpool Corporation
WFM Whole Foods Market, Inc.
WMB Williams Companies, Inc.
WIN Windstream Holdings, Inc.

WEC WEC Energy Group
WPX WPX Energy, Inc.
WYN Wyndham Worldwide Inc.
WYNN Wynn Resorts Limited
XEL Xcel Energy Inc.
XRX Xerox Corporation
XLNX Xilinx Inc.
XL XL Group Ltd.
XYL Xylem Inc.
YHOO Yahoo! Inc.
YUM Yum! Brands, Inc.
ZMH Zimmer Biomet Holdings, Inc.
ZION Zions Bancorporation