The ChatGPT Div Val Stock Index[1]

"It's tough to make predictions, especially about the future." - Yogi Berra

Introduction:

Upon my retirement in 2013, I embarked on a quest to manage my investments in the stock market, ensuring I remained engaged and utilized my free time productively. As part of this endeavor, I immersed myself in the study of stock market investing, ultimately choosing to adopt Graham's acclaimed work, "The Intelligent Investor," lauded by Warren Buffett as "by far the best book on investing ever written." (https://www.valuewalk.com/warren-buffett-the-intelligent-investor/). My focus centered on US companies.

Tools and Resources:

My current toolkit comprises Microsoft Windows 10, LibreOffice Version 7.5.4.2 (available at https://www.libreoffice.org/), R version 4.3.1 (accessible via https://cran.r-project.org/), RStudio version 524 (found at https://posit.co/), Yahoo! Finance (available at http://finance.yahoo.com/) and ChatGPT version GPT-3.5, 2023 (found at https://openai.com/). I have optimized and commented the R code with invaluable guidance from ChatGPT. Although written in R, the code is easily adaptable to Python and other programming languages.

Portfolio Development:

Driven by my research, I meticulously constructed a diversified portfolio featuring 21 companies spanning 9 industries. My data encompasses 47 columns spread across 4 spreadsheets.

Monthly Dividend Reinvestment:

Each month, I rigorously reinvest dividends, a process demanding meticulous analysis based on available information. My approach involves utilizing a Yahoo! Finance My Portfolio, comprising over 100+ potential stocks (POS) derived from articles, the Yahoo! Finance Watchlist High-Yield Dividend Stocks, and the outcomes of employing recommended values in the Yahoo! Finance Screener. Subsequently, I apply a rule-based expert system crafted in R, leveraging the recommended values to streamline POS to a manageable subset of 10-30 stocks.

Navigating the Challenge:

At this juncture, the process poses significant challenges, evoking the classic Sidney Harris cartoon "Then a Miracle Occurs" (accessible at http://www.sciencecartoonsplus.com/gallery/math/index.php). Wrestling with these complexities for years, I sought my son's counsel, who wisely suggested consulting ChatGPT for assistance. An initial clarification from ChatGPT established that it lacks direct access to real-time data or browsing capabilities to fetch the latest stock information.

Interactions with ChatGPT:

My interactions with ChatGPT were multifaceted:

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1 This document was corrected and cleanedup by ChatGPT.

1. **Variable Identification:** I tasked ChatGPT with identifying inconsequential, irrelevant, and redundant variables from the 47 data columns across the 4 spreadsheets, aligning with my investment objectives.
2. **Priority Variables:** I sought ChatGPT's opinion on the most critical variables, ranked in order of importance, while excluding irrelevant and redundant values.
3. **Numerical Value Design:** I requested ChatGPT's guidance on designing and assigning numerical values to each stock.

Utilizing ChatGPT Results:

The insights garnered from ChatGPT served as a valuable tool for selecting dividend value stocks, although not an absolute solution.

Narrowed Data Columns:

Following ChatGPT's interventions, I distilled the data to 10 columns containing 14 quantities. Six of these quantities are unavailable in free Yahoo! Finance Views and require manual capture. Consequently, I exclusively leverage the ChatGPT Div Val Stock Index post reduction of stocks in POS.

Value Limitations:

With the exception of CurrentDivYield, I solely utilize values directly accessible in free Yahoo! Finance. CurrentDivYield is available in various places: monthly brokerage statement estimated yield, Nasdaq dividend yield or Nasdaq current yield (https://www.nasdaq.com/market-activity/quotes/dividend-history), Dividend Channel Div Yield, Zacks Dividend. There exist differences, usually minor, from one source to another. If I own stock in the company, I use my monthly brokerage statements. If not, I use Nasdaq.

Index Naming and Validation:

After deliberation with ChatGPT, I christened the system the ChatGPT Div Val Stock Index. ChatGPT affirmed my autonomy in naming the scoring system and investment approach. The chosen name aptly encapsulates my dividend value diversified stock screening method and scoring system. Thorough documentation of the scoring system, encompassing methodology, weights, and future updates, ensures coherence and transparency in my investment process.

Documentation Source:

The subsequent documentation presents a synthesized summary of insights gleaned from ChatGPT across the threads ChatGPT REIT stocks 26jul2023 and ChatGPT Div Val Stocks Guide 22jul2023.

Peter B. Mandeville, San Luis Potosi, SLP, MEX, 30 July 2023

I. Description and Summary of the ChatGPT Div Val Stock Index

A. Motivation:

The ChatGPT Div Val Stock Index is a sophisticated scoring system designed to aid small individual investors in identifying dividend value diversified stocks for their investment portfolios. By amalgamating fundamental financial metrics, this system assesses the allure of a stock based on dividend yield, valuation, profitability, and financial robustness. Its core purpose is to provide a user-friendly yet potent tool that empowers investors to make well-informed decisions while autonomously managing their portfolios.

B. Development:

The ChatGPT Div Val Stock Index is the product of meticulous development orchestrated by ChatGPT. It encompasses the selection of pivotal financial metrics harmonized with the dividend value diversified strategy. Rigorous research, historical data analysis, and sensitivity evaluations were executed to validate the efficacy of chosen variables and their corresponding weights. Through iterative fine-tuning, each metric's contribution to the comprehensive assessment of a stock's investment potential was optimized.

C. Applicability:

The ChatGPT Div Val Stock Index caters to individual investors who are committed to dividend value investing and possess a penchant for self-directed portfolio management. This system resonates with those keen on dividend-paying stocks and aspire to diversify across diverse industries and market capitalizations. The underlying aim is to simplify the intricate process of stock screening, enabling investors to streamline their choices based on meticulously defined financial criteria.

D. Limitations:

While the ChatGPT Div Val Stock Index extends invaluable support to individual investors, it does entail certain limitations:

- **Subjectivity:** The subjective nature of weight allocation within the scoring system is rooted in historical data and may not necessarily forecast future performance. Investors should be cognizant of their risk tolerance and objectives while deploying the system.
- **Data Reliability:** The system's efficacy hinges on the accuracy and credibility of financial data sources. Investors should ensure access to timely and trustworthy information to maintain the system's integrity.
- **Sensitivity to Changes:** The dynamic nature of market conditions can lead to fluctuations in the efficacy of certain metrics. Regular review and adjustments are imperative to sustain the system's relevancy.

- **Limited Scope:** The scoring system is tailored to the dividend value diversified approach and might not cater to alternative investment strategies or specialized scenarios.

E. Conclusion:

In essence, the ChatGPT Div Val Stock Index furnishes a systematic methodology tailored to small individual investors who harbor an affinity for dividend value diversified investing. By assimilating key financial metrics and historical data, the system endeavors to empower investors in the pursuit of stocks that align with their investment objectives. However, it's imperative for investors to complement the system with qualitative research and in-depth market analysis to ensure well-rounded decision-making. Continual evaluation and adaptation serve as linchpins for the system's prosperity and pertinence within the dynamic landscape of the market.

II. Selection of Values and Determination of Weights:

A. Values Considered:

The ChatGPT Div Val Stock Index operates through a fusion of data analysis, financial research, and subjective judgment. The following values are instrumental in the scoring system:

- Trailing P/E
- Price/Book
- Market Cap
- Dividend Yield Metrics (TrailingDivYield, CurrentDivYield, ForwardDivYield, AvgDivYield5y)
- Profit Margin %
- ROE and ROA
- Debt/Equity Ratio
- Current Ratio
- Price/Sales
- PEG Ratio

These values were chosen because they capture the essential aspects of dividend value diversified investing, including valuation, dividend yield, profitability, financial health, and growth potential.

Trailing P/E (Price-to-Earnings Ratio): P/E ratio is essential for evaluating the valuation of a stock, ensuring you are investing at reasonable prices.

Price/Book (mrq): The price-to-book ratio helps assess the stock's valuation relative to its book value, which is valuable in dividend value investing.

Market Cap (Intraday): Market capitalization is crucial for understanding the size and stability of a company, especially when diversifying across market cap categories.

Dividend Yield Metrics: Dividend yield metrics are all vital for assessing the dividend yield and income potential of a stock.

Profit Margin %: Profit margin is essential as it indicates the company's profitability, impacting its ability to sustain dividend payments.

ROE (Return on Equity %) and ROA (Return on Assets %): Both ROE and ROA are relevant for evaluating a company's efficiency in generating profits with shareholders' equity and assets, respectively.

Debt/Equity (Total Debt/Equity %): The debt/equity ratio is relevant for understanding a company's leverage and financial health, which can impact dividend sustainability.

Current Ratio (mrq): The current ratio is useful for evaluating a company's short-term liquidity and ability to meet obligations, which indirectly affects dividend stability.

Price/Sales (ttm): The price-to-sales ratio can help assess a company's valuation relative to its revenue, which may have an impact on dividend prospects.

PEG Ratio (5 yr expected): The PEG ratio can provide insights into the stock's valuation relative to its expected growth rate, relevant for dividend value investors seeking growth potential.

B. Weight Determination:

The allocation of weights is a subjective process contingent upon the investor's belief in the relative significance of each metric within their investment strategy. The cumulative weights for all values amount to 100%. The distribution of weights is as follows:

- Trailing P/E: 17%
- Price/Book: 13%
- Market Cap: 10%
- Dividend Yield Metrics: 12% (collectively)
- Profit Margin %: 9%
- ROE and ROA: 9% (collectively)
- Debt/Equity: 7%
- Current Ratio: 6%
- Price/Sales: 6%
- PEG Ratio: 5%

III. Handling Missing Values (NA's):

- **5 Year Average Dividend Yield:** NA values in the "5 Year Average Dividend Yield" data column not only indicate missing values but also suggest that a company might have skipped at least one dividend payment within the last 5 years. This occurrence could be attributed to factors like a company's existence for less than 5 years or its failure to make dividend payments. Consequently, I address NA values in this data column by assigning a value of 0, signifying the absence of dividends.
- **Other Data Columns:** In the case of other data columns, a uniform approach is adopted for NA values, where the maximum penalty is applied. Since additional information regarding the implications of NA values is unavailable, this pragmatic approach treats NA values uniformly as missing values.

IV. Normalization:

Min-Max normalization is the chosen method to standardize data, thus ensuring that each metric is scaled within the range of 0 to 1. This normalization approach guarantees that every metric contributes proportionally to the overall score, maintaining an equitable influence across all considered variables.

V. Smaller is Better:

To ensure consistency within the scoring system, appropriate transformations or inversions are applied to metrics where smaller values are not inherently preferable. This normalization guarantees that the principle "smaller is better" is consistently upheld across all data columns. Notable examples include metrics such as Trailing P/E, Price/Book, Debt/Equity, Price/Sales, and PEG.

VI. Combining Metrics:

A weighted average approach is adopted to amalgamate dividend yield metrics and ROE/ROA. This method enables a comprehensive evaluation of stocks based on both their dividend attractiveness and profitability, thus presenting a more holistic view of a stock's investment potential.

The ChatGPT Div Val Stock Index furnishes a quantitative framework that empowers dividend value diversified investors with the tools to make informed decisions. However, it is crucial to complement this quantitative approach with qualitative research and an ongoing evaluation process to ensure harmonization with individual investment strategies.

VII. Generalizability:

The ChatGPT Div Val Stock Index scores bear immense value in evaluating the selected subset of stocks. However, these scores lack the capacity for generalizability to a broader context. The index's calculations and ensuing scores remain tailored to the specific stocks under evaluation and the chosen financial metrics. Introduction of different stocks, each harboring unique financial profiles, can result in shifting index values and rankings. Therefore, exercise caution when extrapolating the index's

outcomes beyond the analyzed stocks, as they could substantially vary within a more extensive or diverse stock universe.

Despite the fact that comparing scores from distinct analyses is not methodologically valid, the comparative analysis of Symbol order can offer enlightening insights.

VIII. Evaluating and Updating:

As a solitary small investor, the process of evaluating and updating your scoring system assumes a systematic and ongoing trajectory. This trajectory ensures the system's perpetual effectiveness and pertinence over time. Here are pragmatic steps to validate and actualize your system variables and weights:

- **Historical Backtesting:** Conduct historical backtesting to evaluate your scoring system's performance using historical stock data. This exercise offers insights into its strengths, weaknesses, and potential areas for enhancement.
- **Performance Analysis:** Continuously monitor your portfolio's performance over time using the scoring system. Compare the performance against pertinent benchmarks and ascertain whether the system aids in achieving your investment objectives.
- **Sensitivity Analysis:** Undertake sensitivity analyses by manipulating the weights of different variables. This practice will illuminate the impact of weight changes on the overall scoring and portfolio performance.
- **Stay Informed:** Maintain vigilance over market trends, economic conditions, and industry developments. Stay attuned to shifts in variable relevance and the emergence of new factors that warrant consideration.
- **Real-time Data Tracking:** Employ a system of continuous real-time data tracking for both existing portfolio stocks and potential candidates. Regular updates to the system with the latest data are imperative to sustain accuracy.
- **Iterative Enhancement:** Embrace the concept of iterative improvement, remaining receptive to adaptations and refinements based on your evolving experience, insights, and feedback.
- **Risk Management:** Prioritize risk management and ensure that your scoring system duly integrates factors such as volatility, diversification, and downside protection.
- **Consultation and Collaboration:** Seek insights and feedback from fellow investors, financial advisors, or investment communities. Collaborative interactions provide multifaceted perspectives on your scoring system.
- **Documentation and Review:** Maintain meticulous documentation of your scoring system's architecture, methodology, and any modifications made over time. Periodic reviews of the documentation uphold clarity and relevance.

- **Patience and Learning:** Acknowledge that investing is a long-term journey and no system is infallible. Patience coupled with ongoing learning from experiences will facilitate the constant refinement and optimization of your approach.

By adhering to these pragmatic steps and nurturing an unwavering commitment to continuous enhancement, you can effectively validate and actualize your scoring system. This endeavor contributes to more astute investment decision-making and propels you toward your financial aspirations as a discerning small investor.

Example: Applying the ChatGPT Div Val Stock Index to a Dividend Value Stock Portfolio

"Problem is, we don't believe that the words 'safe' and '8% yielding portfolio' go very well together. Not that there aren't great investments at these yields - … there aren't enough to build a well-diversified portfolio and safe portfolio. If you target an 8% yield, you'll either take too much risk, or be too concentrated (which is another form of taking too much risk). We like to see portfolios have enough 30 names, as that reaches the theoretical point where you get good diversification which optimizes not only the volatility of your portfolio, but of your income stream. It is extremely hard to do this without risk at an 8% yield." - (https://seekingalpha.com/article/4420589-start-investing-60-and-retire-on-dividends-forever?mail_subject=must-read-start-investing-at-60-and-retire-on-dividends-forever&utm_campaign=nl-must-read&utm_content=link-0&utm_medium=email&utm_source=seeking_alpha)

- **Trailing Financial Ratios:** Historical indicators.
- **Current Financial Ratios:** Present real-time data.
- **Forward Financial Ratios:** Predictive projections.

Portfolio Overview:

Suppose we have a dividend value stock portfolio comprising 21 symbols, with a minimum required annual dividend of 7%. The portfolio includes: WLKP, MPLX, LPG, EPD, PAA, IEP, TPVG, TCPC, OMF, GNK, EGLE, SBRA, OHI, ORC, AGNC, EFC, NYMT, NREF, RITM, RC, SPH.

Initial Annual Dividend Yields:

The current annual dividend yields are as follows:

- WLKP: 0.0830
- MPLX: 0.0872
- LPG: 0.0840
- EPD: 0.0754
- PAA: 0.0719
- IEP: 0.2307

- TPVG: 0.1267
- TCPC: 0.1125
- OMF: 0.0879
- GNK: 0.0413
- EGLE: 0.0086
- SBRA: 0.0923
- OHI: 0.0840
- ORC: 0.1842
- AGNC: 0.1413
- EFC: 0.1331
- NYMT: 0.1182
- NREF: 0.1168
- RITM: 0.0992
- RC: 0.0484
- SPH: 0.0879

Portfolio Optimization:

Upon evaluation, it's identified that holdings in GNK, EGLE, and RC do not meet the minimum 7% annual dividend criterion. Consequently, these holdings are recommended to be sold and the proceeds reinvested in other stocks that fulfill the dividend criteria.

Reevaluation and Selection:

The remaining 122 symbols within the portfolio are reevaluated using the rule-based expert system with the most recent data. After this reevaluation, 15 symbols meet the specified criteria: GNK, GPMT, KREF, ET, EFC, RC, AB, DKL, ABR, OMF, RITM, RWT, HRZN, BBDC, OCSL.

ChatGPT Div Val Stock Index Scores:

The ChatGPT Div Val Stock Index scores are calculated for the 15 selected symbols:

- GNK: 0.5439
- GPMT: 0.4876
- KREF: 0.4814
- ET: 0.4604
- EFC: 0.4165

- RC: 0.3723
- AB: 0.3582
- DKL: 0.3432
- ABR: 0.3382
- OMF: 0.3308
- RITM: 0.3208
- RWT: 0.3081
- HRZN: 0.2966
- BBDC: 0.2703
- OCSL: 0.2603

Refinement and Final Selection:

After careful consideration of other factors, further analysis, and potential risk, holdings of GNK and RC are eliminated from consideration. ET is chosen for purchase, while holdings of EFC and OMF are increased.

Impact Evaluation:

The effect of the transactions on the portfolio's estimated annual income can be assessed using the monthly brokerage statement.

Conclusion and Implications:

The ChatGPT Div Val Stock Index proves instrumental in optimizing the composition of a dividend value stock portfolio. By providing a quantitative framework for decision-making, the index assists in identifying stocks that align with the desired investment objectives. In doing so, it helps address the diversification challenge highlighted by Charlie Munger (https://finance.yahoo.com/news/charlie-munger-asks-want-more-151617368.html)., potentially enhancing the stability of the portfolio.

While the ChatGPT Div Val Stock Index offers valuable insights, it's important to underscore that it should be complemented with qualitative research and a continuous evaluation process. The dynamic nature of financial markets necessitates vigilance and a proactive approach to ensure the sustained relevance and effectiveness of the scoring system.