PORTFOLIO RISK MANAGEMENT

“SAFEGUARDING INVESTMENTS IN AN UNCERTAIN MARKET”

IS THE PORTFOLIO DOING WELL?

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Introduction:

In the dynamic landscape of financial markets, effective risk management is paramount to achieving sustainable investment success. As investors or portfolio managers navigate through diverse asset classes, market conditions, and economic uncertainties, the ability to monitor and manage portfolio risk becomes a strategic imperative. To empower investors with comprehensive insights and actionable information, we present our Portfolio Risk Management Dashboard.

Understanding the Dashboard:

Our Portfolio Risk Management Dashboard is a powerful tool designed to provide a holistic view of the risk landscape associated with your investment portfolio. It serves as a centralized hub, offering real-time data, advanced analytics, and intuitive visualizations to aid in informed decision-making. Whether you are an individual investor, a financial advisor, or an institutional entity, this dashboard is tailored to enhance your risk management capabilities.

Key Features:

1. **Risk Metrics Overview:**
    - Gain immediate access to key risk metrics, including standard deviation, beta, and other performance indicators, providing a comprehensive snapshot of your portfolio's risk profile.
2. **Diversification Analysis:**
    - Visualize the diversification of your portfolio across various asset classes, sectors, and geographic regions. Identify concentrations and ensure a well-balanced allocation to mitigate specific risks.
3. **Scenario Analysis:**

    - Evaluate the impact of different market scenarios on your portfolio. Conduct stress tests to assess resilience and make informed decisions based on potential outcomes.
4. **Dynamic Asset Allocation:**
    - Monitor the asset allocation of your portfolio in real-time. Receive alerts and insights to guide adjustments, ensuring alignment with your risk tolerance and investment objectives.
5. **Performance Attribution:**
    - Understand the drivers of portfolio performance with detailed attribution analysis. Identify which components contribute most significantly to returns and risks.
6. **Customizable Risk Alerts:**
    - Set personalized risk thresholds and receive real-time alerts when your portfolio approaches or breaches predefined risk levels. Stay ahead of potential challenges and proactively manage your investments.

Importance Of a Dashboard:

- **User-Friendly Interface:**
  Enjoy a user-friendly interface designed for accessibility and ease of use, allowing you to navigate seamlessly through complex risk data.
- **Real-Time Updates:**
  Benefit from real-time data updates, ensuring that you have the latest information at your fingertips to make timely and well-informed decisions.
- **Customization for Your Needs:**
  Tailor the dashboard to your specific preferences and requirements. Whether you are focused on individual stock holdings or diverse investment portfolios, our platform is adaptable to your unique needs.

As we embark on this journey of optimizing your portfolio risk management, our dashboard stands as a reliable ally, offering transparency, actionable insights, and a comprehensive overview of your investment risk landscape. Welcome to a new era of empowered decision-making in the pursuit of your financial objectives.

DATA SOURCE: Google finance is primarily which relies on various financial data providers to deliver real-time stock quotes, financial news, and other financial information. Google Finance doesn't directly generate or own the financial data but aggregates it from different sources. The sources may include stock exchanges, financial news outlets, and other financial data providers.

The specific data sources that Google Finance uses may change over time, as Google can enter into partnerships or contracts with different providers. As of my last update, some of the commonly used financial data providers for Google Finance included:

1. **Morningstar:** Google Finance has been known to use Morningstar for certain financial data and metrics.
2. **BATS Trading and Other Exchanges:** For real-time stock quotes, Google Finance taps into various stock exchanges, including BATS Trading and others.
3. **Google News:** Google Finance often integrates financial news from various reputable news sources to keep users informed about the latest developments impacting financial markets.

VISUALIZATION TOOL: Power BI is a powerful business analytics tool developed by Microsoft. It is widely used for creating interactive and visually appealing dashboards and reports. Power BI offers a range of features that make it an effective choice for data visualization. Here are some key aspects of using Power BI as a visualization tool for dashboards:

1. **Data Connectivity:**
    - Power BI can connect to a variety of data sources, including databases, spreadsheets, cloud services, and web-based

data sources. This flexibility allows users to import and transform data for visualization.

2. **Data Modeling:**
   - Power BI provides a robust data modeling environment, allowing users to create relationships between different data tables. This is essential for building accurate and insightful visualizations based on complex datasets.
3. **Interactive Dashboards:**
   - Power BI allows the creation of interactive dashboards with drag-and-drop functionality. Users can add visual elements such as charts, graphs, maps, and tables to create a comprehensive and visually appealing overview of data.
4. **Wide Range of Visualizations:**
   - Power BI offers a rich set of visualization options, including bar charts, line charts, pie charts, tables, maps, and more. Users can choose the most appropriate visualization type for their data to convey insights effectively.
5. **Custom Visuals:**
   - Users can enhance their dashboards by incorporating custom visuals created by the Power BI community or developing their own custom visuals using the Power BI developer tools.
6. **Data Exploration and Drill-Down:**
   - Power BI allows users to explore data at different levels of granularity. With drill-down capabilities, users can investigate specific data points by navigating through hierarchies or categories.
7. **Powerful DAX Formulas:**
   - Data Analysis Expressions (DAX) is a formula language used in Power BI for creating custom calculations and aggregations. DAX provides powerful capabilities for deriving new insights from the data.
8. **Real-Time Data:**
   - Power BI supports real-time data updates, enabling users to create dashboards that reflect changes in data as they

occur. This is particularly useful for monitoring dynamic metrics and KPIs.

9. **Integration with Other Microsoft Products:**
    - Power BI integrates seamlessly with other Microsoft products, such as Excel, Azure, and SQL Server. This integration streamlines data workflows and enhances collaboration within the Microsoft ecosystem.
10. **Sharing and Collaboration:**
    - Power BI allows users to share dashboards and reports securely with others within or outside the organization. It supports collaboration by providing features such as commenting, annotations, and version history.
11. **Mobile Accessibility:**
    - Power BI offers mobile apps for iOS and Android devices, allowing users to access and interact with their dashboards on the go.

Power BI's user-friendly interface, extensive visualization options, and integration capabilities make it a popular choice for organizations seeking to create actionable and insightful dashboards from their data. The tool is suitable for a wide range of industries and business scenarios, from financial analysis to sales reporting and operational monitoring.

STOCKS IN THE PORFOLIO:

The portfolio entails only US stock which will be listed down and in this report we will be working with there ticker names instead

	A	B
1	Stock Name	Ticker
2	APPLE INC.	AAPL
3	MICROSOFT CORPORATION	MSFT
4	ALPHABET INC.	GOOG
5	AMAZON.COM, INC.	AMZN
6	The Walt Disney Company	DIS
7	Facebook, Inc.	META
8	Tesla	TSLA
9	Mastercard Incorporated	MA
10	Berkshire Hathaway Inc.	BRK.B
11	Johnson & Johnson	JNJ
12	Procter & Gamble Company	PG
13	The Coca-Cola Company	KO
14	PepsiCo, Inc.	PEP
15	Walmart Inc.	WMT
16	JPMorgan Chase & Co.	JPM
17	The Goldman Sachs Group, Inc.	GS
18	Nvidia Corporation	NVDA
19	General Electric Company	GE
20	Exxon Mobil Corporation	XOM

Main insights from the data visualization of the risk management dashboard

This is visualization shows main insights of what portfolio managers are looking for in order to know which decision to take, in making sure the portfolio is working on a profit and not run to potential risks which can be monitored and avoided.

RISK TREND

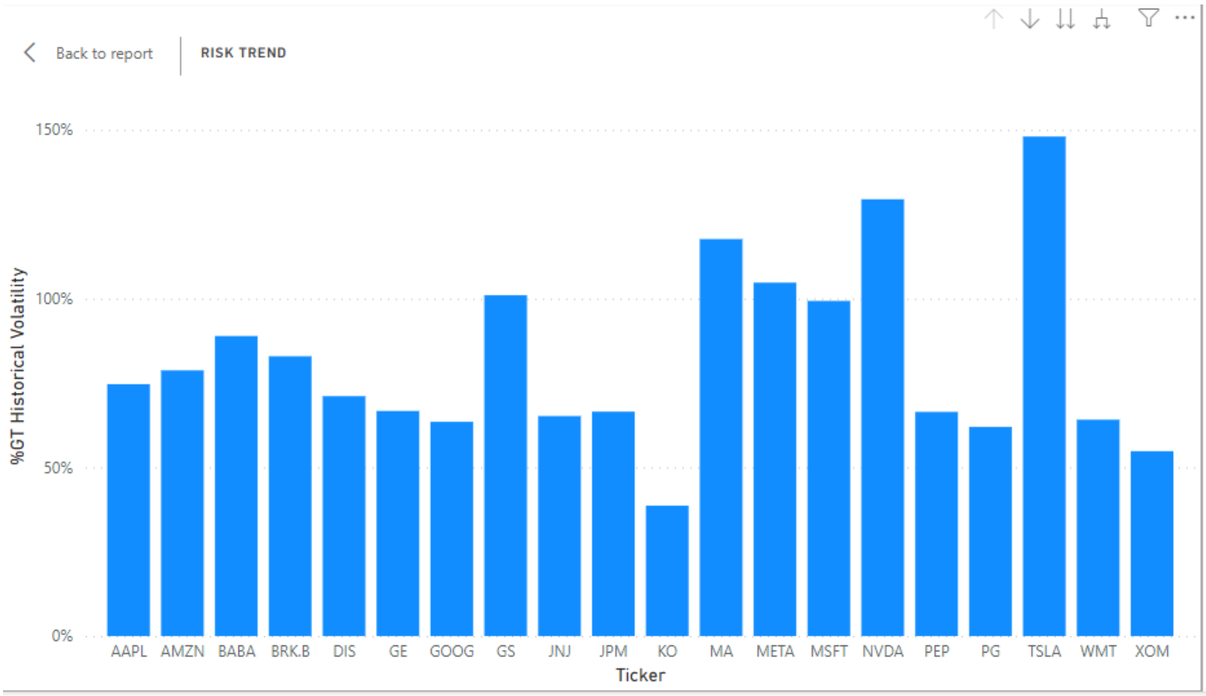

Fig.1.1

In the above we see the historical volatility lets deep dive into what is history volatility, a high historical volatility indicates that the price of a financial instrument has experienced significant and rapid price movements over a specific period in the past. Historical volatility is often expressed as a percentage and quantifies the degree of variation in the price of an asset.

In the fig above we can see can that there is high volatility in bar graph, in average which the stocks is more than 50% and is only KO, which is low and the rest is having a high historical volatility:

Here's what a high historical volatility generally implies:

1. **Greater Price Fluctuations:** High historical volatility suggests that the asset's price has exhibited larger and more frequent fluctuations during the specified historical period. This can be due to various factors such as economic events, market sentiment, or specific news impacting the asset.
2. **Increased Risk:** Higher historical volatility is typically associated with increased risk. Investments with high volatility are

considered riskier because the potential for substantial price swings is greater. Portfolio managers may experience both higher returns and higher losses in such scenarios.

3. **Market Uncertainty:** A surge in historical volatility often indicates heightened uncertainty or instability in the market. Portofolio managers may be reacting to changing economic conditions, geopolitical events, or other factors that contribute to a more unpredictable investment environment.
4. **Options Pricing Impact:** In options trading, historical volatility is a crucial factor in determining option prices. High historical volatility can lead to higher option premiums as the market anticipates larger price movements, making options more expensive.
5. **Short-Term Trading Opportunities:** Traders may view high historical volatility as an opportunity for short-term gains. The increased price movements can create trading opportunities for those who can accurately predict or react quickly to market changes.
6. **Potential for Rapid Losses or Gains:** Portofolio managers should be aware that a high historical volatility indicates a greater potential for both rapid losses and gains. While it presents opportunities for profit, it also heightens the risk of significant portfolio fluctuations.
7. **Consideration in Risk Management:** For portofolio managers and portfolio managers, understanding and considering historical volatility is crucial in risk management. It informs decisions about asset allocation, position sizing, and the overall composition of a portfolio.

It's important to note that historical volatility is based on past price movements and does not predict future volatility with certainty. Market conditions can change, and historical volatility may not accurately reflect future price behavior. As such, portofolio managers often use a combination of historical and implied volatility, along with other risk metrics, to make informed investment decisions and manage their portfolios effectively.

Asset Contribution and Local Excess Risk Breakdown

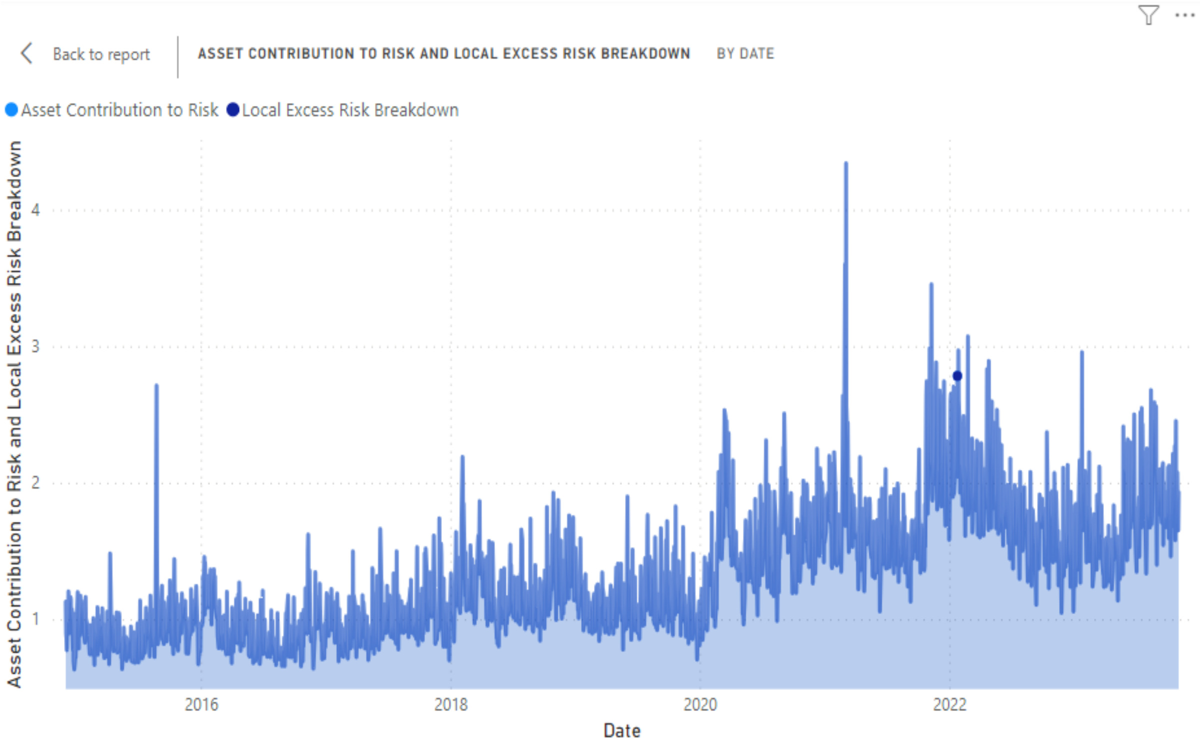

Fig.1.2

In the above Fig.1.2, we see the breakdown of asset contribution and excess risk, we can see the portfolio is at its highest level in 2021 towards 2022, high Asset Contribution and Local Excess Risk Breakdown can highlight the strengths and vulnerabilities of a portfolio, it's crucial for portofolio managers to interpret these metrics in the context of their investment objectives, risk tolerance, and overall strategy. Regular monitoring and adjustments are key to ensuring that the portfolio remains aligned with the investor's goals in an ever-changing market environment.

A high Asset Contribution and Local Excess Risk Breakdown in a portfolio by date can convey important information about the dynamics of the portfolio during specific time periods. Here's what a high Asset Contribution and Local Excess Risk Breakdown might imply:

High Asset Contribution:

1. **Positive Performance Impact:**
    - High asset contribution indicates that specific assets within the portfolio have made a significant positive impact on overall portfolio returns during the specified dates, like we can see towards the ending of 2021, it shows a high asset contribution.
2. **Concentration of Returns:**
    - It suggests that a few assets are playing a crucial role in driving the portfolio's performance. This concentration could be due to the outperformance of certain securities, sectors, or asset classes.
3. **Potential Overreliance:**
    - While high asset contribution can be positive, it may also highlight a potential risk if the portfolio is overly reliant on a small number of assets. Any adverse movements in these high-contributing assets could have a substantial impact on the portfolio's performance.
4. **Relevance to Investment Strategy:**
    - Understanding which assets contribute significantly to returns is crucial for aligning the portfolio with the investor's overall investment strategy. It aids in strategic decision-making and may influence adjustments to the portfolio's composition.

High Local Excess Risk Breakdown:

1. **Increased Concentration Risk:**
    - High local excess risk breakdown indicates that specific assets, sectors, or factors are contributing disproportionately to the portfolio's overall risk during certain dates, which can be illustrated in the beginning of 2022.
2. **Vulnerability to Specific Events:**

- It suggests that the portfolio may be more vulnerable to specific events or market conditions associated with the high-risk contributors. Events affecting these factors could have a pronounced impact on the portfolio.

3. **Opportunity for Risk Mitigation:**
    - Identifying the sources of excess risk provides an opportunity for targeted risk mitigation. Portofolio managers can implement strategies to manage risks associated with the specific assets or factors contributing most to the excess risk.
4. **Risk Management Adjustments:**
    - A high local excess risk breakdown may prompt portfolio managers to reevaluate their risk management strategies and potentially make adjustments to the portfolio's composition or risk mitigation measures.

Combined Implications:

1. **Potential Trade-offs:**
    - High asset contribution and local excess risk breakdown may indicate a trade-off between higher returns (due to certain assets) and higher risks (associated with specific factors).
2. **Active Management Considerations:**
    - Portofolio managers might need to actively manage the portfolio, considering the evolving dynamics highlighted by these metrics. Regular reviews and adjustments may be necessary to maintain a balanced risk-return profile.
3. **Strategic Decision-Making:**
    - The information derived from these metrics can guide strategic decision-making, helping portfolio managers make informed choices about rebalancing the portfolio, adjusting positions, or implementing risk management strategies.
4. **Market and Economic Insights:**The findings may also offer insights into broader market and economic conditions, helping

portfolio managers understand which assets or factors are particularly sensitive to changes in the environment.

ASSET CONTRIBUTRION AND RISK WEIGHT

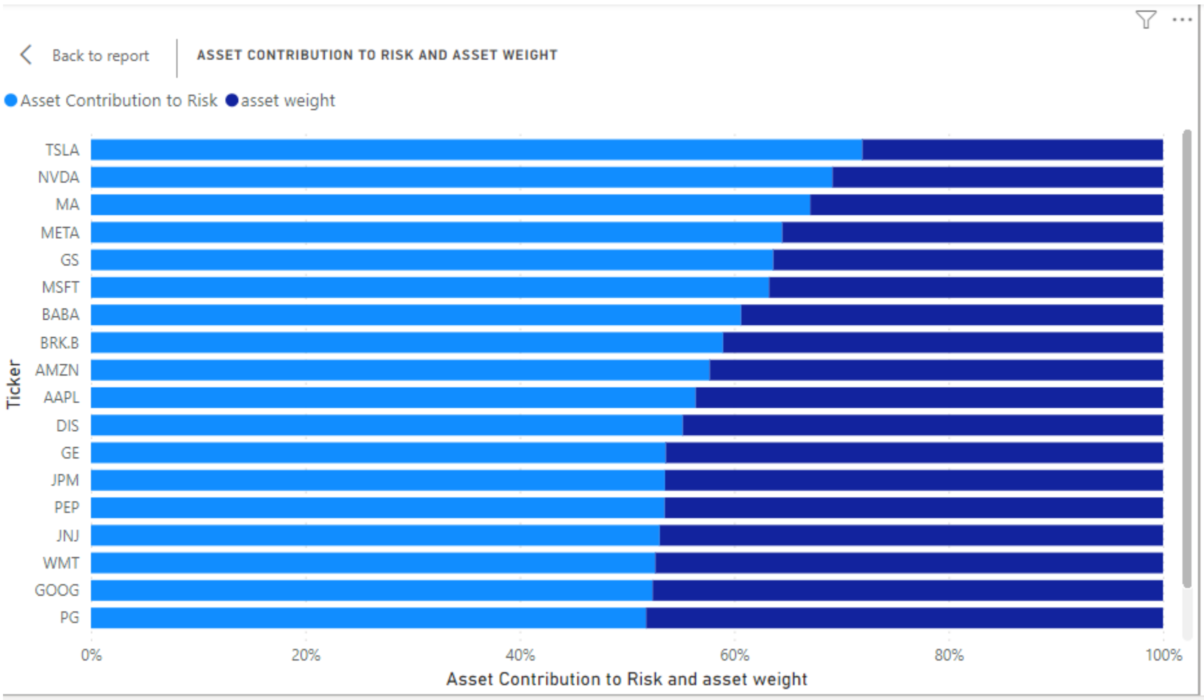

Fig.2.1

In this Fig its shows the asset contribution to risk and the asset weight of the stock in a portfolio and we can see TSLA has the highest contribution to risk and has the lowest asset weight, before we understand this visualization, let's try to know the meaning of asset contribution to risk and asset weight:

Asset Contribution to Risk: Asset contribution to risk measures the impact of each individual asset on the overall risk of a portfolio. It helps portfolio managers understand which specific assets contribute more significantly to the total risk exposure.

While

Asset Weight of Stock in a Portfolio: The asset weight of a stock in a portfolio represents the proportion of the total portfolio value that is invested in that particular stock. It is calculated by dividing the market value of the stock by the total market value of the portfolio.

This comparison is done to check which stock is invested more and which is contributing more to the risk exposure as seen the top stocks exactly in the top.

Relationship Between Asset Contribution to Risk and Asset Weight:

1. **Risk Concentration:**
   - A stock with a high asset weight in the portfolio may also have a high contribution to risk. If a single stock dominates the portfolio's value, it is likely to have a significant impact on the portfolio's risk, and this can be seen in the TSLA stock.
2. **Diversification Effect:**
   - Diversification, achieved by varying asset weights, can help manage risk. Even if a stock has a high asset weight, its impact on risk may be mitigated if other assets in the portfolio have lower correlations and contribute less to overall risk, and which seen in PG stock which has the highest asset weight.
3. **Risk-Return Trade-off:**
   - Portofolio managers need to consider the trade-off between the asset weight of a stock, its contribution to risk, and its expected return. High-risk assets may offer higher potential returns, but they also increase the overall risk profile of the portfolio.
4. **Strategic Decision-Making:**
   - Portfolio managers use the insights from both asset contribution to risk and asset weight to make strategic decisions. They may adjust asset weights to achieve a more balanced risk-return profile or implement risk management strategies targeting specific assets.

In summary, understanding the interplay between asset contribution to risk and asset weight is crucial for effective portfolio management. Striking the right balance, diversifying across assets, and considering the risk-return trade-offs are key elements in constructing portfolios that align with portofolio managers' objectives and risk tolerance. Regular monitoring and adjustments based on these metrics contribute to maintaining a resilient and well-optimized investment portfolio.

BOTTOM FACTOR RISK CONTRIBUTION

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Ticker	Bottom Factor Risk Contribution
MA	0.56
GS	0.40
AMZN	0.13
MSFT	0.09
META	0.08
TSLA	0.08
NVDA	0.08
BRK.B	0.03
KO	0.03
WMT	0.03
JPM	0.02
JNJ	0.02
PG	0.02
GOOG	0.02
GE	0.02
BABA	0.02
AAPL	0.02
XOM	0.01

Fig.2.2

The bottom factor risk or the factor risk contribution, in the above we can see the stock MA has the highest factor risks contribution of 0.56 which means If a specific factor has a high-risk contribution to the overall portfolio risk, it means that the fluctuations or movements in that factor have a significant impact on the portfolio's volatility. This could imply that the portfolio is sensitive to changes in that particular factor, and portfolio manager, may need to closely monitor or manage exposure to mitigate potential risks.

JPM	0.02
JNJ	0.02
PG	0.02
GOOG	0.02
GE	0.02
BABA	0.02
AAPL	0.02
XOM	0.01
PEP	0.01
DIS	0.01

Fig.2.3

The above illustrates the last part of the bottom factor contribution and in we can see that the stocks XCM, PEP and DIS, has the lowest asset contribution of 0.1 and this means that the fluctuations in that factor have a relatively minor impact on the overall risk of the portfolio. In this case, changes in the factor may not significantly affect the portfolio's volatility, and portfolio managers may have a lower level of concern or may allocate fewer resources to managing that specific risk.

It's important to note that the assessment of factor risk is often part of a broader risk management strategy, where investors aim to understand and control the sources of risk in their portfolios. Different factors can include market risk, interest rate risk, currency risk, sector-specific risk, and more. The significance of a high or low factor risk depends on the specific goals, investment strategy, and risk tolerance of the investor or portfolio manager, but in this particular case the portfolio manager is trying to avoid a high factor risk contribution, so this dashboard gave the insight on which bonds are the highest which is stock MA, and followed by GS.

RISK METRIC

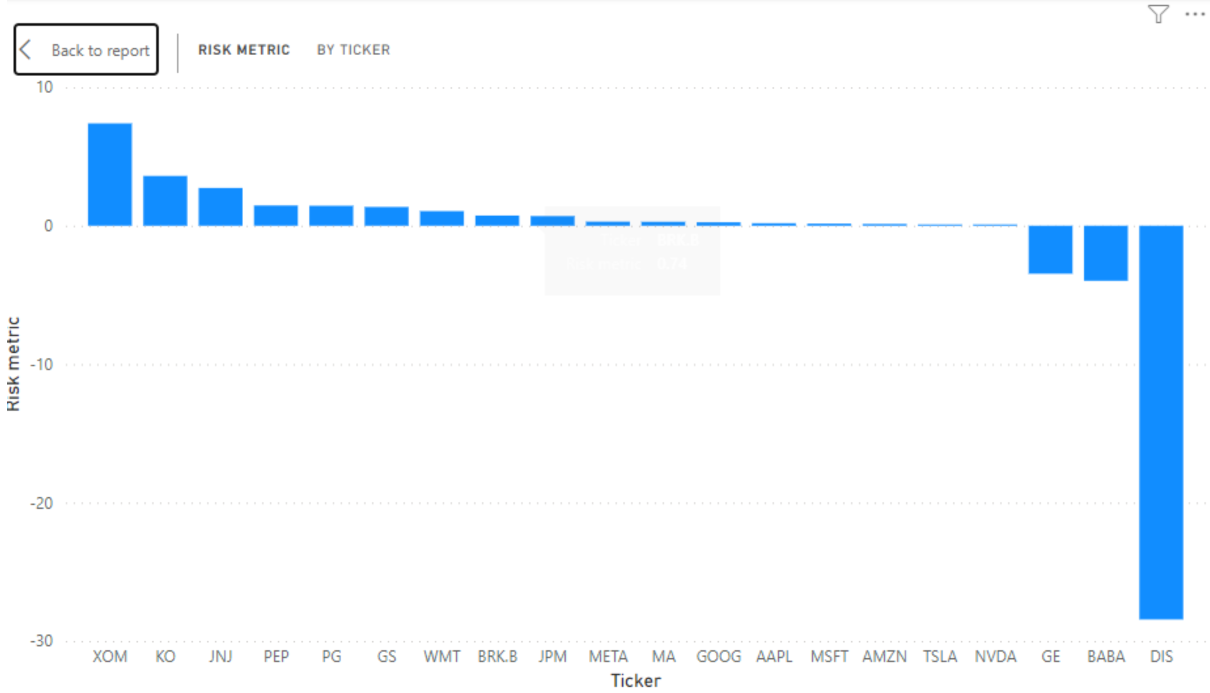

Fig.2.4

Risk metric, the we see above the we have both a positive and negative metrices on some of the tickers or stocks and a positive value indicates the magnitude or level of risk and a lower value is desirable, a negative result could indicate a reduction in risk, so with this the portfolio manager can see stocks that positively risker like show in the Visualisation and the ones that are negative and not risk at all.

It's crucial to understand the conventions and interpretations specific to each risk metric. In general, positive values often indicate risk or volatility, while negative values may imply a reduction in risk or a deviation from a benchmark. Additionally, the context and the financial metric being used will influence the interpretation of positive and negative values. Always consider these metrics in conjunction with other relevant information about the portfolio and market conditions for a comprehensive assessment of risk.

SUB INSIGHTS

This data visualization shows how well the portfolio is performing and gives more details on the portfolio.

NUMBER OF SHARES INVESTMENTS

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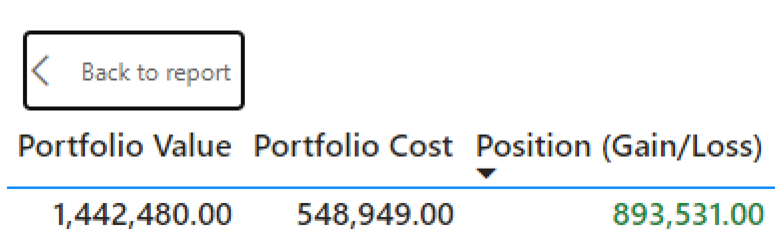
NUMBER OF SHARES

Ticker	No of Shares
AAPL	100
AMZN	1000
BABA	200
BRK.B	100
DIS	100
GE	200
GOOG	200
GS	1000
JNJ	200
JPM	200
KO	1000
MA	1000
META	200
MSFT	200
NVDA	100
PEP	100
PG	200
Total	**6700**

Fig.3.1

This shows that in this portfolio there is 20 different stocks and the number of stocks in which each stock is invested, and we can see there is an overall of 6700 stocks invested, with a minimum of 100 and maximum of 1000 for a stock company.

PORTFOLIO VALUE AND COST



Portfolio Value	Portfolio Cost	Position (Gain/Loss)
1,442,480.00	548,949.00	893,531.00

Fig.3.2

In this dashboard above we can see the portfolio value and the cost, and which shows that the portfolio is running at a profit as it shows in the green and most portfolio managers make sure that the portfolio always runs at a profit at any given time.

PROFIT AND LOSS OF EACH STOCK

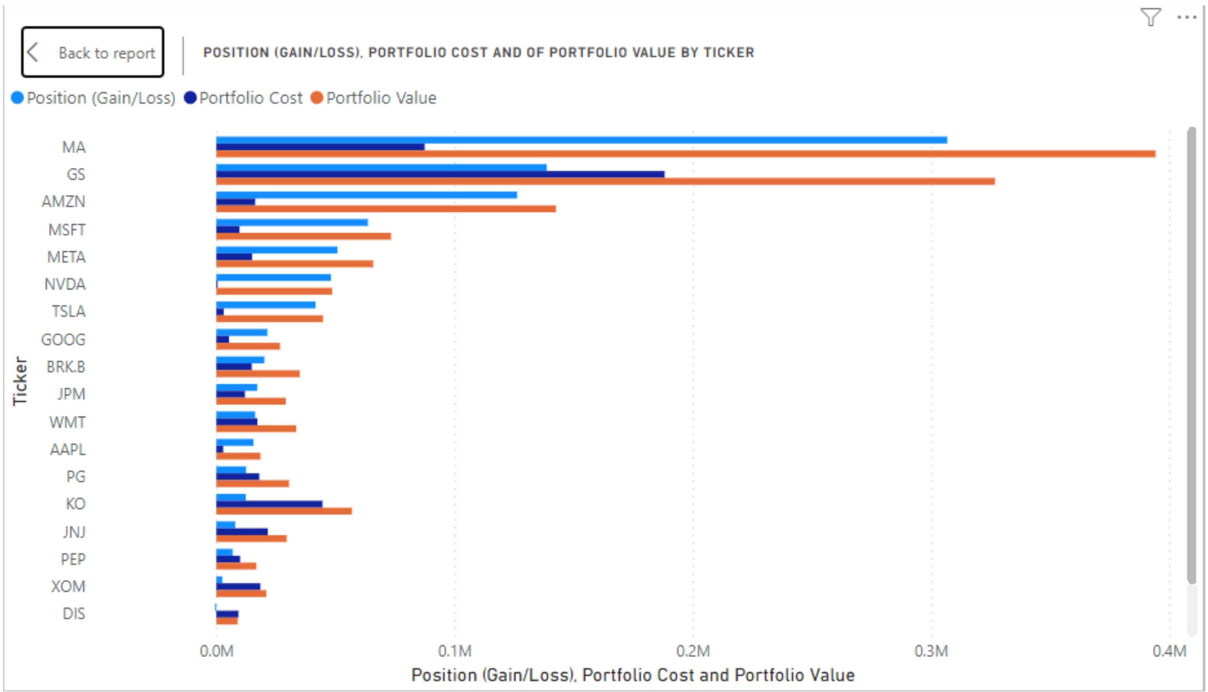


Fig.3.3

In the above illustration, we can see the profit and loss of each stock , this visualization actually gives the portfolio manager more insights on how each stock is performing on a given period of time.as seen above the stock MA is doing better than the others stock and from MA TO AAPL stocks are running at profit and below that they are actually making a loss, with this information the portfolio manager needs the risk assessment explained previously to make decision, whether to sell off of the stock or, this insights alone is not enough for a portfolio manager to sell of a stock.

STOCK PRICES INCREASE

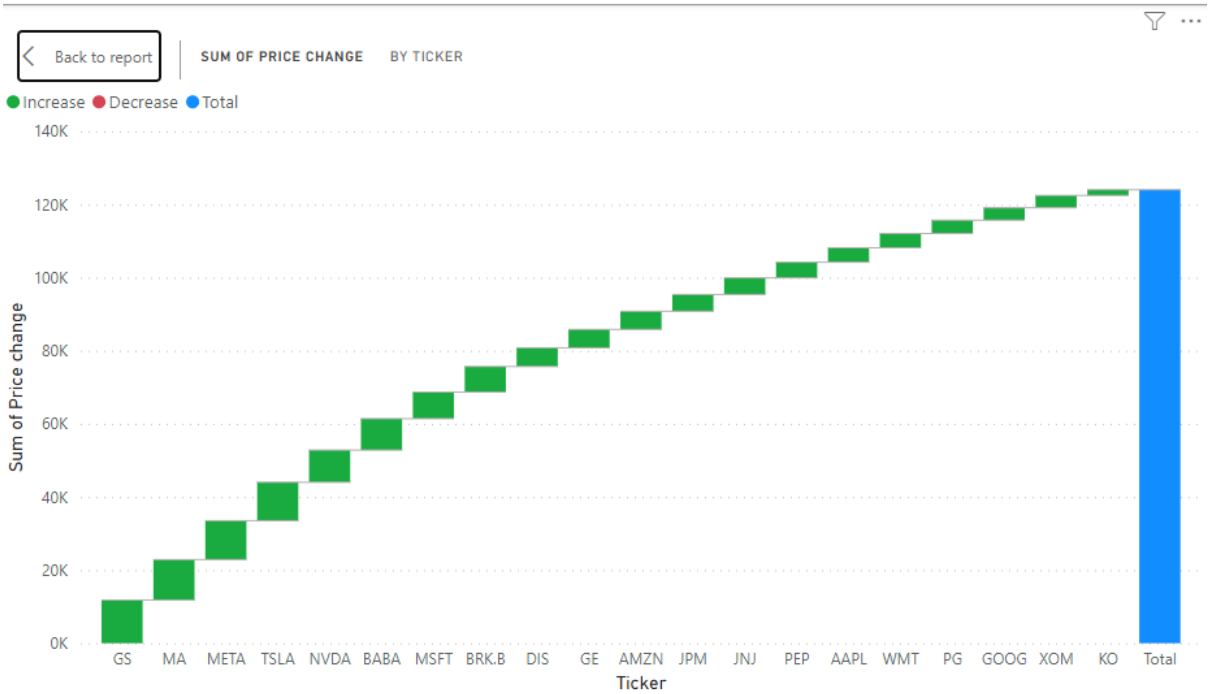


Fig.3.4

In the illustration above we see there is constant increase in the price of the stocks even though, ranging from the stock GS being the highest and KO being the lowest an increase in price of stock means the stock prices is generally positive, individual investor goals, risk tolerance, and time horizon can vary. Additionally, the overall health of the financial markets and economic conditions can influence the sustainability of stock price increases, but as shows in Fig.3.3 not all of them are making profits, which is also a point on consideration for portfolio managers.

DAILY PERFORMANCE

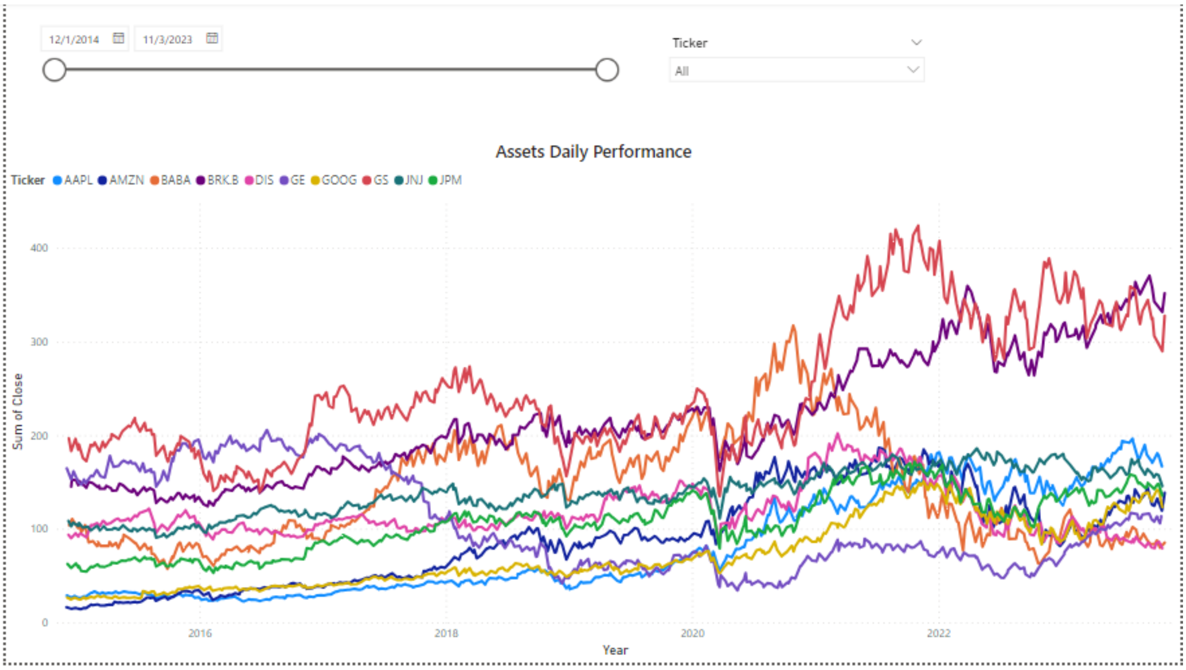


Fig.3.5

Daily performance of the stocks, this illustrates, the daily performance of the stocks from 2015 to date, and this visualization the portfolio manager can choose the date and the stock, he or she wants to monitor using those buttons shows above, we can clearly see on the year 2020, most of the stock has a decrease in price, which was the covid and the financial market of USA, experience a decrease and even as seen above too, it is also seen that the stock GS prices are increasing higher than the others which was also shown in Fig.3.4 and but it was not the stock making the highest profit as shown in Fig.3.3.

In summary Investors or portfolio managers often monitor daily stock performance to make informed decisions, assess market trends, and manage risk. It's important to consider daily performance in the context of longer-term trends, fundamental analysis, and individual investment goals. Additionally, past daily performance does not guarantee future results, and stock prices can be subject to sudden and unpredictable changes.

IS THE PORFOLIO DOING WELL?

To assess how well a portfolio is doing, consider the following steps:

1. **Review Performance Metrics:**
   - The overall performance of 80% of the stocks is doing well and its increasing in price on daily basis, which is a good thing, so base on this assessment the portfolio is doing quite well.
2. **Compare Against Goals:**
   - The goal of this porfolio is to make profit and mitigate risk, the higher the risk the higher the returns but on this part we can say the portfolio is doing well in managing its risk while making profits.
3. **Diversification:**

   The portfolio is well-diversified that is its different types of company stocks, but its downside is the portfolio is just in one country which can typically more resilient to market fluctuations, if anything should happen in the US.
4. **Risk Management:**

   The portfolio manager can monitor effectively the portfolio and managing risk. Assess the impact of market volatility on your investments, which is a good thing.
5. **Economic and Market Conditions:**
   - In the daily performance we can see the portfolio manager under the economic and market conditions, during the covid era and he or she will decide by buying other stocks while reducing the stocks that were not doing so well, so which is generally a good decision.

So, in general base on the highlighted points, we can say this portfolio is doing quietly well.

In a nutshell the Portfolio Risk Management Dashboard serves as a powerful tool for investors, portfolio managers, and financial professionals in navigating the complexities of the financial markets. In an environment characterized by uncertainty, volatility, and constant change, the dashboard provides valuable insights and tools to safeguard investments and optimize risk-return profiles, and the portfolio in itself it doing quite well and all this insights that were talked about helped the portfolio manager to manage the portfolio well in the market of uncertainty, even though there might be some adjustments that can be done but most of these decisions are solely dependent on the market trend and economic situations but here are

key takeaways from the Portfolio Risk Management Dashboard:

1. Risk Overview:

- The dashboard provides a comprehensive overview of the portfolio's risk profile, incorporating measures of volatility, correlation, and other key risk metrics. This holistic view ensures a deep understanding of the inherent risks.

2. Asset Contribution Analysis:

- Asset contribution analysis enables users to identify the specific assets driving portfolio performance and risk. This insight is crucial for strategic decision-making, allowing for a focus on key contributors to returns and risk.

3. Dynamic Asset Allocation:

- The ability to monitor and adjust asset allocation dynamically is a key feature of the dashboard. Investors can respond to changing market conditions, adjusting the portfolio to align with evolving economic landscapes.

4. Risk Tolerance Alignment:

- Understanding risk tolerance is paramount, and the dashboard facilitates the alignment of the portfolio with investors' risk preferences. This ensures that the portfolio is in line with the desired risk-return trade-off.

5. **Risk Mitigation Strategies:**

- The dashboard incorporates tools for implementing and monitoring risk mitigation strategies. This includes the use of derivatives, options, and insurance products to hedge against specific risks and protect the portfolio during adverse market movements.

6. **Historical Volatility Analysis:**

- Historical volatility analysis provides insights into past price movements, helping investors set realistic expectations and anticipate potential future fluctuations. It serves as a foundation for assessing the potential impact of market dynamics on the portfolio.
- for a range of potential outcomes.

7. **Regular Monitoring and Adjustments:**

- Continuous monitoring is emphasized, enabling investors to make timely adjustments based on the latest market information. Regular reviews ensure that the portfolio remains resilient and aligned with investment goals.

8. **Educational Insights:**

- The dashboard provides educational insights into the relationship between risk and return. This empowers investors to make informed decisions, understand the implications of risk management strategies, and navigate the financial markets with confidence.

CONCLUSION

the Portfolio Risk Management Dashboard stands as a dynamic and indispensable tool in the arsenal of investors seeking to safeguard their investments in an uncertain market. By combining analytics, risk metrics, and strategic insights, the dashboard empowers users to navigate market fluctuations, optimize portfolio performance, and achieve long-term financial success. Regular updates and enhancements to the dashboard ensure its relevance and effectiveness in addressing the evolving challenges of the investment landscape.

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