Nanyang Technological University Singapore
Nanyang Business School

AB0403 Sem 06 Grp 03

BRADLEY EDWARD RAJ | U2410419J
GOH WEI EN, ZEN | U2410314B
PATRICK ULYSSES PURNAMA | N2401038J
TAN MING GHEE | U2410164J
TAY HUI, JOLENE | U2410883D

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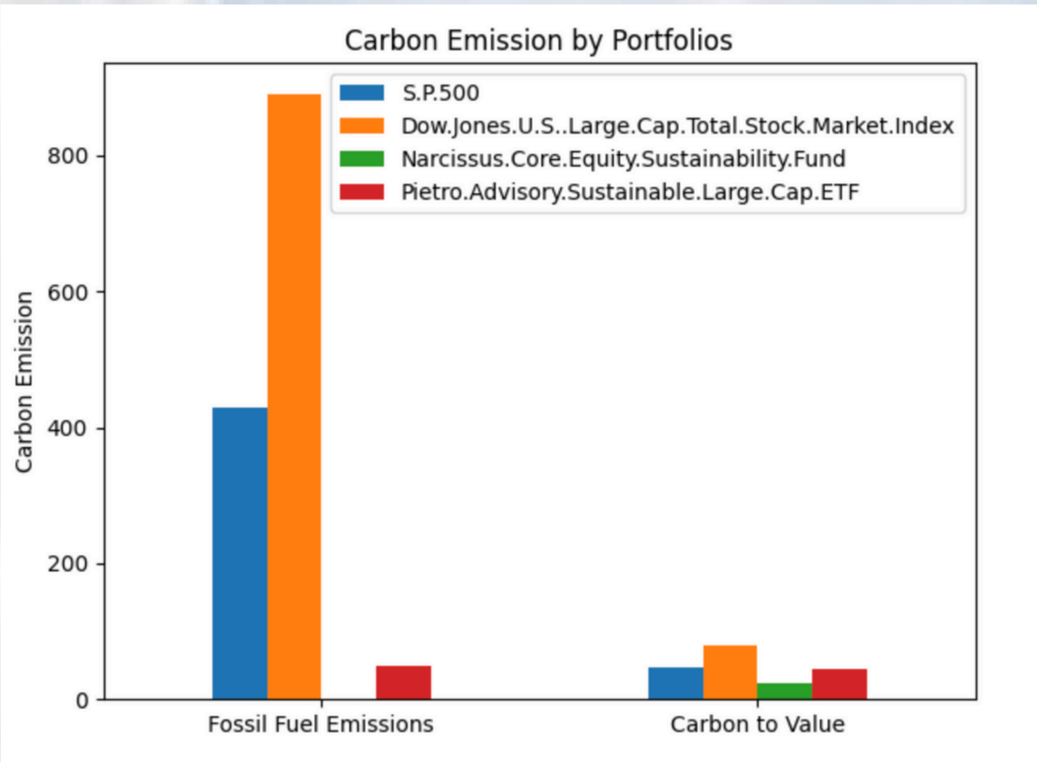
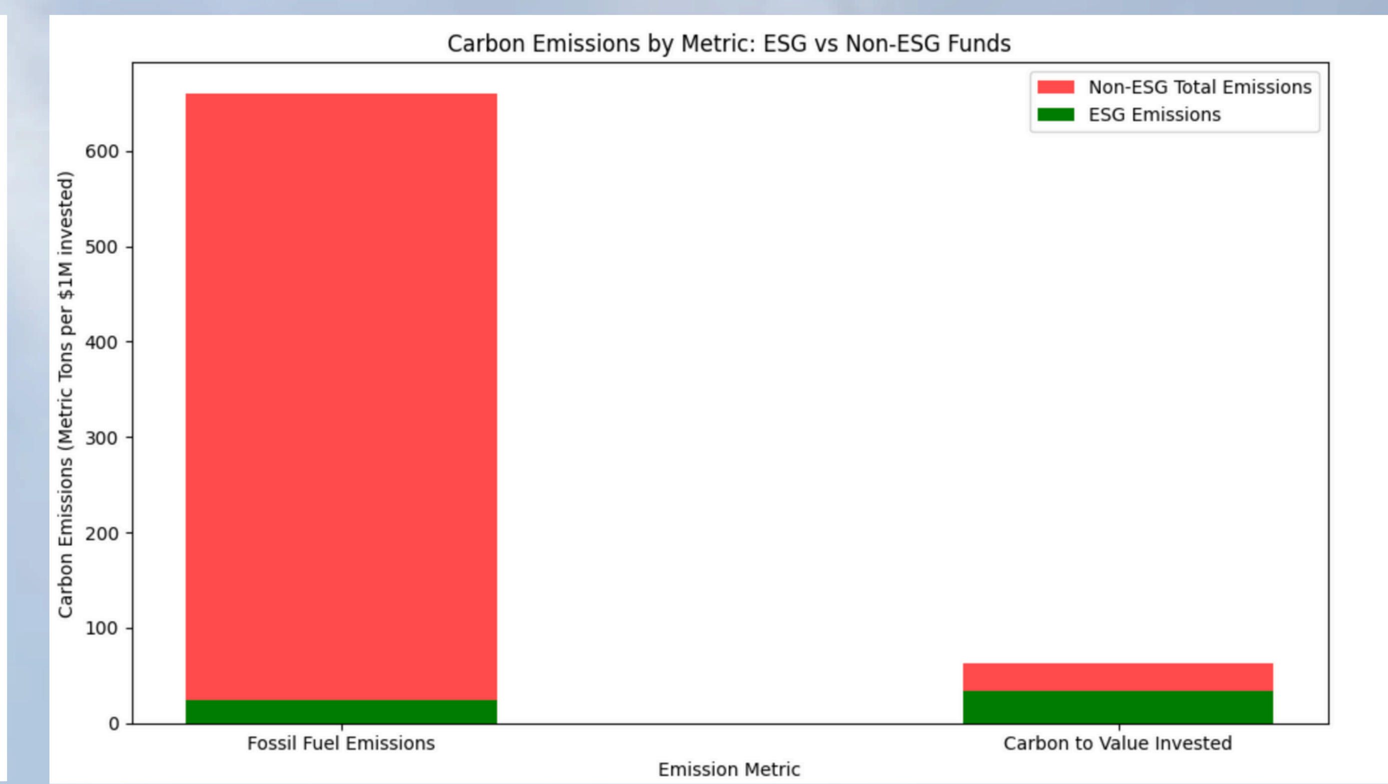
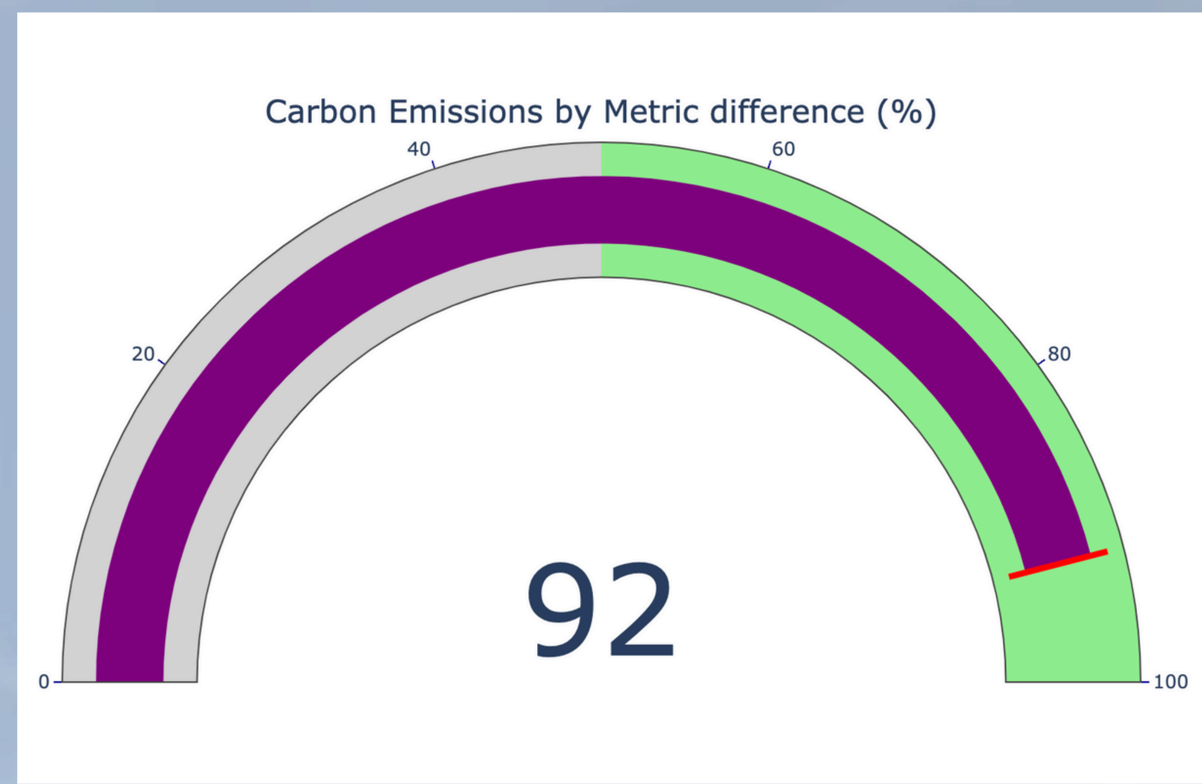
Introduction

With the increasing emphasis on sustainability and responsible investing, Environmental, Social and Governance (ESG) funds have since gained popularity as an alternative to traditional investment options. We chose to analyse mainly the S&P 500, Dow Jones, Narcissus Core Equity Sustainability Fund and Pietro Advisory Large-Cap Sustainable as the other S&P 500 funds focus solely on a single industry. Hence, we aim to explore how these funds differ from traditional indexes in hopes of helping investors make informed decisions about sustainable investing.

By how much do the ESG funds reduce carbon emissions compared to other funds/indices?





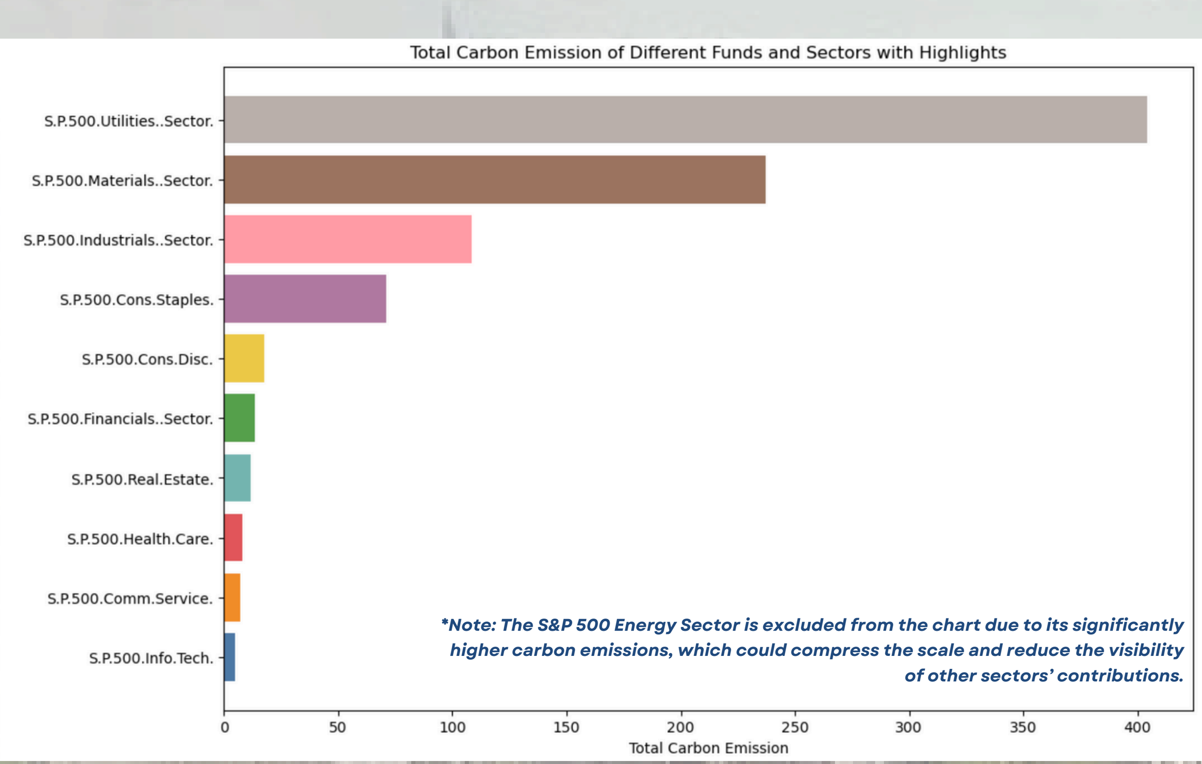


Carbon Emission by Portfolios compares different portfolios' carbon emissions, specifically **"Fossil Fuel Emissions"** and **"Carbon to Value"** metrics. ESG funds, represented by **"Pietro Advisory Sustainable Large Cap ETF"** and **"Narcissus Core Equity Sustainability Fund"**, have noticeably **lower fossil fuel emissions** compared to non-ESG funds like the "S&P 500" and "Dow Jones U.S. Large Cap Total Stock Market Index."

Carbon Emissions by Metric: ESG vs. Non-ESG Funds compares two emission metrics: **"Fossil Fuel Emissions"** and **"Carbon to Value Invested."** The **non-ESG category** has **substantially higher emissions** in both metrics compared to the ESG category.

Carbon Emissions by Metric Difference (%) shows a percentage value, indicating the **carbon emission difference** between ESG and non-ESG funds. A high percentage (**92%**) suggests that **ESG funds produce significantly lower emissions** compared to non-ESG funds.

From these 3 graphs, we can see that the 2 ESG funds considerably reduce carbon emissions compared to non-ESG funds.

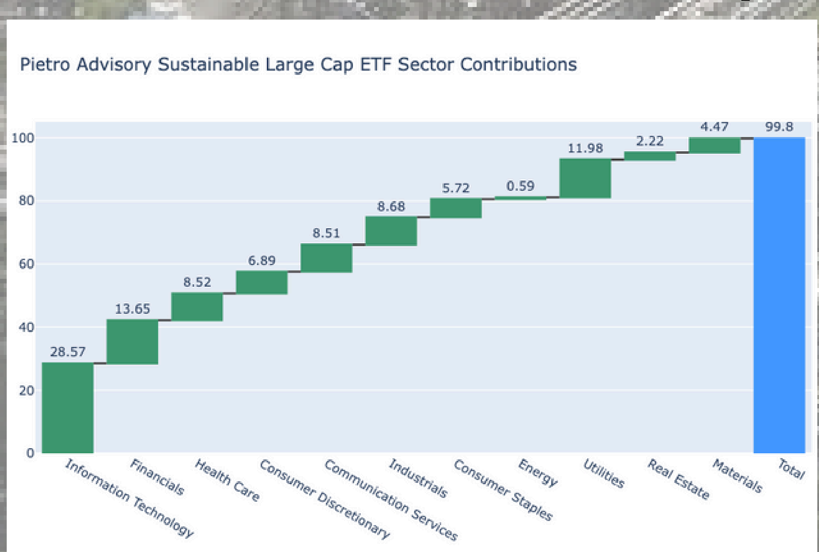


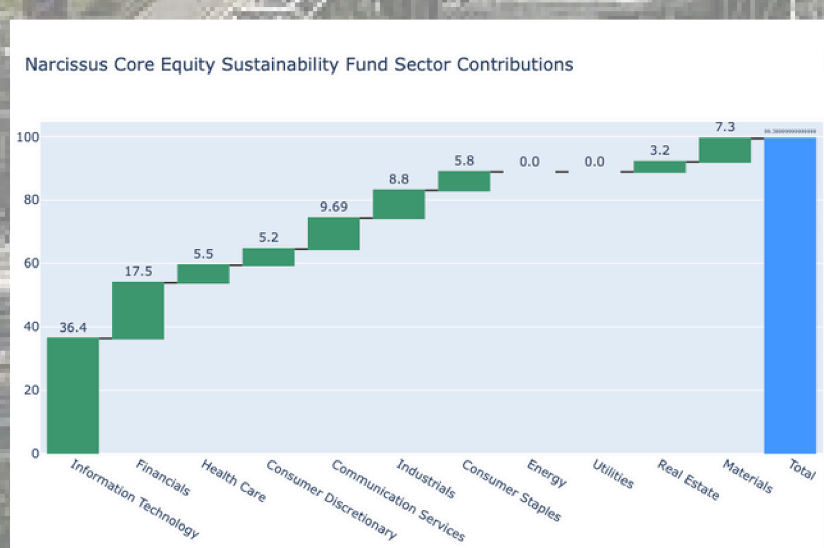
The bar chart compares **total carbon emissions** (Carbon to Value & Fossil Fuel Emission) across **various sectors within the S&P 500**.

The **Energy sector** leads with the **highest carbon emission** at 11,578.45* metric tons of CO2 due to its heavy reliance on fossil fuel like coal and oil for power generation, resulting in significant direct emissions. The **Utilities sector** also **ranks high**, as it often relies on traditional energy sources to meet large-scale power demand.

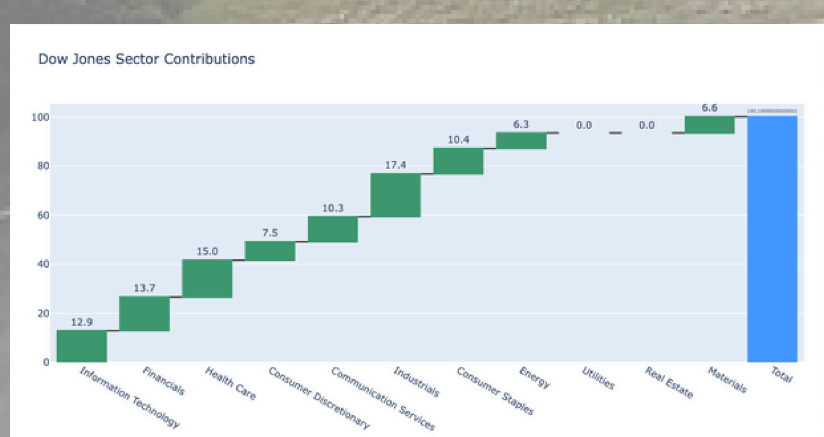
Information Technology has the **lowest carbon emission** due to its reliance on digital infrastructure instead of industrial processes. Many leading tech companies have made significant investments in renewable energy like wind and solar to power data centers. This shift towards cleaner energy significantly minimises carbon emission in the sector.

Sector Proportion in ESG Funds





Sector Proportion in Non-ESG Funds



Predominance of Low-Emission Sector in ESG Funds

ESG funds are designed to prioritise sustainability, often investing in sectors with lower carbon footprints. It typically exclude or underweight high-carbon sectors, such as fossil fuel companies, which leads to significantly lower environmental impact.

In Information Technology and Financials, Narcissus has a contribution of 36.4% and 17.5% in those sectors respectively. Similarly, Pietro's IT sector accounts for 28.57% and Financial sector accounts for 13.65%. These sectors have lower environmental impact, aligning well with sustainability goals and low-carbon policies.

Inclusion of High Carbon-Emitting Sectors in Non-ESG Funds

Traditional Indexes like S&P 500 and Dow Jones have allocations in sectors like Energy, known for its high carbon emissions. Both indexes have a 3.7% and 6.3% contribution in that sector respectively. These indexes do not explicitly prioritise ESG criteria in their composition as they are designed to represent the overall market without particular emphasis on sustainability.

In contrast, ESG-funds adopt a more rigorous approach to limit exposure to high-carbon industries. Narcissus has 0% while Pietro has a mere 0.59% in the Energy sector. The allocation of funds in this sector, or lack of, highlights its strict emphasis on ESG screening criteria. This ensures it invests in companies that practices sustainability and good environmental considerations.

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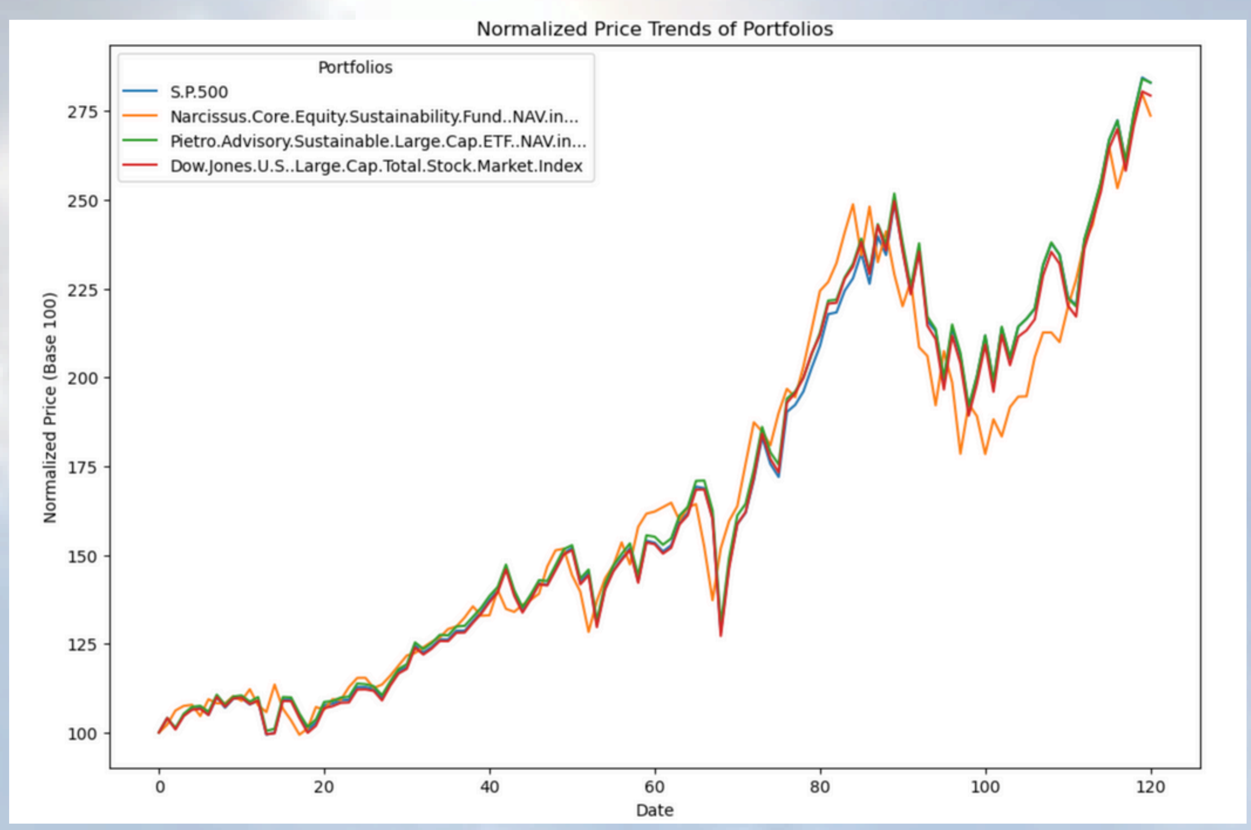
Jain, M., Sharma, G. D., & Srivastava, M. (2019). Can Sustainable Investment Yield Better Financial Returns: A Comparative Study of ESG Indices and MSCI Indices. Risks, 7(1), 15. https://doi.org/10.3390/risks7010015

How do ESG funds compare to traditional indices in terms of performance and sustainability? Why choose ESG?



ESG funds often focus on companies with strong sustainability practices, which can lead to long-term growth. Companies with high ESG ratings are often better at managing risks related to climate change, regulatory pressures, and social responsibility.

In the chart, we see that ESG funds like the "Narcissus Core Equity Sustainability Fund" and "Pietro Advisory Sustainable Large Cap ETF" track well with or even outperform traditional indices over time. This suggests that ESG investments may offer competitive returns alongside traditional funds.

By investing in ESG funds, individuals contribute to lower-carbon businesses, aligning with global sustainability goals and potentially benefiting from the transition to a greener economy.

Companies with strong ESG practices are often better prepared to handle regulatory changes, especially those related to environmental protection and labour standards. As governments implement stricter regulations on emissions and social governance, ESG-aligned companies may face fewer disruptions.

“There is no significant difference in the performance between sustainable indices and the traditional conventional indices, being a good substitute to the latter” Jain, M., Sharma, G. D., & Srivastava, M. (2019).

The ESG funds (Narcissus Core Equity Fund and Pietro Advisory Sustainable ETF) exhibit performance that closely aligns with traditional indices like the S&P 500 and Dow Jones US Large Cap.

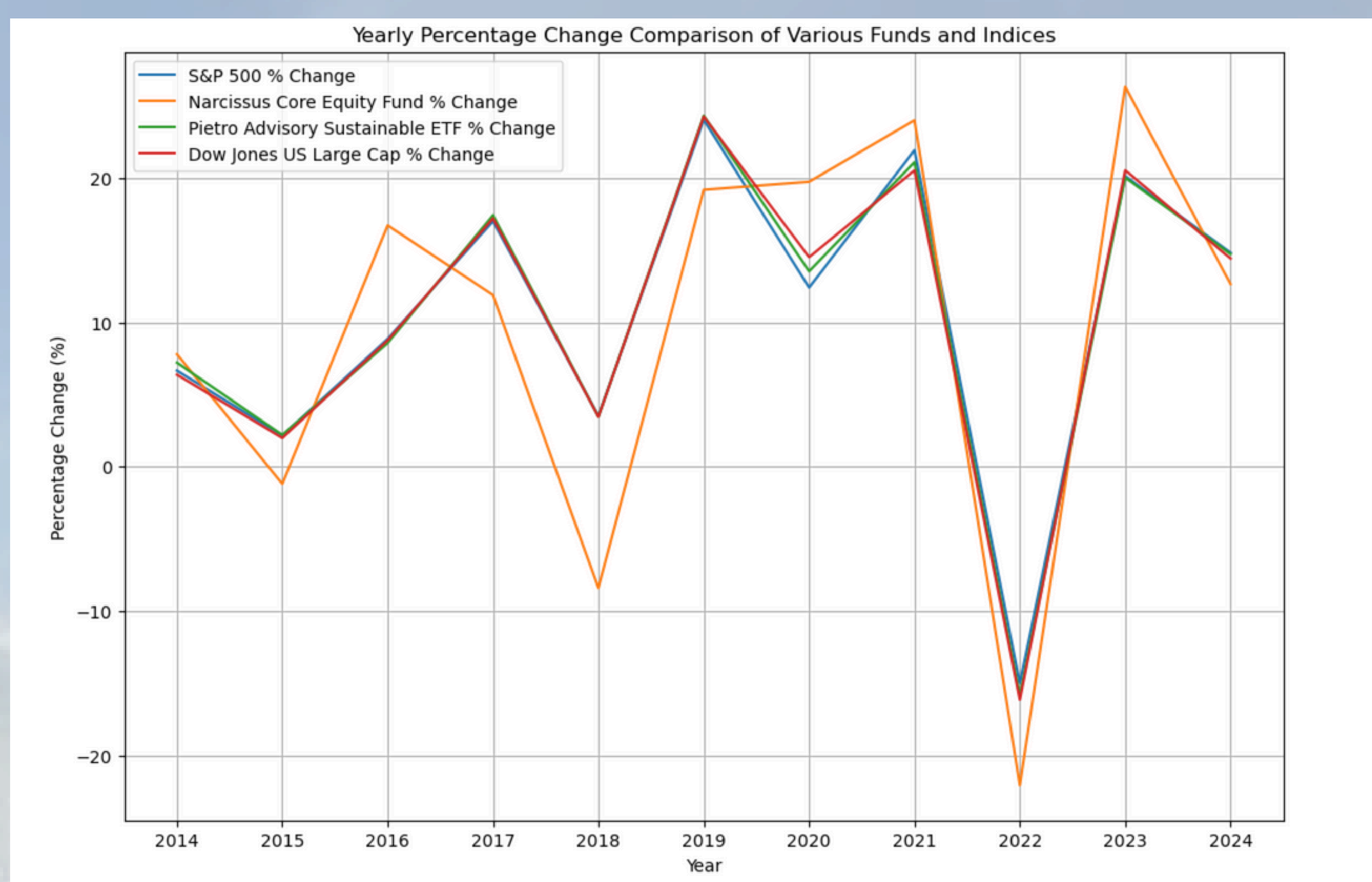
In years of strong market growth, these ESG funds achieved comparable or even slightly higher returns. This suggests that ESG funds can offer returns similar to traditional funds, indicating that investors do not necessarily have to sacrifice performance to invest in sustainable, responsible options.

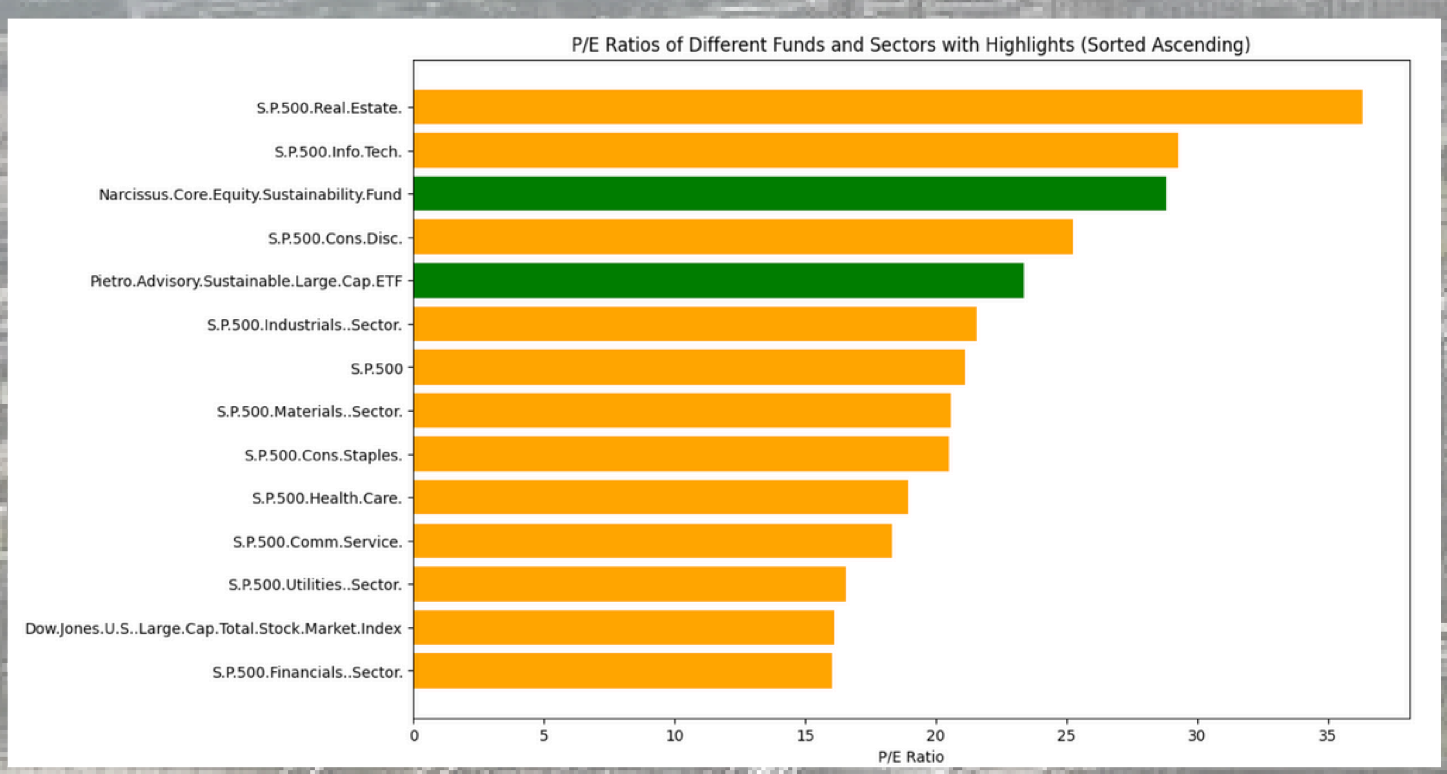
During volatile years, such as 2018 and 2022, ESG funds show fluctuations similar to those of traditional indices, indicating resilience. Although all funds experienced dips, the ESG funds rebounded quickly, showing recovery rates comparable to non-ESG funds. This resilience highlights that ESG funds are capable of handling market downturns well, making them a stable choice in volatile markets.

In some periods, the ESG funds showed slightly lower volatility or less severe declines compared to the traditional indices. For example, the ESG funds did not fall as sharply as the S&P 500 and Dow Jones in certain years, suggesting that their focus on sustainable, stable companies might offer some downside protection. This characteristic can appeal to investors looking for reduced risk exposure during uncertain periods.

In years following a market downturn (e.g., 2016, 2020, and 2023), ESG funds rebounded strongly along with traditional indices. This demonstrates that ESG funds can participate fully in recovery periods and benefit from overall market growth. For investors, this recovery strength suggests that ESG funds have growth potential and can keep up with the broader market's upward trends.

Based on the chart, ESG funds provide competitive returns, strong recovery in growth periods, and resilience during market downturns. This makes them a compelling choice for investors seeking both financial performance and alignment with sustainability values. The chart suggests that ESG funds can offer a balance of growth potential and stability, making them an attractive investment option. The sustainable funds generally align with this trend, indicating that environmentally sustainable investments are capable of achieving similar returns to traditional funds over time.





Based on the chart, ESG funds (highlighted in green) have moderate P/E ratios compared to many S&P 500 sectors, indicating balanced valuations. This suggests that they offer a stable investment option without the high valuations seen in some sectors, while also aligning with sustainable and responsible practices.

- P/E ratio compares a company's share price with its earnings per share, providing a gauge of the stock’s valuation. (Investopedia,2024)
- From the chart, we can see that the Real Estate and Information Technology sectors rank high in P/E ratio, reflecting optimism in future growth, while the Financial sector ranks lowest in P/E ratio, indicating it is less growth-oriented.
- Comparing our 2 ESG and 2 non-ESG funds, the ESG funds have a moderate-to-higher P/E ratios, which could be due to the proportion of sectors included in the funds.
- A high P/E ratio might mean that a company's stock is overvalued or that investors expect high growth rates. Thus, investors can expect higher growth expectations in the short run from ESG funds. In the long run, there are other factors to consider such as market conditions,

The P/E ratio represents the dollar amount an investor can expect to invest in a company to receive $1 of that company's earnings. Different sectors have different P/E ratios. A weighted P/E of the sectors in the funds will give an indication of the funds P/E. Looking into “S&P 500”, “Dow Jones US Large-Cap Total Stock Market Index”, “Pietro Advisory Sustainable Large Cap ETF” and “Narcissus Core Equity Sustainability Fund”, ESG funds show moderate-to-higher P/E multiples, indicating high growth expectations among investors.

Environmental, Social and Governance (ESG) investing prioritises companies committed to sustainable environmental practices, social responsibility, and strong corporate governance. For investors looking to balance financial returns with ethical impact, ESG funds present a compelling choice.

Diversifying across ESG funds rather than specific sectors helps sector-specfic downturns, leading to more balanced growth and long-term stability. This also reduces unsystematic risk, offering investors a resilient portfolio aligned with sustainable principles.

ESG Funds, such as “Pietro Advisory Sustainable Large Cap ETF” and “Narcissus Core Equity Sustainability Fund” carefully select companies that prioritise low carbon emissions and responsible business practices. By excluding or underweighting industries with high environmental impact, ESG funds align investment goals with ethical considerations, creating portfolios that not only generate returns but also contribute to a sustainable future.

Moreover, ESG funds have demonstrated competitive P/E ratios, indicating strong growth potential among investors. Its performance trend often moves alongside traditional indexes such as “S&P 500” and “Dow Jones US Large-Cap Total Stock Market Index”. This suggests that while ESG funds often perform on par with traditional indexes, they actively address environmental concerns.

Choosing ESG funds means investing in both financial performance and a better world. By supporting companies that commit to lower emissions and responsible practices, investors can contribute to a future that values environmental health alongside economic growth.

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AB0403 Decision Making with Programming and Data