Received: 05/08/2025; Revised: 08/20/2025; Accepted: 08/31/2025; Published: 10/22/2025

The Philippine Stock Exchange Index (PSEi) and its Selected Macroeconomic Indicators: Catalyst for Sustainable Economic Growth

https://doi.org/10.58870/berj.v10i1.81

Maybelle A, Gallardo
College of Arts and Sciences
San Beda University, Manila, Philippines
mgallardo@sanbeda.edu.ph

Edilberto B. Viray, Jr.
College of Arts and Sciences
San Beda University, Manila, Philippines
eviray@sanbeda.edu.ph

Abstract

The Bangko Sentral ng Pilipinas (BSP) goal in financial inclusion was not only to provide universal access to financial services but to use these financial services to improve the financial health of each Filipino. Based on its study, only a few Filipinos can be considered financially literate. Financial literacy results in a person's good financial well-being. Investment in the stock exchange is part of the financial ecosystem and considered one of its aggressive investments. There was scant literature specifically on the relationship between PSEi and its selected macro indicators, which measured the performance of the Philippine stock market. Hence, this study significantly addresses this gap. The study's main goal was to probe the impact of the macroeconomic indicators, namely gross domestic product (GDP), inflation rate, exchange rate, and interest rates, on the performance of the stock market. Employing secondary data, these indicators were processed and measured using the Granger causality analysis. Results showed that the trend on each indicator reflected a significant relationship to PSEi. As the country promotes more investment, this study provides valuable insights into the potential cause-and-effect benefits of the changes in the macro-indicators. Further, the PSE index served as a significant means to measure the performance of the stock market. It provided guidance for investors in making sound decisions. A stable and growing PSEi enhances the market trust, thereby optimizing productivity. A robust PSEi attracts local and international investments, leading to economic growth. Hence, BSP and DOF may adopt the use of PSEi using the selected macro indicators as part of their financial inclusion program on financial literacy and investment.

Keywords: Philippines, Stocks, Exchange, inflation, interest, and gross domestic product.

Background of the Study

The dynamic changes between the Philippine Stock Exchange Index (PSEI) and various macroeconomic indicators employing the Autovector Regression and Granger Causality analysis aid in measuring the Philippine economy's health and financial markets. It provides significant knowledge and awareness that can be used for economic analysis. The study probes how the stock market performance relates to broader economic conditions. The interaction of these macroeconomic indicators plays a pivotal role for investors, policymakers, and market analysts in predicting stock market movements, resulting in sound decisions. Macroeconomic indicators include various economic metrics: 1) GDP growth; 2) inflation rates; 3) interest rates; and 4) exchange rates. These variables severely affect the PSEi movement. Continuous monitoring and evaluation are needed to adapt to the constant changes in economic conditions and mitigate risks. Using the above-mentioned statistical tools provides valuable insights into the potential cause and effect brought by the changes in the said indicators affecting the stock market. The complex relationship between these indicators and the PSEi remains underexplored. Hence, the proponents wish to address this gap in the study. The macroeconomic indicators will enable the provision of financial assistance for businesses. thereby, improving economic activity. The PSEi is an essential means to measure the performance of the Philippine stock market. It serves as a guide for investor opinion on speculation. Results thereof promote sustainable economic growth and productive employment.

Based on the study of Bustamante, C., and Viloria, R. (2021), higher educational institutions such as San Beda University and others have an important role in realizing the United Nations' Sustainable Development Goals (UN-SDGs) through research collaboration and learning integration with students, government agencies, and private institutions. In the effort, the Philippine Stock Exchange Index reflects the health of the Philippine economy by disclosing how key companies are performing. An increase in PSEi indicates strong economic activity, which aligns with the objective of the Sustainable Development Goal (SDG 8). Furthermore, a robust PSEi attracts local and international investments, leading to economic growth. Investments can be in the form of expansions, infrastructure development, and technological advancement. Companies that perform well and are listed on the PSEi frequently expand their operation. This creates more jobs for the Filipinos. This further supports the SDG8 goal of achieving full and productive employment. These successful companies can offer better perks that are also part of the decent work of SDG 8. The stock market provides an opportunity for businesses to increase capital. This strategy is vital to fund the business growth and innovation, which are essential to SDG 8. The listing of the stock exchange inspires businesses to formalize, which is also aligned with SDG 8's goal of promoting formalization and the growth of companies. To be listed in the PSEi, a

company should adhere to high standards of corporate governance and sustainability practices, which also support SDG 8's goal. On the other hand, being publicly listed requires transparency and accountability, which can lead to conscientious business practices and support sustainable economic growth. With the investment in innovation and technology nowadays, a stable and growing PSEi can enhance the market trust, encouraging them to adopt this modernization through digitization. This is also one of the contributing factors to higher productivity, which is also the goal of SDG 8.

Relevance: Assessing the connection to San Beda University's Research Theme for Academic Year 2024 – 2025.

1. SBU theme for AY 2024-2025: "Bedans as Pilgrims of Hope in the Year of the Great Jubilee."
   The research study focuses on the United Nations' Sustainable Development Goal number 8, Decent Work and Economic Growth – obtaining decent work and economic growth is the foundation for improving people's lives and sustainable development. Major progress has been made towards increasing access to various levels of investments in all types of platforms. This clearly shows the connection between the university's main theme in research and the paper's initial findings & concluding part of the study.

2. SBU adopted the United Nations' Sustainable Development Goals and Laudato Si': Integral Ecological Education.

Table 1.

The target goals of SDG8 (Decent Work and Economic Growth).

SDG's		Target number Status	All related discussions or target goals of SDG 8.
08	Decent Work and Economic Growth	8.1	• Sustain per capita economic growth by national circumstances and, in particular, at least 7 percent gross domestic product growth per annum in the least developed countries
		8.2	• Achieve higher levels of economic productivity through diversification, technological upgrading, and innovation, including through a focus on high-value-added and labor-intensive sectors.

SDG's	Target number Status	All related discussions or target goals of SDG 8.

Table 1.

Continued.

	SDG's	Target number Status	All related discussions or target goals of SDG 8.
08	Decent Work and Economic Growth	8.3	• Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation, and encourage the formalization and growth of micro-, small-, and medium-sized enterprises, including through access to financial services.
		8.4	• Improve progressively, through 2030, global resource efficiency in consumption and production, and endeavor to decouple economic growth from environmental degradation, by the 10-year framework of programs on sustainable consumption and production, with developed countries taking the lead.
		8.10	• Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance, and financial services for all.

Source: https://www.undp.org/

Statement of Research Problem

This study aims to provide the interdependencies among critical macroeconomic indicators and their impact on PSEi, thereby aiding in the amendment of the existing economic policies**.**

Specifically, it aims to answer the following questions:

1. What is the trend of the Philippine Stock Exchange Index (PSEi) for the past 17 years, from 2008 to 2024?
2. What is the trend of the selected macroeconomic indicators for the past 17 years, from 2008 to 2024?
    a. GDP
    b. Inflation Rate
    c. Interest Rate
    d. Exchange Rate
3. Is there a significant relationship between PSEi and selected macroeconomic indicators using the Granger causality analysis?
4. Based on the findings, what specific policy recommendations can be formulated to enhance the stability and growth of the PSEi in support of sustainable economic growth?

Objectives of the study:

1. To provide a comprehensive understanding of the effects of the selected macroeconomic indicators on the Philippine Stock Exchange Index (PSEi).
2. To analyze the impact of the selected macroeconomic indicators on the Philippine Stock Exchange Index (PSEi).
3. To what extent is the influence of the selected macroeconomic indicators on PSEi?
4. To develop evidence-based policy recommendations that strengthen the relationship between PSEi and its key macroeconomic indicators, thereby supporting sustainable economic growth.

Review of Related Literature

There is an increasing amount of empirical research examining the relationship between macroeconomic variables and stock market indices. As stated by Bato and Viray, Jr., high national debt affects household spending and foreign investments, potentially influencing the PSEi through factors like inflation, interest rates, and exchange rates. Nonetheless, the impact of these variables on stock market performance can vary across countries due to variations in their economic structures and policies. Thus, it is crucial to continuously examine the connection between macroeconomic variables and stock market indices to gain insights into the evolving nature of these relationships. Although numerous studies have

explored this topic, there is a lack of research specifically on the Philippines that employs VAR or Granger analysis.

To better under these dynamics in the Philippine setting, four key macroeconomic indicators were selected and examined their influence on stock market performance, to wit:

A. Gross Domestic Product (GDP)

GDP is a measurement used to assess a nation's economic performance and overall health (Kramer, 2024). A steady GDP growth typically indicates higher business revenue and consumer spending, which is in line with a favorable stock market. On the other hand, a decreasing GDP growth rate could indicate a downturn in the economy and cause investors to become skeptical in terms of their decision-making.

There is a direct relationship between PSEi and GDP. GDP growth usually boosts corporate earnings, which can drive PSEi higher. According to Balaba, J. (2017), for every increase in the PSEi by 1 basis point, GDP goes up by a small rate of 0.000029%. Furthermore, San Miguel, E. (2019) analyzed the interrelationship between PSEi and the said indicators. The methodology used was the Pearson correlation test, which investigated the significance of the relationship between PSEi and each indicator. For GDP, the result was below the level of significance 0.05 (the same as for exchange rate, interest rate, and inflation rate), indicating that PSEi and GDP have a moderate positive relationship, with a Pearson coefficient value of 0.396.

GDP growth reflects the total market or money value of all final goods and services produced in an economy over one year. In the Philippines, robust GDP growth typically correlates with bullish sentiment in the stock market. High GDP growth rates indicate a thriving economy, which translates to increased consumer spending, corporate earnings, and investment opportunities. On the other hand, sluggish GDP growth or negative growth may lead to bearish market sentiments as investors anticipate lower corporate profits and reduced business activities.

The Philippine stock market is showing signs of revival after a prolonged period of stagnation. The country’s economic indicators remain strong as GDP grew by 5.6% in 2023. Historically, the Philippine stock market has averaged around 15 times, with the potential to surge to over 20 times during bull phases. (Business World 2024).

As an open economy, the Philippines is susceptible to external economic developments, including global economic growth, trade tensions, and financial market volatility. Positive global economic trends, such as robust growth in major economies, generally uplift investor confidence and drive foreign fund inflows into

the Philippine stock market. Conversely, geopolitical tensions, trade disputes, or economic downturns in key trading partners may lead to capital outflows and market volatility.

Masangkay (2020) in his study said that there is no cointegrating relationship between the real Philippine GDP and PSEi price levels from the first quarter of 1988 until the third quarter of 2020. The findings show that the relationship between the Philippine GDP and PSEi price levels is not consistent over time, indicating that the variables may diverge and converge within the given time.

Satumira and Salandanan (2023) explained that during the pandemic, many people felt anxious because of the sudden challenges they faced. However, over time, some grew stronger by learning from those difficulties. Similarly, the economy can go through hard times, like a drop in GDP, and later recover. In both cases, it's about bouncing back, whether it's people healing emotionally after a crisis or the economy recovering from a downturn.

B. Inflation rate

Inflation refers to the rate at which the general level of prices for goods and services is rising (Oner, 2020). High inflation may reduce purchasing power and devalue investments, provoking investors to opt for options that provide higher inflation protection. However, excessively high inflation can also be bad for the stability of the economy. It could encourage central banks to begin increasing interest rates to control inflation, which could negatively impact stock prices, businesses, and even the citizens themselves. Migrino, Batangan, and Abello (2023) explained that inflation during the pandemic could drive up healthcare costs, which might impact how many people survive serious illnesses. Inflation also affects the PSEi, which helps analysts predict how the stock market will move. Just like health experts use data to predict health outcomes. Both fields rely on understanding trends to make important forecasts.

The relationship between PSEi and the inflation rate may vary. Moderate inflation rates may indicate growth in PSEi since a moderate inflation rate can be an indicator of a healthy economy, but extremely high or low inflation rates may indicate an economic crisis in the country. However, according to San Miguel, E. (2019), PSEi and the inflation rate have a strong negative relationship, having a Pearson coefficient value of -0.52.

Inflation significantly impacts investor behavior and stock market performance. High inflation erodes purchasing power, leading to decreased consumer spending and lower corporate profits. Consequently, investors may shift their funds from stocks to inflation-hedging assets like bonds or commodities.

Conversely, controlled inflation rates promote stability and confidence in the economy, fostering positive sentiment in the stock market.

Ahmed, Rizwan, Chen, Xihui, et al (2023) examined the link between inflation and the macroeconomy, such as output, trade balance, and unemployment, as reflected through crude oil prices. In terms of policy implications, energy shocks have significant effects on society and the macroeconomy, particularly in terms of economic expansion, inflation, and the environment. Government initiatives, tax laws, and interest rates are all affected by inflation through channels such as consumer spending, company investment, and employment rates.

C. Interest Rate

Interest rates set by the central bank influence borrowing costs for businesses and consumers, affecting investment decisions and spending patterns (Investopedia, 2023). Higher interest rates may reduce economic growth and cause stock prices to fall as borrowing costs rise, lowering business profitability and consumer spending. On the contrary, lower interest rates typically encourage economic activity and raise stock prices as borrowing becomes affordable.

Lower interest rates tend to support the increase of stock prices because this lessens borrowing costs, which stimulates economic growth. This entices entities to take loans that allow them to expand their business, which ultimately leads to economic growth if many companies do the same. With the findings of San Miguel, E. (2019), PSEi and interest rate have been found to have a moderately negative relationship, having a Pearson coefficient value of -0.436.

Monetary policy decisions, particularly changes in interest rates by the Bangko Sentral ng Pilipinas (BSP), profoundly affect stock prices and market volatility. Lower interest rates stimulate borrowing and spending, encouraging investment in stocks and other risk assets. Conversely, higher interest rates make borrowing expensive, potentially dampening consumer spending and business investments, leading to a downturn in stock prices.

Interest rates and stock exchanges are two essential components of an economy's growth. The effects of interest rates on the stock market have significant implications for observing guidelines, risk control procedures, the valuation of financial securities, and government policies for the financial markets. Miguel (2019) disclosed that interest rates have no significant relationship with the price performance of the PSE Services Sector Index constituents.

In the context of the Philippine financial market, changes in market interest rates have a direct impact. Following policy rate cuts by the Bangko Sentral ng Pilipinas (BSP), market interest rates have trended downwards. As a

result, banks have passed on reduced lending rates to borrowers. This dynamic has consequences for the overall financial landscape, including the stock market (Guinugundo, 2020).

Throughout the last 20 years, fluctuations in the PSEi can be partially attributed to changes in interest rates, both domestically and internationally. Monitoring interest rate movements and their impact on the economy is essential for understanding stock market behavior over an extended period.

D. Exchange rate

The exchange rate represents the value of one currency in terms of another (Chen, 2024). For the Philippines, fluctuations in the exchange rate, particularly against major currencies like the US dollar, can impact various sectors of the economy, such as exports, imports, and remittances from Overseas Filipino Workers. A weaker domestic currency can benefit export-oriented companies but may also increase the cost of imported goods, potentially affecting corporate earnings and consumer purchasing power (Bangko Sentral ng Pilipinas, 2020).

Although an increase in the exchange rate in the Philippines' favor may hurt the profitability of exporters, a strengthening of the currency may signal the strengthening of economic performance. With the findings of San Miguel, E. (2019), PSEi and the exchange rate have been found to have a strong negative relationship, with a Pearson coefficient value of -0.561.

The Philippine peso's exchange rate against major currencies influences the competitiveness of Philippine exports, foreign investment inflows, and corporate earnings of multinational companies listed on the PSE. A weaker peso boosts export competitiveness and increases the peso value of overseas earnings for exporters, positively impacting the stock prices of export-oriented companies. Conversely, a strengthening peso may benefit import-dependent industries but could adversely affect exporters and multinational corporations.

Impact of Exchange Rate Fluctuations on the PSEi Over the Last Two Decades. Exchange rate fluctuations have played a significant role in shaping the performance of the Philippine Stock Exchange Index (PSEi). The relationship between currency exchange rates and the PSEi is complex and multifaceted, with both direct and indirect effects influencing investor behavior and market dynamics.

One of the primary channels through which exchange rate movements impact the PSEi is foreign investment. A weaker Philippine peso relative to major currencies can attract foreign investors to the PSEi, as it makes Philippine stocks

more affordable in their home currency. Conversely, a stronger peso may deter foreign investment, affecting the overall liquidity and sentiment in the market.

Rehana et al. (2019) stated that stock markets and foreign exchange markets are two major sources for investment vehicles to invest and maximize returns on investment. Exchange rate fluctuations are volatile in developing countries, and this is largely due to currency differences in developed countries. The existence of this difference may impact the financial performance of developing countries, for which their country's stock market plays a vital role in determining their country's financial progress.

Exchange rate fluctuations have had a significant impact on the PSEi over the course of the last twenty years, influencing foreign investment flows, export competitiveness, import costs, macroeconomic conditions, and investor sentiment. Understanding the interplay between exchange rates and the stock market is essential for comprehensively analyzing market dynamics and making informed investment decisions.

Granger Causality Analysis

Shojaie and Fox (2022) pointed out that causality testing is considered an important part of economic research and is used to determine the order of variables based on their correlations. Bardullas et al (2023) stated that the Consumer Price Index and Money Supply are both Granger-caused by the PSEi. Second, the Stock Market has shown a negative relationship with the Exchange Rate. Third, the Interest Rate has no significant relationship with the PSEi. Lastly, macroeconomic indicators did not produce significant results to be conclusive, thus their relationship with the stock market remains uncertain. This suggests that the PSEi is informationally efficient concerning the selected macroeconomic indicators. San Miguel, E. B. (2019) concluded that macroeconomic indicators such as the real gross domestic product, inflation rate, and foreign exchange rate have a strong relationship with the price performance of the PSE Services Sector Index constituents, while this study provided conclusive statements, other factors would need to be considered by an investor in their investment decisions.

Theoretical Framework/Philosophical Underpinning

Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) is a foundational financial theory used to determine the expected return on an investment based on its systematic risk. It establishes a direct relationship between an asset's expected return and its level of market risk. According to Chen (2021), CAPM remains an influential paradigm in financial risk management, formalizing the mean-variance

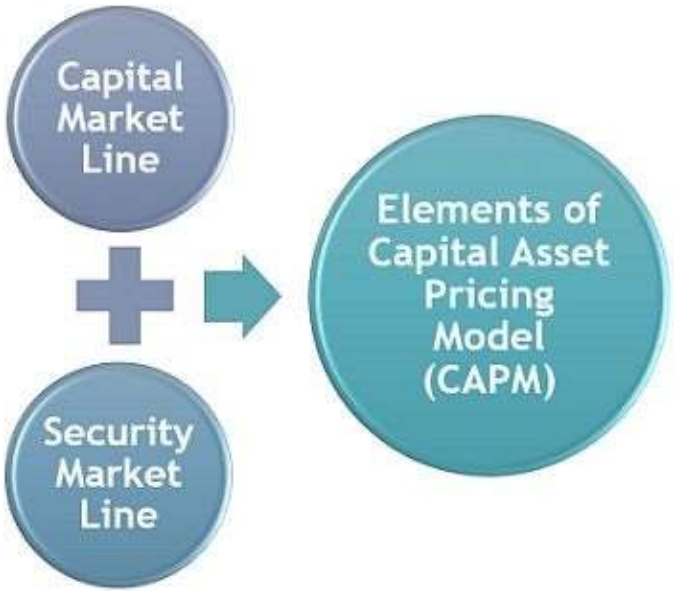
optimization of a risky portfolio in the presence of a risk-free investment. Developed by William Sharpe (1964) and John Lintner (1965), CAPM positions the PSEi as the market portfolio, serving as a benchmark for the overall performance of the Philippine stock market.

In practice, changes in macroeconomic variables may alter the systematic risk of stocks, leading to adjustments in expected returns and stock prices. When indicators point to heightened economic uncertainty, investors typically demand higher returns to compensate for increased risk, thereby influencing stock valuations. By comparing the expected return from CAPM with the actual return of a stock, investors can assess whether it is undervalued or overvalued.

Although CAPM itself is not designed to address sustainability, it provides the analytical foundation for this study by quantifying how macroeconomic factors affect stock performance within the PSEi. This risk–return perspective complements broader approaches such as Arbitrage Pricing Theory and Endogenous Growth Theory, which extend the discussion toward sectoral differences, macroeconomic influences, and long-term economic development.

Figure 1.

Capital Asset Pricing Model (CAPM)



Sectoral Analysis

Macroeconomic indicators influence sectors in distinct ways, shaping both sectoral performance and the overall movement of the PSEi. For example, interest rate increases may constrain consumer-driven industries by raising borrowing costs, while financial institutions might benefit from such changes.

These sectoral differences demonstrate that the PSEi is not only a financial index but also a barometer of economic growth and stability. Shifts in sectors reflect how various parts of the economy adapt to changing macroeconomic conditions, reinforcing the importance of linking financial market performance with broader economic outcomes. This perspective supports the goal of fostering sustainable and inclusive growth.

Arbitrage Pricing Theory (APT)

Arbitrage Pricing Theory, developed by Stephen Ross, is another way to link macroeconomic changes to stock returns. It is an extension of the sources of asset value, which is based on the principle of variance and assumes that the process creates stability. In other words, the CAPM depends on one dependent variable, which means that there is only one independent variable, the market price of risk. Similar assumptions between CAPM and APT include uniform expectations, perfectly competitive markets, and market volatility.

However, Ross proposed a multifaceted approach to asset pricing from the arbitrage pricing theory. He believes that the main drivers of stock returns are economic factors such as unexpected changes in the costs of risk, changes in production demand, unsatisfactory financial planning, and unexpected changes in the structure of interest rates. These factors are expressed as specific coefficients that show how well the property responds to each factor.

About the study. It is important to determine the factors that significantly affect the returns of the fundamental stocks. These factors encompass the following: economic growth (GDP), which influences corporate earnings and stock returns; Inflation rate, which affects the purchasing power, cost structures, and profitability; interest rates, which affect borrowing costs, consumer spending, and investment returns; and exchange rates, which affect export and import businesses. This theory provides an all-inclusive strategy to analyze and predict the performance of the Philippine stock market that aligns with the different economic environments influencing the PSEi.

The Endogenous Growth Theory

Underscores the role of financial markets as engines of sustainable development, linking investment and capital allocation to long-term economic growth through job creation, innovation, and productivity. Within this framework, the PSEi becomes more than just a stock market index; it reflects the capacity of the Philippine economy to mobilize resources, direct capital efficiently, and support enterprise and innovation.

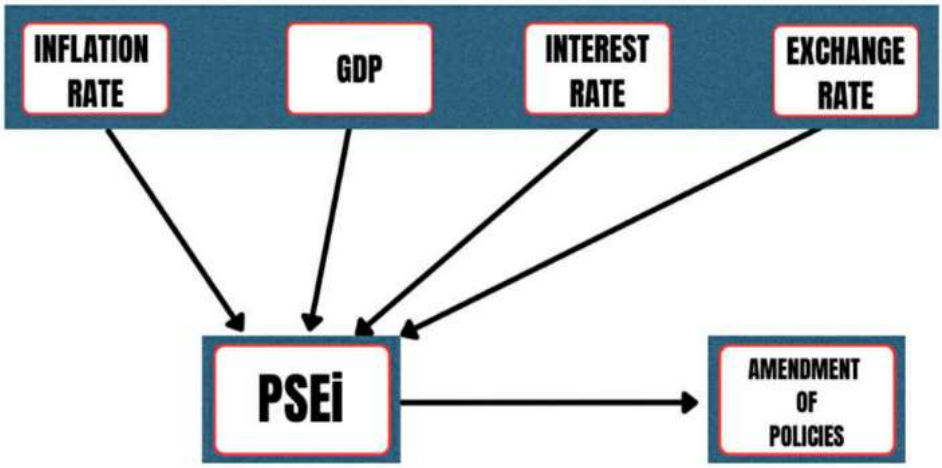
In relation to this study, the PSEi functions as a vital channel for both domestic and foreign investments, enabling firms to expand operations, generate employment, and enhance overall productivity. By examining the interplay between the PSEi and macroeconomic indicators such as GDP growth, inflation, interest rates, and exchange rates, this theory highlights how financial markets not only mirror economic conditions but also actively shape sustainable and inclusive development.

Conceptual/Operational Framework

The study covers the Philippine Stock Exchange Index (PSEi) trends for the past 15 years, as it covers the years 2008 to 2023. Together with the PSEi, the researchers also cover the significant selected macroeconomic indicators: gross domestic product (GDP), inflation rate, interest rates, and exchange rate. All four indicators will cover fifteen (15) years from 2008 to 2023, the same as the main variable. The main measurement to be utilized in the study is the Granger causality analysis, using PSEi as the main variable with its indicators: gross domestic product, inflation rate, interest rate, and exchange rate to form policy implications for future recommendations.

Figure 2.

Operational Framework



In this study, the Philippine Stock Exchange Index (PSEi) serves as the main variable, with gross domestic product (GDP), inflation rate, interest rate, and exchange rate identified as key macroeconomic indicators that influence its performance. These indicators affect the stock market by shaping investor confidence, business activity, and capital flows. In turn, the movements and trends in the PSEi provide valuable insights into the overall state of the economy, which can guide policymakers in amending or formulating policies to promote financial stability and sustainable economic growth.

Hypothesis:

Ha1: Gross domestic product (GDP) has a significant relationship with the PSEi.

Ha2: The inflation rate has a significant relationship with the PSEi.

Ha3: The interest rate has a significant relationship with the PSEi.

Ha4: The exchange rate has a significant relationship with the PSEi.

Methodology

This study employed a descriptive research design to explore the characteristics and identify trends within both the dependent and independent variables. Descriptive research was considered appropriate since it highlights observable patterns and provides a clearer understanding of how the Philippine Stock Exchange Index (PSEi) relates to selected macroeconomic indicators.

The Philippine Stock Exchange Index (dependent variable) and the factors such as GDP, inflation rate, exchange rate, and interest rates (independent variables) exhibited fluctuations over time. By employing summary statistics (mean, median, standard deviation) and visualizations such as bar charts, line charts, and scatterplots, the researchers were able to present the data in a way that shows similarities and differences in the trends across each variable.

To strengthen the analysis, the study also applied the Granger Causality Model. While descriptive statistics revealed observable patterns, Granger causality was used to test whether movements in macroeconomic variables precede and potentially influence changes in the PSEi. This provided deeper insights into directional relationships beyond simple correlations, making the results more robust.

The study utilized secondary data from reliable government institutions such as the Philippine Statistics Authority (PSA), Philippine Stock Exchange (PSE), National Economic and Development Authority (NEDA), Department of Finance (DOF), Bureau of the Treasury (BTr), and Bangko Sentral ng Pilipinas (BSP). Depending on research needs, data were also obtained from the Bureau of Customs (BOC) and the Bureau of Internal Revenue (BIR). This approach ensured both efficiency in data gathering and credibility of information, while upholding ethical standards through proper acknowledgment of government agencies.

Since the study covered a 15-year timeframe (2008–2023), all data points used, including those for computing averages, strictly fell within this period. Data collection was also guided by the Freedom of Information (FOI) Act, signed by former President Rodrigo R. Duterte on July 23, 2016, which grants citizens access to public government documents.

Data Analysis / Analytical tool

The researchers will be utilizing more secondary data, enabling the running of data analysis using Granger causality. In this paper, the Granger Causality Test is used to analyze the interaction of the four selected endogenous variables of the study. This specifically includes the following steps: (1) Conduct the unit root test for all the variables; (2) describe the selection of lag order, model

construct, and the robustness test; (3) measure the Granger causality of the specified variables.

The initial step in determining "Granger causality" is to look for a pattern in our sample data. In every time-series analysis, the assumption that the variables being examined are stationary is crucial. Because Granger causality necessitates covariance stationary series, an Augmented Dickey-Fuller test will be constructed. A time series unit root is a feature that makes it non-stationary. The unit root test includes an ADF test. The null hypothesis of non-stationarity may be rejected for all the series at a 5% confidence level.

Results and Discussions

Trend analysis of selected macroeconomic variables and PSEi

Figure 3.

Philippine Stock Exchange Index (PSEi) trend analysis from 2008 to 2024.

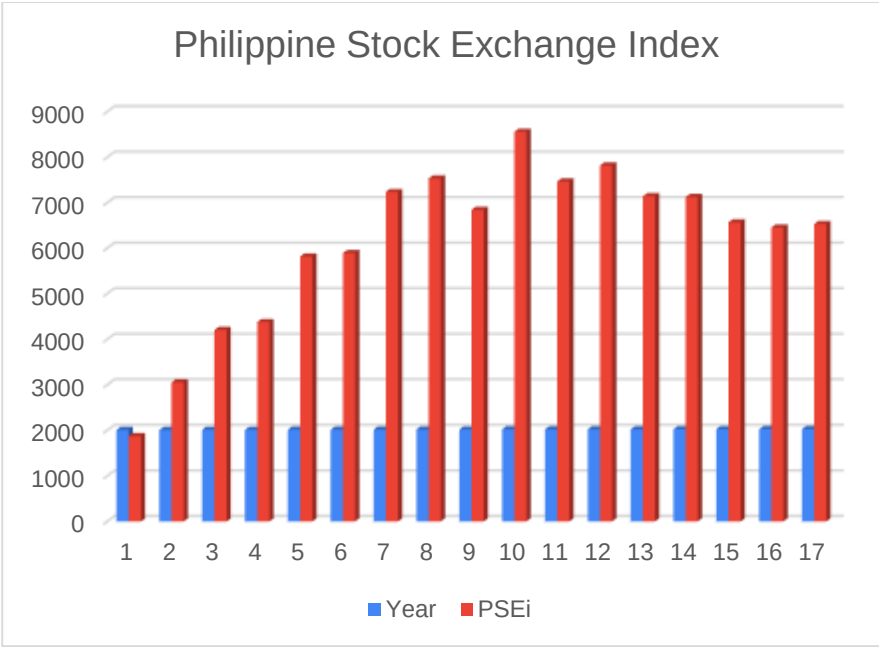


Figure 3 shows the trend of the Philippine Stock Exchange Index (PSEi) in the years 2008 (1) to 2024 (17), demonstrating a general upward trend with periods of volatility, reflecting economic growth, investor sentiment, and external market influences. The record showed 1,872.85 in 2008 amid the global financial crisis; the index was recovering significantly, reaching 5,812.73 by 2012 as the economy rebounded. The PSEi continued to soar high, peaking at 8,558.42 in 2018, driven by strong corporate earnings and economic expansion. However, the index experienced fluctuations in subsequent years, declining to 6,566.39 in 2022, likely due to pandemic-related disruptions and global uncertainties. By 2024, the PSEi stabilized at 6,528.80, indicating cautious optimism as economic conditions improved.

Figure 4.

The Philippines' Gross Domestic Product (nominal) trend analysis from 2008 to 2024.

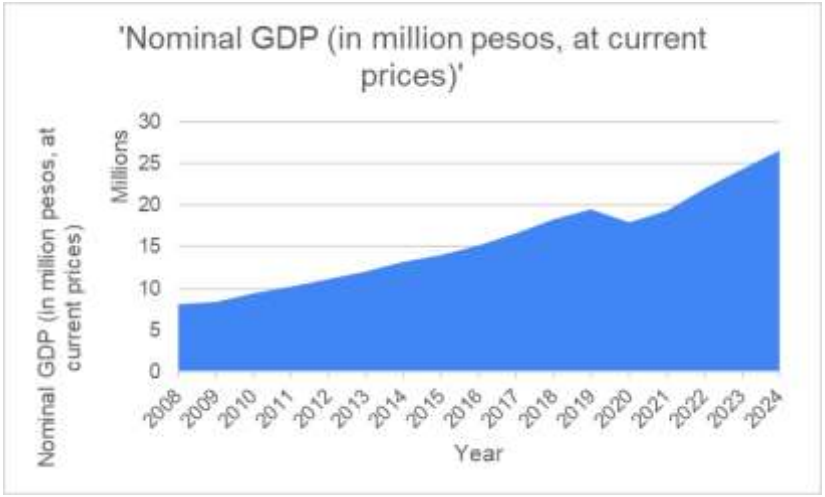
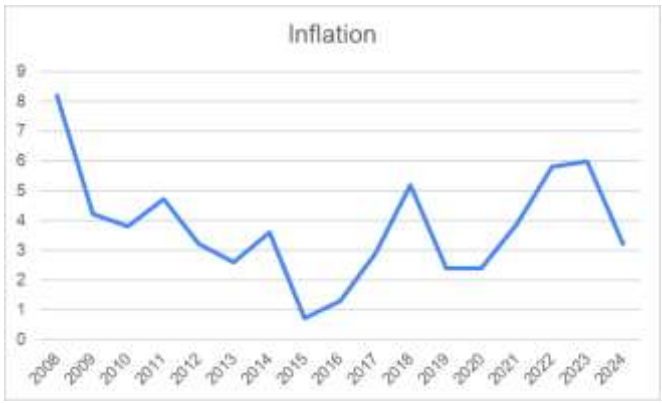


Figure 4 exhibits the nominal GDP of the Philippines from 2008 to 2024. It showed a generally upward trend, signifying a consistent expansion of the economy's overall market value. This shows growth driven by increased consumption spending, government investments, and the uphill rise in export revenues. However, a notable dive in 2020 can be attributed to the global economic meltdown caused by the COVID-19 pandemic. Despite this minor setback, the Philippines' economy demonstrates resilience, rebounding in the subsequent years and continuing its growth trajectory.

Figure 5.

Philippines' Inflation trend analysis from 2008 to 2024.



This figure shows the fluctuating inflation rate in the Philippines. Starting at a high of 8.2% in 2008, likely due to the global financial crisis, before gradually declining to a low of 0.7% in 2015. Inflation then increased again, peaking at 5.2%

in 2018, driven by rising fuel prices and economic growth. It moderated between 2.4% in 2019 and 2020, possibly due to the pandemic's economic slowdown. However, inflation surged to 5.98% in 2023, influenced by global supply chain disruptions and geopolitical tensions, before decreasing to 3.2% in 2024, reflecting successful inflation control measures.

Table 2.

Philippines – United States of America Exchange Rate trend analysis from 2008 to 2024.

Year	Phil-US ER
2008	44.4746
2009	47.6372
2010	45.1097
2011	43.3131
2012	42.2288
2013	42.4462
2014	44.3952
2015	45.5028
2016	47.4925
2017	50.4037
2018	52.6614
2019	51.7958
2020	49.6241
2021	49.2546
2022	54.4778
2023	55.6304
2024	57.2907

Table 2 showed that the Philippine-US exchange rate from 2008 (1) to 2024 (17) exhibited fluctuations, reflecting changes in economic conditions and external factors. The exchange rate started at 45.50 PHP/USD in 2008, strengthening to 42.23 PHP/USD in 2012, indicating a period of peso appreciation. However, from 2013 onward, the Philippine Peso gradually depreciated, reaching 45.50 PHP/USD in 2015 and weakening to 52.66 PHP/USD in 2018, likely due to trade deficits and global market uncertainties. A brief appreciation occurred in 2020, bringing the rate down to 49.25 PHP/USD, but the Philippine Peso depreciated again in the following years, reaching 57.29 PHP/USD in 2024. This long-term depreciation trend suggests the influence of inflationary pressures, external shocks, and economic policies, impacting the Philippines' currency's stability against the US dollar.

Figure 6.

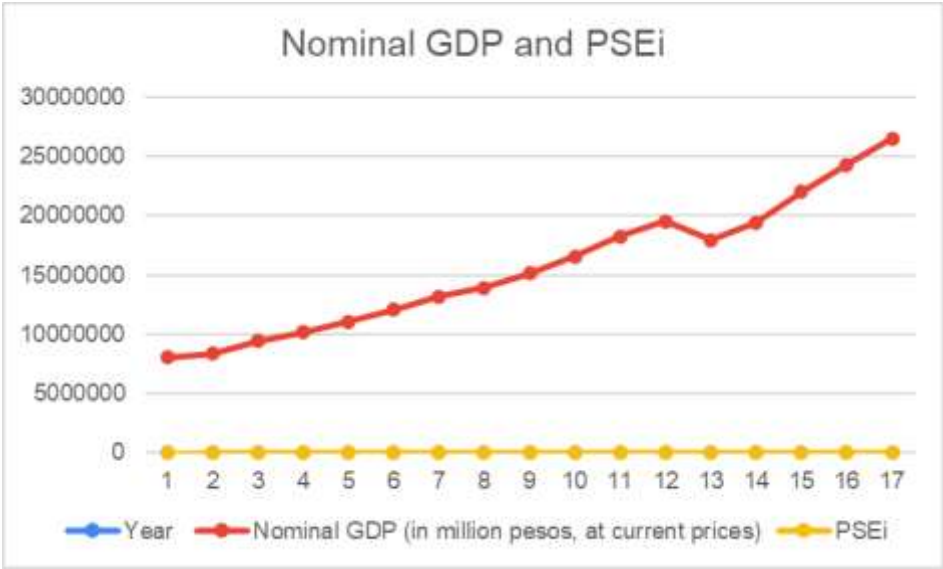
Philippines' Interest Rates trend analysis from 2008 to 2024.

Figure 6 illustrates the significant fluctuations in interest rates in the Philippines from 2008 (1) to 2024 (17), which fluctuated significantly in response to economic conditions and monetary policies. Starting at 5.00% in 2008, the rate rose to 7.22% in 2010, reflecting tighter monetary policy, before decreasing to 1.88% in 2018, likely to support economic growth amid global uncertainties. The tightening continued as rates rose to 6.35% in 2020 and peaked at 7.55% in 2023, possibly to combat inflationary pressures. By 2024, the rate settled at 5.75% indicating a balancing act between inflation control and economic growth. These fluctuations suggest the central bank's responsive approach to changing economic conditions, aiming to maintain financial stability while fostering sustainable development.

Comparative analysis of selected macroeconomic variables with PSEi

Figure 7.

Philippine Stock Exchange Index (PSEi) and Gross Domestic Product (nominal) Comparative analysis from 2008 to 2024.



In Figure 7, the researchers analyze the relationship between the Philippine Stock Exchange Index (PSEi) and nominal GDP from 2008 to 2024. The data indicated that PSEi movements align closely with the country's GDP trends, highlighting the connection between economic performance and stock market behavior. The global financial crisis of 2008 and 2009 led to a significant decline in GDP and a sharp drop in the PSEi. Following this, strong GDP growth from 2010 to 2019 peaked, with the PSEi reaching 9,078.37 in January 2018. However, the COVID-19 pandemic in 2020 caused another contraction in GDP, resulting in a corresponding decline in the PSEi. While the economy and the PSEi showed signs of recovery from 2021 to 2023, the growth was moderate, and the market remained volatile. In 2024, GDP growth fell short of expectations at 5.6%, leading to a further decline in the PSEi, which reached a near 15-month low of 6,345.40 on January 23, 2025.

Figure 8.

Philippine Stock Exchange Index (PSEi) and Inflation Comparative analysis from 2008 to 2024.

Figure 8 illustrates the complex relationship between the PSEi and inflation from 2008 to 2024. During the 2008 global financial crisis, the PSEi experienced a significant decline of over 30%, driven by global instability and domestic factors. In January 2018, the index reached a record high of 9,078.37; however, it fell by 3.3% the following month due to global market volatility and rising inflation expectations in the U.S. A notable surge in inflation in 2023, which peaked at 8.7%, led the Bangko Sentral ng Pilipinas to raise policy rates to 6.5%, the highest level since 2008. These elevated rates contributed to a year-end PSEi closing of 6,450, with a price-to-earnings (P/E) ratio of 12.9x, the lowest since the financial crisis. By October 2024, inflation had slightly increased to 2.3% from 1.9% in September, although it remained relatively low compared to previous peaks.

Figure 9.

Philippine Stock Exchange Index (PSEi) and Philippines-US Exchange Rate Comparative analysis from 2008 to 2024.

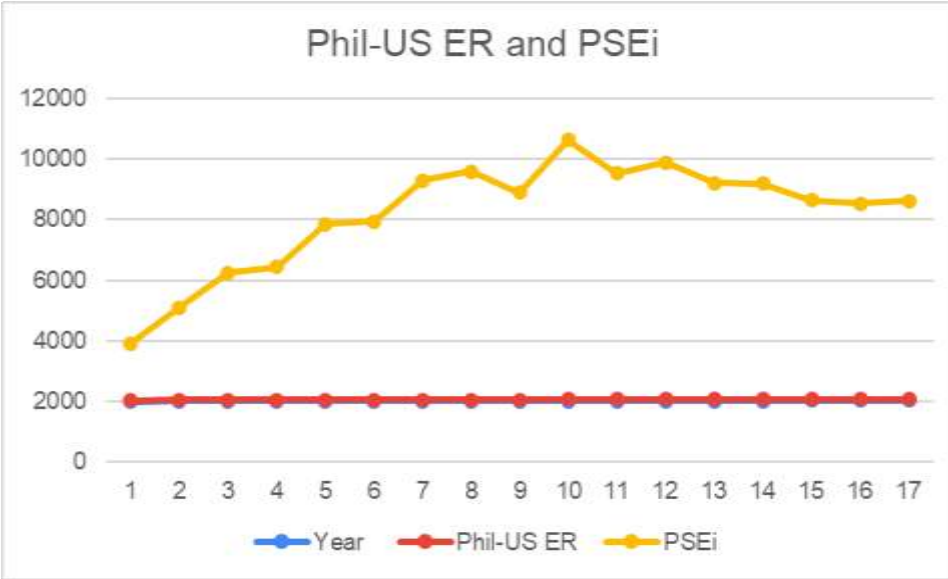


Figure 9 shows the complex relationship between the Philippine Stock Exchange Index (PSEi) and the Philippine peso exchange rate from 2008 to 2024, shaped by various economic factors. During the 2008 financial crisis, the PSEi experienced a decline of over 30%, coinciding with a peso depreciation against the US dollar. This depreciation was driven by weakened investor confidence and capital flight. In January 2018, the PSEi reached a record high of 9,078.37; however, it fell by 3.3% the following month. This decline was influenced by global market volatility and rising inflation expectations in the US. The Philippine peso also weakened during this period, partly due to a widening trade deficit and external uncertainties. High inflation in 2023, which peaked at 8.7%, further impacted both the PSEi and the exchange rate. The relationship between the PSEi and the peso is affected by domestic economic conditions, global market trends, and investor sentiment. A weaker peso can enhance export competitiveness and increase imports and inflation costs, which may negatively impact the stock market. Conversely, a stronger peso can attract foreign investment but potentially hurt exports. This complexity illustrates why the PSEi-exchange rate relationship is subject to various influences over time.

Figure 10.

Philippine Stock Exchange Index (PSEi) and Interest Rate Comparative analysis from 2008 to 2024.

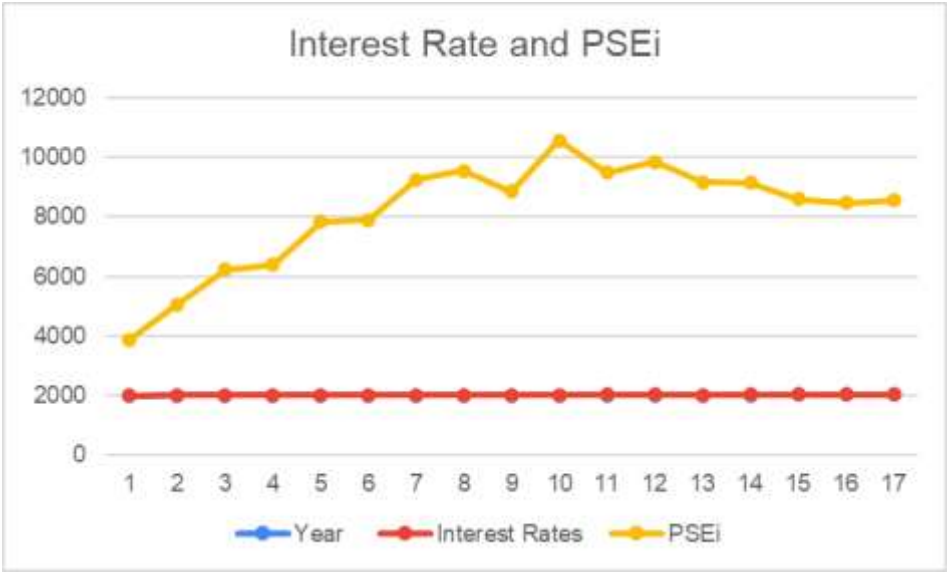


Figure 10 shows that the PSEi from 2008 to 2024 has been significantly influenced by the Bangko Sentral ng Pilipinas (BSP) interest rate policies, which in turn responded to evolving economic conditions. During the 2008-2009 global financial crisis, the BSP lowered interest rates to stimulate the economy and support the PSEi amidst global turmoil. From 2010 to 2019, a period of sustained economic growth, the BSP maintained a balanced approach to interest rates, controlling inflation while fostering growth, which generally contributed to an upward trend in the PSEi. The 2020 COVID-19 pandemic prompted the BSP to slash interest rates to a record low of 2% to mitigate economic disruptions, an accommodative policy that had mixed results on the PSEi due to prevailing uncertainties. As the economy recovered slowly in 2021-2022, the BSP began normalizing interest rates, and the PSEi showed signs of recovery, yet remained susceptible to domestic and global economic factors. So far, PSEi's trajectory has been closely tied to the BSP's interest rate policies, which have been strategically deployed to address various financial challenges.

The Granger Causality Results

Figure 11.

The Granger Causality Test Results covering 17 samples from 2008 to 2024 for the Philippines' Gross Domestic Product (GDP), Inflation, Philippine-US Exchange Rates, and Interest Rates, as the Philippine Stock Exchange (PSEI) remains the major determinant.

Granger Causality Test Results

Variable	F_Statistic	P_Value
GDP	0.814	0.551
Inflation	1.040	0.490
Exchange_Rate	1.222	0.450
Interest_Rates	1.574	0.389

Figure 11 presents the Granger Causality Test Results covering 17 samples from 2008 to 2024 for the selected macroeconomic indicators, namely: The Philippines' Gross Domestic Product (GDP), Inflation, Philippine-US Exchange Rates, and Interest Rates. As for the Philippine Stock Exchange (PSEI), it remains the major determinant.

While Gross Domestic Product is crucial to the economic model, the results indicate that "GDP does not Granger-cause the PSEI." The findings suggest that lagged GDP values do not enhance the prediction of the PSEI, as evidenced by a low f-statistic of 0.814 and a p-value of 0.551, which exceeds the 0.05 significance level.

Similarly, inflation's f-statistic is slightly better than GDP's, yet still low. The p-value for inflation is 0.49, also greater than 0.05, indicating that the relationship is not statistically significant. This suggests that lagged inflation does not have a significant relationship with the PSEi and does not Granger-cause it.

Another significant variable is the exchange rate. The Philippines-US exchange rate has an f-statistic of 1.222, suggesting some potential for improving the model's predictive power for the PSEi. However, with a p-value of 0.45, which is greater than 0.05, the researchers cannot reject the null hypothesis. This indicates no statistically significant Granger causality, meaning the exchange rate does not possess predictive power for the PSEI in the utilized data sets.

Lastly, regarding interest rates, the f-statistic is 1.574, which is slightly stronger than the other macroeconomic variables. However, the p-value of 0.389 is still well above 0.05, indicating that the relationship is not statistically significant. In summary, interest rates do not Granger-cause the PSEi despite exhibiting a slightly stronger association than the other variables.

Conclusion

The summary of the conclusion based on the findings includes the following key insights. Over the 17 years studied, the Philippine Stock Exchange

Index (PSEi) demonstrated resilience as it reflected both domestic and global economic conditions. Periods of expansion, such as the rebound after the 2008 global financial crisis and the market peak in 2018, fueled by strong corporate earnings, underscored its capacity for growth. In contrast, significant declines were observed during episodes of instability, including the 2008 crisis itself, the economic slowdown caused by the COVID-19 pandemic, and the global uncertainties of 2022 to 2024. These fluctuations highlight the PSEi's sensitivity to macroeconomic shifts and external shocks.

The macroeconomic indicators examined, GDP, inflation, interest rates, and exchange rates, each revealed distinct patterns over the study period. GDP generally trended upward, contracting only during major crises but recovering quickly thereafter. Inflation moved between low and high periods of moderation, with notable stability in years such as 2015 and 2024. Interest rates reflected policy adjustments, ranging from record lows during the pandemic to significant increases in 2023. Meanwhile, the exchange rate followed a general path of peso depreciation, influenced by trade deficits, inflationary pressures, and global uncertainties, though brief episodes of appreciation also occurred.

Despite these movements, the Granger causality test showed that none of the selected macroeconomic indicators had statistically significant predictive power over the PSEi at the 5% level. Interest and exchange rates demonstrated slightly stronger associations than GDP and inflation, yet the relationships were not strong enough to establish predictive capacity. This suggests that other variables, such as sector-specific developments, corporate performance, investor confidence, and geopolitical events, played a greater role in shaping the PSEi during the study period.

Based on these findings, the study concludes that policymaking to strengthen the PSEi and promote sustainable economic growth should not be anchored solely on macroeconomic indicators. Instead, a broader approach that integrates company fundamentals, sectoral performance, global market dynamics, and qualitative elements like political stability and investor sentiment is needed. Sustained monitoring of these factors, alongside traditional macroeconomic measures, will provide a more comprehensive and reliable foundation for investment decisions and economic policy.

Recommendations

For policymakers, the results of the Granger causality test suggest that GDP, inflation, interest rate, and exchange rate do not have statistically significant

predictive power over the PSEi. This indicates that policy formulation on the stock market may need to look beyond these indicators when assessing performance. Further studies could refine the inflation-targeting framework and broaden the BSP's monetary policy tools. Possible considerations include adopting more flexible forward guidance, enhancing market-based interventions, and introducing measures that foster investor confidence. By strengthening transparency and stability in monetary policy, the BSP may indirectly support stock market performance while contributing to long-term economic growth.

For investors and market analysts, macroeconomic indicators are best viewed as part of a broader decision-making framework rather than as standalone predictors. A balanced approach could integrate fundamental analysis, such as company financials and sectoral growth prospects, with technical analysis, such as price trends and trading volumes. It is also important to monitor global economic conditions, foreign investment flows, and regional developments, which may exert more immediate influence on the PSEi than domestic macroeconomic shifts. To mitigate risks associated with market volatility, diversification of investment portfolios remains a prudent strategy.

In relation to sustainable development, the PSEi may be regarded as a potential driver of inclusive and sustainable growth. By attracting investments, creating jobs, and encouraging business expansion, the PSEi has the capacity to serve as a channel for development. Policymakers may therefore consider advancing policies and practices that reinforce corporate governance, uphold decent labor standards, and promote innovation-driven industries aligned with long-term growth objectives.

Finally, for future researchers, the scope of macroeconomic indicators could be expanded to include variables such as foreign direct investments (FDI), unemployment rates, government spending, and consumer confidence indices. Longer timeframes or higher-frequency datasets (e.g., quarterly or monthly data) may also be utilized to capture more detailed trends. Methodologically, future work may employ advanced models such as the Autoregressive Distributed Lag (ARDL) model or Vector Autoregression (VAR) to capture both short-run and long-run dynamics. Furthermore, integrating sustainability metrics such as ESG scores and green investments alongside traditional economic indicators may strengthen the link between financial markets and sustainable development.

References

Ahmed, R., Chen, X. H., Kumpamool, C., & Nguyen, D. T. K. (2023). Inflation, oil prices, and economic activity in recent crises: Evidence from the UK.

Energy Economics, *126*(1), 106918. https://doi.org/10.1016/j.eneco.2023.106918

Asian Development Bank (ADB). (n.d.). www.adb.org.ph. https://www.adb.org.ph

Balaba, J. M. L. (2017). Does the stock market drive the Philippine economy? *De La Salle University*, Manila. https://www.dlsu.edu.ph/wp-content/uploads/pdf/conferences/research-congress-proceedings/2017/RVREBM/RVREBM-I-003.pdf

Bangko Sentral ng Pilipinas (BSP). (2020). The exchange rate. https://www.bsp.gov.ph

Bangko Sentral ng Pilipinas (BSP). (n.d.). www.bsp.gov.ph. https://www.bsp.gov.ph

Bardullas, K. R. O., Co, V. J. T., Leung, A. H. P., & Tadeo, A. A. J. (2023, April 4). Granger causality between stock market and selected macroeconomic indicators: Evidence from the Philippines [Bachelor's thesis, De La Salle University, Manila].

Bato, M., & Viray, E. (2024). Exploring the effects of high national debt on household consumption and foreign direct investments. https://online.fliphtml5.com/bxkrc/vfgh/#p=1

Belke, A., Dubova, I., & Ulrich, V. (2017). Long-term interest rate spillovers from major developed economies to emerging Asia (Working Paper No. 705). Asian Development Bank Institute. https://www.adb.org/publications/long-term-interest-rate-spillovers-emerging-asia

Bloomberg. (n.d.). www.bloomberg.com. https://www.bloomberg.com

Bustamante, C. B., & Viloria, R. B. (2021). Extent of sustainability practices in San Beda University: The basis for action plan formulation. *Bedan Research Journal*, *6*(1), 171–195. https://doi.org/10.58870/berj.v6i1.26

Chen, J. M. (2021). The capital asset pricing model. *Encyclopedia*, *1*(3), 915–933. http://dx.doi.org/10.2139/ssrn.3844183

Francisco, E., & Poblete, A. (2024, March 7). Historically low valuation. *Philstar Global*. https://www.philstar.com/business/2024/03/07/2338563/historically-low-valuation

Guinigundo, D. C. (2020). The impact of the global financial crisis on the Philippine financial system: An assessment. *BIS Publication*. https://www.bis.org/publ/bppdf/bispap54s.pdf

Investopedia. (2023, August 23). How central banks affect interest rates. https://www.investopedia.com/ask/answers/031115/how-do-central-banks-impact-interest-rates-economy.asp

Mapa, C. D. (2024). Summary inflation report consumer price index (2018=100): October 2024. Philippine Statistics Authority (PSA). https://psa.gov.ph/price-indices/cpi-ir/node/1684065264

Masangkay, G. (2020). An empirical analysis on the relationship between Philippine GDP and the PSEI price levels [Bachelor's thesis, University of Sto. Tomas]. *ResearchGate*. https://www.researchgate.net/publication/350071612_An_Empirical_Analysis_on_the_Relationship_Between_Philippine_GDP_and_the_PSEI_Price_Levels

Migrino, J., Batangan, A., & Abello, R. (2023). Covid-19 infections wave mortality from surveillance data in the Philippines using machine learning. https://online.fliphtml5.com/bxkrc/sgoy/#p=1

Miguel, E. B. S. (2019). Interrelationship between Philippine Stock Exchange Services Sector Index and selected macroeconomic indicators. *Indian Journal of Science and Technology, 12*(1), 1–10. https://doi.org/10.17485/ijst/2019/v12i30/145444

Moral, M. A. (2024, March 11). Unfolding the trajectory of the Philippine stock market. *Business World*. https://www.bworldonline.com/special-features/2024/03/11/580856/unfolding-the-trajectory-of-philippine-stock-market/

Moral, M. A. (2024). Unfolding the trajectory of the Philippine stock market. *Business World*. https://www.bworldonline.com/special-features/2024/03/11/580856/unfolding-the-trajectory-of-philippine-stock-market/

Ochave, R. M. D. (2025). PSEi declines further on GDP miss, cautious Fed. *Business World*. https://www.bworldonline.com/stock-market/2025/01/30/649999/psei-declines-further-on-gdp-miss-cautious-fed

Oner, C. (2020, July 30). Inflation: Prices on the rise. *International Monetary Fund*. https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/Inflation

Ong, H. (2024). Insights on how the Philippine stock market was affected by economic conditions. *Inquirer Business*. https://business.inquirer.net/461213/why-the-philippine-stock-market-will-fall

Organisation for Economic Co-operation and Development (OECD). (2024). OECD Capital Market Review of the Philippines 2024. https://www.oecd.org/en/publications/oecd-capital-market-review-of-the-philippines-2024_80afb228-en.html

Philippine Statistics Authority (PSA). (n.d.). www.psa.gov.ph. https://www.psa.gov.ph

Philippine Stock Exchange (PSE). (n.d.). www.pse.ph. https://www.pse.ph

Rehana, R., Zehrab, I., Chhaprac, I. U., & Pooja, M. (2019). The relationship between exchange rate and stock prices in South Asian countries. *International Journal of Innovation, Creativity and Change, 6*(9). https://www.ijicc.net

San Miguel, E. B. (2019). Interrelationship between Philippine Stock Exchange Services Sector Index and selected macroeconomic indicators. *Indian Journal of Science and Technology, 12*(30), 2–10. https://doi.org/10.17485/ijst/2019/v12i30/145444

Satumira, N., & Salandanan, R. (2023). Post-traumatic stress and post-traumatic growth of selected victims of the pandemic. https://online.fliphtml5.com/bxkrc/sgoy/#p=166

Shojaie, A., & Fox, E. B. (2022). Granger causality: A review and recent advances. *Annual Reviews, 9,* 289–319. https://doi.org/10.1146/annurev-statistics-040120-010930

The World Bank. (2018). *Philippines Monthly Economic Developments*. https://documents1.worldbank.org/curated/en/959321521036041334/pdf/Philippines-monthly-economic-developments-March-2018.pdf

Trading Economics. (n.d.). Philippines economic indicators. https://tradingeconomics.com/phil

Appendices

Table 3.

17-year trend for GDP (nominal), Inflation, Phil-US Exchange Rates, Interest Rates, and Philippine Stock Exchange Index

Year	Nominal GDP (in million pesos, at current prices)	Inflation	Phil-US ER	Interest Rates	PSEi
2008	8,050,201	8.2	44.4746	5.0000	1872.8500
2009	8,390,421	4.2	47.6372	6.0000	3052.6800
2010	9,399,451	3.8	45.1097	7.2200	4201.1400
2011	10,144,661	4.7	43.3131	4.4500	4374.9600
2012	11,060,589	3.2	42.2288	2.5240	5812.7300
2013	12,050,592	2.6	42.4462	3.5000	5889.8300
2014	13,206,828	3.6	44.3952	4.0000	7230.5700
2015	13,944,157	0.7	45.5028	5.0900	7529.6000
2016	15,132,381	1.3	47.4925	3.6500	6840.6400
2017	16,556,651	2.9	50.4037	1.8790	8558.4200
2018	18,265,190	5.2	52.6614	4.7500	7466.0200
2019	19,517,863	2.4	51.7958	6.3500	7815.2600
2020	17,951,574	2.4	49.6241	1.0200	7139.7100
2021	19,410,568	3.9	49.2546	2.0000	7122.6300
2022	22,028,276	5.8	54.4778	5.5000	6566.3900
2023	24,318,611	5.98	55.6304	7.5500	6450.0400
2024	26,550,000	3.2	57.2907	5.7500	6528.8000

Figure 12.

Trend of the Philippine GDP (nominal)

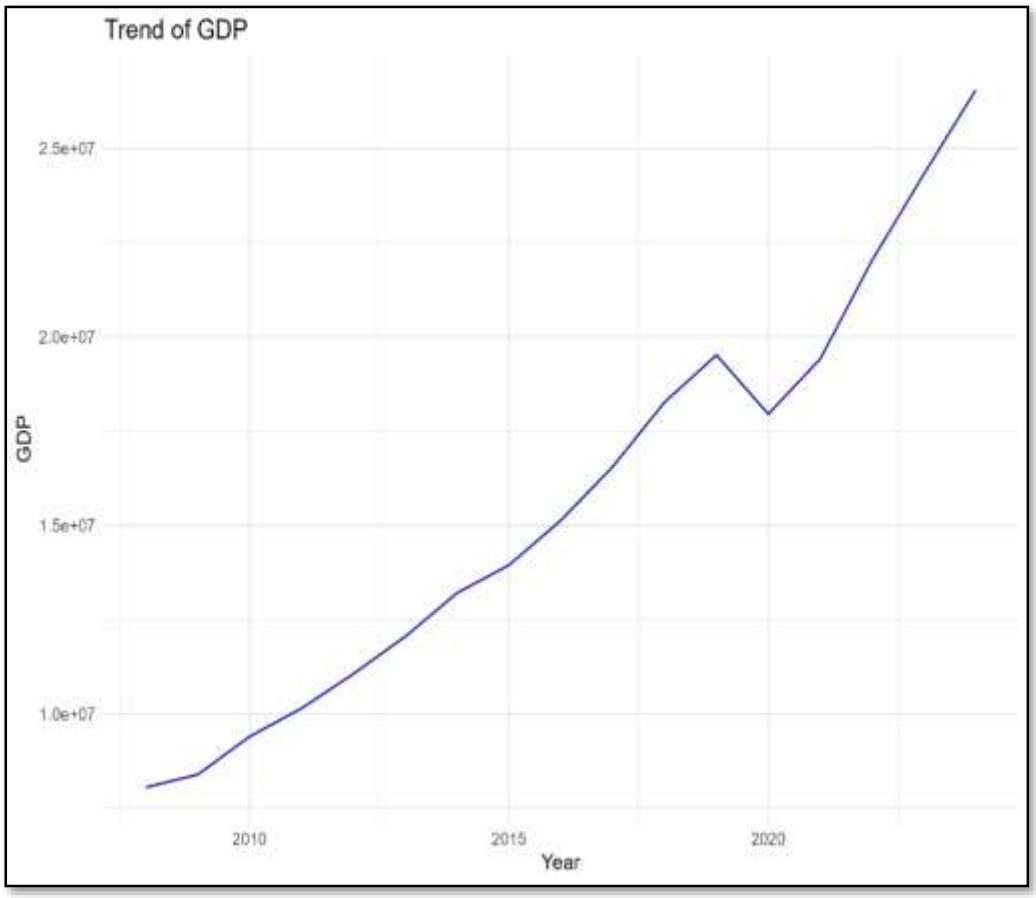


Figure 13.

Trend of the Philippine Inflation Rates

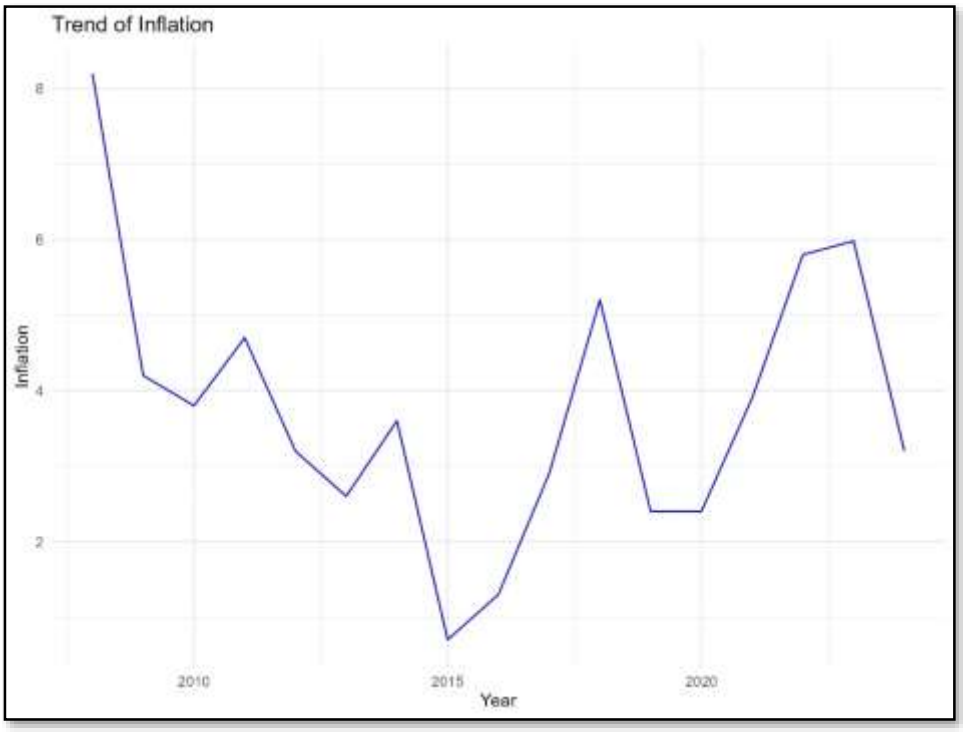


Figure 14.

Trend of the Philippine-United States of America Exchange Rates

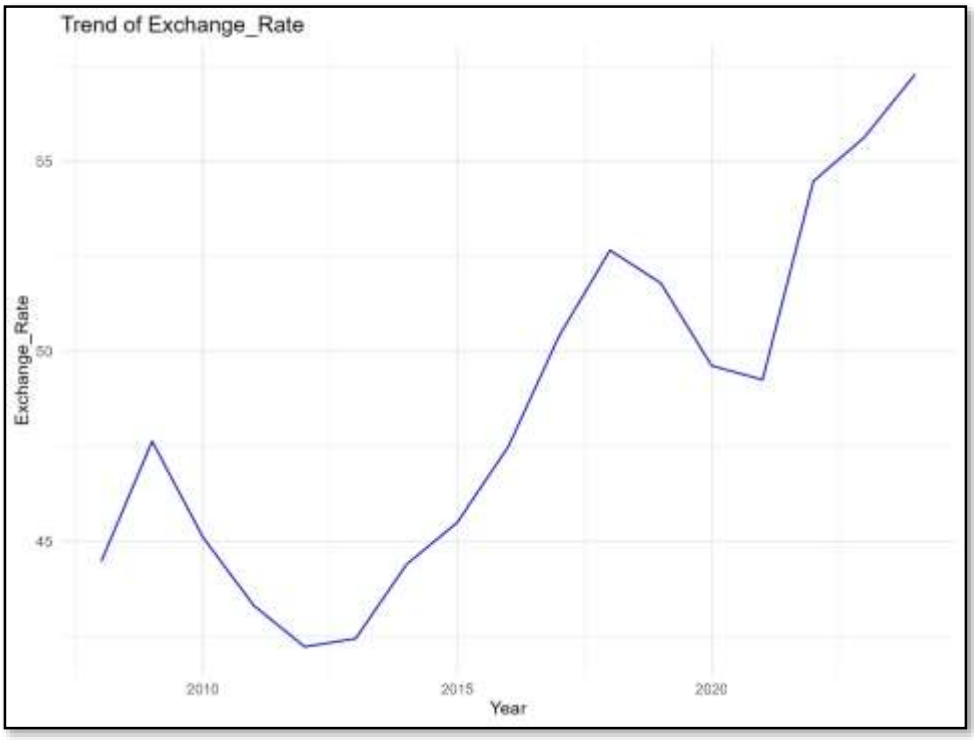


Figure 15.

Trend of the Philippine Interest Rates

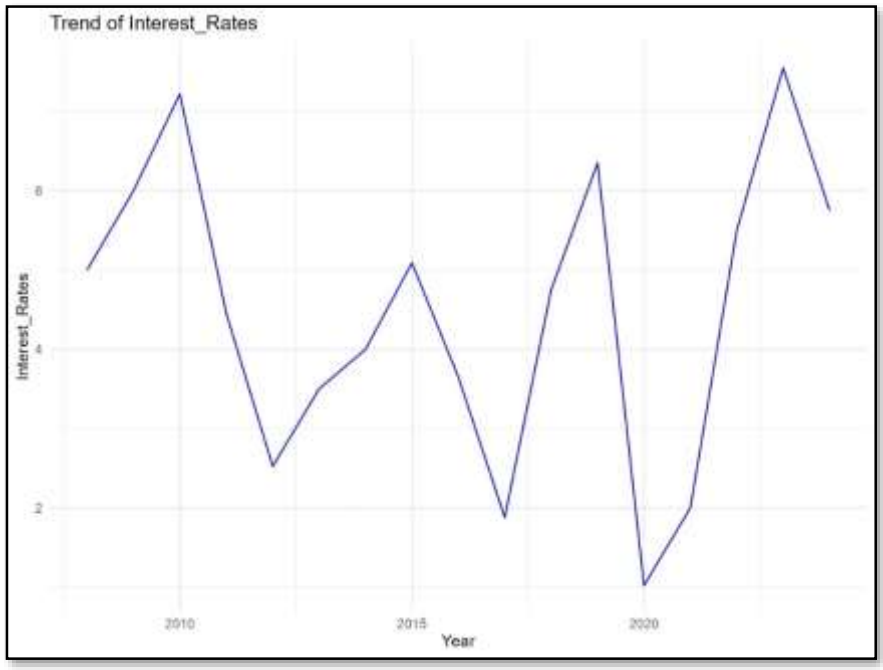
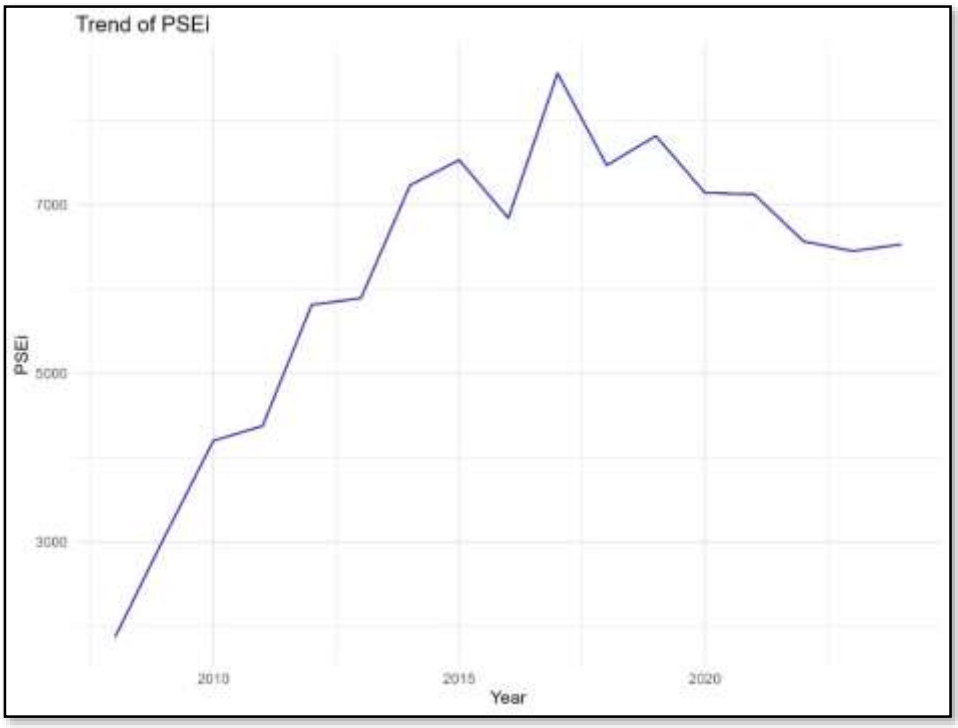


Figure 16.

Trend of the Philippine Stock Exchange Index


Trend of PSEI
7000
5000
3000
PSEI
2010
2015
2020
Year