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Research Article

The Relationship Between Consumer Price Index and Poverty Levels in the Philippines

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ABSTRACT

Analyzing the effects of Consumer Price Index (CPI) on levels of poverty in the Philippines gives insight into the economic situation of households. Changes in the CPI leads to changes in the general purchasing power of persons in the economy. This study analyzes the impact of changes in the CPI on levels of poverty in the Philippines. Due to unavailability of poverty data, this study utilizes Auto-regressive Integrated Moving Average (ARIMA) using RStudio to estimate and interpolate data gaps and perform temporal trend analysis. This study found that the increases in the CPI are associated with a decrease in poverty level suggesting that certain economic conditions linked with rising prices, such as increased economic activity or income adjustments, may contribute to poverty reduction. There is an inverse relationship between inflation and poverty. This study finds that the changes in the CPI directly impacts low income households in most cases.

Keywords: *Consumer Price Index (CPI), Inflation, Philippines, Poverty, Poverty Rate*

Introduction

In recent years, more and more information is being explored with regards to the current condition of the World. The main thing people look at is the level of poverty, especially with the recent societal and economic situations that are happening in the country. As more and more people are being aware of various problems arising and affecting their daily lives, there is a sudden surge of curiosity to what effects it might implicate to the population, specifically to people's daily experience.

Ever since the conceptualization of Economics, poverty is a theme that seems to be deeply integrated in it. Moatsos and Lazopoulos (2021), cited Sen (1985), that poverty is related to the lack of some fundamental freedoms and lack of agency of the individuals, and the fulfillment of one's capabilities. In this study they also highlighted that in terms of the Global perspective, poverty is the severe lack of the necessary economic resources, coined as "severe poverty" by the United Nations. While Sumner (2025), cited World Bank (2025), and

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Alfani et al. (2025), that World Bank classifies a person as poor when per-capita income or consumption is below a PPP-dollar line aligned with a CPI to a reference year.

Looking at the Global Poverty trends, Hasell et al. (2022), stated that extreme poverty has significantly decreased over the past generation. He further iterated that there are approximately 1.5 billion fewer individuals living below the International Poverty Line of \$3 per day than in 1990, reflecting an average decline of about 42.9 million per year, or about 118,000 people every day over the past 35 years (Hasell et al., 2022). However, in the same article, Hasell et al. (2022), revealed that preliminary predictions of people who live in poverty will be about 730 million by 2030, most of them from the Sub-Saharan region of Africa, (Lakner et al., 2025). This shows how poverty is slowly being eradicated but the reality of the matter is that some are still experiencing it.

Shifting the focus to ASEAN countries, it is important to note that poverty has various measures, but most prominent among these is the national poverty rate or also known as the poverty headcount ratio. This ratio is based on a country's poverty line that is set by the national government. The World Bank further explains in their article, *Poverty and Inequality Indicators* (2023), that the National poverty lines are thus estimates of poverty that are consistent with each nations' specific economic and social circumstances, reflecting the local experience of what it is to be considered not poor. It is worth remembering that poverty lines should not be used to compare national poverty rates, (World Bank, 2023) as this boundary is determined by different factors that every nation experiences differently.

With all that being said, based upon the USD 3.20 poverty line, Asia's poverty rate dropped from 73.6% in 1965 to less than 10% in 2014. While at the sub-regional level, in 1965 South-east Asia was the poorest region (UNU-WIDER, 2020). However by 2014, South Asia was the only sub-region that had not managed to end extreme poverty. Taiwan and Hong Kong eliminated extreme poverty in the late 1960s, Singapore in the mid-1970s. South Korea followed in the early 1980s, Malaysia in the late 1990s, and Thailand and Indonesia in the new millennium. These numbers indicate that while Asia,

specifically the ASEAN have had great progress in eradicating poverty, it still remains to be a problem.

Ultimately, poverty and inequality have been recurrent challenges in the Philippines. In the past three Publications: *Overcoming Poverty and Inequality in the Philippines: Past, Present, and Prospects for the Future Decades*, the Philippines has made remarkable progress in reducing poverty. Driven by high growth rates and structural transformation, the poverty rate fell by two-thirds, from 49.2 percent in 1985 to 16.7 percent in 2018 (World Bank, 2022). By 2018, the middle class had expanded to nearly 12 million people and the economically secure population had risen to 44 million (World Bank, 2022). According to BusinessWorld (2025), currently, data from the Philippine Statistics Authority (PSA) showed poverty incidence among the population fell to 15.5% in 2023 from the 18.1% estimate in 2021. This translated to 17.54 million poor Filipinos, 12.26% down from 19.99 million in 2021. This exceeded the 2023 poverty rate target of 16-16.4% (BusinessWorld, 2025).

Based on the aforementioned measure of poverty line, emphasizing the different measures for poverty and identifying its basis on the nations' economic circumstance. With this being said, almost all national poverty lines are anchored to the cost of a food basket—what the poor in that country would customarily eat—that provides adequate nutrition for good health and normal activity, plus an allowance for nonfood spending. This is also known as the Consumer Price Index.

Consumer price index (CPI) is a statistical estimate of the level of prices of goods and services bought for consumption purposes of consumers. According to Sibai, F., El-Moursy, & Sibai, A. (2024), CPI is an indicator of inflation and is tracked by many government and economic agencies to make decisions of major importance. It reflects the weighted average of consumer goods and services, and helps in weighing the purchasing power of a certain country in terms of its currency, and its cost of living. CPI is used as a measure of the change in the average retail prices of a fixed basket of goods and services commonly purchased by households relative to a base year (Costales, 2021). The composition of the basket is

periodically updated to reflect changes in consumer behaviour (Riley, 2023). Additionally, CPI is a monthly record that allows measuring throughout the time the variation of final consumption prices of a determined set of goods and services by households living in a specific urban area (Riofrío, Chang, Revelo-Fuelagán, & Peluffo-Ordóñez, 2020).

Whilst consumer price index (CPI) is a vital economic indicator, it has various limitations and gaps that can affect the accurate measurement of the true cost-of-living of consumers. According to Riley (2023), CPI assumes that consumers do not change their consumption patterns in response to price changes. In reality, consumers often substitute goods and services when prices rise, opting for less expensive alternatives. This behaviour is not fully accounted for in the traditional CPI calculation. Consequently, CPI is not a perfect measure of the cost of living, as such, one of the flaws of using CPI as an economic indicator is the substitution bias. Baker (2016), argues that because the CPI monitors the prices in a fixed basket of goods and services, it does not pick up the extent to which consumers are able to save by switching to items that rise less rapidly in price. Moreover, another limitation of CPI is that it cannot be used to measure differences in price levels or living costs between one area and another as it measures only time-to-time changes in each area. A higher index for one area does not necessarily mean that prices are higher there than in another area with a lower index (U.S. Bureau of Labor Statistics, 2018). This means that CPI does not completely grasp the variations in prices between urban and rural areas or between different regions within a country.

Looking at the index numbers that reflect how different situations affect things; information of this kind is making everyone more curious how other things are connected in other things. When talking about the topic of poverty, there are various researches that have connected it to various factors both in the topic of worsening and reducing it. One of the main factors that is commonly connected to this is the Inflation rate which is likely to worsen poverty, (Misa, Mohammed and Onyilo, 2025). A study in Indonesia has stated that for every 1% increase in inflation leads to about 0.16%

increase in the poverty rate (Masita, Halim and Suryati, 2024). However, there is a discrepancy in the body of knowledge, one of which is the study of Chairunnisha, Saptono & Nikensari (2024), that states that inflation has no significant effect on the poverty rate. Adeyemi-Tijani & Adeniyi (2025), takes it further by stating that these variables are negatively related. After all of these, Sulastri, Rahim & Armawaddin (2024) shared the variability of this relationship based on the presence of a mediating variable. While Meo et al. (2018), added that either positive and negative change in inflation has a positive effect on poverty rate.

To support Meo et al. (2018), the study of Paul and Sharma (2019) has used CPI data of India to derive the Inflation rate and then connected it to the poverty rate. Rizki and Solihati (2022), have also done the same in their study for Indonesia. While Nabi et al. (2020) used CPI to as an indication of inflation level in their research to determine the relationship of various factors to Poverty, one of them being the CPI. All of these researches arrived at the same result that Inflation has a significantly positive relationship to poverty. These studies are only a few of the researches that connect inflation to poverty. However, this still gives the researchers an idea of the possible relationship of CPI to poverty rate, even if these researches did not directly relate the two variables.

With this in mind, the study of Kaur and Jalil, titled Examining the Linkage between Poverty and Macroeconomic Variables in Malaysia: A Co-integration Analysis, published in 2017 speaks of how various macroeconomic factors may have had an effect on poverty level. This study explored the relationship of GDP, Unemployment, CPI and Tourism towards Poverty. In this study, they have concluded that the Consumer Price Index unidirectionally causes Poverty. This means that CPI can affect poverty but poverty cannot affect or influence CPI. This study may not focus mainly on the connection of CPI to Poverty but its findings and conclusion has provided the research with substantial basis for the possible relationship of the CPI and Poverty Rate.

Ultimately, the study of Arshad et al. (2019), entitled, "Price Levels and Poverty Nexus: A Case Study of Pakistan", states that there is a positive correlation between CPI and

Poverty Headcount Ratio. This result came after running the Poverty Headcount Ratio and Consumer Price Index in an Auto Regressive Distributed Lag model. This is the closest research that has been found to relate CPI and Poverty Rate directly, thus giving the researcher a solid foundation for conducting this research. Contradictory to this, Azhar (2020) conducted a Panel Regression to the Consumer Price index and poverty rate of 8 countries in the ASEAN (including the Philippines) and revealed that there is a negative relationship between CPI and Poverty Rate, specifically every 1% increase in it there is an equivalent of 23.4 decrease in Poverty Rate. Insofar as the review of related studies of this research, Azhar (2020) is the closest to be related to the Philippine economy. Reflecting the possible relationship between the variables more closely, than others as it has a closer proximity and likeness to the Philippines. Taking this into consideration, the relationship of CPI and Poverty levels are more likely varied in some key areas and is worth noting.

The recurring theme that arose from the existing body of knowledge is centered around the possibility of the correlation between CPI and Poverty. Various researches have indicated this possible relationship by directly linking Inflation, which uses CPI, to poverty (Paul and Sharma, 2019; Nabi et al., 2020; Rizki and Solihati, 2022). Although some research, to some degree, contradicted this information (Adeyemi-Tijani & Adeniyi, 2025 & Chairunnisha, Saptono & Nikensari, 2024). Some others revealed a varying (Sulastri, Rahim & Armawaddin, 2024) and consistent (Meo et al., 2018) effect on poverty rate. While another research described the relationship of these two variables as having unidirectional influence (Kaur and Jalil, 2017). However, there is research that states in one of their results that CPI and Poverty are positively correlated (Arshad et al., 2019). With all of these, a research in the Philippines by Sugui, Montojo & Bermudez (2023), concluded that Inflation affects the living standard of the Filipinos. These researches are the foundational basis for this research.

Despite all of these, there is still a lack of research done on the relationship of Poverty Rate and CPI. There is also a gap identified from the recommendation of Kaur and Jalil (2017), to

use the Poverty Headcount Ratio for future research. Furthermore, Misa, Mohammed and Onyilo (2025), suggested a larger dataset typically 30-40 years of observation. Finally, although there is research about Inflation and Living standards in the Philippines, there is still a lack of study regarding the relationship of Poverty Rate and Consumer Price index in the country. With this in mind, this research objective is to create an ARIMA model that will be the best linear unbiased estimator of the relationship of CPI and Poverty in the Philippines from 1985-2024 through answering the following research questions:

1. What is the data available of the Consumer Price Index in the Philippines and what are its descriptive properties?
2. What is the data available of the Poverty Rate in the Philippines and what are its descriptive properties?
3. What are the operational properties of the model used to determine the relationship of CPI and Poverty Rate?
4. What is the relationship between Consumer Price Index (CPI) to the Poverty Rate in the Philippines?

This research is grounded upon the following theories, mainly Capability Approach by Sen (1999). This theory argues that poverty is not simply a lack of income, but rather as a condition of capability deprivation where an individual lacks real opportunity to live a good life. In this theory, Sen gives emphasis to "functionings" as the state of being and doings, and "capabilities" as the real opportunities to achieve the function. Sen also points out that even if people have the same income, they cannot achieve the same achievements in life due to their different abilities to convert resources to welfare. This theory proposes ways to help lower and even solve poverty. First is prioritizing people's basic capability such as education, health, nutrition, social participation, and political freedom. Policies need to make sure that the available resources can actually be used by the individuals. Next is removing limited capabilities such as poor public service, lack of infrastructure, and discrimination as it affects the well being of an individual and affects their functioning. Lastly, the expansion of freedom as they can freely choose between different

options rather than being stuck to one option that is not going to help them improve their functioning.

Super Inequality: A General Theory of Mass Poverty by Aspalter, C. (2022) focuses on the extreme inequality rather than individual failure and lack of income. Mass poverty is a structural problem that causes uneven distribution of wealth, power, and resources to the society. Only a fraction of the population holds most of the resources, resulting in limited resources being distributed to the larger portion of the population. This theory stated that poverty is not an accident, but a system created and maintained by the rich and super powerful to create inequality so they can continuously benefit from the resources that are supposedly distributed equally. This theory states that solving poverty is not just about helping individuals but it needs to address the root cause, which is unequal distribution of wealth and power.

Economic theories of poverty by Davis and Sanchez-Martinez (2015) have many range of viewpoints. Poverty is understood differently in each theory. In classical theory, poverty is an individual choice and responsibility. Neoclassical theory says otherwise. The theory explains that the cause of poverty is beyond personal control, like market failure, lack of access to resources, and barriers to education and employment. The Keynesian theory gives emphasis to the role of the government in stabilizing the economy and providing public goods. Poverty is considered involuntary and caused by unemployment. Marxian theory or radical views, inequality and discrimination are the central cause of poverty. Another theory is social exclusion theory, which states that lack of interaction or participation in society is the cause of poverty. The theory suggests that a combination of approaches by addressing the cause stated by these theories can solve poverty.

In summary, the following theories present the causes of poverty. Sen's Capability Approach highlights how poverty is about deprivation of access and ability to participate in basic human capabilities. This is connected in this research in terms of how inflation can limit or expand these capabilities for an individual. The general theory of mass poverty is also connected in terms of how poverty is a system in which price changes play a crucial role in its

persistence and collapse. Finally, the economic theories of poverty relate in this research as it provides a viewpoint of the government intervention to alleviate the effects of poverty to individuals. These theories play a huge role in understanding how poverty is impactful and in formulating policies on how it can be properly eradicated.

Materials and Methods

Research Design

This study is based on a quantitative research method. The focus of the study is to find out patterns, relationships and trends using data of numerical values around poverty. Economic indicators such as poverty rate and Consumer Price Index (CPI) of a country were taken into consideration in this study. Statistical methods were used to test the effects of the changes in the Consumer Price Index on the Poverty Rate to measure the degree and direction of this relationship and to explain the findings in the light of the evidence from the data.

Sources of Data

The data for poverty rate and Consumer Price Index (CPI) were both sourced from the World Bank. The World Bank is a global development institution that provides financial assistance and serves as one of the largest consolidated sources of development data, offering comprehensive and well-analyzed datasets. The data for poverty rate and CPI used for this study spanned a period of almost 40 years from 1985 to 2024. However, poverty rate data is published every three years, with a two-year gap in between. To create a continuous time series, the ARIMA model was applied to interpolate or to estimate the missing annual data. This study uses credible and authoritative sources to deliver quality research findings.

The Consumer Price Index (CPI) is a statistical index originally defined as the total change over time in the market prices of a basket of basic goods and services representing the purchasing habits of a theoretical average consumer.

According to Jolliffe & Prydz (2017), the paper introduces a societal poverty line to better align global and national poverty estimates. The proposed societal poverty line is derived from various harmonized national poverty

lines, and has an intercept of \$1 per day and a relative gradient of 50 percent of median national income or consumption. The societal poverty line better reflects national poverty definitions than other relative measures, showing a steady decline since 1990, though at a slower rate than extreme poverty.

Both indicators are relevant for assessing the welfare of a population. As the CPI increases the cost of living for every individual and household rises. In the absence of an increase in real income the vast majority of those living below the poverty line will see their financial situation deteriorate as prices rise beyond their means, pushing them deeper into poverty. This would result in an increase in the poverty rate.

Data Analysis Technique

This study presents a descriptive trends analysis on the movement and behavior of the poverty rate and the Consumer Price Index (CPI) over a certain period. The trends on the poverty rate and CPI are presented in a line graph to clearly illustrate patterns such as trends, oscillations or levels. The analysis of these trends help identify changes in variables and possible relationships between them. It also helps determine if there are corresponding

changes in poverty levels for every increase in CPI and enables better economic interpretation and data-based decision making.

Statistical Treatment

Linear regression method was used to determine whether there is a linear relationship between the two variables (Mahara & Fauzan, 2021), wherein poverty rate is the dependent variable and CPI is the independent variable. To analyze the data more efficiently, the study carried out various statistical methods using RStudio to examine the results from the models. Subsequently, to analyze and forecast the data, ARIMA time series models were fitted to the variables CPI and poverty rate.

The study first employed the ordinary least squares (OLS) method, a fundamental econometric method, to fit a linear regression model for the squared residuals and examine whether the fitted model is significant to which was perceived using the Lagrange Multiplier test. Diagnostic testing was conducted afterwards to check for assumptions on the independence, homoskedasticity, normality, and linearity of the model using the linear regression models (lm) function, specifically the "lmtest" package in RStudio.

Table 1. Results of Lagrange Multiplier (LM) test

LM Test	P-value
Independence	2.2e-16
Homoskedasticity	0.7038
Normality	x = 0.3350 y = 0.3322
Linearity	0.05581

Based on the results, all of the assumptions are met except for the independence assumption, which has a p-value of 2.2e-16. This means that there is strong evidence of the presence of autocorrelation in the residuals. However, the test results indicate that the assumption of homoskedasticity (p-value: 0.7038) is met, which means that the errors have constant variance. The results also indicate that the normality assumption (p-value: x=0.3350, y=0.3322) is met. In addition, the test for linearity indicates that the linearity assumption is met (p-value: 0.05581), which means that, while marginally less than the typical significance level, the

results are sufficient to indicate that the assumption is met. Thus, the results indicate that, while the model meets most of the assumptions, the non-met assumption of independence could potentially need to be addressed, perhaps through the use of time series techniques.

As all of the assumptions were met except for the independence, the study opted for a series of data transformation models. After each transformation, Durbin-Watson (DW) test was performed on Cochrane-Orcutt and Prais-Winsten model, whilst Ljung-Box test was performed on General Least Squares (GLS) model,

to test if there is still a positive serial correlation in the residuals to each models.

Primarily, the study performed Cochrane-Orcutt to estimate the linear regression model whilst transforming the time-ordered regression, correcting for autocorrelation in the model analysis. According to Rahman, Parvez, & Islam (2023), autocorrelation occurs when the errors in a regression model are correlated with each other. This violates the assumption of independent and identically distributed errors, which can lead to biased estimates of the regression coefficients and incorrect inference. Hence, this method was utilized to transform the variables and resolve the autocorrelation in the residuals (Rahman, Parvez, & Islam, 2023).

Afterwards, Prais-Winsten was employed when correction for serial correlation failed in Cochrane-Orcutt. Prais-Winsten is a procedure in which it corrects the autocorrelation problems that OLS regression failed to address. It is a form of feasible generalized least squares (GLS) used when the violations are correlated

over time. However, unlike the Cochrane-Orcutt test, which drops the first observation in the time series, the Prais-Winsten transformation keeps the first observation. This makes it more efficient, particularly in smaller samples. According to Mottaleb, Mulimbi, Durand-Morat, & Han (2024), the Prais-Winsten method is highly advised due to its simplicity and techniques in handling autocorrelation.

Lastly, General Least Squares (GLS) was performed when correction for serial correlation failed in Prais-Winsten. GLS fits the linear model while explicitly modeling correlated errors so that coefficient estimates and standard errors are valid. Unlike OLS, which assumes constant variance (homoskedasticity) and no correlation between the residuals, GLS accounts for these violations by modeling the covariance structure of the error terms. This leads to more efficient parameter estimates under such conditions (Tijani, Lasisi, Shango-doyin, & Oladapo, 2025).

Table 2. Results of test for Autocorrelation after data transformations

Test for Autocorrelation (Independence Assumption)	P-value
Cochrane-Orcutt (DW Test)	1.671e-05
Prais-Winsten (DW Test)	2.2e-16
General Least Square (Ljung-Box Test)	0.0001467

The p-values for all trials remained far below the chosen level of significance (1.671e-05, 2.2e-16, 0.0001467) indicating that the models still have a problem with dependent observations and, despite these attempts, each transformation models does not meet the assumption of independence between observations. The results from all of the trial-and-error efforts, including changes to the model specification, data transformation and alternative testing methods, still yielded the same conclusion. However, since the same conclusion was repeatedly obtained, it became evident that the current method is insufficient to address the violation, leading to the consideration of a different statistical treatment that can better handle dependence in the data.

The researchers then prompted the use of the Auto-regressive Integrated Moving Average (ARIMA) model. ARIMA is a general statistical model used for time series data. ARIMA models are very commonly applied to

economic and temporal data such as CPI and poverty rate for better understanding past trends and prediction of future values based on previous data points.

Auto-Regressive Integrated Moving Average (ARIMA) is a statistical model that finds patterns from existing data to predict future values. Therefore, future predictions are described by past data and not by independent variables. It is one of the most used methods to forecast univariate time series data (Riofrío, Chang, Revelo-Fuelagán, & Peluffo-Ordóñez, 2020). It is used in the study to analyze the forecasted time-series data by modeling the underlying autocorrelations and trends.

The study first employed ARIMA to interpolate the missing annual observations. Hence, it filled in the two-year gap in the World Bank poverty data. Separately, ARIMA model was then performed to capture and correct serial dependencies. It is used to fit the time-series data so that the transformed residuals are

approximately independent. Simply put, the ARIMA model is used as a transformation tool to correct for autocorrelation, therefore modeling the error effects whilst estimating the CPI effect as an external regressor to the dependent variable, poverty rate, accounting for its autoregressive and moving average dynamics. To further check the validity of the ARIMA model, a series of diagnostic testing was performed.

First, a test to check the assumption on independence. Autocorrelation indicates that the

model has not fully captured the data patterns, suggesting the need for further refinement (Hussein & Abdillahi, 2025). The Ljung-Box test is performed to further validate if the residuals from the ARIMA time series model fits the data properly by checking if the autocorrelations of the residuals are small enough to be considered random meaning they are independent and lack significant autocorrelation, hence supporting the performance of the model.

Table 3. Results of Ljung-Box test

Ljung-Box Test	P-Value
Independence	0.5571

The Box-Ljung test showed a p-value of 0.5571, which is higher than the 0.05 significance level. Therefore, it can be concluded that there is no significant autocorrelation left in the residuals after modeling. In other words, the ARIMA model has accounted for the time-dependent structure of poverty levels, and no systematic pattern remains unexplained. Hence, the estimated association between CPI and poverty can be considered more reliable.

Moreover, to test for homoskedasticity in the model, ARCH test was employed. ArchTest is used to detect the Auto-regressive

Conditional heteroskedasticity (ARCH) effects in the residuals of the model as it is concerned with the serial correlation of the heteroskedasticity. A significant result indicates that past shocks help explain current variance. As it is a test of the variance process, it therefore complements autocorrelation checks from the Ljung-Box test. As such, this helps the study determine from the model that assumes the constant variance and confirm understated uncertainty or misleading confidence or intervals. This also helps concretize the argument that the model is efficient.

Table 4. Results of Auto-Regressive Conditional Heteroskedasticity test (Archtest)

Arch Test	P-Value
Homoskedasticity	0.3835

The ARCH test returned a p-value of 0.3835, which is greater than 0.05, so there is no sign of heteroskedasticity. This means that error variability in forecasting poverty levels remains unchanged over time. Consequently, changes in CPI affecting poverty will not be influenced by times of unexpectedly high or low volatility, thus making the parameter of the model estimates both reliable and consistent.

Furthermore, the Terasvirta test was performed to determine whether a linear model is sufficient or if a nonlinear specification is more appropriate for the study. This test examines the presence of nonlinear patterns in the relationship between variables, particularly in time series data. Therefore, if the test results show significance (p-value less than the chosen significance level), a nonlinear model is preferred, otherwise, a linear model remains appropriate.

Table 5. Results of Terasvirta test

Terasvirta Test	P-Value
Linearity	0.2773

The p-value obtained from the Terasvirta test was 0.2773, which is higher than 0.05, indicating that no significant nonlinear

relationship exists between the variables. This means that the relationship between CPI and poverty level could be sufficiently captured

through a linear model. Hence, the application of a linear ARIMA model featuring CPI as the independent variable is an appropriate way of analyzing the data.

Lastly, Shapiro-Wilk normality test was performed to assess and ensure if the model is normally distributed. This test is preferred as it

is the most applicable to the study with an observation of 40 years. Shapiro-Wilk tests the null hypothesis that the sample is normally distributed against the alternative hypothesis that it does not. Its p-value indicates that the deviation from normality is reasonable for the sample of the size of the data.

Table 6. Results of Shapiro-Wilk test

Shapiro-Wilk Test	P-Value
Normality	0.6407

The Shapiro-Wilk test gives a p-value of 0.6407, which means the residuals follow a normal distribution. This fulfills the fundamental assumption for performing statistical inference meaning that any hypothesis testing or

confidence interval construction based on the model will be valid. Hence, the study findings referring to the interplay between CPI and poverty levels can be deemed trustworthy.

Result and Discussion

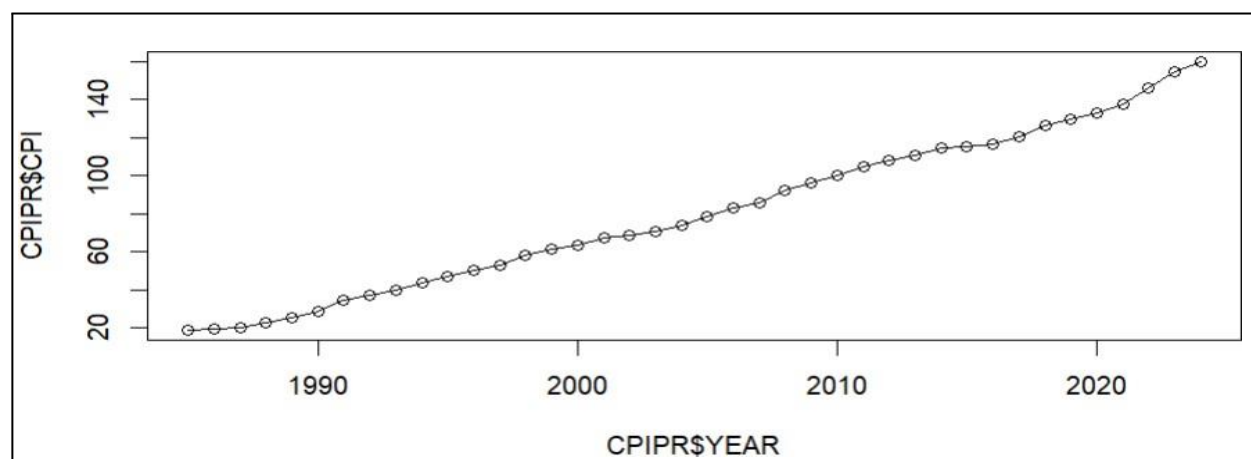


Figure 1. Line graph of Consumer Price Index (CPI) from 1985 to 2024

The Philippine Consumer Price Index (CPI), has reflected the growing prices of commodities in the Philippines from 1980-2024. The first two years of the data showed a single digit growth namely 1% (1985-1986) and 4% (1986-1987). These years were marked by a significant change in Philippine history and economy alike. It was the year after the EDSA people power, when Cory Aquino was sworn as the president of the Philippines after the 20 year dictatorship of Marcos Senior. As Sanchez (2021), said, "The EDSA protests in 1986 were a remarkable moment in Philippine history, a moment filled with the sense of unlimited hope and possibility. And for those with democratic dreams, it provides both a lesson and a warning

for the battles ahead". The following year the value surged to 2 digits which became 14% (1987-1988) and this 2 digit increase continued for 3 more years. The following year there was a steady increase of 12% (1988-1989 & 1989-1990) and then a dramatic increase to 19% (1990-1991). During these years was the height of the effect of the new 1997 constitution that was set by the newly sworn president Cory Aquino. Major national restructuring, mainly the restoration of Democracy and the effects of it has impacted these fluctuations. Then the growth rate decreased to 9% (1991-1992) and 7% (1992-1993) and then another sudden increase to 10% (1993-1994). These were the years of momentous events. The

Mount Pinatubo eruption (1991) to the closing of the American Military bases in Clark and Subic, to the eruption of Mount Mayon (1993). After these volatile shifts in prices of goods due to various situations that affected the Philippine economy, the increase seems to settle around a single digit increase. This means that for about 30 years (1994-2024), the data shows a stable increase in prices of goods. Although there are still changes in the Philippines, these were not enough to bring a drastic effect to the prices of goods. In fact the data shows that the highest value within these 30 years is 9% (1997-1998)

marked by the Regional Financial Crisis (Reyes, Manasan, Orbeta and de Guzman, 1999), while the highest increase is from 3% to 8% (2007-2008) which was when the Global Financial crisis happened (Pardalis and Sanchez, 2008).

It is interesting how these numbers reflect major events in the country. Major Economic changes and situations that everyone experiences through the rise in prices of the goods that Filipinos buy. These trends are not just numbers but also an indication of how Filipinos lived.

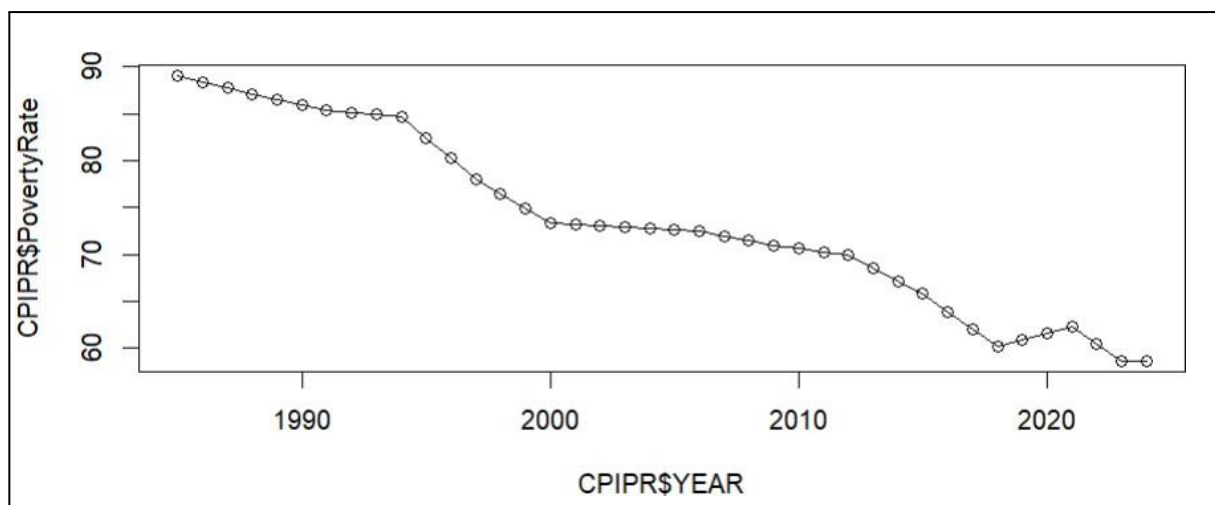


Figure 2. Line graph of Poverty Rate from 1985 to 2024

The Philippine Poverty Rate, interchangeable with the term Poverty Headcount Ratio, specifies the ratio of the Filipino population in the Philippines that lives below the Poverty Line. Based upon the data available, the leading trend in the poverty rate is downward sloping, meaning that from 1985-2024, there is a decrease in the number of Filipinos who are living in poverty. A closer look reveals that in the first 7 years (1985-1991), there is a consistent 7% drop in the ratio. This trend is the reflection of the implementation of the Medium-Term Philippine Development Plan of the ex President Cory Aquino (Collas-Monsod, 1998). Then following 3 years (1991-1994), the decrease eased at 3% per year. This is mostly attributed to creating more jobs and additional household income from the OFW's (Raquiza, 1997). After these easing, there was a significant increase in the rate of change to 2 digit for the next 6 years, ranging from 26% (1994-1995), 27% (1995-

1996), 28% (1996-1997) and 20% (1997-2000). This drastic shift was the reflection of the effectiveness of the Social Reform Agenda (SRA), which was formally launched in 1994 (Raquiza, 1997). And then there is a consistent decrease of 2% for 6 years (2000-2006). And then another increase in the rate of change to 7% for 3 years (2006-2009). These trends were due to the implementation KALAH-I-CIDSS (Kapit-Bisig Laban sa Kahirapan- Comprehensive and Integrated Delivery of Social Services) that was implemented in 2004 (Asian Development Bank, 2009). And then there is a slower rate of change of 5% for yet another 3 years (2009-2012). This was mainly the effect of the Pantawid Pamilyang Pilipino Program (4P's) that was implemented during 2008. And then another drastic increase in the rate of change for the following 6 years, namely; 20% (2012-2015), 28% (2015-2016), 29% (2016-2017), 30% (2017-2018). This is the time of Benigno

Aquino III and Capuno (2022) cited Cabuay and Hill (2019), describing that the growth of the Philippines was more robust than its neighboring countries. After this dramatic drop in the rate, the following 3 years (2019-2021) exhibited an increase in the poverty rate at around 11%-12%. In which was the year that the whole world experienced the Global Pandemic that halted everything. While the final 3 years (2021-2024), displayed another decrease in the poverty rate, going at about 29%-30%. The changes and trends in the Poverty Rate are grouped every three years interval because the actual available data is only available every

three years and the gaps were filled with the interpolated values. Despite this, every value was fitted accordingly and somehow made the whole picture complete when analysing the trends of the Poverty rate in the Philippines.

With this in mind, it is interesting to note that each shift in the Poverty rate can be traced back to the administration of that specific year. Noticing every significant decrease represents a government program to fight against poverty. Remembering and being aware of the government action towards a more improved nation, at least by eradicating poverty, a few percent at a time.

Table 7. Results of Auto-Regressive Integrated Moving Average Model

Variable	Coefficients
xreg	- 0.2141
Standard Error	0.0155
xreg = -0.2141 s.e. = 0.0155	t-value $\approx$ -13.81

Focusing on the xreg coefficient (-0.2141) and its standard error (0.0155), the calculated t-value is about 13.81. Since this number is much higher than the critical value ± 1.96 at the 95% confidence level, it means that the xreg coefficient is very statistically significant. This result implies that the Consumer Price Index has a considerable, negative, and statistically trustworthy effect on the present level of poverty. To put it another way, for every 1 unit of increase in the value of CPI, there is a 21% decrease in the value of the Poverty Rate. In the context of the paper on the link between CPI and poverty levels in the Philippines, the strong xreg effect is a crucial finding because it indicates that poverty is affected by external economic factors like CPI and should be considered in making future decisions. Regardless of the time-varying CPI, the significant external regressor result ($t = 13.81$) indicates that CPI negatively influences the future value of the Poverty Rate. This means that the impact of CPI on poverty should be viewed as part of a system where poverty is significantly dependent on the value of CPI.

The findings of this research reflects the direct relationship of Poverty Rate and Consumer Price Index that exhibits an opposite trend. Nevertheless, these results are in-lined with that of Azhar (2020) that indicates the negative relationship of CPI and Poverty Rate. This may

be due to the fact that although short term shocks to the price of goods, the long run inverse relationship of the variable indicates that an increase in CPI reflects an improved economic condition can outpace this negative effect (Azhar, 2020). The authors posed that a decrease in inflation leads to a decrease in aggregate supply and demand that in turn increases the unemployment and poverty rate (Azhar, 2020). Together with this, the United Nations (2010) also hypothesized that if inflation reduces real-wages of workers, making labor more cheaper, then corporations will be inclined to hire more to the point that the additional employment will offset the increase in prices brought by inflation. Between these two possible explanations, Azhar (2020), seems to be what fits the most in the Philippine context.

Conclusion

The analysis revealed that there is an increasing trend in the Consumer Price Index of the Philippines which reflects important insights regarding the price levels in the country. With this, the analysis also revealed that there is a decreasing trend in terms of the Philippines Poverty Rate. This means that as the Consumer Price Index increases, the poverty rate decreases. This is mostly attributed to the possibility that increase in prices (i.e. inflation) leads

to increased aggregate supply and demand consequently decreasing unemployment and poverty rate.

Additionally, this result coincides with the Capability Approach Theory that states poverty is about having the liberty of capability (Sen, 1999). Since Inflation is mostly associated with the growth of a nation, thus, having a growing economy facilitates more and more opportunities to improve the provisions of basic capabilities to the people; it can also improve facilities and ultimately facilitate a growing capacity of the citizens. The result is also connected to the Economic Theories of Poverty that states how poverty is somehow outside of one's control due to many factors (Davis & Sanchez-Martinez, 2015). Highlighting how the government can play a huge role in aiding its citizens to get out of poverty through proper policies. Lastly, it agrees with the claims of the General Theory of Mass Poverty in terms of poverty as a system (Aspalter, 2022), and thus, it can be changed for the benefit of everyone.

Recommendation

In all of this, the research findings of this study that goes against some of the literature, it is still worth looking into the topic with a fresh perspective. Based on the conclusion of the study, this research recommends the following:

Major national events such as economic crises, natural disasters, or global disruptions often trigger noticeable changes in price levels, with the burden felt most heavily by ordinary households. In the Philippine context, where a significant portion of income is spent on basic necessities, sudden increases in the prices of food, fuel, and utilities can quickly erode purchasing power. Because of this, it is essential for the government to implement timely and effective policies that cushion the impact of these price shocks. One practical approach is the strategic use of price controls, such as setting price ceilings on essential commodities. While such measures must be carefully managed to avoid supply shortages, they can provide immediate relief to consumers during periods of volatility.

Efforts to reduce poverty should also remain a central priority. Existing government programs have contributed to improvements in the poverty headcount ratio at the societal

poverty line, indicating that policy interventions can make a meaningful difference. However, the effectiveness of these initiatives depends not only on their continuation but also on how well they are implemented and targeted. Enhancing beneficiary identification, minimizing leakages, and ensuring that assistance reaches the most vulnerable sectors are critical steps in reducing the number of Filipinos living in poverty.

Although some findings suggest that inflation may coincide with reductions in poverty—possibly due to increased economic activity—this does not diminish the challenges it poses, particularly for low-income households. Rising prices disproportionately affect those with limited and fixed incomes, making it harder for them to meet basic needs. Therefore, it remains crucial to strengthen social protection mechanisms, such as cash transfer programs, subsidies, and employment opportunities, to help these households cope with the rising cost of living and maintain a decent standard of living.

Finally, this research highlights opportunities for further study. Future researchers are encouraged to incorporate population as a moderating variable when analyzing poverty rates, as demographic changes can significantly influence economic outcomes. Additionally, employing more advanced statistical techniques that capture both short-run and long-run relationships among variables would provide a more comprehensive understanding of how inflation, policy interventions, and other factors interact over time. Such approaches can offer deeper insights into the dynamics of poverty and inform more effective and sustainable economic policies in the Philippines.

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