



The Impact of Inflation on Exchange Rate Depreciation in the Philippines: A Systematic Review

Dorothy Eloise M. Bernadoz *

Mindanao State University,
Philippines

Hamdoni K. Pangandaman

Mindanao State University,
Philippines

Saddam M. Solaiman

Mindanao State University,
Philippines

Sri Hasniyah C. Balinte

Mindanao State University,
Philippines

Thamer Edres

Mindanao State University,
Philippines

Zyra Jean Salazar

Mindanao State University,
Philippines

Sittie Maida Abdul

Mindanao State University,
Philippines

Damiarah Mangigin

Mindanao State University,
Philippines

Sittie Aisah M. Darapa

Mindanao State University,
Philippines

Corresponding author:

Dorothy Eloise M. Bernadoz, Mindanao State University, Philippines ✉ Bernadoz.dm146@s.msumain.edu.ph

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Abstract

Background: Inflation and exchange rate depreciation are critical macroeconomic variables affecting economic stability, particularly in emerging and developing economies. Understanding their relationship is essential for effective monetary policy. However, empirical findings remain fragmented due to differences in methodologies, country contexts, and analytical approaches.

Aims: This study systematically reviews and synthesizes empirical literature on the relationship between inflation and exchange rate depreciation, focusing on key determinants, transmission mechanisms, and policy implications across economic contexts.

Methods: A systematic review was conducted following PRISMA guidelines. Searches were performed across ScienceDirect, Wiley Online Library, SpringerLink, ProQuest, Sage Journals, Taylor & Francis, JSTOR, and Google Scholar. Of 187,773 records identified, 14 studies met the inclusion criteria after screening and eligibility assessment. Data extraction used a structured framework, study quality was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Tool, and data were synthesized using the Synthesis Without Meta-Analysis (SWiM) approach.

Results: Findings consistently show a significant relationship between exchange rates and inflation. Exchange rate pass-through (ERPT) is a key mechanism through which currency depreciation affects inflation, often asymmetrically. Oil price shocks, global economic conditions, money supply, policy rates, and government expenditure also influence inflation. Advanced econometric and machine-learning models, such as NARDL, VAR, and neural networks, improve forecasting accuracy and understanding of inflation-exchange rate interactions. Global shocks, monetary policy spillovers, and market expectations further affect both variables.

Conclusion: Inflation and exchange rate depreciation are closely interconnected through domestic and global factors. Effective policy requires context-specific responses, exchange rate stability, sound macroeconomic fundamentals, and robust analytical models. Future research should explore nonlinear dynamics and advanced predictive approaches.

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INTRODUCTION

Inflation and exchange rate movements are among the most closely monitored macroeconomic indicators, particularly in developing economies where external vulnerabilities and domestic price

instability often intersect (Olamide et al., 2022). Inflation, defined as the sustained increase in the general price level of goods and services, can significantly influence a country's currency value by affecting purchasing power, trade competitiveness, and investor confidence (Yiheyis & Musila, 2018). One of the most widely recognized theoretical frameworks explaining this relationship is Purchasing Power Parity, which posits that differences in inflation rates between countries lead to corresponding adjustments in exchange rates (Nagayasu, 2021). In this context, higher domestic inflation is generally associated with currency depreciation, as the real value of money declines relative to foreign currencies (Mafi-Kreft, 2003).

In the Philippines, the relationship between inflation and exchange rate depreciation has gained increasing attention due to recurring periods of price volatility and external economic pressures. As a small open economy, the Philippines is particularly sensitive to fluctuations in global commodity prices, capital flows, and monetary policy shifts in advanced economies. Episodes of rising inflation have often coincided with the weakening of the Philippine peso, raising concerns about imported inflation, trade imbalances, and overall macroeconomic stability (Guo et al., 2019). However, the extent to which inflation directly drives exchange rate depreciation remains a subject of empirical debate, as other factors such as interest rates, external debt, and political uncertainty may also play significant roles.

Existing literature presents mixed findings regarding the direction and strength of the relationship between inflation and exchange rate movements (Reyes, 2007). While some studies support the theoretical expectation that higher inflation leads to currency depreciation, others suggest a more complex and bidirectional relationship, where exchange rate depreciation itself contributes to inflation through higher import prices (Sen et al., 2020). This ambiguity highlights the need for a systematic and comprehensive synthesis of empirical evidence, particularly within the Philippine context, where country-specific dynamics may shape the inflation–exchange rate nexus differently compared to other emerging economies.

Given these considerations, this study aims to systematically review existing literature on the impact of inflation on exchange rate depreciation in the Philippines. By synthesizing findings from prior empirical studies, this research seeks to evaluate the consistency of evidence, identify methodological approaches, and examine the extent to which theoretical expectations align with observed outcomes. Furthermore, this review aims to highlight gaps in the literature and provide insights for policymakers, researchers, and economic planners in understanding the implications of inflation dynamics on exchange rate stability in the Philippines.

METHOD

Study Design

This study employed a systematic review methodology to examine the relationship between inflation and exchange rate depreciation in the Philippines. A systematic approach was adopted to ensure a comprehensive, transparent, and replicable synthesis of existing empirical literature. The study was guided by established principles of evidence synthesis, aiming to identify, evaluate, and integrate findings from relevant studies that analyze the macroeconomic link between inflation and currency movements. To structure the research process, the PICO (Population, Intervention / Exposure, Comparison, and Outcomes) framework was utilized in formulating a focused and answerable research question.

Given the macroeconomic nature of the variables, the study adapts the traditional PICO framework by treating inflation as the primary exposure variable influencing exchange rate behavior. Anchored in the theoretical premise of Purchasing Power Parity, this review seeks to assess whether increases in inflation are consistently associated with the depreciation of the Philippine peso. The guiding research question for this study is:

“What is the impact of inflation on exchange rate depreciation in the Philippines based on existing empirical literature?”

The systematic review focuses on studies that examine macroeconomic indicators within the Philippine context, including time-series analyses, econometric models, and comparative studies

involving emerging economies where relevant. By synthesizing findings across multiple studies, this research aims to determine the consistency, direction, and magnitude of the relationship between inflation and exchange rate movements, while also identifying variations in methodological approaches and key moderating factors.

Table 1. Description of PICO

PICO Elements	Description
People/ Participants	Philippine Economy; macroeconomic studies focusing on the Philippines
Intervention	Inflation rate (changes in general price level)
Comparison	Periods of low or stable inflation; or cross-country comparisons in selected studies
Outcomes	Exchange rate depreciation (decline in value of the Philippine peso relative to foreign currencies)

Search Methods

A comprehensive literature search was conducted across multiple academic databases to identify relevant studies examining the impact of inflation on exchange rate depreciation in the Philippines. The selected databases included **ScienceDirect** (8,168), **ProQuest** (143,935), **SpringerLink** (5,620), **Sage Journal** (1, 175), **Taylor & Francis** (3,320), **Wiley Online Library** (10), **JSTOR** (3,874), and **Google Scholar** (17,800), ensuring broad coverage of peer-reviewed journals, working papers, and economic studies. The search covered publications from **2020 to 2026** to capture both early and recent empirical analyses on macroeconomic dynamics in the Philippines and comparable emerging economies.

To ensure a systematic and exhaustive retrieval of literature, Boolean operators (AND, OR) were employed to refine and combine search terms. Quotation marks (") were used for exact phrase searching, while parentheses () were applied to group related concepts and improve search precision. The search strategy was designed to reflect key theoretical and empirical constructs associated with inflation and exchange rate movements, including concepts derived from Purchasing Power Parity. The following keywords and search strings were utilized:

("inflation" OR "inflation rate" OR "price level") AND ("exchange rate" OR "currency depreciation" OR "peso depreciation") AND ("Philippines" OR "emerging economies") AND ("impact" OR "effect" OR "relationship" OR "determinants").

In addition to database searches, a manual screening of reference lists from relevant articles was conducted to identify additional studies not captured through database queries. Grey literature, including reports from international financial institutions and policy papers, was also considered where appropriate to provide a more comprehensive understanding of the inflation–exchange rate relationship. All retrieved studies were subjected to an initial screening based on titles and abstracts, followed by a full-text review to determine their eligibility for inclusion in the systematic review.

Inclusion and Exclusion Criteria

The inclusion criteria for selecting studies in this systematic review were as follows: (1) empirical studies that examine the relationship between inflation and exchange rate movements, particularly currency depreciation; (2) studies focusing on the Philippines or including the Philippines as part of a comparative analysis involving emerging economies; (3) articles published in peer-reviewed international journals or reputable economic and policy publications; (4) studies published within the time frame of 2020 to 2025 to capture both foundational and recent developments in macroeconomic research; (5) studies employing quantitative methodologies such as time-series analysis, econometric modeling, regression analysis, or panel data analysis; and (6) articles written in English.

On the other hand, the exclusion criteria included: (1) studies that do not directly examine the relationship between inflation and exchange rate depreciation (e.g., studies focusing solely on inflation

or exchange rates without analyzing their interaction); (2) non-empirical works such as literature reviews, systematic reviews, meta-analyses, conference proceedings, editorials, commentaries, theses, and dissertations; (3) studies lacking sufficient methodological rigor or clear analytical framework; and (4) articles that are not accessible in full text or unavailable for download.

Screening of Articles

The screening process for this systematic review, which examines the impact of inflation on exchange rate depreciation in the Philippines, was conducted through a structured and collaborative approach to ensure methodological rigor and transparency. The screening process was primarily led by five reviewers: Dorothy Eloise M. Bernadoz (DEMB), Hamdoni K. Pangandaman (HKP), Saddam M. Solaiman (SMS), Sri Hasniyah C. Balinte (SHCB), and Thamer Edres (TE), who were responsible for the initial identification and assessment of relevant studies.

In the first phase, predefined keywords and search strings were applied across selected academic databases to retrieve potentially relevant literature. The initial screening involved a careful evaluation of titles and abstracts to determine their relevance to the inclusion criteria, specifically focusing on empirical studies that examine the relationship between inflation and exchange rate movements, particularly currency depreciation. Studies that did not align with the macroeconomic focus of the review were excluded at this stage.

In the second phase, full-text articles of the remaining studies were retrieved and assessed for eligibility based on the established inclusion and exclusion criteria. Only studies with complete, accessible, and methodologically sound data were included in the final synthesis. To ensure consistency and reduce selection bias, any disagreements among the primary reviewers were resolved through discussion and consensus, with additional validation provided by the remaining co-authors: Zyra Jean Salazar (ZJS), Sittie Maida Abdul (SMA), Damiarah Mangigin (DM), and Sittie Aisah M. Darapa (SAMD). This multi-reviewer process strengthened the reliability, validity, and transparency of the article selection procedure.

Data Extraction

A total of fourteen (14) studies that met the inclusion criteria were selected for data extraction. The reviewers employed a structured and systematic data extraction framework to ensure consistency in capturing relevant study characteristics across all included literature. Key information extracted from each study included authorship, year of publication, country or regional context, research design, setting, analytical or econometric model, study duration or data coverage, key findings, and the specific components of macroeconomic or financial outcomes examined.

The included studies were predominantly quantitative in nature, employing a wide range of econometric and computational approaches such as Non-linear Autoregressive Distributed Lag (NARDL), Autoregressive Distributed Lag (ARDL), Vector Autoregression (VAR/BVAR), Mixed Data Sampling (MIDAS), Generalized Autoregressive Conditional Heteroskedasticity (GARCH)-based frameworks, survey-based econometric models, and machine learning techniques including Recurrent Neural Networks (RNN) and Feedforward Neural Networks (FNN). These methodological approaches were applied across diverse macroeconomic and financial contexts, including inflation dynamics, exchange rate pass-through, monetary policy spillovers, banking sector behavior, financial development measurement, and international trade volatility (Fang et al., 2021; Hoang & Wiegratz, 2022).

Across the selected studies, common analytical themes emerged, particularly the role of exchange rates, inflation drivers, global and domestic shocks, and monetary policy regimes in shaping macroeconomic outcomes. Several studies also highlighted asymmetric effects, non-linear relationships, and time-varying dynamics, demonstrating the complexity of macro-financial linkages across both emerging and developed economies.

The extracted data were systematically organized in a comprehensive summary table (Table 2, Appendix 1), allowing for comparative analysis of methodological approaches, empirical results, and economic interpretations across different country settings and time periods. This structured synthesis provided a clear overview of how macroeconomic variables interact within different econometric frameworks and supported the identification of consistent patterns, particularly the dominance of

external shocks (such as oil prices and global monetary policy) and the significant role of exchange rate movements in influencing inflation, output, and financial stability.

Overall, the data extraction process provided a strong empirical foundation for synthesizing evidence across heterogeneous studies and enabled a coherent assessment of macroeconomic relationships and financial dynamics relevant to the objectives of this systematic review.

Quality Assessment of Selected Articles

To ensure the methodological rigor and reliability of the included studies, the researchers employed the Joanna Briggs Institute (JBI) Critical Appraisal Tools for all selected articles. Given that the final dataset comprised a combination of qualitative case studies, quantitative econometric analyses, time-series studies, machine learning-based forecasting models, and cross-country empirical designs, the JBI suite of checklists was deemed the most appropriate framework for a unified quality assessment approach.

Each study was appraised according to its respective design using the appropriate JBI checklist, including tools for qualitative research, analytical cross-sectional studies, quasi-experimental studies, and time-series/observational designs. The appraisal focused on key methodological domains such as clarity of research questions, appropriateness of study design, validity of data sources, adequacy of sample and time coverage, robustness of statistical or analytical methods, identification and control of confounding factors, and transparency in reporting of results and limitations.

For quantitative econometric and machine learning-based studies, particular attention was given to model specification, appropriateness of estimation techniques (e.g., VAR, ARDL, NARDL, BVAR, MIDAS, and neural network frameworks), and robustness checks. Meanwhile, qualitative research was assessed based on congruity between research methodology, data collection methods, analysis processes, and interpretation of findings. Cross-sectional and multi-country studies were further evaluated in terms of comparability of datasets and validity of cross-country inference.

The critical appraisal process was independently conducted by the reviewers using standardized JBI checklists. Any discrepancies in scoring or interpretation were resolved through discussion and consensus to ensure consistency and reduce reviewer bias. This systematic and standardized evaluation strengthened the transparency, reliability, and methodological soundness of the study selection process, thereby enhancing the credibility of the synthesized findings.

Risk of Bias

The risk of bias assessment for the included studies was conducted using the Joanna Briggs Institute (JBI) Critical Appraisal Tools, in accordance with each study's respective research design. Given that the final set of included articles comprised a mixture of qualitative case studies, quantitative econometric analyses, time-series models, cross-country empirical studies, and machine learning-based forecasting approaches, the JBI checklists provided a standardized and appropriate framework for evaluating methodological quality across heterogeneous designs. Each study was assessed across core JBI domains, including clarity of research objectives, appropriateness of study design, validity and reliability of data sources, adequacy of analytical methods, identification and management of confounding variables, transparency of statistical reporting, and overall congruity between methodology and interpretation of findings. Studies employing econometric techniques (e.g., VAR, ARDL, NARDL, BVAR, MIDAS) were additionally evaluated based on model specification, robustness of estimation, and handling of structural assumptions, while qualitative studies were assessed based on data credibility, analytical rigor, and representation of participant perspectives (Pakasa et al., 2023).

Overall, most studies demonstrated low risk of bias, particularly those using large datasets and well-established econometric methods. However, a number of studies showed moderate risk of bias, primarily due to limitations in reporting methodological details, potential model specification constraints, or insufficient discussion of robustness checks. Despite these limitations, the majority of the evidence base was considered methodologically sound and appropriate for synthesis.

Discrepancies in appraisal were resolved through consensus among the reviewers to ensure consistency in judgment and adherence to JBI guidelines. This systematic evaluation strengthened the validity and transparency of the review findings.

Table 2. Joanna Briggs Institute (JBI) Critical Appraisal Tool for Mixed Methods

No	Author(s) & Year	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	% yes	Overall Interpretation
1	Pham et al.	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	U	85%	Low risk of bias
2	Urrutia et al.	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	92%	Low risk of bias
3	Pama et al.	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	U	Y	88%	Low risk of bias
4	Suraj et al.	Y	Y	Y	U	Y	Y	Y	Y	Y	U	Y	Y	Y	90%	Low risk of bias
5	Urrutia et al. (RNN study)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%	Low risk of bias
6	Karlsson & Månsson	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	92%	Low risk of bias
7	Tran & Nguyen	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	U	88%	Low risk of bias
8	Bagsic et al.	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	U	Y	88%	Low risk of bias
9	Beckmann & Czudaj	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	92%	Low risk of bias
10	Pham et al. (ERPT study)	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	92%	Low risk of bias
11	Anderl & Caporale	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	U	Y	88%	Low risk of bias
12	Ji	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	U	Y	Y	88%	Low risk of bias
13	Finck & Tillmann	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	92%	Low risk of bias

Note: (Y) criterion is fully met, indicating high methodological quality, (U) criterion is partially met or not explicitly stated, leading to some uncertainty, (N) criterion is not met, indicating a potential risk of bias or methodological weakness.

Data Analysis

The authors employed the Synthesis Without Meta-Analysis (SWiM) guidelines to guide the systematic analysis and narrative synthesis of findings across the included studies, ensuring transparency, reproducibility, and methodological rigor in handling heterogeneous quantitative and qualitative evidence. Given that the final sample consisted of diverse econometric, time-series, panel data, machine learning, and qualitative case study designs, SWiM provided an appropriate framework for integrating findings without statistical aggregation.

The data analysis process began with a structured organization of all included studies based on key extraction variables, including author(s), year of publication, country or region, research design, data setting, econometric or analytical model, time period, intervention or analytical focus, and reported outcomes (Appendix 1, Table 2). This systematic categorization allowed for clear identification of methodological similarities and differences across studies examining inflation and exchange rate dynamics.

Following data organization, the studies were grouped into thematic analytical clusters, namely: (1) exchange rate pass-through (ERPT) to inflation and prices, (2) inflation forecasting and macroeconomic prediction models, (3) spillover effects of global monetary and financial shocks, (4) macroeconomic determinants of exchange rate volatility and inflation, and (5) financial sector responses to exchange rate fluctuations. This thematic grouping enabled a structured comparison of empirical findings across different analytical perspectives.

The synthesis further examined variations in methodological approaches, including nonlinear and linear econometric models (e.g., NARDL, ARDL, VAR/BVAR, MIDAS), panel regression techniques, and machine learning approaches such as neural networks. Particular attention was given to how these models captured short-run and long-run dynamics, asymmetries, nonlinearities, and cross-country transmission effects in inflation–exchange rate relationships.

A comparative narrative analysis was then conducted to identify recurring empirical patterns, including the consistent influence of exchange rate movements on inflation, the dominant role of external shocks such as oil prices and global monetary policy, and the varying impact of domestic structural factors such as trade openness, exchange rate regimes, and financial development. Differences in findings across countries and time horizons were also systematically examined to highlight contextual variability (Labini et al., 2024).

To support synthesis and interpretation, all extracted data were summarized in a comprehensive table (Appendix 1, Table 2), which facilitated cross-study comparison of design characteristics, analytical methods, and key findings. This structured approach ensured consistency in interpretation and allowed for a transparent assessment of how inflation and exchange rate dynamics interact across different macroeconomic environments.

Overall, the SWiM-guided analysis enabled a rigorous and coherent synthesis of evidence, highlighting both convergence and divergence in findings while maintaining methodological transparency in the review process.

RESULTS

Characteristics of the selected studies

A total of fourteen (14) studies were included in the final review. Based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (Figure 1), an initial 187,773 articles were identified through database searching across multiple academic platforms. Of these, 119,260 records were excluded using predefined limiters such as publication type, accessibility, language, and relevance to the study topic. A further 66,867 articles were removed after title and abstract screening due to lack of direct relevance to the relationship between inflation and exchange rate depreciation, insufficient methodological rigor, or inappropriate study design. This resulted in 1,646 articles subjected to screening, from which 27 full-text articles were assessed for eligibility, along with one additional article identified through reference lists. After applying the inclusion criteria and quality assessment, 11 studies were excluded, resulting in a final sample of 14 studies included in the review (Figure 1).

The included studies covered a wide range of geographical contexts, with a strong focus on Asian and emerging economies. Several studies were conducted in the Philippines, while others examined ASEAN-5 countries, Southeast Asia, China, and broader global samples involving multiple economies. Additionally, some studies adopted a comparative approach, including both developed and developing countries such as the United States, India, and Singapore. This diversity in geographical scope provided a comprehensive perspective on macroeconomic dynamics across different economic systems.

In terms of research design, the majority of the studies employed quantitative econometric methodologies, reflecting the empirical nature of macroeconomic analysis. Common approaches included Non-linear Autoregressive Distributed Lag (NARDL), Autoregressive Distributed Lag (ARDL), Vector Autoregression (VAR) and Bayesian VAR (BVAR), as well as advanced techniques such as Mixed Data Sampling (MIDAS) and wavelet analysis. Several studies also incorporated machine learning models, including Multi-Layer Feedforward Neural Networks (MFFNN) and Recurrent Neural Networks (RNN), particularly in forecasting exchange rates and inflation. Only one study utilized a qualitative design, focusing on the role of artificial intelligence in educational settings.

The settings of the studies were predominantly macroeconomic and financial systems, including national economies, international trade environments, foreign exchange markets, and the banking sector. Specifically, studies examined inflation-targeting regimes, exchange rate behavior, banking sector lending responses, and global economic interactions. One study diverged from this trend by exploring the application of artificial intelligence in nursing education, highlighting the interdisciplinary relevance of the research.

The intervention or analytical models varied across studies but were largely centered on examining exchange rate pass-through (ERPT), inflation dynamics, forecasting models, and external economic shocks. Many studies focused on nonlinear and asymmetric modeling techniques to better capture real-world economic behavior. Others emphasized predictive modeling using machine learning, comparing their performance with traditional econometric approaches. The duration of the studies also varied considerably, ranging from short-term forecasting periods (e.g., 2018–2023) to long-term time-series datasets spanning multiple decades (e.g., 1990s to 2022 or 2000Q1–2019Q4). Some studies did not explicitly specify duration but were based on extensive macroeconomic datasets.

Overall, the included studies consistently highlighted the significant relationship between exchange rates and inflation, as well as the influence of external shocks such as oil prices and global monetary policies. While methodological approaches and country contexts varied, the findings

collectively emphasized the importance of accounting for nonlinearities, asymmetries, and structural differences across economies. The diversity of designs, models, and settings demonstrates the robustness of the evidence base and underscores the complexity of macroeconomic interactions examined in this review.

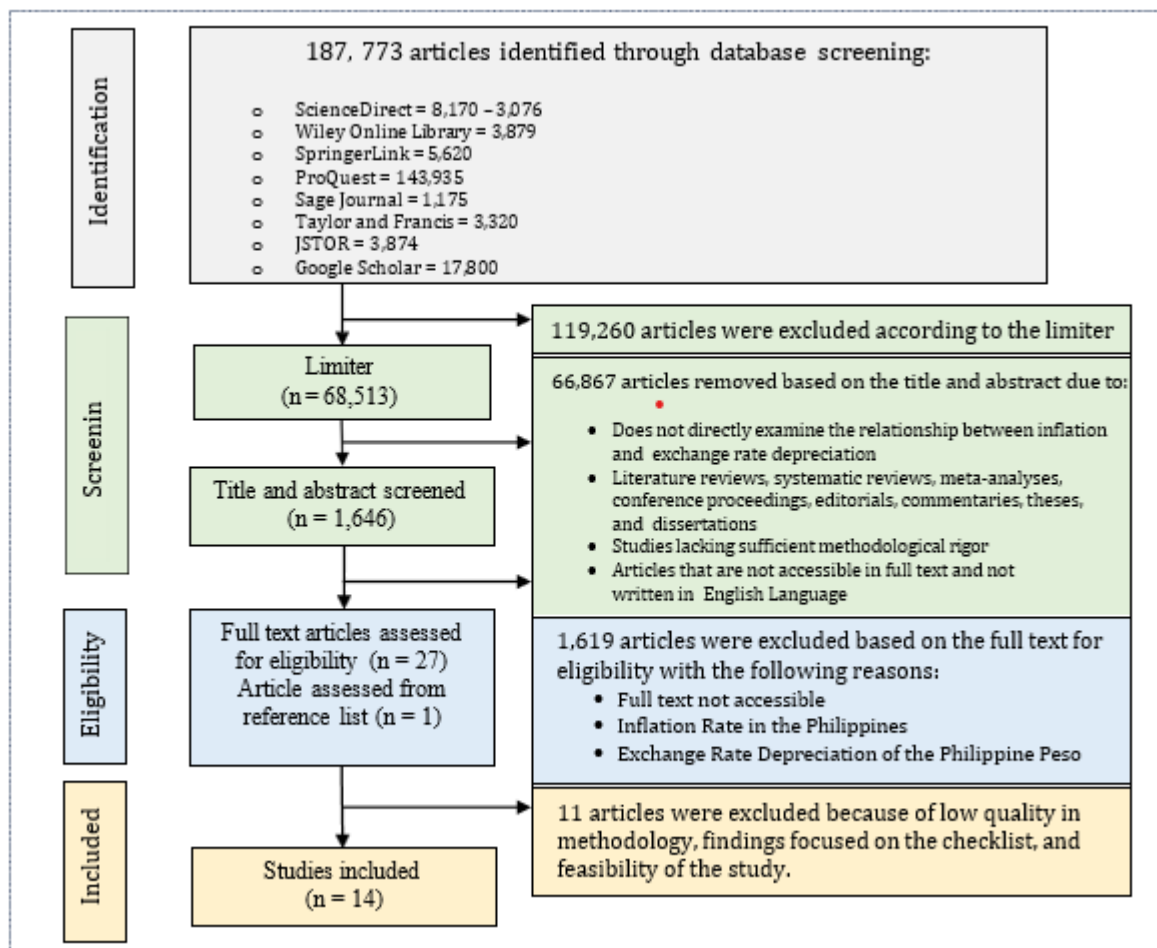


Figure 1. PRISMA flowchart

Participants and study settings

The included studies did not involve human participants in the traditional experimental sense, as the majority were based on macroeconomic and financial data analysis rather than primary data collection from individuals. Instead, the “participants” in this review can be understood as national economies, financial systems, institutions, and macroeconomic variables examined across different country contexts.

Across the fourteen (14) studies, the primary units of analysis included countries, economic regions, financial institutions, and market systems. Several studies focused on ASEAN-5 economies, including the Philippines, Indonesia, and Singapore, while others concentrated specifically on the Philippine macroeconomic environment using national data from institutions such as the Philippine Statistics Authority. Additional studies examined broader regional contexts such as Southeast Asia and Asian emerging economies, as well as global datasets covering up to 29 countries. Comparative analyses were also conducted between developed and developing economies, including countries such as the United States, China, India, and Singapore.

The study settings were predominantly macroeconomic and financial environments, including inflation-targeting regimes, foreign exchange markets, banking sectors, and international trade systems. For instance, several studies analyzed exchange rate pass-through (ERPT) within national economies, while others focused on bank lending behavior under currency depreciation, global

monetary policy spillovers, and oil price impacts on economic activity . One study specifically examined the rice trade system in Southeast Asia, highlighting trade-related dynamics in response to exchange rate fluctuations. Another study explored the role of macroeconomic fundamentals in shaping exchange rate expectations across multiple economies .

The datasets utilized across the studies varied in scope and duration, with many relying on secondary time-series data spanning several years or decades. Common data structures included quarterly and monthly observations, such as datasets covering periods from 2000Q1 to 2019Q4, 2003 to 2020, and even long-term ranges from the 1990s to 2022. Some studies also incorporated forecasting periods, extending analyses into future projections (e.g., 2018–2023 or 2019–2023), particularly in studies using machine learning models.

In addition to macroeconomic studies, one qualitative study diverged from this pattern by involving nursing students in an educational setting, examining the use of artificial intelligence tools such as ChatGPT in learning processes. This study provided a contrasting perspective by incorporating human participants and highlighting the application of technology in academic environments.

Overall, the diversity of participants and study settings reflects the interdisciplinary nature of the review, encompassing economic systems, financial institutions, and educational contexts. The reliance on large-scale secondary data and cross-country comparisons enhances the generalizability of findings, while the inclusion of varied economic environments allows for a more comprehensive understanding of the relationship between exchange rates, inflation, and broader macroeconomic dynamics.

Effects of Inflation on Exchange Rate Depreciation

The relationship between inflation and exchange rate depreciation emerged as a central theme across the included studies, with consistent evidence indicating that inflationary pressures significantly influence currency value and stability. Several studies demonstrated that higher inflation rates tend to contribute to currency depreciation, primarily due to reduced purchasing power and declining investor confidence ([Rahma et al., 2025](#)).

Empirical findings from ASEAN-5 economies revealed that exchange rate shocks have a significant impact on inflation, with evidence of asymmetric effects, particularly in countries such as the Philippines, Indonesia, and Singapore ([Pham & Sala, 2020](#)). These studies highlight that inflation does not respond uniformly to exchange rate movements; instead, the magnitude and direction of changes depend on whether the currency is appreciating or depreciating. This asymmetry suggests that inflationary pressures can both drive and be driven by exchange rate depreciation, reinforcing a bidirectional relationship.

In the Philippine context, Pama, Peliglorio, and Pizarro-Uy (n.d.) found that inflation is significantly influenced by monetary policy variables, particularly the policy rate in the short run. While exchange rate effects were present, their influence varied depending on economic conditions and model specifications. Similarly, Ji (n.d.) demonstrated that exchange rate appreciation tends to reduce inflation at early stages of production, though its impact on consumer prices remains moderate, indicating that the transmission of inflation across economic sectors is uneven.

Further evidence from global and multi-country studies supports the notion that inflation expectations play a critical role in exchange rate movements. Beckmann and Czudaj (2002–2023) found that rising inflation expectations are generally associated with currency depreciation, while stronger economic growth expectations contribute to currency appreciation. This highlights the importance of forward-looking expectations in shaping exchange rate dynamics.

Overall, the findings suggest that inflation acts as both a driver and consequence of exchange rate depreciation, with the strength and direction of this relationship influenced by structural factors, policy regimes, and market expectations. The presence of nonlinear and asymmetric effects further underscores the complexity of inflation–exchange rate interactions across different economic contexts.

Role of External Shocks and Macroeconomic Factors

External shocks and macroeconomic fundamentals were consistently identified as key determinants influencing both inflation and exchange rate dynamics. Among these, oil price

fluctuations and global monetary policy shocks emerged as the most significant external drivers across multiple studies.

Oil price shocks were found to have a substantial and often dominant impact on inflation, particularly in oil-importing economies. Studies on ASEAN-5 countries indicated that oil prices are the most influential determinant of inflation, surpassing other macroeconomic variables such as money supply and output growth (Pham & Sala, 2020). Similarly, demonstrated that oil price increases tend to stimulate economic activity in the short run but have negative long-term effects, reflecting the complex and time-varying nature of energy shocks. Global monetary policy spillovers also play a critical role in shaping macroeconomic outcomes. found that monetary policy shocks from major economies such as the United States, Japan, and China significantly affect inflation, interest rates, and economic growth in Southeast Asia. The effects were particularly pronounced in countries with pegged exchange rate regimes and high levels of trade openness, indicating greater vulnerability to external influences (Hendrati et al., 2023; Oanh & Nguyen, 2024).

In addition to external shocks, several studies highlighted the importance of domestic macroeconomic factors, including money supply, interest rates, foreign direct investment (FDI), and current account balances. FDI and current account balances are major determinants of exchange rate volatility, while inflation also plays a significant role. In contrast, economies with strong export performance, such as China, tend to exhibit lower exchange rate volatility. Economic uncertainty was another important factor influencing inflation dynamics. Showed that economic policy uncertainty (EPU) has a stronger impact on inflation than oil price uncertainty, particularly under nonlinear modeling frameworks. This finding emphasizes the role of policy credibility and stability in maintaining macroeconomic balance (Anderl & Caporale, 2023).

Overall, the findings indicate that both external shocks and domestic macroeconomic fundamentals interact dynamically to influence inflation and exchange rate movements. The dominance of global factors such as oil prices and international monetary policy highlights the increasing interconnectedness of modern economies, while domestic variables continue to shape country-specific responses.

Forecasting and Model Performance

A key area of focus across the included studies was the evaluation of forecasting models and their effectiveness in predicting exchange rates and inflation. The findings consistently demonstrated that advanced computational and machine learning models outperform traditional econometric approaches in terms of predictive accuracy. Studies conducted in the Philippines provided strong evidence supporting the superiority of machine learning techniques. Urrutia, Bariga, and Putong (n.d.) found that the Multi-Layer Feedforward Neural Network (MFFNN) outperformed the traditional Multiple Linear Regression (MLR) model in forecasting exchange rates. The results identified balance of payments and imports as the most significant predictors, highlighting the importance of external sector variables in exchange rate determination.

Similarly, Urrutia, Herrera, and Nicolas (n.d.) demonstrated that the Recurrent Neural Network (RNN) model achieved higher accuracy in forecasting inflation compared to MLR. Key predictors identified in this study included money supply and government expenditure, emphasizing the role of fiscal and monetary variables in shaping inflation trends. In contrast, traditional econometric models such as NARDL, ARDL, and VAR remained highly valuable for theoretical interpretation and causal analysis. These models were particularly effective in capturing long-run relationships, short-run dynamics, and asymmetric effects among macroeconomic variables. For instance, NARDL models were widely used to analyze nonlinear exchange rate pass-through, while VAR-based models provided insights into dynamic interactions among multiple variables.

Comparative studies further highlighted that nonlinear models generally provide better explanatory power than linear models, particularly in capturing real-world economic complexities. Anderl & Caporale, (2023) found that nonlinear approaches yield stronger and more accurate estimates of inflation responses to uncertainty shocks compared to linear frameworks. Despite the advantages of machine learning models in forecasting, their limited interpretability remains a key challenge. In contrast, econometric models offer clearer insights into causal mechanisms, making them more

suitable for policy analysis. As a result, several studies suggest that combining both approaches may provide a more comprehensive understanding of macroeconomic dynamics.

Overall, the findings indicate a growing shift toward integrating machine learning techniques with traditional econometric models, leveraging the strengths of both approaches. While machine learning enhances predictive performance, econometric methods remain essential for explaining underlying economic relationships, highlighting the complementary nature of these analytical frameworks in macroeconomic research.

DISCUSSION

The findings of this systematic review provide strong empirical evidence on the complex and dynamic relationship between inflation and exchange rate depreciation, highlighting the roles of macroeconomic fundamentals, external shocks, and methodological approaches in shaping these interactions. Across the included studies, a consistent pattern emerged: inflation and exchange rate movements are mutually reinforcing and highly sensitive to both domestic and global economic conditions. One of the central findings of this study is the significant and often bidirectional relationship between inflation and exchange rate depreciation. The reviewed studies consistently showed that rising inflation contributes to currency depreciation due to declining purchasing power and reduced investor confidence, while exchange rate depreciation further exacerbates inflation through higher import prices and cost-push pressures (Naimoğlu, 2024). This aligns with recent empirical research demonstrating that inflationary shocks significantly weaken currency value, particularly in emerging economies where exchange rate pass-through (ERPT) tends to be higher (Yiheyis & Musila, 2018).

Moreover, the presence of asymmetric and nonlinear effects observed in several studies reinforces the idea that macroeconomic relationships cannot be fully explained using linear frameworks. For instance, ASEAN-based studies revealed that inflation responds differently to positive versus negative exchange rate shocks (Krishnakumar et al., 2019), a finding supported by recent literature emphasizing nonlinear ERPT dynamics in developing economies. These asymmetries suggest that policymakers must consider the direction and magnitude of shocks when designing monetary interventions.

Another key finding of this review is the dominant role of external shocks, particularly oil price fluctuations and global monetary policy changes (Sedegah & Odhiambo, 2021). The reviewed studies consistently identified oil prices as a major driver of inflation, often outweighing domestic variables (Pham & Sala, 2020). This is consistent with recent studies showing that oil price shocks significantly influence both inflation and exchange rates, especially in oil-importing countries (Pham & Sala, 2020). Similarly, global monetary policy spillovers particularly from major economies such as the United States were found to significantly affect inflation and exchange rate stability in Southeast Asia (Miranda-Agrippino & Rey, 2020).

In addition to external factors, domestic macroeconomic variables such as money supply, interest rates, foreign direct investment (FDI), and current account balances were also found to significantly influence exchange rate behavior and inflation dynamics (Sajid et al., 2024). Studies focusing on developing economies highlighted that weak macroeconomic fundamentals tend to amplify exchange rate volatility (Aizenman, 1992). This aligns with recent evidence suggesting that sound macroeconomic policies and stable fiscal conditions are critical in mitigating inflationary pressures and exchange rate instability (Sule, 2024).

Another important contribution of this study is the comparison between traditional econometric models and machine learning approaches in forecasting macroeconomic variables. The findings indicate that machine learning models, such as Recurrent Neural Networks (RNN) and Multi-Layer Feedforward Neural Networks (MFFNN), generally outperform traditional models like Multiple Linear Regression (MLR) in predictive accuracy (Urrutia et al., n.d.). This is consistent with recent literature demonstrating the superior performance of machine learning techniques in capturing complex, nonlinear relationships in macroeconomic data (Jung et al., 2018).

However, while machine learning models excel in prediction, they often lack interpretability, which remains a strength of econometric approaches such as NARDL and VAR models. Despite the robust findings, several studies also highlight limitations and policy challenges. The presence of asymmetric effects and sensitivity to external shocks complicates the formulation of effective

monetary policies. For instance, economic policy uncertainty (EPU) was found to significantly influence inflation, often more strongly than traditional macroeconomic variables (Anderl & Caporale, 2023). This is supported by recent research emphasizing that uncertainty shocks can destabilize inflation expectations and exchange rates, particularly in emerging markets.

Furthermore, the findings suggest that while exchange rate adjustments can serve as a tool for correcting external imbalances, excessive depreciation may lead to inflationary spirals, especially in economies heavily reliant on imports. This underscores the importance of coordinated monetary and fiscal policies to stabilize both inflation and exchange rates. Overall, this study contributes to the growing body of literature by providing a comprehensive synthesis of empirical evidence on the inflation–exchange rate nexus. The findings emphasize the importance of considering nonlinear dynamics, external vulnerabilities, and methodological advancements in understanding macroeconomic relationships. The integration of machine learning and econometric approaches presents a promising direction for future research, particularly in improving forecasting accuracy while maintaining theoretical interpretability (Abouzaid & Boussedra, 2025; Silahtaroglu, 2024).

At the same time, the review highlights the need for policymakers to adopt flexible and context-specific strategies, taking into account the structural characteristics of their economies, exposure to global shocks, and the evolving nature of macroeconomic relationships in an increasingly interconnected global environment.

Implications for Future Research and Practice

The findings of this study carry important implications for both future research and macroeconomic policy practice, particularly in understanding and managing the complex relationship between inflation and exchange rate depreciation in an increasingly interconnected global economy. From a research perspective, the results highlight the need for more integrated and hybrid analytical approaches. While the reviewed studies demonstrated the effectiveness of both econometric models (e.g., NARDL, VAR, ARDL) and machine learning techniques (e.g., RNN, MFFNN), future research should explore the combination of these methodologies to improve both predictive accuracy and interpretability. Hybrid modeling approaches may offer a more comprehensive framework for capturing nonlinear dynamics while maintaining theoretical clarity, especially in forecasting inflation and exchange rate movements.

Additionally, given the consistent evidence of asymmetric and nonlinear relationships, future studies should further investigate the directional and magnitude-specific effects of economic shocks. More granular analyses such as sectoral-level or firm-level studies could provide deeper insights into how inflation and exchange rate fluctuations propagate across different parts of the economy. Longitudinal and high-frequency data analysis is also recommended to better capture short-run volatility and long-run structural trends.

Another important area for future research involves the role of external shocks and global spillovers, particularly oil price volatility and international monetary policy. The findings suggest that global factors significantly influence domestic macroeconomic stability; thus, future studies should focus on cross-country comparative analyses and regional integration effects, especially within ASEAN and other emerging market blocs. This would enhance understanding of how economic interdependence shapes inflation and exchange rate dynamics.

From a policy and practical standpoint, the findings underscore the importance of adaptive and forward-looking macroeconomic management. Policymakers, particularly central banks, should consider the presence of nonlinear and asymmetric effects when designing monetary policies. Traditional linear policy frameworks may not adequately address the complexities identified in this study, especially during periods of heightened volatility or external shocks. Moreover, the strong influence of external factors such as oil prices and global monetary policies suggests that countries especially developing and import-dependent economies should strengthen their economic resilience. This may involve diversifying energy sources, improving trade balances, and enhancing foreign exchange reserve management to mitigate the adverse effects of external shocks.

The findings also emphasize the importance of maintaining macroeconomic stability through sound domestic policies. Effective management of money supply, interest rates, and fiscal policy can help reduce inflationary pressures and stabilize exchange rates. In addition, strengthening financial

institutions and improving transparency in economic policymaking can enhance market confidence and reduce volatility. Furthermore, the increasing effectiveness of machine learning models in forecasting suggests that policymakers and financial institutions should consider integrating advanced analytical tools into their decision-making processes. However, it is equally important to ensure that these tools are used alongside traditional econometric models to maintain a balance between predictive performance and policy interpretability.

Finally, this study highlights the need for evidence-based and context-specific policy frameworks. Given the variation in findings across developed and developing economies, a one-size-fits-all approach is not appropriate. Instead, policymakers should tailor strategies based on their country's economic structure, exposure to global shocks, and institutional capacity. The study emphasizes that addressing inflation and exchange rate depreciation requires a multi-dimensional approach, combining robust analytical methods, sound macroeconomic policies, and proactive responses to global economic developments. Future research and practice should continue to evolve in response to these complexities, ensuring more effective and sustainable economic management.

CONCLUSION

This study systematically examined the relationship between inflation and exchange rate depreciation by synthesizing evidence from fourteen selected studies across various economic contexts. The findings consistently demonstrate that inflation and exchange rate movements are interdependent, with strong evidence of both direct and indirect transmission mechanisms influenced by domestic and global factors. The presence of asymmetric and nonlinear dynamics further highlights the complexity of these relationships, particularly in emerging and developing economies. Additionally, external shocks such as oil price fluctuations and global monetary policy shifts were identified as critical drivers shaping macroeconomic stability.

Furthermore, the study underscores the importance of employing diverse analytical approaches, including both econometric and machine learning models, to better understand and predict macroeconomic behavior. While machine learning techniques offer improved forecasting accuracy, traditional econometric models remain essential for interpreting causal relationships and informing policy decisions. The results also emphasize the need for adaptive and context-specific policy frameworks that account for structural differences across economies. Overall, this study contributes to the existing literature by providing a comprehensive and integrated understanding of the inflation-exchange rate nexus, offering valuable insights for both researchers and policymakers.

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