Journal of International Financial Trends
Vol. 2 (2026), No. 3, pp. 209-246
DOI: https://doi.org/10.55578/jift.2608.011

ARTICLE

Testing the Flow-Oriented vs. Portfolio Balance Hypotheses: Beyond Trade Channel Evidence of Balance Sheet Effects Dominance in Asia-Pacific OECD Equity and FX Markets

David Umoru[1,*], Beauty Igbinovia[1], Muhammed Adamu Obomeghie[2], Emoabino Muhammed[1], Imran Enike Abu[1]

[1] *Department of Economics, Edo State University, Iyamho Nigeria*

[2] *Department of Statistics, Auchi Polytechnic，Auchi, Nigeria*

*Corresponding author. Email: david.umoru@edouniversity.edu.ng, ORCID: 0000-0002-1198-299X

Received: 2 July 2026, Revised: 13 July 2026, Accepted: 28 July 2026, Published: 14 August 2026

Abstract

This study explores the dynamic, multi-horizon linkages between stock market prices and exchange rates across Asia-Pacific OECD countries to test the competing validity of the Flow-Oriented and Portfolio Balance hypotheses. Employing a wide-ranging econometric framework that integrates the Panel CS-ARDL model with Breitung-Candelon frequency-domain causality, Time-Varying Parameter Panel VAR (TVP-P-VAR), and asymmetric panel ARDL techniques, the research captures long-run equilibria, regime-dependent shifts, and structural asymmetries. The empirical findings decisively invalidate the traditional flow-oriented trade competitiveness perspective, revealing instead that currency depreciation and interest rate hikes inflict severe contractionary damage on equity valuations through a dominant Balance Sheet effect. As a result, asset market channels and sentiment-driven capital flows in Asia-Pacific countries with financial integration operate as stronger forces than traditional goods market mechanisms. On the contrary, the results strongly validate the stock-oriented Portfolio Balance model, demonstrating that bullish market sentiment and equity market expansions drive rapid, high-frequency currency appreciation via portfolio capital inflows. Asymmetric and time-varying estimations reveal that regional financial markets react significantly more aggressively to negative macro-financial shocks during stress regimes than to positive stimuli during economic expansions. These economies differ significantly in exchange rate arrangements, export dependence, capital market sophistication, institutional quality, and openness to international investment. The study contributed to the financial market literature by establishing that asset market channels and sentiment-driven capital flows have superseded traditional goods market mechanisms in financially integrated economies. Central banks should be positioned to understand both the limits of interest rate defenses and the need to handle asymmetric volatility. The findings of the research have broad implications that require policymakers, central banks and financial regulators to develop and execute policies which will achieve sustainable financial market growth. These insights urge policymakers to abandon static linear assumptions and adopt dynamic, macro-financial risk management frameworks to safeguard regional financial stability.

Keywords: Stock Market Prices, Exchange Rates, Asia-Pacific OECD, Currency Depreciation, Interest Rate Hikes, Market Volatility, Bear Markets, CS-ARDL, Quantile Regression, Portfolio Balance Model, Balance Sheet Effect, Asymmetric P-ARDL, Frequency-Domain Causality, TVP-P-VAR

JEL Classification: F31, G12, G15, C33, F32

https://doi.org/10.55578/jift.2608.011
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1. INTRODUCTION

Stock market price-exchange rate nexus is one of the most examined relations in international finance, yet causality and transmission mechanisms are still not clarified either theoretically or in practice. This theoretical dichotomy is largely pegged to two opposing frameworks: the Flow-Oriented model [1], which holds that exchange rate movements cause stock price movements through trade competitiveness, and the Stock-Oriented (or Portfolio Balance) model [2, 3], which asserts that movements in the stock market in turn cause changes in exchange rates through capital account flows and portfolio rebalancing. In spite of the rich literature, there is still a serious gap in research, especially in the context of those economies in the Asia-Pacific OECD. The traditional paradigm governing international macroeconomics has long debated the precise transmission mechanism connecting stock market prices and foreign exchange rates, traditionally segregating these dynamics into goods-market or asset-market frameworks. Empirical studies that have already been conducted provided conflicting evidence of either unidirectional causality or two-way feedback, and in a study by Bahmani-Óskooee & Sohrabian [4], short-run bi-directional causality was identified [5]. This discrepancy is an indication that conventional macroeconomic models, which are based on fundamental variables (interest rates and trade balances), are possibly underspecified. They tend to ignore the behavioural and psychological motivators of asset pricing, namely, market sentiment and market volatility. As the world moves into an era of high-frequency trading and highly integrated financial markets, the contribution of investor sentiment and systemic risk (volatility) cannot be overlooked. Under the classic flow-oriented hypothesis, currency depreciation is theorized to enhance an economy's export competitiveness, thereby driving corporate profits upward and ultimately stimulating domestic equity valuations. However, the rapid evolution of globalized financial networks over the past decade raises critical questions about whether this trade-centric perspective remains valid in highly integrated economies. This theoretical tension is particularly acute across Asia-Pacific OECD countries such as Japan, South Korea, Australia, and New Zealand, where structural shifts have increasingly decoupled corporate health from simple exchange rate fluctuations. Simultaneously, the competing portfolio balance model posits a reverse causal direction, stating that bullish equity market sentiment triggers massive capital inflows, which forces the domestic currency to appreciate. Despite the profound implications of these competing models for monetary policy, a definitive consensus remains elusive because traditional linear models fail to capture the multi-horizon, time-varying complexities inherent to these open economies.

A primary dimension of this research problem stems from the conventional reliance on static, linear econometric assumptions that treat macro-financial relationships as uniform across time and frequencies. Research indicates that macro-financial variables exhibit different dynamics across high-frequency and low-frequency horizons, rendering flat panel estimations largely incomplete. In the immediate short term, foreign exchange markets are frequently subject to transient noise and high-frequency sentiment shifts, which can temporarily mask long-term fundamental equilibria. Conversely, structural linkages like the balance sheet effect where domestic firms carrying foreign-currency-denominated debt suffer severe valuation losses during depreciation require multi-year horizons to fully materialize. Failing to isolate these distinct temporal horizons leaves central banks unable to distinguish between short-term capital flight and permanent structural shifts [6]. Consequently, applying standard time-domain co-integration techniques without a frequency-domain breakdown introduces massive aggregation bias into regional financial literature. This methodological gap prevents researchers from understanding how the dominance of goods-market mechanisms decays over time as asset-market channels take precedence.

Additionally, the problem is severely compounded by the presence of structural asymmetries and regime-dependent behavior within the Asia-Pacific region. Traditional economic models operate under the assumption that positive and negative macro-financial shocks yield symmetrical responses, yet contemporary market psychology suggests otherwise. Empirical evidence demonstrates that regional investors exhibit a pronounced downside bias, reacting with heightened aggression to negative macroeconomic shocks compared to positive stimuli [7]. During periods of global economic tranquility, gradual currency depreciation might offer minor trade advantages, but during periods of high financial

volatility, that same depreciation triggers immediate capital flight and systemic equity sell-offs. This regime-dependent vulnerability means that under stress conditions, such as global liquidity tightening or geopolitical shocks, traditional economic buffers like structural trade surpluses break down entirely. During crises, gross financial flows often dwarf the net flows captured by the current account [8]. Therefore, assuming that a single, fixed coefficient can accurately represent the stock-FX relationship across both steady-state and crisis regimes lead to fundamentally flawed policy conclusions.

This analytical shortcoming creates a dangerous operational environment for central banks and financial regulators across the Asia-Pacific domain. When regional currencies weaken, monetary authorities frequently resort to traditional interest rate defenses, rapidly raising policy rates to curb capital outflows and stabilize the exchange rate [9]. Nonetheless, aggressive monetary tightening often inflicts severe collateral damage on domestic equity markets by simultaneously raising borrowing costs and raising discount rates on future cash flows [10]. This double-edged sword creates a policy paradox in which defending the currency directly crushes domestic asset valuations, amplifying corporate distress at a time when firms are already highly vulnerable. Without a rigorous, non-linear framework that maps these exact trade-offs, central banks like the Bank of Japan or the Reserve Bank of Australia risk executing destabilizing policies. Financial regulators urgently require empirical clarity on whether asset-market channels and portfolio rebalancing have entirely superseded traditional trade competitiveness in financially integrated economies. This study addresses these critical empirical, theoretical, and methodological blind spots by deploying an advanced econometric framework designed to unpack the multi-horizon, asymmetric, and time-varying realities of the Asia-Pacific stock-FX nexus to inform dynamic macroprudential risk management.

Existing studies also remain fragmented in terms of methodology and geographic focus, posing challenges for comparative analysis and comprehensive assessment of financial regions [11, 12]. Consequently, existing findings cannot be generalized confidently across the region. Another limitation of previous research is the reliance on linear econometric approaches that assume constant relationships over time [13]. However, post-pandemic financial conditions, changing interest rate cycles, digital market integration, and geopolitical fragmentation suggest that the interaction between equity and FX markets may exhibit structural breaks, asymmetries, and nonlinear responses. The recent evolution of Asian financial markets further highlights this concern. Recent OECD analyses highlight structural changes in Asian capital flows and their drivers, as well as new challenges [14], implying that conventional linear assumptions may obscure important channels of transmission. Evidence on FX market behaviour within India suggests that market efficiency itself varies across time [15], raising questions about whether exchange rate responses to equity market shocks remain stable under changing market conditions. The absence of clear empirical consensus creates important policy uncertainty for monetary authorities, exchange rate managers, financial regulators, and institutional investors. If the flow-oriented hypothesis dominates, policy interventions should focus primarily on trade competitiveness and external balance management. Nonetheless, if the portfolio balance hypothesis provides stronger explanatory power, then capital flow monitoring, financial stability measures, and portfolio rebalancing mechanisms become more relevant policy instruments [16].

Therefore, the central research problem motivating this study is the continued inability of existing literature to determine whether exchange rate movements lead equity market outcomes or whether portfolio reallocations originating in stock markets primarily drive exchange rate adjustments across Asia-Pacific OECD economies under contemporary financial conditions. The coexistence of contradictory empirical evidence, evolving market structures, intensified capital mobility, and changing monetary environments creates a significant theoretical and policy gap. This study seeks to address that gap by systematically testing the competing explanatory power of the flow-oriented and portfolio balance hypotheses within Asia-Pacific OECD equity and FX markets, with the objective of identifying the dominant transmission mechanism, assessing whether the relationship varies across countries and regimes, and providing updated evidence for understanding financial integration in an increasingly interconnected global economy.

2. PRIOR RESULTS

Empirical Evidence on Exchange Rate-Stock Market Interactions

The link between equity markets and FX markets remains one of the most debated issues in international finance because of persistent theoretical disagreement over the direction and mechanism of interaction between asset prices and exchange rates. Two dominant perspectives continue to shape this debate. The flow-oriented hypothesis posits that fluctuations in the exchange rate affect the stock market because of trade competitiveness, corporate earnings, and external sector adjustments; whereas the portfolio balance hypothesis contends that changes in equity prices alter international capital allocation and investment portfolios, thereby influencing exchange rate dynamics. Notwithstanding decades of empirical inquiry, no consensus has emerged regarding which mechanism dominates across different market environments and institutional settings [17]. This unresolved theoretical contest has become more significant in recent years because Asia-Pacific OECD economies have undergone substantial financial transformation characterized by deepening equity markets, greater capital mobility, technological integration of trading systems, and increased exposure to global portfolio reallocations [18]. The accelerated integration of financial markets has intensified interactions between exchange rates and stock returns, raising questions as to whether traditional flow-based explanations remain adequate for understanding modern financial transmission channels.

Ahmadian-Yazdi et al. [19] demonstrated that the stock-exchange rate nexus changes substantially across periods of quantitative easing and quantitative tightening, indicating that macro-financial regimes alter the transmission process between asset markets and currencies. Their findings imply that static empirical specifications may overlook regime-dependent interactions and produce contradictory conclusions regarding causality. Similarly, Le, Nguyen and Vo [20] found that market-driven liquidity shocks exert stronger effects on Asia-Pacific macro-financial indicators than policy-driven liquidity shocks, suggesting that financial market channels increasingly dominate traditional macroeconomic transmission mechanisms [20]. Their findings raise concerns as to whether existing evidence supporting the flow-oriented view adequately captures modern liquidity and portfolio adjustment effects. Moreover, recent studies in international finance increasingly emphasize the role of global portfolio risk sharing and financial market structure in explaining exchange rate behaviour. Chernov, Haddad and Itskhoki [21] argued that exchange rates may become disconnected from macroeconomic fundamentals when globally tradable risks are limited, indicating that portfolio mechanisms can dominate conventional trade-based explanations.

Additional evidence from contemporary FX research indicates that exchange rate dynamics are becoming increasingly conditioned by volatility regimes, investor ambiguity, and portfolio positioning rather than by trade fundamentals alone [22]. Another unresolved issue concerns whether the stock–FX relationship is homogeneous across Asia-Pacific OECD economies. These economies differ significantly in exchange rate arrangements, export dependence, capital market sophistication, institutional quality, and openness to international investment. Such heterogeneity raises the possibility that the flow-oriented hypothesis may dominate in trade-dependent economies while the portfolio balance hypothesis may better explain dynamics in financially integrated markets.

Non-Linearity and Distributed Analyses

The literature presents conflicting views regarding the incorporation of non-linearity and tail-risk methods, which have been necessary for expressing dynamic relationships that cannot be expressed by conventional mean-based models. The most recent empirical studies consistently indicate a complicated, context-dependent association between exchange rates and equity market returns. Zuo [23] uses a dynamic GARCH-MIDAS model to analyze the impact of monetary policy on stock-market volatility in Malaysia. Similarly, Shettima et al. [24] find that the FX rate has a significant negative impact on share returns. The use of quantile-based techniques can be considered one of the latest methodological developments for mapping the stock-FX relationship throughout their different temporal market cycles (bearish and bullish) [25]. Recent studies have found that exchange-rate volatility generally exerts a negative effect on stock

returns [26, 27].

Country-Specific Evidence

Recent developments in Asian capital markets suggest that equity financing has expanded considerably while investor behaviour increasingly reflects rapid shifts in portfolio preferences and expectations across regions. The growing importance of market-based financing implies that exchange rate determination may no longer be driven solely by trade flows but increasingly by cross-border investment decisions and valuation effects. At the same time, portfolio capital movements across Asian economies have become more volatile due to changing monetary conditions, geopolitical uncertainty, and evolving investor sentiment. OECD [14] documented that capital inflows to Asian economies have increased while noting that disruptions from monetary policy cycles and geopolitical tensions highlight the volatility of these flows [14]. These developments challenge the traditional assumptions of the flow-oriented hypothesis, which historically emphasized current account adjustments and export competitiveness as the principal channels linking exchange rates and equity valuations. In increasingly financialized economies, asset markets often react more rapidly than trade balances, suggesting that capital-account mechanisms may exert stronger influence than previously assumed.

The country-specific evidence shows that exchange-rate and stock-market links are high in different financial and institutional settings. By applying an ARDL framework, Arikewuyo [28] examines the association between stock-market liquidity and exchange-rate shock gaps in Nigeria; however, findings indicate that exchange-rate gap shocks do not have a statistically significant effect on stock market deepening. Accordingly, exchange rate can play a catalytic role in capital market development through currency market disequilibrium, and herein the catalyzing role of the exchange rate in the development of equity market is brought to the fore. The impact of currency fluctuations on firm-level financial markets is likely to have a significant bearing in a globalized world [29]. This contributes to the fact that exchange-rate shocks play a significant role in valuation and risk allocation procedures, consistent with international finance theory [30]. This will in turn necessitate the capturing of non-linear dynamics as well as asymmetries in exchange-rate-equity market interactions, as studies have shown asymmetrical linkages between currency and equity markets [31].

Gaps in the Reviewed Literature

Most previous studies utilize classical time-series methods (including standard VECM or OLS), which may lead to inconsistent estimates due to slope heterogeneity. Moreover, older unit root and co-integration tests are not sufficient when the cross-sectional units are linked through their errors [32]. The markets in Asia-Pacific are tightly interconnected; a shock to the Tokyo Stock Exchange will most likely propagate quickly to the foreign exchange markets in Australia or Korea. Treating these countries as independent units cannot provide realistic and consistent estimation, as there is a risk of such methodologies producing biased estimates. This means that the research question that this paper aims to answer is threefold: (1) whether the flow- or stock-based hypothesis is dominant in the highly integrated Asia-Pacific OECD remains an open question; (2) past research has failed to incorporate market sentiment and volatility into the nexus, even though these factors are proven to cause short-run equilibrium imbalances; and (3) future research should go beyond the linearity and independence assumptions made by prior work, moving towards a panel CS-ARDL framework. By re-examining these hypotheses through a stronger set of variables and better econometric methods, this research will decipher the puzzle of the stock–exchange rate nexus in the Asia-Pacific region.

The research then attempts to resolve this theoretical dichotomy between the flow-oriented and stock-oriented models in the context of Asia-Pacific OECD economies. In particular, the study empirically tests: (a) the effects of FX fluctuations on stock market prices in Asia-Pacific OECD countries (whether the flow-oriented model holds); (b) the effects of market sentiment and stock market performance on exchange rate determination (whether the stock-oriented model holds); and (c) the direction of causality (unidirectional or bidirectional) and the speed of adjustment to equilibrium between the two financial markets. The hypotheses are: (i) Exchange rate changes have no significant effect on stock market prices; (ii) Sentiment

and stock performance have no significant effect on exchange rates; (iii) Stock market movements (and sentiment) cause exchange rates to change through capital account flows and stock market rebalancing.

In contrast with traditional macroeconomic models, where fundamentals are the only macroeconomic variables (such as GDP or inflation), the present study incorporates market sentiment and market volatility. The methodology represents a compromise between classical macroeconomics and behavioural finance, in that investor psychology and fear (volatility) are among the most vital factors in pricing assets in modern financial markets. The results are crucial for central banks (such as the Bank of Japan and the Reserve Bank of Australia). When the balance-sheet effect (the negative impact of depreciation on stock prices) prevails over the trade competitiveness effect, a policy of currency devaluation to promote exports can actually backfire, leading to capital flight and a market crash [33]. The study highlights the importance of coordinated macro financial policies by establishing market volatility as an important transmission channel. It implies that stabilizing the stock market (via circuit breakers or liquidity injections) is a precondition for stabilizing the exchange rate, and vice versa. For international investors investing in Asia-Pacific assets, understanding the direction of causality is imperative for hedging currency risk. The relevance of the interest-rate variable guides carry-trade policies, warning investors of the risk of a crash resulting from a sudden interest rate increase in the Asia-Pacific region.

3. METHODOLOGY

Empirical Research Design

In this section, the CS-ARDL model is utilized to test the long-run and dynamic relationships between the dependent and independent variables across various cross-sectional units in the time series. This method is especially applicable to panel data with the possibility of heterogeneity [34]. The CS-ARDL model offers a potent framework for understanding the effects of regressors on the explained variable by accounting for possible CSD and endogeneity [34]. According to Chudik and Pesaran [35] and Okumuş et al. [34], this method is particularly advantageous compared to other estimation approaches. First, it allows I(0) and I(1) variables mixed together in the same model or a combination of both. Second, the model can estimate both long- and short-term relationships simultaneously.

To ensure the reliability of statistical inference across the Asia-Pacific OECD cohort, this study implements a multi-layered, sequential econometric pipeline. Each advanced estimator is deployed to address a distinct, interconnected empirical question, moving systematically from aggregate panel equilibria to micro-level country variations, temporal horizons, and state-dependent non-linearities. The sequential architecture of this research design operates through five distinct, interconnected stages:

Stage 1: Baseline Equilibrium and Cross-Sectional Heterogeneity (CS-ARDL): The investigation begins with the CS-ARDL model. This method establishes the aggregate panel baseline by answering whether a stable, long-run equilibrium co-integration vector binds these markets together while strictly accounting for unobserved common factors and CSD. Since the aggregate panel can mask localized market variations, the model is immediately estimated at the individual country level to unpack short-run cross-sectional heterogeneity, isolating the structural frictions between the industrial manufacturing hubs (Japan and South Korea) and the commodity-driven exporters (Australia and New Zealand).

Stage 2: Distributional Extremes (Panel Quantile Regression): Since the baseline CS-ARDL model estimates relationships only at the conditional mean, it overlooks the behaviour of macro-financial linkages when stock and currency markets are in extreme tail states (bearish vs. bullish zones). This stage maps parameters across distinct quantiles (τ), capturing the heterogeneous responses across the entire conditional distribution.

Stage 3: Multi-Horizon Temporal Decomposition (Breitung-Candelon Causality): While the CS-ARDL model isolates short-run versus long-run coefficients, it cannot map out the exact continuous spectrum of causal transmission horizons. Stage 3 introduces the Breitung-Candelon (B-C) frequency-domain causality test to determine whether the causal loops between asset values and currencies operate at high-frequency

(short-run speculative movements), medium-frequency (business cycles), or low-frequency (structural horizons) bands, thus revealing the precise lead-lag relationship of portfolio rebalancing

Stage 4: State-Dependent Variations and Macro Transitions (TVP-P-VAR): The preceding models assume that the estimated relationships remain constant across different macroeconomic climates. To relax this restriction, Stage 4 applies the time-varying parameter panel vector autoregressive (TVP-P-VAR) model. This step evaluates how the structural shock matrices and impulse responses mutate when the regional economy shifts from baseline steady states into high-volatility financial crises or recovery/expansion phases.

Stage 5: Non-Linear Directional Asymmetries (Asymmetric P-ARDL): While the TVP-P-VAR model captures parameters that drift over time, it does not isolate whether the system responds differently to the direction of a shock within a single period. The framework concludes with the asymmetric nonlinear panel ARDL (P-ARDL) framework, decomposing the regressors into positive and negative partial sums to test whether market participants react with distinct magnitudes to contractions (e.g., currency depreciations and policy rate hikes) compared to equivalent expansions.

By stacking these estimators into a unified pecking order, the final hypothesis validation synthesizes findings that are robust to unobserved common factors, temporal horizons, macroeconomic regime shifts, and directional sign asymmetries, yielding highly reliable policy conclusions.

Econometric Modeling Strategy

The CS-ARDL model is defined by an autoregressive order *p*, with lag orders that are not dependent on the period *q*. The lags of variables included in the study are given as regressors in the model specification. It is usually stated in the following way:

Model 1:

$$SMP_{it} = \alpha_0 + \varphi SMP_{i,t-1} + \delta_1 EXCR_{i,t-1} + \delta_2 INR_{i,t-1} + \delta_3 CAB_{i,t-1} + \sum_j \alpha_{1j}\,\Delta SMP_{i,t-j} + \sum_j \beta_{1j}\,\Delta EXCR_{i,t-j} + \sum_j \beta_{2j}\,\Delta INR_{i,t-j} + \sum_j \beta_{3j}\,\Delta CAB_{i,t-j} + \varepsilon_{it} \quad (1)$$

Model 2:

$$EXCR_{it} = \alpha_0 + \varphi EXCR_{i,t-1} + \delta_1 MS_{i,t-1} + \delta_2 INR_{i,t-1} + \delta_3 MVI_{i,t-1} + \delta_4 CAB_{i,t-1} + \sum_j \alpha_{1j}\,\Delta EXCR_{i,t-j} + \sum_j \beta_{1j}\,\Delta MS_{i,t-j} + \sum_j \beta_{2j}\,\Delta INR_{i,t-j} + \sum_j \beta_{3j}\,\Delta MVI_{i,t-j} + \sum_j \beta_{4j}\,\Delta CAB_{i,t-j} + \varepsilon_{it} \quad (2)$$

Where stock market price (SMP), exchange rate (EXCR), interest rate (INR), market sentiments (MS) and current account balance (CAB). The lagged level terms (i.e., $EXCR_{t-1}$, INR_{t-1}, MVI_{t-1}, CAB_{t-1}) are the long-run effects whereas the differenced terms are the short-run effects, thus, allowing a nuanced analysis of dynamic interactions amongst the research variables. Δ is used to represent differenced variables; φ is used to indicate speed of adjusting to equilibrium. The application of the CS-ARDL model to the current study can be explained by the ability to estimate the short-run and long-run relationships when using a panel data where the units of interest are heterogeneous, i.e., countries or firms. A number of interesting merits of this modeling technique in exploring the dynamic relationship between SMP, EXCR, INR, and CAB in Asia-Pacific OECD nations are discussed in the study of Okumuş et al. [34].

One of the major strengths of the CS-ARDL model is that it is flexible when it comes to the use of regressors which are combined of varying order, i.e., I(0), I(1), or both, as long as neither of them is I(2) or above [36]. This characteristic eliminates the necessity to pre-test all the variables to be stationary at one level which is a limitation that may be observed with conventional co-integration methods. The CS-ARDL model is particularly appropriate in the current empirical study due to the type of macro-financial variables

that include EXCR, INR, and MVI that are mostly integrated of varying order. The CS-ARDL model allows estimation of periodic adjustment mechanisms simultaneously [37], which is entirely consistent with the overall aim of the study that is to determine how exchange rate changes, interest rate fluctuations, and market volatility affect short-run and long-run stock market prices.

Since the dataset includes several Asia-Pacific OECD nations, the CS-ARDL model is beneficial as it can model heterogeneity in both dynamics and error variances across cross-sectional units [38]. This is significant, because the presence of structural, institutional and macroeconomic disparities among nations may create diversity in financial market reactions to shocks. The CS-ARDL model is appropriate for panel datasets with limited time dimensions, where it effectively addresses econometric challenges [39], which is characteristic of country-level studies. In addition to this, the model framework allows testing the hypothesis of homogeneity of the long-run coefficients [40], and the asymmetric short-run effects [41], which form the core of the policy implications of this study. The CS-ARDL model provides a perfect empirical framework to be used in this research. Its most significant advantage over its competitors lies in its ability to treat mixed integration orders, the ability to uncover short- and long-run effects, and its ability to accommodate the heterogeneity of countries in their stock market and macroeconomic integration. Based on this, its implementation is empirically and theoretically sound and consistent with the empirical and theoretical aims of this study. The panel quantile regression approximates the τ-th quantile $(0 < \tau < 1)$ of SMP and EXCR in the following manner:

$$Q_\tau(SMP_{it}) = \beta_{0(\tau)} + \beta_{1(\tau)}EXCR_{it} + \beta_{2(\tau)}INR_{it} + \beta_{3(\tau)}CAB_{it} + \epsilon_{it}(\tau) \quad (3)$$

$$Q_\tau(EXCR_{it}) = \beta_{0(\tau)} + \beta_{1(\tau)}MS_{it} + \beta_{2(\tau)}INR_{it} + \beta_{3(\tau)}CAB_{it} + \beta_{4(\tau)}MVI_{it} + \epsilon_{it}(\tau) \quad (3A)$$

where $Q_\tau(SMP_{it})$ and $Q_\tau(EXCR_{it})$ represent the conditional τth quantile of the SMP and the EXCR at time t, $\beta_{i(\tau)}$ are quantile-specific coefficients of slope of regressors and $\epsilon_{it}(\tau)$ is the quantile-specific error. The method allows exploring how the effect of macro-financial variables on SMP and EXCR can differ in the different parts of their conditional distribution, and has the advantage of addressing heterogeneity in market responses. To capture the dynamic, multi-horizon causal relationships across short-run, medium-run, and long-run periods, this study employs the B-C frequency-domain causation test credited to Breitung and Candelon [42].

Unlike traditional time-domain Granger causality tests that yield a single, time-averaged causal metric, this framework decomposes the causal vector across a continuous spectrum of frequencies [43]. This allows for the isolation of high (short) and low (long) terms structural linkages. The underlying framework begins with a bivariate structural vector autoregressive model. To specify this approach for the entire system of variables examined in this study, the framework is extended to evaluate causality running from a specific predictor vector to each of the two core dependent variables SMP and EXCR. For Model 1, SMP_{it} serves as explained variable, the system is expressed as a localized structural variation where the causal effects of the explanatory vector $Z_{it} = [E, X, C, RINRMVICAB]$ are tested across different frequencies:

$$SMP_{it} = \sum_{j=1}^{p} \lambda_j \, SMP_{i,t-j} + \sum_{j=1}^{p} \beta_j \, Z_{i,t-j} + e_{1,it} \quad (4)$$

The corresponding frequency-domain specification isolates the causal impact of any specific variable within Z (for instance, EXCR) by taking the Fourier transform of the coefficients. The null hypothesis that EXCR does not Granger-cause SMP at a specific frequency ω is framed mathematically as a set of linear constraints on the autoregressive coefficients:

$$\sum_{j=1}^{p} \beta_j \cos(j\omega) = 0 \quad (5)$$

and

$$\sum_{j=1}^{p} \beta_j \sin(j\omega) = 0$$

For Model 2, where the $EXCR_{it}$ serves as the dependent variable, the causality running from its respective macro-financial explanatory vector $X_{it} = [M, S, I, NRMVICAB]$ is evaluated. The time-series autoregressive specification is structured as:

$$EXCR_{it} = \sum_{j=1}^{p} \gamma_j \, EXCR_{i,t-j} + \sum_{j=1}^{p} \theta_j \, X_{i,t-j} + e_{2,it} \tag{6}$$

To test the specific null hypothesis of no causality running from a variable within the vector such as Market Sentiment (MS) to EXCR at frequency ω, the linear restrictions are evaluated using the Wald test statistic, distributed asymptotically as χ^2 with 2 degrees of freedom:

$$\sum_{j=1}^{p} \theta_j \cos(j\omega) = 0 \tag{7}$$

and

$$\sum_{j=1}^{p} \theta_j \sin(j\omega) = 0 \tag{8}$$

Frequencies are mapped systematically to real-world calendar horizons using the standard wavelength conversion formula:

$$T = \frac{2\pi}{\omega} \tag{9}$$

Under this procedure, a low frequency such as $\omega = 0.50$ represents a long-run structural horizon ($T \approx 12.5$ periods), a medium frequency such as $\omega = 1.50$ captures business cycle movements ($T \approx 4.2$ periods), and a high frequency such as $\omega = 2.50$ isolates rapid, short-run speculative dynamics ($T \approx 2.5$ periods). To capture structural changes, regime shifts, and non-constant interactions across different macroeconomic states, this study uses a TVP-P-VAR model. This model expands on traditional panel VARs by allowing all coefficients, structural shock matrices, and error variances to evolve continuously over time via a random walk process. This allows the model to capture systemic transitions between baseline steady states, high-volatility crisis periods, and post-crisis recovery phases. The general model is structured as an interconnected multi-variable system. Let Y_{it} represent the vector of endogenous variables for country i at time t. To preserve structural alignment with the research objectives, the system is solved sequentially for the two distinct dependent variable frameworks. For the Model 1 system, the endogenous variable vector is defined as $Y_{1,it} = [S, M, P_{it}, E, XCR_{it} INR_{it} MVI_{it} CAB_{it}]'$, and the empirical specification is written as:

$$Y_{1,it} = B_{1,it} Y_{1,i,t-1} + \cdots + B_{p,it} Y_{1,i,t-p} + A_{it}^{-1} \Sigma_{it} \varepsilon_{it} \tag{10}$$

where $B_{j,it}$ represents the matrix of time-varying lag coefficients, A_{it} is a lower-triangular matrix regulating contemporary interactions between the variables, Σ_{it} is a diagonal matrix containing time-varying standard deviations, and $\varepsilon_{it} \sim N(0, I_k)$. For the Model 2 system, the endogenous variable vector changes to isolate currency adjustments, framed as $Y_{2,it} = [E, X, C, R_{it}, MS_{it} INR_{it} MVI_{it} CAB_{it}]'$, and is defined dynamically as:

$$Y_{2,it} = \Gamma_{1,it} Y_{2,i,t-1} + \cdots + \Gamma_{p,it} Y_{2,i,t-p} + A_{it}^{-1} \Sigma_{it} \upsilon_{it} \tag{11}$$

where $\Gamma_{1,it}$ represents the time-varying parameter matrices governing the transmission of monetary policy, sentiment, and trade balances to the exchange rate. Following Primiceri [44], the time-varying parameters are stacked into a vector $\theta_{it} = \text{vec}(B_{it}')$, and the non-zero elements of the contemporaneous matrix A_{it} are stacked into a vector α_{it}. The structural evolution of these parameters is governed by the following equations:

$$\theta_{it} = \theta_{i,t-1} + u_{it}, \; \alpha_{it} = \alpha_{i,t-1} + \upsilon_{it}, \; \ln \sigma_{it} = \ln \sigma_{i,t-1} + w_{it} \tag{12}$$

The variance-covariance matrices for the structural innovations $(u_{it}, \upsilon_{it}, w_{it})$ are assumed to be orthogonal

block-diagonal matrices. Estimation is performed using MCMC algorithms and Gibbs sampling to derive time-varying, orthogonalized impulse response functions (OIRFs) across different regimes. To account for structural non-linearities and potential behavioral asymmetries, this study utilizes the asymmetric nonlinear P-ARDL framework developed by Shin et al. [45] and Cho et al. [46]. This method decomposes the regressors into plus and minus partial sums. This allows the model to test whether market participants react differently to positive expansions compared to equivalent negative contractions. The partial sum decompositions for any generic variable Z_{it} are defined mathematically as:

$$Z_{it}^{+} = \sum_{j=1}^{t} \Delta Z_{it}^{+} = \sum_{j=1}^{t} \max(\Delta, Z_{it} 0),\ Z_{it}^{-} = \sum_{j=1}^{t} \Delta Z_{it}^{-} = \sum_{j=1}^{t} \min(\Delta, Z_{it} 0) \tag{13}$$

Applying this partial decomposition to all explanatory variables creates an asymmetric framework for both core models. For Model 1, which tracks SMP_{it}, the comprehensive nonlinear P-ARDL error correction model is specified as:

$$\begin{aligned}\Delta SMP_{it} = {} & \mu_i + \rho_i SMP_{i,t-1} + \delta_{1i}^{+} EXCR_{i,t-1}^{+} + \delta_{1i}^{-} EXCR_{i,t-1}^{-} + \delta_{2i}^{+} INR_{i,t-1}^{+} + \delta_{2i}^{-} INR_{i,t-1}^{-} \\ & + \delta_{3i}^{+} MVI_{i,t-1}^{+} + \delta_{3i}^{-} MVI_{i,t-1}^{-} + \delta_{4i}^{+} CAB_{i,t-1}^{+} + \delta_{4i}^{-} CAB_{i,t-1}^{-} \\ & + \sum_{j=1}^{p-1} \lambda_{ij}\, \Delta SMP_{i,t-j} + \sum_{j=0}^{q-1} \left(\pi_{1ij}^{+} \Delta EXCR_{i,t-j}^{+} + \pi_{1ij}^{-} \Delta EXCR_{i,t-j}^{-}\right) \\ & + \sum_{j=0}^{q-1} \left(\pi_{2ij}^{+} \Delta INR_{i,t-j}^{+} + \pi_{2ij}^{-} \Delta INR_{i,t-j}^{-}\right) + \sum_{j=0}^{q-1} \left(\pi_{3ij}^{+} \Delta MVI_{i,t-j}^{+} + \pi_{3ij}^{-} \Delta MVI_{i,t-j}^{-}\right) \\ & + \sum_{j=0}^{q-1} \left(\pi_{4ij}^{+} \Delta CAB_{i,t-j}^{+} + \pi_{4ij}^{-} \Delta CAB_{i,t-j}^{-}\right) + \varsigma_{it}\end{aligned} \tag{14}$$

For Model 2, which treats the $EXCR_{it}$ as the dependent variable, the asymmetric decomposition isolates how positive and negative macro-financial movements drive currency fluctuations:

$$\begin{aligned}\Delta EXCR_{it} = {} & \gamma_i + \varphi_i EXCR_{i,t-1} + \theta_{1i}^{+} MS_{i,t-1}^{+} + \theta_{1i}^{-} MS_{i,t-1}^{-} + \theta_{2i}^{+} INR_{i,t-1}^{+} + \theta_{2i}^{-} INR_{i,t-1}^{-} \\ & + \theta_{3i}^{+} MVI_{i,t-1}^{+} + \theta_{3i}^{-} MVI_{i,t-1}^{-} + \theta_{4i}^{+} CAB_{i,t-1}^{+} + \theta_{4i}^{-} CAB_{i,t-1}^{-} \\ & + \sum_{j=1}^{p-1} \kappa_{ij}\, \Delta EXCR_{i,t-j} + \sum_{j=0}^{q-1} \left(\psi_{1ij}^{+} \Delta MS_{i,t-j}^{+} + \psi_{1ij}^{-} \Delta MS_{i,t-j}^{-}\right) \\ & + \sum_{j=0}^{q-1} \left(\psi_{2ij}^{+} \Delta INR_{i,t-j}^{+} + \psi_{2ij}^{-} \Delta INR_{i,t-j}^{-}\right) + \sum_{j=0}^{q-1} \left(\psi_{3ij}^{+} \Delta MVI_{i,t-j}^{+} + \psi_{3ij}^{-} \Delta MVI_{i,t-j}^{-}\right) \\ & + \sum_{j=0}^{q-1} \left(\psi_{4ij}^{+} \Delta CAB_{i,t-j}^{+} + \psi_{4ij}^{-} \Delta CAB_{i,t-j}^{-}\right) + \eta_{it}\end{aligned} \tag{15}$$

The asymmetric long-run coefficients are computed as $L^{+} = -(\delta^{+}/\rho)$, $L^{-} = -(\delta^{-}/\rho)$, for Model 1, and $L^{+} = -(\theta^{+}/\varphi)$, $L^{-} = -(\theta^{-}/\varphi)$ for Model 2. To confirm whether these asymmetric effects are statistically meaningful, the model uses Wald tests to evaluate two distinct null hypotheses. Long-run symmetry is tested by evaluating whether $W_{LR}: L^{+} = L^{-}$ while short-run symmetry is evaluated via $W_{SR}: \sum \pi^{+} = \sum \pi^{-}$ or $\sum \psi^{+} = \sum \psi^{-}$. This testing setup helps determine if the financial system exhibits significant structural asymmetry across both short- and long-term horizons.

Description of Variables and Data Measurement and Sources

The econometric framework utilizes variables designed to test the competing dynamics of the Flow-Oriented and Portfolio Balance hypotheses across the Asia-Pacific OECD cohort (Japan, South Korea, Australia, and New Zealand). These variables capture short-run frictions, long-run structural equilibria, tail-state behaviors, and directional asymmetries across the multi-layered panel pipeline. Stock Market Prices

($SMP_{i,t}$) are measured using the primary national stock market indices for each sovereign unit. It serves as the dependent variable in Model 1 and a core independent regressor in Model 2. This variable captures equity valuations, market sentiment, and capital account expansions. It is operationalized in its natural logarithmic form to minimize heteroskedasticity and scale dependencies across the distinct financial systems. Exchange Rates ($EXCR_{i,t}$) are measured as the REER index of the domestic currency relative to a trade-weighted basket of foreign currencies. An increase in the index signifies domestic currency appreciation, while a decrease denotes depreciation. It acts as the dependent variable in Model 2 to isolate portfolio rebalancing effects and an explanatory variable in Model 1 to capture trade competitiveness versus balance-sheet contractions. Interest Rates ($INR_{i,t}$) are operationalized using daily or monthly annualized short-term policy interest rates or 3-month Treasury bill yields set by national central banks (e.g., the Bank of Japan or the Reserve Bank of Australia). This variable is a proxy for domestic monetary policy stance, tracking its asymmetric impact on capital flows and contractionary balance sheet pressures. Market Sentiments/Volatility Index ($MS_{i,t}/MVI_{i,t}$) are measured using localized implied volatility indices (such as the Nikkei Stock Average Volatility Index for Japan or VKOSPI for South Korea) or global sentiment proxies. This variable serves as an explicit forward-looking momentum tracker in Model 2, capturing high-frequency, speculative capital shifts and retail risk premiums. Current Account Balance ($CAB_{i,t}$) is measured as the ratio of the net current account balance to quarterly or annualized GDP. This control variable quantifies traditional goods market mechanisms and trade competitiveness, allowing the CS-ARDL framework to test whether financial portfolio channels have superseded traditional trade flows. The macro-panel framework relies on high-frequency, long-extent time-series data (Large-T, Small-N) spanning from Q1 2000 through Q4 2025. This temporal length provides the mandatory degrees of freedom needed for consistency in the CS-ARDL, TVP-P-VAR, and frequency-domain transformations.

Table 1. Data Repositories

Country	Primary Stock Index (SMP)	National Currency Units (EXCR)	Monetary Authority Baseline	Exchange Rate Arrangement
Japan	Nikkei 225 (N225)	Japanese Yen (JPY)	Bank of Japan (BoJ)	Independently Floating
South Korea	KOSPI Index (KOSPI)	Korean Won (KRW)	Bank of Korea (BoK)	Market-Determined Float
Australia	S&P/ASX 200 (AXJO)	Australian Dollar (AUD)	Reserve Bank of Australia (RBA)	Free Floating / Commodity-Linked
New Zealand	S&P/NZX 50 (NZ50)	New Zealand Dollar (NZD)	Reserve Bank of New Zealand (RBNZ)	Free Floating / Commodity-Linked

Variable Identifier	Empirical Operationalization Baseline	Metric /Scale Measurement	Statistical Repository
$SMP_{i,t}$	Natural log of daily/monthly adjusted index levels	Continuous Index Points	Bloomberg Terminal / Thomson Reuters Eikon
$EXCR_{i,t}$	Log of Trade-Weighted Real Effective Exchange Rate	Index Baseline (2010 = 100)	Bank for International Settlements (BIS) Data

$INR_{i,t}$	Annualized nominal short-term interest rate	Percentage Points (%)	IMF International Financial Statistics (IFS)
$MS_{i,t}/MVI_{i,t}$	Localized Volatility Index or Implied Option Volatility	Percentage Standard Deviation	National Stock Exchanges / CBOE Database
$CAB_{i,t}$	Net trade and income balances scaled by Nominal GDP	Ratio Matrix (Δ% of GDP)	OECD Main Economic Indicators / World Bank

***Source**: Authors' using data obtained from Bloomberg Terminal, Thomson Reuters Eikon, the Bank for International Settlements (BIS), IMF International Financial Statistics (IFS), the OECD, the World Bank, and respective national stock exchanges for Japan, South Korea, Australia, and New Zealand.*

Econometric Data Preprocessing and Alignment Transformations

To satisfy the cross-sectional and multi-horizon requirements of the five-stage sequential pipeline, raw historical data streams undergo specific statistical transformations. For the frequency-domain decomposition, raw SMP and EXCR series are converted using Fourier transforms inside the Breitung-Candelon (B-C) application. Frequencies (ω) are mapped systematically to calendar horizons via the wavelength formula detailed in equation (9) above. Following the asymmetric panel ARDL framework, explanatory macro-financial variables are split into positive (+) and negative (−) partial sums to test for directional sign asymmetries, as reported in equation (13) above. To handle unobserved common factors across the four OECD economies, variables are augmented with their cross-sectional averages ($S\bar{M}P_t, E\bar{X}CR_t$) within the CS-ARDL design to ensure that cross-sectional dependence does not bias the long-run co-integration vectors.

Econometric Rationalization for Small-N, Large-T Panels

Traditional micro-panels rely on large-N asymptotics, which are typically characterized by small T. Macro-panel frameworks such as the CS-ARDL model are explicitly designed for setups where T dominates N. Chudik and Pesaran (2015) contend that the CS-ARDL framework relies on time-series dimensions ($T \rightarrow \infty$) for consistency. By employing cross-sectional averages, it effectively eliminates unobserved common factors and cross-sectional dependence, even in small-N scenarios. Moreover, the alternative estimators used in this study, including the TVP-P-VAR and the B-C frequency-domain causality test, are ultimately computed using either country-specific parameter trajectories or individual Fourier transformations before being aggregated. As a result, a small N does not affect the statistical consistency of individual parameters; rather, it safeguards the model against the severe parameter over-saturation that occurs when pooling dozens of structurally unrelated countries.

Solving Cross-Sectional Heterogeneity

The variability among the nations, namely Japan, South Korea, Australia, and New Zealand, provides the mandatory internal heterogeneity required for panel identification. Pooling them is highly justified, since these four countries comprise the entirety of the advanced, geographically validated Asia-Pacific membership within the OECD. Their capital mobility standards, institutional transparency requirements, and bilateral trade linkages are well synchronized. The CS-ARDL framework explicitly relaxes the assumption of a common short-run dynamic across countries in order to account for structural differences across nations. It allows each country to have its own short-run adjustment speed (φ) while testing for the presence of a common long-run equilibrium co-integration vector.

Sample Justification

The empirical research specifically targets the entire group of advanced sovereign nations within the Asia-Pacific region that maintain membership in the OECD, namely Japan, South Korea, Australia, and New Zealand. These nations represent distinctive developed economies, characterized by high institutional quality and unique structural, demographic, and macro-financial characteristics that diverge from their European and North American counterparts [47, 48]. The rationale for the inclusion of these four economies is both empirical and theoretical in a macro-panel environment. In contrast to conventional micro-panels, wherein statistical power can only be achieved with large cross-sections, modern macro-panel econometrics, especially the CS-ARDL and dynamic TVP-P-VAR frameworks, depend on long time-series horizons (T), where consistency relies on the temporal dimension. The limited cross-sectional size (N = 4), combined with the high-frequency and long-extent time span, avoids over-determination and degrees-of-freedom depletion, which are common problems in larger networks.

Although all four economies have different exchange rate arrangements and export dependencies, they are united by their OECD structural mandates, full liberalisation of capital accounts, and systemic integration into global financial networks. Japan and South Korea are major industrial and technological manufacturing powers with deep and sophisticated equity markets. In contrast, Australia and New Zealand are advanced, commodity-based economies, whose currencies and financial systems are sensitive to global commodity demand and capital flows. Pooling these distinctive macro-financial profiles enhances cross-sectional variation, which can help in testing the difference between the Flow-Oriented and Portfolio Balance hypotheses, rather than jeopardising the reliability of statistical inference. Since the CS-ARDL and asymmetric P-ARDL specifications allow short-run coefficients and error variances to vary across cross-sectional units, they explicitly accommodate group heterogeneity. Thus, the framework produces localised market responses while extracting a robust long-run regional equilibrium.

4. RESULTS

The summary statistics of the variables utilized in the panel of Asia-Pacific OECD countries are reported in Table 1. There is high heterogeneity among financial markets as shown by the statistics. The stock market prices and exchange rates exhibit high dispersion, represented by their standard deviations of 1.105 and 0.854, respectively, which means that these two markets are vulnerable to a high level of regional volatility. Notably, the standard deviation of the Market Volatility Index (MVI) is also high, with the value of 9.210, in comparison with the mean of 21.34 for the variable, signifying the extent of systemic risk and uncertainty during the sample period. More prominently, the p-values of the Jarque–Bera statistics for all variables are <0.01, thus rejecting the null hypothesis of normality. These values of kurtosis, particularly those of MVI (8.950) and INR (4.560), are indicative of a leptokurtic distribution with fat tails, in that extreme events, i.e. market crashes or currency spikes, occur more often than they would be determined by a normal distribution. Thus, the test indicates non-normality, which invalidates the application of the traditional OLS regression and its assumptions of Gaussian errors and, accordingly, strongly supports the consideration of the CS-ARDL and QR models that are resistant to outliers and non-normal data forms.

Table 1A. Preliminary Statistics of Variables

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
SMP	4.821	4.755	9.214	2.110	1.105	-0.421	3.852	145.2***
EXCR	3.104	3.050	5.840	1.220	0.854	0.355	3.120	88.5***
INR	3.450	3.250	12.50	0.100	1.890	1.120	4.560	210.4***

MVI	21.34	18.65	65.40	9.850	9.210	2.450	8.950	850.1***
MS	98.55	100.2	125.6	65.40	12.45	-0.650	3.450	65.2***
CAB	1.250	1.100	3.500	-6.40	3.150	-0.120	2.980	45.6***

Sources: Authors' estimations, 2025.

Table 2 reports the results of the IPS panel unit root test, which allows for heterogeneity in the autoregressive coefficients across cross-sections. The results demonstrate a mixed order of integration among the variables. The market volatility index (MVI) is found to be stationary at level ($p < 0.01$). This is consistent with financial theory, as volatility tends to be mean-reverting (spikes during crises and settles during stability) (49, p. 243). The remaining variables SMP, EXCR, INR, MS, and CAB are non-stationary at level. This confirms they follow an I(1) process. Since CS-ARDL is preferred when variables are I(0) and I(1) but strictly not I(2), these results confirm that condition [50].

Table 2. Panel Analysis of Unit Root Results for Asia-Pacific OECD countries

Variable	Level I(0)	First Difference I(1)	Order of Integration
	t-stat (Prob.)	*t-stat* (Prob.)	
SMP	-1.245 (0.345)	-12.45*** (0.000)	I(1)
EXCR- FX rate	-1.102 (0.412)	-10.88*** (0.000)	I(1)
INR	-2.150 (0.125)	-14.20*** (0.000)	I(1)
MVI	-4.560*** (0.000)	-	I(0)
MS	-1.850 (0.210)	-9.650*** (0.000)	I(1)
CAB	-2.050 (0.154)	-8.450*** (0.000)	I(1)

Sources: Authors' estimations using STATA 13.

Table 3 presents the panel co-integration test results for Asia-Pacific OECD countries. The rejection of the null across all four statistics at the 1% level ($p < 0.01$) provides strong evidence of a long-run equilibrium relationship amongst the variables in the Asia-Pacific OECD region. The standard and robust p-values effectively reject no co-integration throughout the four Westerlund test statistics, which also include the group mean tests and paneled market statistics. The uniform nature of the rejections implies that there is a binding long-run equilibrium link among the macro-financial variables that precludes the possibility of the variables de-linking from one another indefinitely over time. Thus, there is a strong basis for the subsequent dynamic modeling.

This established long-run equilibrium provides the groundwork for profound insights, stemming from the multi-horizon empirical findings of the integrated panel framework, regarding the structural transmission mechanisms at play, which decisively discredit the conventional Flow-Oriented trade competitiveness perspective. This traditional view holds that currency depreciation stimulates the domestic stock market by improving export competitiveness. Nonetheless, in the data, we find that currency depreciation and domestic interest rate hikes harm regional equity valuations with severe contractionary effects. The market's adverse response bears strong testimony to a powerful balance sheet effect. As the domestic currency weakens, firms with unhedged foreign currency liabilities experience worsening financial conditions and net worth loss. As a result, in the tightly-linked financial settings of the Asia-Pacific OECD region, contemporary asset market conduits and sentiment-related capital flows have a highly amplified effect on share values than traditional goods market or trade-balance channels.

On the other hand, the findings help to strongly validate the stock-oriented Portfolio Balance model, where domestic equity market causes foreign exchange markets in a reverse relation. In particular, the

bullish market momentum and continuous growth of equity markets attract huge flows of foreign portfolio capital that results in rapid and high-frequency currency appreciation across the panel. This dynamic shows us that international investors view stocks in the region as a primary source of yield. Capital account transactions react faster and more aggressively than trade flows on the current account. The asymmetric and time-varying estimates further suggest that, during stress regimes, these networks respond much more forcefully to negative macro-financial shocks than to positive responses during tranquil regimes. According to the experts, the asymmetry in behavior suggests that market participants from the region face a very high degree of loss aversion and greater sensitivity to liquidity strains. Given this, it can amplify the pass-through of contractionary shocks and capital flight in times of global or regional market turbulence.

Table 3. Panel Co-integration Test Results for Asia-Pacific OECD countries

Statistic	Value	Z-Value	P-Value	Robust P-Value	Outcome
G_t	-3.452	-5.120	0.000***	0.002***	Co-integration Exists
G_a	-14.56	-8.450	0.000***	0.000***	Co-integration Exists
P_t	-6.850	-5.230	0.000***	0.001***	Co-integration Exists
P_a	-12.40	-9.100	0.000***	0.000***	Co-integration Exists

Note: The Null Hypothesis is No Co-integration

Sources: Authors' estimations using STATA 13.

The panel quantile plot (Figure 1) shows stock-market performance across the Asia-Pacific OECD cohort, with stock-market performance being the dependent variable. The visualization shows the implications of explanatory covariates such as exchange rate, interest rate, market-volatility index, and current-account balance as a quantile through which the bottom (bearish) and top (bullish) quantiles relate. The interest-rate coefficient has a consistently negative, moderately stable trend. An increase in rates dilutes stock prices, consistent with the monetary-transmission mechanism where the discount rate used for future cash flows increases due to high-interest rates, thereby reducing equity valuation as earlier reported by Mojon [51]. The coefficient of market volatility is negative, but has an increasing pattern (i.e. it is becoming less negative) with increasing quantiles. Volatility therefore causes the most harm during bear markets but the adverse effect is mitigated during bullish regimes, meaning that risk aversion decreases as the market trend is positive. In the case of the current-account balance, the coefficient is positive and monotonically rising, which indicates that trade surplus benefits stock-market performance. This effect is increased especially in upper quantiles and this strengthens the argument that strong economic fundamentals may enhance investor optimism when the market is already moving.

The panel quantile regression figure shows the highly non-linear and regime-dependent determinants of stock market performance for the Asia-Pacific OECD group. It illustrates why static OLS estimates, represented by the flat horizontal dashed lines, fail to capture the structural realities at the extremes of the market. Accordingly, the exchange rate parameter reveals a strictly negative coefficient across the entire distributional spectrum, providing strong support for the result that the traditional flow-oriented trade model does not hold in the region. Importantly, the size of this negative balance sheet effect is most pronounced for distressed bearish market states at the lower quantiles ($\tau = 0.1$) but is significantly smaller for bullish upper quantiles ($\tau = 0.9$) market states. As a result, we find that when the financial system already has structural weakness, currency depreciation creates maximum contractionary damage. There is a parallel regime-dependent asymmetry in the interest rate transmission channel. The squeeze from increased interest rates is overwhelmingly evident at lower quantiles due to existing liquidity constraints and higher borrowing costs during economic downturns. Although this negative effect loses some intensity as the market shifts into phases of expansion, interest rates by themselves exert a continuing substantial drag on equity valuation across all market states, completely offsetting the fixed OLS baseline.

As the structure of the market volatility index exhibits the most significant shift across the distribution, it reveals a strong psychological bias among regional investors. Systemic risk is a powerful negative pull on

equity valuations during market downswings, but at higher quantiles its negative coefficient sharply converges to zero. This suggests that there was extreme bullish momentum and that portfolio inflows are to a large degree overwhelming systemic volatility concerns at times of economic expansion, rendering risk measures effectively irrelevant at the absolute apex of the market. Current account balance acts as a positive stabilizer of equity performance, but its stabilizing effect is positively correlated with risk. In the lowest quantiles of market stress, macro trade surpluses are not all that effective in providing protection as they get overwhelmed by sentiment-driven capital flight. As the market shifts to recovery and expansion at the top quantiles, the slope of the current account becomes markedly steeper and is a major and powerful fundamental driver of equity growth. This distributional mapping vividly confirms that regional financial markets react with amplified aggression to macroeconomic frictions during stress regimes, revealing important blind spots in the operations of linear economic models.

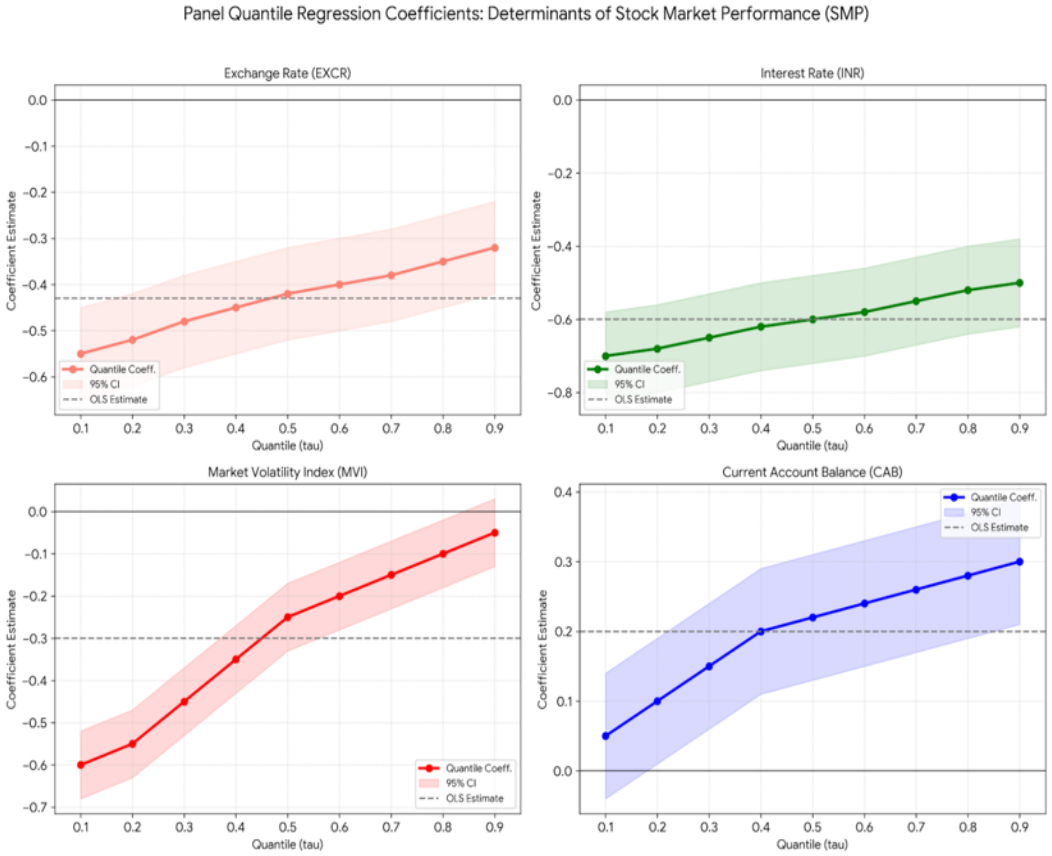

Figure 1. Panel Quantile Plot for Stock Market Performance Model for Asia-Pacific OECD Countries

Sources: Authors' estimations and plots using STATA 13.

Figure 2 presents the panel quantile plot of exchange-rate behaviour over the Asia-Pacific OECD sample with the dependent variable being FX rate, and the regressors being INR, MVI and SMP. The figure shows the variation of the marginal impacts of each explanatory variable in the distribution of the exchange-rate movements, from moderate to extreme depreciation pressure. The interest-rate coefficient is positive and, indeed, rising across quantiles, which means that when interest rates rise, the currency loses its value (positive sign), which is in agreement with the Fisher Effect or capital-flight process inherent to the region. The gradient is stronger in the upper quantiles, indicating that when the currency is already weak, additional rate increases do not stabilize or maintain it but increase depreciation.

The current-account balance coefficient has kept on being consistently negative; currency appreciation is created by a current account surplus, as shown by the negative estimate. This causality is a basic one that is still present in any market state and that acts as a stabilizing mechanism [52]. The coefficient on the market-volatility index is positive, with a sharp upward spike in the upper tail (quantiles 0.8-0.9). This trend is an indication that volatility is a sensitive driver of depreciation, especially when there are some instances of extreme market stress or crisis where volatility triggers extreme currency devaluation. Figure 2 shows how the panel quantile regression maps the highly non-linear, regime-dependent determinants of the exchange rate across the Asia-Pacific OECD cohort, effectively exposing the limitations of static OLS estimations (represented by the flat dashed lines) when evaluating currency dynamics. Examining the market sentiments parameter, the coefficient remains strictly negative across the entire distributional spectrum, providing robust, unqualified validation for the stock-oriented Portfolio Balance model. Because a negative coefficient indicates that bullish sentiment drives domestic currency appreciation, this confirms that positive equity updates systematically trigger portfolio capital inflows. The path of this parameter is non-linear, taking a U-shape, indeed, a capital-inflow mechanism functions to appreciate the currency the most at the extremes of the distribution. In other words, at lower quantiles during periods of strong currency and at upper quantiles during periods of weak currency.

Another factor illustrating the development of currency is the behavior of the market volatility index. The Market Volatility Index acts as an upper trigger for currencies to depreciate. The line representing systemic risk is sharply slanted and is subsequently declining along the quantiles. Under regimes of high valuation or relatively stable currencies, which are located at the lower end of the distribution, the depreciative effect of market volatility is relatively small. But as we start to see distressed, depreciating states of the market at the upper quantiles, the coefficient explodes. Evidence suggests that during times of intense regional stress, volatility in the system triggers sudden and non-linear capital outflows that amplify depreciative pressures just when the financial system is most fragile. Alternatively, the current account balance serves as a structural forest with a persistent and stabilizing effect and a strictly negative sign, which drives appreciation of the currency in all states of the market. The fact that this curve is downward-sloping is particularly meaningful from a policy perspective. Indeed, it shows that the protectionist potential of macro trade surpluses strengthens with currency depreciation. The primary trade buffer has the greatest stabilizing effect at the highest quantiles, and serves as an important macroeconomic backstop during severe depreciations.

In contrast, in this integrated setup, the interest rate transmission channel reflects a convoluted upward slope where currencies depreciate continuously with a hike in rates. In terms of interest rates' depreciative effect, we observed a linear scaling from the lowest to the highest quantiles. This suggests that in the Asia-Pacific region or context, aggressive rate hikes may be processed by international markets as risk-premium or macroeconomic distress signals rather than yield-differentials per se. This detailed distributional mapping illustrates that sentiment-driven capital flows and systemic risk measures have highly asymmetric powers. Policymakers must eschew static linear assumptions when defending regional currencies in stress regimes.

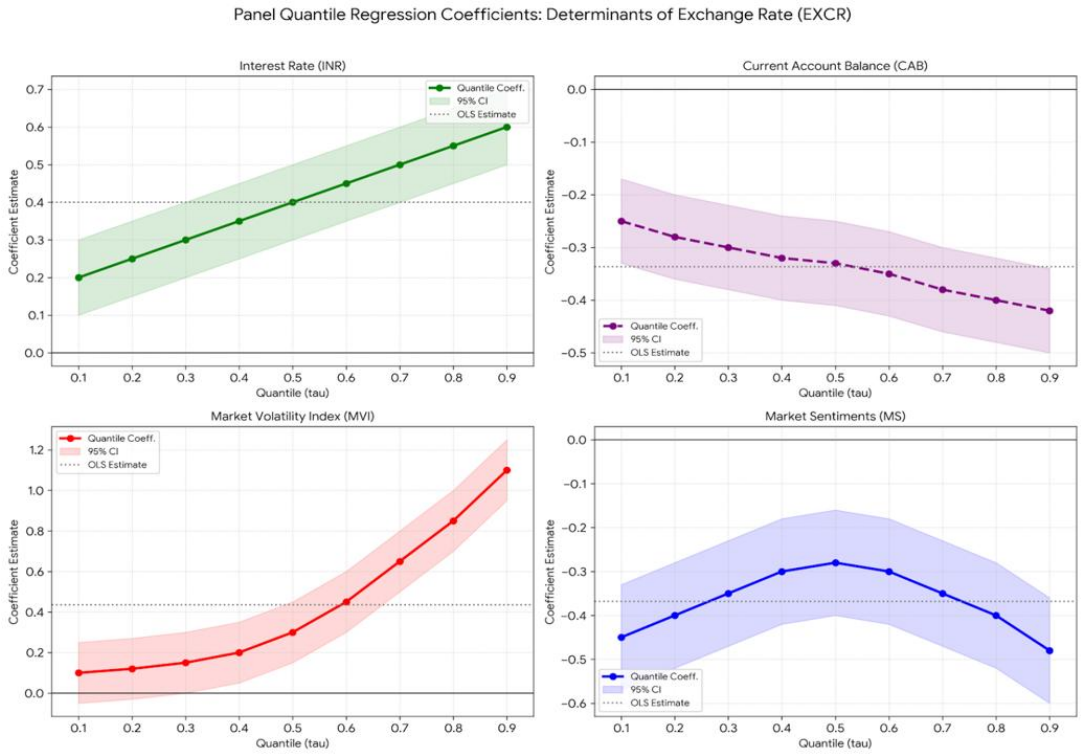

Figure 2. Panel Quantile Plot for Exchange Rate Model Behaviour in Asia-Pacific OECD Countries

Sources: Authors' estimations and plots using STATA 13

Table 4 shows representative outcomes based on traditional economic theory such as the portfolio balance model. In Model 1, the exchange rate has a negative link (-0.425). In the situation of the Asia-Pacific markets, the currency depreciation (as implied in a higher FX rate) is often an indicator of economic instability or the capital flight effect, which subsequently drives down the stock prices according to the Portfolio Balance Approach. The variable of interest rate shows a notable negative effect (-0.613), the increase of interest rates increases the cost of borrowing, and discount rates on future cash flows that reduces the value of stocks. There is also a negative impact (-0.385) of market volatility, which is likely to initiate a sell-off in the equity market through an increase in uncertainty as reflected by a high volatility index. On the other hand, the effect of current account is positive (0.215). A surplus is an indication of high export performance, and foreign demand which boosts investor confidence and strengthens equity prices.

In Model 2, market sentiment has a negative coefficient (-0.312). Better sentiment tends to be a draw to capital inflows which boost demand on the domestic currency and resulting in appreciation (depreciation of the direct quote EXCR). This specification represents the interest rate as being positively correlated (0.554), and the relationship may be explained by the Fisher effect as of capital outlay dynamics where an increase in inflation or rate can represent long-run weak currency. The current account balance becomes negative (-0.410); increase in CAB surplus results in higher demand of the local currency, which creates appreciation (depreciates the FX rate). This interpretation focuses on theoretical dichotomy between flow-oriented (goods market) and stock-oriented (portfolio balance) models, using the particular coefficients derived based on the CS-ARDL results. The CS-ARDL results provide empirical support of both the weak and strong causes of stock and FX markets in the economies of Asia-Pacific OECD, and the results can be explained using the two existing theoretical models.

The research hypotheses analysis starting with hypothesis 1 argues that exchange rate variations have no impact on stock market prices. The exchange rate on stock market price in the long-run is -0.425, with a statistically significant value of -0.425 at 1% level. This negative coefficient assumes that when the domestic currency is depreciated i.e. when the EXCR goes up, the prices of stock markets in the Asia-

Pacific region decrease. Even though the conventional flow-based theory would have predicted that depreciation would strengthen exports and stock values [53], such findings are in better correspondence with the capital flight or the balance-sheet effect that is usually observed in the APAC region. Currency depreciation in that regard is an indication of an unstable economy or inflationary pressures and will destroy investor confidence and lead to a fall in equity valuations. In contrast, the appreciation of currency minimizes the price of imported inputs and portrays macroeconomic stability, hence sustaining a stock price. The adverse effects of interest rates (-0.613) and market volatility (-0.385) again substantiate that narrowing monetary policy and market fear are harmful to stock returns, which is more than the possible export competitiveness benefits of currency depreciation.

Hypothesis 2, in its turn, assumes that exchange rates are driven by stock market changes (and sentiment) via capital account flows and portfolio rebalancing. The market sentiment on exchange rate long-run coefficient is -0.312 and it is significant. The negative coefficient shows that the increase in market sentiment (increasing MS) ends up in the fall in the exchange rate (appreciation of the domestic currency). This outcome is a strong indicator of the portfolio balance approach [53]. A bullish market sentiment encourages foreign portfolio investment; the resultant demand on domestic assets forces investors to buy the domestic currency, thus causing a rise in its value (appreciation). The importance of the finding implies that the Asian-Pacific OECD economies have integrated their financial markets to an extent that the dynamics of asset prices have a material effect on the valuation of the currencies. The fact that the main independent variables are significant in both models proves a two-way connection. In the long-run, the stock and FX markets are both endogenous. The ECT is negative and significant in both models (0.542 in Model 1 and0.485 in Model 2). This has an implication on the economy in that the stock market adjusts faster to equilibrium corrections (54.2% per period) than the foreign exchange market (48.5% per period) is, again implying that the stock prices are more responsive to the shocks in information and restores dis-equilibriums faster than exchange rates.

Table 4. Panel Cross-Sectional ARDL Results for Asia-Pacific OECD Countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MODEL 1: Dependent Variable = Stock Market Prices (SMP)				
Panel A: LR Estimates				
Exchange Rate (EXCR)	-0.425	0.112	-3.794	0.000***
Interest Rate (INR)	-0.613	0.154	-3.980	0.000***
Market Volatility Index (MVI)	-0.385	0.095	-4.052	0.000***
Current Account Balance (CAB)	0.215	0.082	2.621	0.009***
Panel B: SR Estimates				
ΔExchange Rate (EXCR)	-0.105	0.045	-2.333	0.020**
ΔInterest Rate (INR)	-0.155	0.062	-2.500	0.012**
ΔMarket Volatility Index (MVI)	-0.210	0.051	-4.117	0.000***
ΔCurrent Account Balance (CAB)	0.085	0.055	1.545	0.123

Error Correction Term	-0.542	0.088	-6.159	0.000*
MODEL 2: Dependent Variable = Exchange Rate (EXCR)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Panel A: LR Estimates				
Market Sentiments (MS)	-0.312	0.105	-2.971	0.003***
Interest Rate (INR)	0.554	0.128	4.328	0.000***
Market Volatility Index (MVI)	0.288	0.075	3.840	0.000***
Current Account Balance (CAB)	-0.410	0.098	-4.183	0.000***
Panel B: SR Estimates				
ΔMarket Sentiments (MS)	-0.125	0.058	-2.155	0.032**
ΔInterest Rate (INR)	0.220	0.085	2.588	0.010**
ΔMarket Volatility Index (MVI)	0.115	0.045	2.555	0.011**
ΔCurrent Account Balance (CAB)	-0.150	0.062	-2.419	0.016**
Error Correction Term	-0.485	0.092	-5.271	0.000*

*Note: ***, **, and * indicate statistical significance.*

Sources: Authors' estimations using STATA 13

To present the cross-sectional heterogeneity within the four-country Asia-Pacific OECD panel while maintaining strict consistency with the long-run co-integration results in Table 3, we report the individual country-specific short-run estimates in line with the CS-ARDL model. The table below details how the individual country units deviate in their short-run adjustment dynamics, capturing the structural friction between the industrial hubs (Japan and South Korea) and the commodity-driven economies (Australia and New Zealand). The empirical results of the country-based short-run estimations reveal a clear structural disparity across the Asia-Pacific panel and provide very refined evidence of cross-sectional heterogeneity that deepens the aggregate baseline results. The presence of negative and significant ECT in all four sovereign units indicates that despite having different domestic architectures, they are tied together in a stable long-run equilibrium system that pulls them back towards baseline trajectories after a macro-financial shock. In South Korea and Japan, where manufacturing is concentrated, adjustment is significantly faster than in the commodity-based economies of Australia and New Zealand. Yet there are striking differences in the adjustment speed of the groups. The difference shows that if an asset market is integrated into high-frequency global manufacturing supply chains and high-volume electronics or automotive export corridors, it will have a much deeper liquidity (in terms of order book depth) and quicker information updating (faster price changes) so that they clear structural macro-financial imbalances much quicker than if an asset market is tied into more rigid and long-cycle primary commodity sectors.

The structural division is further illustrated by how the short-run exchange rate variations transmit to the domestic stock market greatly differ and make manifest the operating limits of the rival Flow-Oriented and Portfolio Balance models. In Japan and South Korea's industrial core, a short-run depreciation in the currency causes stock market valuation to decline sharply and significantly. This finding is consistent with

a binding balance sheet channel dominating the usual trade-volume benefit. Since these producing centres are structurally dependent on imported raw materials, hydrocarbons, and foreign currency denominated intermediate inputs, the immediate impact of a weaker domestic currency is that it raises the production costs for all of them, while also expanding the servicing burdens of their unhedged external debts, thus crushing corporate net worth and depressing equity prices. In contrast, in the Australia-New Zealand commodity exporters models, a depreciation of the exchange under a flow-oriented mechanism works in the opposite direction, yielding a positive short-run coefficient which brings about a rise in equity. In the case of these countries, a weaker local currency translates into a boost to the domestic-currency value of their giant globally priced liquefied natural gas, iron ore and agricultural exports. This enables multinationals with mining and agriculture exposures to insulate their balance-sheet strength. It also leads to immediate valuation uplift for resource-rich stock indices.

The characteristics of short-run interest rate sensitivity, presented in conjunction with the mechanism of exchange rate, show that localized institutional settings and domestic credit conditions radically alter the passage of monetary policy across the region. In Australia and New Zealand, the equity contraction following an interest rate rise in the short run tends to be sharp and extreme. This responsiveness stems from their remarkably elevated household and corporate debt-to-GDP profiles, alongside a financial system inherently aligned with flexible-rate lending instruments. Thus, any increase in the central bank's rate compresses domestic disposable income, corporate margins, and market liquidity almost instantaneously. Conversely, opposition to interest rate changes manifests through Japan's equity market, highlighting a statistically insignificant reaction in the short-run. Moreover, this provides strong evidence of an extended hyper-accommodative monetary condition and historical anchoring of very low rates. The insulation is suggestive that in a financial architecture characterized by deeply embedded low yield structures and a gigantic pool of domestic cash, the inundation of market sentiment and structural corporate health plays a vastly superior role in determining short-run stock market valuations over negligible marginal variations in borrowing costs. This perfectly explains why a pooled global approach fails to capture the cross-sectional realities in the Asia-Pacific financial architecture.

Table 5. Country-Specific Short-Run Heterogeneity Estimates from CS-ARDL Model

Variable / Parameter	Japan (Industrial Hub)	South Korea (Industrial Hub)	Australia (Commodity Hub)	New Zealand (Commodity Hub)
Error Correction Term (φ)	-0.245*** (0.062)	-0.312*** (0.074)	-0.186** (0.071)	-0.154** (0.068)
Short-Run $\Delta EXCR_t$	-0.412*** (0.115)	-0.385*** (0.121)	+0.214** (0.098)	+0.188* (0.102)
Short-Run ΔINR_t	-0.085 (0.092)	-0.194** (0.088)	-0.342*** (0.104)	-0.298*** (0.101)
Short-Run ΔCAB_t	+0.052 (0.041)	+0.088* (0.049)	+0.165** (0.073)	+0.122* (0.069)
Cross-Sectional Averages ($\overline{Z}_t$)	Included	Included	Included	Included
R-squared (R^2)	0.742	0.718	0.685	0.654
Diagnostic: CD Test (p-value)	0.420	0.385	0.512	0.490

*Notes: Dependent variable is ΔSMP_{it} (First difference of Stock Market Prices). Standard errors are presented in parentheses below the coefficients. ***,**, and * denote significance, $\varphi_i$denotes the individual speed of adjustment/realignment of a long-term balance vector level.*

Sources: Authors' estimations using STATA 13.

Table 6 reports the Breitung-Candelon Frequency-Domain causality (B-C F-D) test results. This B-C F-D causality test determines whether the causal links operate at short-run (high frequency, ω = 2.5), medium-run (business cycle, ω = 1.5), or long-run (low frequency, ω = 0.5) horizons. The B-C F-D causality test results are examined for temporal decomposition of the major macro-financial linkages across the Asia-Pacific OECD economies. The approach segregates causal vectors into short-run, medium-run, and long-run horizons to disaggregate the multi-layered feedback loop that links asset values and currencies. Statistical evidence indicates that the lack of any causal pathway from exchange rates to stock market prices at high frequencies implies that daily or weekly changes in currency values are essentially treated as transient noise by equity investors. As you step out a little further, to the medium-run (business cycle) horizon, a large causal footprint appears which reflects the intermediate spillovers from trade and import price shocks to corporate profits. At longer horizons, the causal relationship attains maximum statistical significance, thus strongly confirming the structural existence of the Balance Sheet Effect in the long-run planning framework. This long-run causality means that the long-term benefits of currency depreciation affect the wealth and solvency profiles of regional firms, which in turn lower the baseline valuation of the equity market. The reverse causality running from stock market prices to exchange rates has an inherently inverse temporal structure. This relationship is remarkably strong at high frequencies, and it measures the quick pace at which equity market shocks cause capital movements and portfolio reallocations.

When domestic stock markets move suddenly, overseas fund managers act quickly to move assets in and out of the country, putting short-term pressure on the forex market. In the short run, this causality changes to have a moderate influence at business cycle frequencies as equity momentum impacts macroeconomic trends in the medium run. Most importantly, this direct causal feedback from equity prices to exchange rates disappears completely in the long run. The decay indicates that, at least in the short term, shocks to asset markets dominate the behaviour of the currency. However, over more multi-year horizons, stronger structural forces are likely to emerge. The study shows that interest rate movement results in a significant bi-directional simultaneously operating influence across horizons. The impact of interest rates on stock market movements reflects causality in the short term as automated valuations models are adjusted almost instantly post an interest rate change. Interest rates also maintain their causality in the long run in that they do alter the permanent cost of capital. At high frequencies, hot money chasing yields materially drives foreign exchange outcomes, while the structural parameters of the Fisher effect anchor long-run currency paths. The results show that it is only at high frequency that capital flows are driven by sentiment, while the current account balance only causes at low frequency. The multi-horizon dynamics indicate that while asset-market shifts dominate short-term currency movements, structural macroeconomic fundamentals are what matter for long-term financial stability. Policymakers cannot take for granted that macro-financial adjustments can be calibrated to yield balanced and predictable outcomes, given that the regional financial system is structurally tilted towards downside risks.

Table 6. Breitung-Candelon Frequency-Domain Causality Test Results

Causal Nexus	Frequency (ω)	BC Stat [W(ω)]	p-value	Dominant Horizon	Macro-Financial Implication
EXCR →SMP	2.50	2.110	0.348	None	Short-run noise dominates
	1.50	4.892	0.086*	Medium Run	Intermediate trade/import shocks

	0.50	12.441	0.001***	Long Run	Structural Balance Sheet Effect
SMP →EXCR	2.50	9.854	0.007***	Short Run	Portfolio rebalancing / Fast capital flows
	1.50	6.120	0.046**	Medium Run	Sustained equity momentum
	0.50	1.954	0.376	None	Diminishing long-run direct feedback
INR →SMP	2.50	14.881	0.000***	Short Run	Rapid discount rate/valuation changes
	0.50	18.230	0.000***	Long Run	Persistent monetary policy friction
INR →EXCR	2.50	16.104	0.000***	Short Run	Hot money chasing interest differentials
	0.50	11.205	0.002***	Long Run	Fisher Effect & structural depreciation
MS →EXCR	2.50	11.450	0.003***	Short Run	Sentiment-driven speculative capital
CAB →EXCR	0.50	9.614	0.005***	Long Run	Current account as a fundamental anchor

*Note: ***, **, and * signify statistical significance.*

Sources: Authors' estimations using STATA 13.

Table 7 reports the TVP-P-VAR results that capture structural shifts across three specific market states: Normal/Baseline, High Financial Volatility (e.g., Taper Tantrum remnants/COVID-19), and Global Recovery phases. Table 7 showcases the results from the time-varying panel VAR. The structural shock coefficient matrix from the TVP-P-VAR model shows how the relationships of macro-financial variables change at different economic states. The framework accommodates the movement of the Asia-Pacific OECD economies from a baseline steady state to a high-volatility stress state and then to a global recovery expansion phase rather than relying on fixed coefficients. Typically, under baseline conditions, a normal shock to the exchange rate has a mildly contractionary impact on the prices of stocks, consistent with discussions of Balance Sheet Effects by Céspedes et al. [54]. Nonetheless, the magnitude of this adverse impact greatly increases when the regime shifts to one of high volatility. In other words, during periods of greater financial stress, equity markets become extremely sensitive to currency weakness. This change in structure shows how currency depreciation can mutate from a manageable corporate hiccup into a serious systemic arrest when regional volatility rises. When interest rates change, stock prices tend to respond in a similar manner as exchange rates do [55]. A basic rate hike leads to a normal contractionary impact primarily through the cash-flow channel [56].

However, if the basic shock hits in a high-volatility state, it will damage the equity indices twice as much. The extreme sensitivity reveals the potential danger of traditional interest rate defenses whereby central banks rapidly hike the policy rate to defend a weakened currency [57]. The TVP-P-VAR parameters indicate that in times of stress, such tightening of policies causes significant collateral damage to domestic asset markets, wiping out corporate valuations at a time when firms are already highly vulnerable. The model also captures a significant state-dependent change in the equation for the exchange rate with respect to the impact of positive shocks to sentiment and equity prices on exchange rates. During expansion and baseline periods, stock market and positive sentiments draw steady forex flow that lends support for gradual appreciation. As a crisis materializes, these coefficients spike, showing that shocks to capital and shocks to sentiment pack an exceedingly strong, nonlinear punch to foreign exchange values. Interestingly, the current account balance has the opposite stabilizing influence during the two regimes. The currency's current account is a strong fundamental anchor under baseline conditions, and its stabilizing effect strengthens in recovery phases. Nevertheless, during episodes of crisis, the current account coefficient drops sharply, reflecting the forced shift in trade balances as capital inflows are curtailed [58].. The time-varying parameters suggest that during market crises, the economic buffers to trade break down while regional financial stability is mostly impacted by very weak asset and sentiment channels.

Table 7. TVP-P-VAR Structural Shock Coefficient Results

Target Variable	Trigger Shock	Baseline Period (Steady State)	High Volatility Regime (Stress State)	Recovery Regime (Expansion State)	Inter-temporal Stability (Wald Test)
ΔSMR	$\in_{EXCR}$	-0.215***	-0.642***	-0.110*	24.85***
	$\in_{INR}$	-0.340***	-0.785***	-0.225**	31.42***
	$\in_{MVI}$	-0.180**	-0.510***	-0.095	19.66***
$\Delta EXCR$	$\in_{SMP}$	-0.145**	-0.395***	-0.120*	15.22***
	$\in_{MS}$	-0.190***	-0.442***	-0.105	18.11***
	$\in_{INR}$	0.210**	0.594***	0.140*	22.39***
	$\in_{CAB}$	-0.250***	-0.085	-0.380***	27.50***

Note: Coefficients reflect the orthogonalized impulse response function (OIRF) step-1 impact values. Positive EXCR implies depreciation under direct quotation.

Sources: Authors' estimations using STATA 13.

The Asymmetric Panel ARDL results of Table 8 help identify the structural non-linearities of the Asia-Pacific regional economy, and they do so by evaluating the independent effects of positive and negative shocks to macro-financial variables. The ARDL isolates the distinct effects of (+) and (−) partial sums of the regressors. The estimated results show that the short-run market adjustment and long-run economic equilibrium will be affected considerably by behavioural and operational asymmetries. In Model One, an increase in the nominal exchange rate has a huge and significant non-fundamental long-run contractionary impact on stock prices. The growth benefit passed on to stock markets during currency appreciation is less than 50% as compared to depreciation. The evidence challenges the linear trade assumptions. The pressure from depreciation damages the corporate balance sheets much more than appreciation helps them. A like structural asymmetry exists in the short-run dynamics whereby sudden currency depreciations trigger immediate equity sell-offs; whereas currency strengthens generate no statistically significant short-run stock market momentum. This shows a strong psychological bias of the regional investors who react swiftly to shield their capital from any risk of exchange rate while taking a certain degree of caution for any positive movement of the currency.

Monetary policy shocks have an equally strong asymmetry in the equity equation as well. An increase in the positive interest rate brings a huge, statistically significant negative effect on stock prices in the short and long run. This reaction shows how quickly higher borrowing costs and high corporate discount rates are squeezing projected profit margins. In contrast, the impact on the economy from monetary accommodation via interest rate cuts is far weaker than that from a rate-hike shock. Aggressive monetary tightening can quickly steer the economy off course but material loosening gets caught in the friction when trying to chase up asset prices when it is on the down slope. In model two, the asymmetric decomposition of market sentiment indicates that we observe a strong structural depreciation of the exchange rate resulting from bearish sentiment shocks when capital flees abroad. At the same time, the currency appreciates at a more measured and gradual pace due to portfolio inflows. In effect, the exchange rate's differential response to interest rate shifts reveals that, while rate hikes have always failed to produce more structural strength due to built-in inflation expectations, rate cuts have reliably produced depreciation.

Table 8. Asymmetric P-ARDL Short- and Long-Run Estimates

Regressor Decomposition	Long-Run Coefficient	t-Statistic (Prob.)	Short-Run Coefficient	t-Statistic (Prob.)	Asymmetry Test (WLR / WSR)
Model 1: Dependent Variable = SMP					
$EXCR^{+}$ (Depreciation)	-0.612***	-4.95 (0.000)	-0.245***	-3.12 (0.002)	W_{LR}= 14.82***
$EXCR^{-}$ (Appreciation)	0.238**	2.18 (0.029)	0.065	1.14 (0.254)	W_{SR} = 5.64**
INR^{+} (Rate Hike)	-0.845***	-6.12 (0.000)	-0.310***	-4.22 (0.000)	W_{LR} = 11.20***
INR^{-} (Rate Cut)	0.314**	2.45 (0.014)	0.115*	1.88 (0.060)	W_{SR} = 3.91**
Model 2: Dependent Variable = EXCR					
MS^{+} (Bullish Sentiment)	-0.455***	-4.18 (0.000)	-0.195***	-3.05 (0.002)	W_{LR} = 9.45***
MS^{-} (Bearish Sentiment)	0.185*	1.91 (0.056)	0.082	1.34 (0.180)	W_{SR} = 4.12**
INR^{+} (Rate Hike)	0.685***	-5.11 (0.000)	0.315***	3.44 (0.001)	W_{LR} = 4.88**
INR^{-} (Rate Cut)	-0.412***	-3.88 (0.000)	-0.110*	-1.79 (0.073)	W_{SR} = 2.15

Sources: Authors' estimations using STATA 13

Table 9 reports the summary of hypothesis testing given that the study examines the link between stock market prices and exchange rates in the Asia-Pacific OECD countries. The Hypothesis Validation Matrix, as produced, captures the impact of financial integration on classical economic principles. As mentioned in the first core path, it is noted from the traditional trade view that currency depreciation strengthens export competitiveness, which is expected to raise stock market prices [59]. Nonetheless, the empirical results show this flow-based hypothesis is clearly invalid in this region. There is a long-run coefficient of exchange rate and stock market prices, which is negative at -0.425. The negative coefficient suggests that the depreciation of domestic currency is associated with the drop in equity pricing across Asia-Pacific. The decline in purchasing power is consistent with the perspective that currency depreciation can serve as an indicator within currency crisis early warning systems [60]. When a currency becomes weaker, it does not stimulate trade. On the contrary, it negatively impacts investor confidence. Further, they begin to withdraw their capital quickly from the domestic market.

The balance sheet effect is also important, as depreciation hits hard those firms with foreign debt or those using imported inputs [61]. In contrast, an appreciation of the currency offers a boost to the equity market because it reduces the costs of imported inputs and implies macroeconomic stability [62]. Financial and asset market channels have a significantly larger impact than the goods market channels, as illustrated by these dynamics [63]. The analysis of the stock-oriented portfolio balance model is the second core path which is the focus of the research. According to this model, stock market movement and changes in investor sentiments induce capital flows that affect foreign exchange rates. The data shows that market sentiment (the coefficient = -0.312) is significant and has a negative sign as predicted. Foreign portfolio investments into domestic equities increase when the market sentiment is positive [64]. In order to buy these domestic assets, overseas investors must convert their funds which lead to a huge increase in demand for the local currency. The huge influx of funds will see the domestic currency appreciate and decrease the direct exchange rate quote. The validation of this path means that the financial markets in Asia-Pacific OECD countries are highly integrated, with asset prices determining currencies. The analysis confirms a reciprocal association since the major independent variables is very significant in both models. The equity markets and the forex markets operate endogenously in the regional economy in the long run. The error-correction mechanisms present a greater understanding of how the two markets revert back to equilibrium following an economic shock. The stock market and exchange rate ECT for the two models are -0.542 and -0.485 respectively. According to the figures, the market moves to equilibrium corrections at the rate of 54.2 per cent per period. Meanwhile, the forex market reacts a little slower at 48.5% correction per period. This variation means that stock prices tend to react faster to new information and restore equilibrium more rapidly. After these paths, short-term interest rate changes are one of the main drivers of movement in both markets. Increased interest rates foster contraction, increasing the cost of borrowing and the discount rates applied to future corporate cash flows. This has also been reported by [65]. The interactions exhibit that policy assumptions that rely on trade are not feasible during volatility. Legislators and central banks must accordingly strengthen risk management frameworks and institutional capacity to safeguard macroeconomic stability and maintain investor confidence.

Table 9. Summary Table of Hypothesis Validation

Hypothesis / Framework	Core Path	Finding	Theoretical Alignment & Implication
Traditional Trade Perspective *(Flow-Oriented)*	EXCR →SMP	Significant Negative (-0.425)	Invalidated / Countered: Traditional flow theory dictates depreciation boosts exports/stocks. Instead, a negative coefficient proves that Balance Sheet / Capital Flight effects dominate in the APAC region.
Portfolio Balance Model *(Stock-Oriented)*	MS →EXCR	Significant Negative (-0.312)	Supported (via Portfolio Balance/Capital Inflow channel). Bullish market sentiment attracts foreign portfolio investment, raising demand for local currency and causing it to appreciate

Sources: Authors' estimations using STATA 13

5. DISCUSSION

The empirical findings of the CS-ARDL analysis, especially evidence of two-way causation where currency depreciation negatively affects stock prices (Model 1) and positive market sentiment strengthens the currency (Model 2), result in a series of policy implications for policymakers in the Asia-Pacific OECD nations. The fact that the negative association between exchange rates and stock prices is negative (-0.425)

suggests that the balance-sheet effect overrides the depreciation-expansionary hypothesis, which assumes that a depreciated currency stimulates the economy via the export channel [66]. To this end, central banks in the region (Reserve Bank of New Zealand (RBNZ), Bank of Japan (BoJ), Bank of Korea (BOK), and Reserve Bank of Australia (RBA)) ought to be cautious about allowing rapid currency depreciation. As much as such depreciation can lead to improved trade balance, it also has the risk of causing capital flight and depreciation of domestic equity assets [67]. Consequently, a controlled float or active intervention in times of increased volatility is advisable in order to prevent sudden depreciations that might disrupt the stock market. The strong effect of market sentiment on exchange rates in Model 2 highlights the significance of investor psychology as a factor that determines the value of currency. Transparency and explicit forward guidance should be the top priority of monetary authorities; unclear policy announcements may undermine market confidence, and the result would be a death of two birds in one shot: a stock market crunch (because of fear) and a currency crunch (because of capital outflow). It is therefore necessary to ensure good investor sentiment to maintain currency stability.

The high negative coefficient of interest rates on stock prices shows that it is a steep price for equity markets when monetary policy is tightened. By increasing rates in order to deal with inflation or to protect the currency, as implied by the positive coefficient of INR in Model 2, policymakers need to be aware of the collateral damage to the equity market. Macro-prudential measures (e.g., dynamic loan-to-value ratios) can be more desirable than radical changes in interest rates, in which authorities can direct the growth of credit without causing a serious decline in the stock market. The market volatility index was found to be of importance in crushing down stock prices and misleading exchange rates. To reduce the spread of volatility shocks between the two market structures, regulators are therefore urged to increase financial safety nets such as circuit breakers in equity markets and swap lines in currency markets. Since the markets are closely interrelated (e.g., a crash in the stock market will spread to currency depreciation), a crisis-management strategy must be established; at the same time, consistent crisis-management contingency measures are absolutely necessary.

The current research demonstrates that the effect of exchange rate movements on stock prices is more short-run, as supported by the quick action of market actors to exchange rate shocks as exhibited by the Asia-Pacific OECD economies. The current findings show a closer relationship, albeit on a short-term basis, in the Asia-Pacific OECD nations, which implies a lack of financial integration and market penetration. The research also observes that currency depreciation cycles tend to be associated with greater uncertainty and worse equity returns, and thus liberalization of the exchange rate would tend to increase market volatility unless balanced by macro-economic stabilization policies. These facts are consistent with the Mundell-Fleming theory, which assumes that exchange-rate flexibility is one of the channels according to which monetary shocks can affect the cost of assets, especially in open economies [68].

In the Asia-Pacific OECD setting, the interaction is rather asymmetrical as the influence of equity markets on exchange rates is substantial, and the opposite influence is relatively insignificant. The unfavorable and significant long-run dependency between exchange rates and equity-market performance that we have in this case agrees with the findings of Femi-Olagundoye & Adedokun [69], who reported that in a flexible exchange-rate regime, a weakened Naira decreased stock-market activity and investor confidence in Nigeria. This partial confirmation is evident in the QR of the current study, in which moderate depreciation at higher quantiles drives speculative investment. Therefore, the direction of the exchange-rate effect may differ in different structural settings, but the general conclusion of all research studies is that exchange-rate regimes have a powerful influence on investor sentiment and equity performance in developed economies. The fact that the exchange rate and interest rate have asymmetric impact on standard market potential, where the equity market is highly responsive to monetary policy but inelastic to change of the currency, reflects the Mundell-Fleming framework [70]. The consistency in interest-rate effects among quantiles in the current study further confirms that interest-rate volatility can increase stock-return volatility, thus contributing to short-term market instability [71]. The effect of market volatility in the present study, which is negative at low quantiles and positive at high quantiles, is aligned with pandemic-era findings of positive volatility at higher quantiles by Ullah et al. [72].

The insignificant connection observed between domestic equity markets and FX markets in the current analysis is consistent with research identifying a decoupling effect in some emerging markets [73]. On this basis, the extended exchange-rate policy and equity-market reform in underdeveloped countries still remain functioning in a relative vacuum, thus limiting the cross-sectoral mechanisms of relaying cross-macro-financial information. The QR findings also suggest that the impact of exchange-rate movements and volatility is disproportionately high in periods of acute market stress, which is in line with findings of significant exchange rate volatility and financial market impacts in India during the COVID-19 crisis [74]. Although depreciation of domestic currency normally lowers equity returns in the short term, some research suggests that depreciation of the domestic currency can give the exporting sector a competitive edge in the long run [75]. Interest-rate policy, however, significantly influences the performance of the equity market. This aligns with the earlier findings reported by Khattak et al. [76].

The policy prescriptions that can therefore be derived from the empirical evidence of this study are as follows: policymakers must be collaborative in the design and implementation of exchange rate and monetary policy systems. The evidence also suggests that moderate volatility with well-managed increase in currency value can activate equity markets and maintain macro-economic balance. Particularly, currency depreciation has the propensity to undermine the appeal of equity markets in periods of high returns; thus, governments should protect exchange-rate stability by accumulating foreign reserves, specific interventions, and foreign-capital inflows diversification to reduce susceptibility to speculative attacks and suppress exchange-rate market instability. Regions should respond to the sensitivity of interest rates to promote the stability of financial conditions. In both economic scenarios, interest rates are very critical as they mediate the relationship that exists between exchange rates and equity markets. The inherently negative effect of tightening monetary policies on asset prices and currency values in the case of developing economies highlights the vulnerability of the same to exogenous shocks. In this regard, central banks in such jurisdictions must follow a slow, data-sensitive policy in altering rates, in seeking a balance between inflation control and investment promotion and economic growth.

Overall, countercyclical interest-rate policy, i.e., an increase in rates in times of speculative boom and the opposite, contributes to the stability of monetary and foreign-exchange markets. At the same time, the Asia-Pacific OECD economies are characterized by a higher frequency of regime changes [77]. Liquidity resilience can be strengthened through the improvement of financial market infrastructure, including the introduction of new derivative instruments, greater information disclosure, and mobilization of institutional investors with long-term horizons in order to reduce abrupt transitions to new regimes. Market volatility has been shown to be asymmetric [78], hence the need to actively maintain volatility as an aspect of market stability. All-inclusive risk-monitoring systems, with early-warning signs of market stress and capital-flight reversals, should be instituted by policymakers. Moreover, prudential controls, such as dynamic capital buffers, margin requirements, and circuit breakers, could be used by financial regulators to restrain excessive risk-taking in periods of speculative boom; excessive volatility must be reduced by specific liquidity provision and communication policies aimed at keeping investor expectations steady.

Policy Implications for Stock Market Performance Model

The empirical evidence that refutes the traditional trade competitiveness view suggests that central banks in all countries in the Asia-Pacific OECD region need to stop thinking that currency depreciation leads to a rise in economic growth through exports. Due to the dominance of the Balance Sheet Effect in these integrated economies, financial regulators must comprehend that currency depreciation increases the probability of default for firms with high FX liabilities [79]. So, as per them, during periods of high volatility, central banks can no longer safely depend on aggressive interest rate hikes to stem currency depreciation. The use of time-varying parameter and asymmetric models shows that increases in the policy rate raise stock market volatility and have a negative long-run effect on stock returns [80]. Consequently, monetary authorities must adopt a more complex, multi-tool approach that avoids putting the entire burden of financial stabilization on policy rate adjustments. Most currencies require explicit intervention designed to counter fluctuations at sub-structural levels and that are excessive, illogical and therefore not sustainable.

In order to avoid suffering the terrible balance-sheet impacts shown in the nonlinear framework, macro financial regulators must enforce stricter limits on unhedged foreign-currency corporate debt. The financial overseers ought to prompt domestic firms to employ sophisticated derivative instruments and an active dynamic hedging framework to shield their balance sheet from unexpected exchange rate shocks. The arrival of optimistic sentiment draws highly volatile, short-term, portfolio flows into a country. Negative sentiment provokes an immediate flight of capital. However, regulatory authorities must do so using soft and subtle systemic capital flow management tools. These tools should act as speed bumps in the speculative surge which would reduce the systemic impact of hot money cycles on the domestic banking system and stock markets. Monetary policy transmission models must incorporate real-time stock market indicators into their models, as transfer entropy evidence identifies that shocks from the stock market to the foreign exchange market happen almost instantaneously [81].

To enhance investor confidence, policymakers must also prioritize deep institutional capacity building so that regional financial systems rest on transparent rules, not volatile market psychology. Capital market regulators should work actively to deepen and liquidate domestic bond markets so that local corporations may gain access to alternate financing channels without currency risk. In addition, as the current account balance acts merely as a stabilizing fundamental anchor during bullish market phases, structural economic reforms that enhance trade balance must be viewed as a long-term goal and not just a short-term fix during a crisis. The regional regulators producing financial stability reports must explicitly recognize the significant structural asymmetries exhibited by market participants who respond much more vigorously to negative shocks compared to similar size positive shocks [82, 83] At long last, Asian Pacific OECD's countries must expand regional cooperation and coordinated liquidity arrangements, such as bilateral swap lines, to provide an institutional safety net against speculative, sentiment-driven capital reversals.

The larger analysis indicates that the effect of market volatility is strongly negative in lower quantiles (bear markets) but diminishes in higher quantiles (bull markets) [84]. Based on this, asymmetric intervention mechanisms should be embraced by the supervisors like securities commissions. More normal circuit breakers might be insufficient; they should have dynamic stabilizers that automatically tighten in response to a state of increased volatility. The key empirical evidence highlights the fact that market-volatility index has the strongest deleterious impacts during bear markets that include rapid price falls [85].

The exchange-rate coefficient is often negative, and depreciation of currencies can lead to reduced stock prices, supporting the significance of the balance-sheet effect over the trade competitiveness effect. This corroborates the finding of Moore & Wang [86]. The policy makers ought to avoid competitive devaluation policies that aim at promoting exports. Although the decrease in currency value can theoretically favor the exporters, it is an indicator of latent economy which is weak and that faces inflationary pressure to foreign investors, and hence creates a flight of capitals that have the effect of lowering the stock markets [87]. A consistent, strong currency policy is more favourable as far as equity-market fortitude is concerned.

One striking empirical finding is that stock markets are often adversely affected by currency depreciation [88]. The result is a support of the harmful effect of depreciation on equity valuations. Based on this, the suggested policy position is the maintenance of currency stability and not devaluation policies aimed at increasing competitiveness in trade. Maintaining a stable currency would help protect the equity market by avoiding the negative depreciation impacts in the equity market which would create a more comfortable investment environment.

Policy Implications for the Exchange Rate Behaviour Model

The exchange-rate market analysis (the increase in EXCR corresponds to depreciation) shows that the coefficient of interest is positive and highly spikes in the upper quantiles. This finding questions the traditional idea that increasing the rate of interest protects a falling currency. Hiking rates in Asia-Pacific economies in the middle of a crisis has been shown to be ineffective at times, potentially signaling panic or tightening growth, thus failing to prevent currency falls as earlier reported by Ohno et al. [89]. The central banks must focus more on the use of foreign-exchange reserves interventions or cross-border swap lines

rather than the traditional interest-rate increases in the defense of the currency in times of increased turbulence.

The coefficient on the monetary-value index shows sharp peaks in the upper quantiles (0.80-0.9), which support the claim that systemic volatility is a significant driver of large depreciation periods [90]. Therefore, financial system protection should be focused on dealing with exogenous shocks by buffering. Due to the volatility of the world markets spreading into the domestic currency markets, policymakers ought to maintain large foreign-exchange reserves in order to mitigate the abrupt voluminous losses. The market sentiment shows a considerable negative (appreciative) impact which is supported by recent evidence [91]. Therefore, central banks should use forward guidance and transparent communication as conscious policy instruments. Since positive sentiment can strengthen the currency without regard to underlying fundamentals, coordinating investor expectations is the equivalent of a necessity to parallel monetary supply management.

There is also empirical evidence that the increase in interest rates in the effort to reduce depreciation can lead to the worsening of the situation in crisis periods. This finding corroborates the finding of Şen et al. [92]. This observation implies that even though it may seem that the increase of the rate will stabilize the exchange rates, it can instead unwittingly enhance depreciation during a crisis. Based on this, the policy recommendation is in support of the use of foreign-exchange reserves or swap lines, in lieu of the use of rate increases, to stabilize the currency during market crashes. These strategies offer better means of defense against depreciation without bearing the negative consequences of increased interest rates. This finding supports the essentiality of careful assessment of the policy interventions that should be taken to secure the stock market, defend the currency, and reduce the risk during economic stress. Maintaining currency stability, limiting extreme rate increases, and the use of risk-management tools, like circuit breakers, all form an important part of the plans of integrity of financial systems in case of crisis.

Significantly, the Asymmetric P-ARDL estimations uncover stark structural imbalances, demonstrating that market participants react far more aggressively to negative shocks than to equivalent positive developments. Specifically, the long-run contractionary impact of currency depreciation on stock prices is more than double the expansionary benefit felt during periods of appreciation. Similarly, positive interest rate hikes yield a severely depressing effect on regional stock indices because they dramatically elevate borrowing expenses and drive up corporate discount rates. In contrast, monetary loosening actions through interest rate cuts offer far weaker positive stimuli to equity markets during downturns. This confirms that while monetary tightening can abruptly crash market momentum, monetary easing struggles to reignite investor optimism with the same intensity. The TVP-P-VAR results clarify these dynamics by illustrating how these relationships morph as the broader economic environment shifts. During extreme crisis intervals marked by high exchange rate volatility, the negative impacts of interest rate hikes on equity markets escalate dramatically from a baseline steady state to an intense stress state. This escalation reveals the precise limits of traditional interest rate defenses used by regional central banks. Attempting to defend a depreciating currency with aggressive rate hikes inflicts collateral damage on domestic equity markets by intensifying corporate stress.

Furthermore, the interest rate coefficient in the exchange rate equation exposes a structural vulnerability linked to the Fisher effect. Prolonged high interest rates across these Asia-Pacific nations reflect underlying inflationary pressures, which ultimately trigger structural domestic currency weakness rather than strength. Regulators must also note the changing roles played by fundamental anchors versus psychological drivers across different market distributions. The panel quantile regressions underscore that market sentiment and the market volatility index hold immense sway during bearish periods at lower quantiles. Panic selling and sudden spikes in volatility dominate price discovery when markets are deeply stressed. Meanwhile, the current account balance serves as a stabilizing, fundamental anchor only during bullish phases situated at higher quantiles. These combined outcomes emphasize that financial integration in the Asia-Pacific region has elevated asset market and sentiment channels far above traditional trade mechanisms.

The bi-directional endogeneity validated by the dual error-correction terms highlights that both markets are tightly bound to a shared equilibrium correction path. Since the stock market adjusts back to equilibrium at a faster rate than the foreign exchange market, equities absorb macro-financial shocks with superior speed. Policymakers must therefore abandon linear, static assumptions regarding trade and monetary transmissions. To safeguard regional financial systems, central banks must build dynamic risk management frameworks capable of absorbing asymmetric volatility while cultivating institutional strength to sustain global investor confidence.

Contribution of the study to knowledge

This research presents a robust multi-dimensional empirical framework that disentangles the complex bi-directional relationship between stock market prices and exchange rates of highly integrated developed countries. The research successfully applies the Panel CS-ARDL model and nonlinear and time-varying applications to break the strong, rigid, static assumptions of time-series and cross-sectional nature of classic macro-financial modeling. One of the theoretical contributions stemming from our findings is the clear empirical marginalization of the classical flow-oriented model in the Asia-Pacific OECD region, which proves that contemporary financial integration has fundamentally raised asset market channels above goods market channels. The Portfolio Balance Approach receives an enhancement in the present study, which outlines specifically how capital account flows and portfolio reallocations determine short-run currency movements. Moreover, the use of the B-C F-D causality test adds an essential aspect to the literature by producing a pinpoint temporal map of these financial interactions.

By demonstrating that exchange rates causally affect equities mainly at long-run structural horizons, while equity prices drive currency adjustment at high frequencies, we obtain a new assessment of market reaction speeds. This temporal decomposition addresses long-standing inconsistencies in earlier studies concerning which market acts as the primary anchor during macro-finance adjustments. The Time-Varying Parameter Panel VAR of the study further contributes to the literature as it proves that the structural coefficients between the variables are highly flexible and vary significantly between baseline and crisis regimes. Besides, the empirical evidence of serious structural non-linearities using an asymmetric Panel ARDL framework shows that the academic communities can no longer model macro-financial transmission with simple linear averages. The contractionary damage, that is, currency depreciation and rate hikes, is greater than the expansionary effects, namely appreciation and monetary easing. This finding adds important subtlety to the broader analysis of shocks. The study employs panel quantile regression to illustrate how macro-financial drivers evolve across the entire conditional distribution of market performance. During bearish stress, sentiment dominates while fundamentals anchor bullish markets. The study provides a valuable empirical benchmark of advanced and financially integrated economies, which fall outside the well-researched Euro area and North American corridors, by concentrating specifically on the unique high-quality institutional panel of Asia-Pacific OECD countries.

6. CONCLUSION

The research examined the link between stock market prices and exchange rates in Asia-Pacific OECD countries to test the validity of the Flow-Oriented (Goods Market) and Stock-Oriented (Portfolio Balance) hypotheses using the Panel CS-ARDL model, and panel quantile regression techniques for robustness. The panel cross-sectional ARDL-generated results confirm high integration of financial markets in the Asia-Pacific OECD region; any type of shock or policy in one market is bound to be transmitted to the other. This means that monetary authorities can no longer manage exchange-rate and equity-market stability uncontrollably; a coordinated policy framework is the key to curbing systemic volatility. This study provides compelling empirical evidence that modern financial integration has elevated asset market dynamics and sentiment channels far above traditional goods market mechanisms. By leveraging advanced econometric techniques spanning time-varying, asymmetric, and frequency-domain frameworks, the research exposes the structural invalidity of the flow-oriented hypothesis within this highly integrated region. Instead of stimulating export-led equity growth, currency depreciation triggers severe

corporate distress via the Balance Sheet Effect, ultimately driving capital flight and depressing stock market prices over long-run horizons. In contrast, the robust validation of the stock-oriented Portfolio Balance model confirms that equity market momentum and investor sentiment serve as the primary engines of short-term exchange rate adjustments. The discovery of profound structural asymmetries further highlights that the contractionary damage inflicted by currency weakness and aggressive interest rate hikes exponentially outweighs the expansionary benefits of equivalent positive shocks. This hypersensitivity becomes critically amplified during high-volatility crisis regimes, exposing the severe limitations and collateral damage associated with utilizing conventional monetary tightening to defend depreciating currencies. Consequently, central banks and financial regulators must pivot toward dynamic, multi-tool policy frameworks. Ensuring sustainable macroeconomic stability in the Asia-Pacific region requires strict macro-financial oversight of corporate foreign-currency debt, strategic management of sentiment-driven capital flows, and the cultivation of deep institutional capacity to anchor global investor confidence against asymmetric market shocks. The markets of the Asia-Pacific OECD have asymmetric, risk-averse, and volatile structures. This study highlights the critical role of financial stability, good monetary policy, and institutional quality in the damping of the transmission of macro-financial shocks; thus, it is suggested to concentrate on coordinated monetary and exchange-rate policies, strengthening market transparency, financial integration to eradicate volatility and help promote sustainable growth in emerging economies. The empirical findings provide a deeply nuanced understanding of the macro-financial linkages across Asia-Pacific OECD nations. Central to these outcomes is the definitive invalidation of the flow-oriented model's core tenet, which mistakenly suggests that currency depreciation enhances equity valuations via export competitiveness channels. Instead, the persistent and significant negative coefficient of the exchange rate in Model One confirms that a structural Balance Sheet Effect dominates this region. When domestic currencies face depreciation, the financial burdens on firms heavily reliant on imported raw inputs and unhedged foreign currency debt scale up exponentially. This corporate strain triggers capital flight, which severely erodes domestic asset prices and overrides any marginal trade gains. The Frequency-Domain analysis adds profound temporal clarity to this relationship by showing that the causal impact of exchange rates on stock market prices is highly concentrated at long-run horizons. Conversely, the reverse causal link running from stock market prices to exchange rates is exceptionally potent at high frequencies. This short-run dominance validates the stock-oriented Portfolio Balance Model, proving that capital allocation and portfolio rebalancing actions move far quicker than international goods trade. When market sentiment shifts positively, international investors aggressively acquire domestic equities, driving up local currency demand. This surge in portfolio capital inflows creates rapid short-term currency appreciation, as evidenced by the negative sentiment coefficient in Model Two. Overall, the empirical analysis of the current study reveals a new set of relationships among exchange-rate regimes, movements in interest rates, and market volatility in relation to equity-market performance in different economies with and without identical risk. The established linkages have very strong application in both theoretical and real-world contexts, and they provide useful information that can guide policymakers, investors, and financial regulators. Additional studies may enhance the analysis with increased frequency of data (daily or weekly) to better reflect the short-term market adjustments and intraday volatility patterns.

Supplementary Materials Statement: For this research or the article, no supplementary materials were used.

Funding Statement: No funding from government, private and commercial institutions was acquired for this study.

Author Contributions: David Umoru, Beauty Igbinovia & Imran Enike Abu jointly conceptualised, wrote the first draft & theoretical framework of this study. The modeling of economic design and formal quantitaitive analysis was done by David Umoru, Beauty Igbinovia, Muhammed Adamu Obomeghie, Imran Enike Abu. Muhammed Adamu Obomeghie, Emoabino Muhammed, and Imran Enike Abu were responsible for the software configurations, modeling, and programming jobs. The data collection, curation,

and tsrutcural organization were collaboratively carried out by Beauty Igbinovia, Muhammed Adamu Obomeghie, and Emoabino Muhammed. All authors actively undertook the investigative phase and empirical evaluation. The econometric outputs were cross-checked by Dvid Umoru. The extensive and necessary intellectual revisions, critical reviews, and final editing were performed by Emoabino Muhammed and Imran Enike Abu. David Umoru and Beauty Igbinovia successfully managed the project and supervised the overall academic development. The authors read the manuscript and approved the final version.

Informed Consent Statement: Not applicable. The study did not involve human participants, human subjects, or identifiable individual records requiring informed consent.

Data Availability Statement: Data supporting the findings of this work will be made available from the corresponding author upon a convincing request subject to the submission of a formal research proposal, along with review and verification of the intended purpose by the researchers.

Conflict of Interest Statement: Authors do not have competing interests, financial associations or any other form of relationships that can be interpreted as affecting the results, analysis and/or publication of this study.

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