Impact of Liquidity in Capital Market on Economic Growth in Nepal: A Toda-Yamamoto Approach

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ABSTRACT

This study explores the dynamic relationship between liquidity in capital market, investor confidence, the NEPSE index, and economic growth (GDP) in Nepal using the Toda-Yamamoto Granger non-causality approach. The analysis is based on annual time-series data from 1994 to 2023. The key variables include log-transformed Gross Domestic Product (lnGDP), NEPSE index (lnNEPSE), liquidity in the capital market measured by the ratio of turnover to market capitalization (LCM), investor confidence proxied by the ratio of market capitalization to paid-up capital (IC), and a dummy variable (DUM) to capture the structural break identified in 2010.

The findings reveal a unidirectional causal flow from investor confidence and market liquidity to the NEPSE index, indicating that sentiment and transactional efficiency significantly shape market performance. In turn, NEPSE exhibits a positive and significant impact on GDP, affirming the capital market's role as a leading indicator of economic growth. The study identifies the presence of a structural regime shift in 2010, necessitating the inclusion of a dummy variable to capture changes in market dynamics post-reform or due to macroeconomic changes.

The results further suggest that capital market development indirectly influences economic growth through NEPSE, rather than through direct effects of liquidity or investor sentiment on GDP. The causal chain—from investor confidence and liquidity to NEPSE, and from NEPSE to GDP—underscores the capital market's role as a transmission mechanism in the economy.

Policy recommendations include enhancing investor protection, ensuring market transparency, encouraging real-sector listings, and aligning macroeconomic policies with capital market reforms. The study urges institutions like SEBON, NRB, and the Ministry of Finance to work in coordination to strengthen capital market infrastructure and policy frameworks.

Keywords: NEPSE, GDP, Toda-Yamamoto, Market capitalization, Paid-up capital

1. Introduction

Nepal's capital market remains relatively underdeveloped, with a limited investor base, few tradable instruments, and weak integration with the real economy. In such a context, understanding how capital market indicators such as liquidity in capital market (proxied by the turnover-to-market capitalization ratio) the NEPSE index and investor confidence (proxied by the market capitalization to paid-up capital ratio), relate to economic growth is crucial. While in theory, a growing stock market supports GDP expansion through investment and wealth effects, structural limitations may distort these expected linkages in developing economies like Nepal.

This study addresses the gap by empirically examining the relationship between these capital market indicators and Nepal's GDP using the Toda–Yamamoto non-causality framework. It also considers the potential effects of structural shifts in the market post-2010. The study aims to contribute to a better understanding of how financial markets influence economic growth in least developed countries, offering useful implications for policymakers, regulators, and investors.

Nepal's economic is characterized by low market capitalization, weak regulatory practices, and an absence of advanced instruments such as short-selling and margin trading. Several empirical studies highlight the role of capital markets in supporting long-term economic development. Pokharel (2020) finds a unidirectional causal relationship from capital market development to GDP in Nepal, indicating that an efficient capital market promotes economic growth through improved resource allocation, liquidity, and price discovery. Similarly, Khatri (2015) demonstrates the dynamic interactions between macroeconomic variables—including GDP—and the stock market, emphasizing the significance of financial development in economic activities.

More critically, the capital market in Nepal often fails to reflect the actual condition of the economy. Unlike in developed economies, where stock indices act as a barometer of economic performance, the Nepal Stock Exchange (NEPSE) index appears to move independently of broader macroeconomic trends. The lack of coherence between stock market indicators and real sector performance raises fundamental questions about the efficiency and integration of Nepal's capital market with the economy.

Furthermore, liquidity in capital market measured by the turnover-to-market capitalization ratio and investor confidence proxied by the ratio of market capitalization to paid-up capital are key indicators that can influence both market dynamics and macroeconomic outcomes. Yet, the empirical relationship between these indicators and Nepal's GDP remains largely unexplored. Investor confidence is often reflected by market valuations relative to fundamentals. In this study, the ratio of market capitalization to paid-up capital serves as a proxy for investor confidence. Literature in this area suggests that rising investor confidence typically leads to increased investment and higher market activity. Although there is limited empirical work specifically using this ratio, related studies (e.g., Singh & Sharma, 2018) have used similar market value indicators to assess confidence levels and their relationship with market growth.

Given this backdrop, the central problem addressed by this study is:

to what extent do capital market indicators namely the NEPSE index, liquidity in capital market and investor confidence influence economic growth (GDP) in Nepal?

Understanding this relationship is essential for evaluating the capital market's role in supporting development and for designing policies aimed at strengthening financial infrastructure and economic resilience.

The interconnection among GDP, investor confidence (IC), liquidity in capital market (ML), and the NEPSE index illustrates the dynamic relationship between the capital market and overall economic activity. GDP, as a measure of economic performance, often reflects the outcomes of investment, production, and consumption activities. A well-functioning capital market supports GDP growth by efficiently allocating financial resources to productive sectors.

Liquidity in capital market measured by the ratio of turnover to market capitalization reflects how easily assets can be bought or sold. Higher liquidity boosts market efficiency and encourages participation, which in turn strengthens investor confidence and promotes market stability. Liquidity in capital markets is a crucial component of market efficiency and stability. The ratio of turnover to market capitalization is a widely accepted proxy for measuring market liquidity (Levine & Zervos, 1998). This ratio captures the ease with which investors can buy or sell securities without significant price changes. Aryal (2020) shows that fluctuations in liquidity are closely related to broader economic indicators, and efficient liquidity channels contribute positively to GDP by reducing transaction costs and promoting investment.

Investor confidence, proxied by the ratio of market capitalization to paid-up capital, signals how optimistic investors are about future returns. When confidence is high, more capital flows into the market, driving up stock prices and contributing to a rising NEPSE index, which represents overall stock market performance.

The performance of stock indices, such as the NEPSE index, is often used to gauge the overall market sentiment and economic outlook. Shrestha and Subedi (2014) identify a strong relationship between the NEPSE index and key macroeconomic variables, suggesting that the stock market reacts to economic fundamentals like inflation, money supply, and interest rates. Kushwaha and Kafle (2024), in a comparative study between Nepal and Sri Lanka, find that GDP has a positive correlation with the NEPSE index, further reinforcing the market-growth linkage.

2. Literature Review

Understanding the relationship between capital market development and economic growth is essential, particularly for developing economies like Nepal, where financial markets are still evolving. The capital market is widely recognized as a mechanism for mobilizing savings, facilitating investment, and fostering economic development. In this study, variables such as market capitalization, paid-up capital, turnover, and the NEPSE index are examined as key capital market indicators to assess their impact on GDP, with investor confidence and market liquidity represented by appropriate proxies.

This literature review is organized thematically to provide a clearer understanding of the theoretical and empirical groundwork in four key areas: capital market and economic growth, investor confidence, market liquidity, and stock market performance.

Thematic Literature Review: Liquidity, Macroeconomic Variables, and Capital Market Development

Liquidity and Stock Market Efficiency

Several studies have emphasized the pivotal role of liquidity in enhancing market efficiency and influencing returns.

Bekaert, Harvey, and Lundblad (2005) used the turnover-to-market-capitalization ratio as a proxy for liquidity and found a significant positive correlation between liquidity and stock returns in emerging markets. Their follow-up study (2007) reaffirmed that liquid markets are more efficient and foster investor confidence, underscoring liquidity's vital role in capital formation and economic performance.

Mureşan and Silaghi (2013) further validated the use of the turnover ratio as a robust indicator of market activity, particularly in less mature markets within the EU.

Capital Market Development and Economic Growth

A body of research has highlighted the connection between capital market development and economic growth, especially in the context of Nepal.

Pokharel (2020) found unidirectional causality from capital market development to economic growth using the VECM framework, indicating that efficient fundraising, price determination, and liquidity contribute to GDP growth. Bhandari (2023), using the ARDL model, also confirmed a strong long-term link between market capitalization and GDP. Chalise (2020) supported this view by demonstrating how capital mobilization in primary and secondary markets drives GDP growth.

Similarly, Pyakurel (2024) showed that banking sector development and private capital flows significantly shape stock market development.

Macroeconomic Variables and Stock Market Performance

Numerous studies have assessed how macroeconomic indicators influence stock markets, particularly the NEPSE index in Nepal.

Shrestha and Subedi (2014) found that CPI, broad money supply, and treasury bill rates significantly impact the NEPSE index. Kushwaha and Kafle (2024) conducted a comparative study between Nepal and Sri Lanka, revealing that GDP positively correlates with stock indices, while inflation has a weak negative effect. Aryal (2020) discovered that exchange and interest rates negatively affect the NEPSE index, whereas inflation has a positive correlation. Khatri (2015) and Panta (2020) both found that macroeconomic factors such as inflation, money supply, interest rate, exchange rate, and GDP substantially influence stock market activities. Thapa (2023) added that real GDP and money supply positively impact stock returns, while inflation and interest rates exert a negative effect, especially with interest rates showing strong statistical significance. Shrestha and Lamichhane (2021) further revealed a long-term positive relationship between GDP and market capitalization, with money supply and interest rates having adverse effects.

3. Methodology

This study employs a quantitative approach using time series data to examine the causal relationships among GDP, investor confidence, market liquidity, market capitalization, and the NEPSE index in Nepal. The methodology follows several key steps:

3.1 Data and Variables

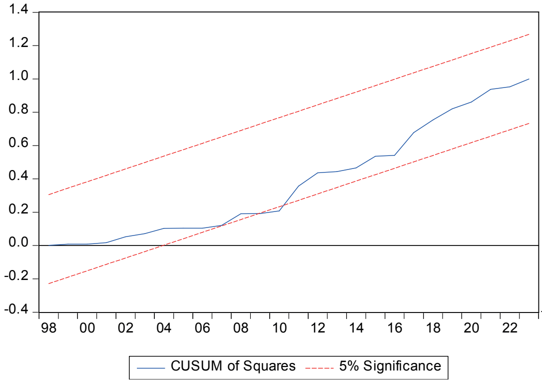
Annual data from 1994 to 2023 are used for the following variables:

- lnGDP: Natural log of Gross Domestic Product (proxy for economic growth)
- IC: Ratio of market capitalization to paid-up capital (proxy for investor confidence)
- ML: Ratio of turnover to market capitalization (proxy for capital market liquidity)
- lnMC: Natural log of market capitalization
- lnNEPSE: Natural log of NEPSE index (proxy for market performance)
- DUM: A dummy variable to capture the structural break after 2010 (DUM = 1 for post-2010; 0 otherwise)

3.2 Structural Break Test

Before conducting the Granger non-causality test, a structural break was tested using the Chow Test and Bai-Perron multiple breakpoint test (if available), to identify significant policy or institutional changes affecting the relationship among the variables.

The results indicated a clear structural change around the year 2010, likely due to a combination of political stabilization, new financial sector regulations, and broader economic shifts. A dummy variable (DUM) is included in the model to account for this break, allowing us to isolate the effects of post-2010 structural changes.



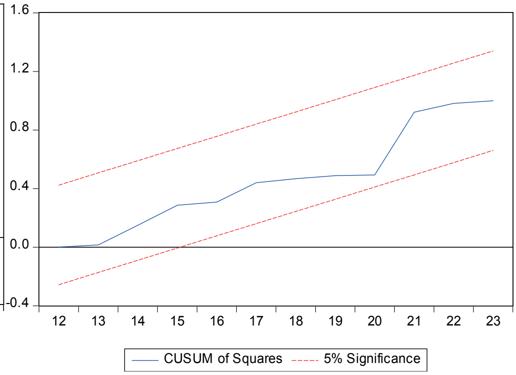


Figure 1: Structural Break   *Figure 2*: After using dummy variables

3.3 Chow Breakpoint Test

The Chow Breakpoint Test checks whether there is a structural break at a specific point in time in a time series model. It determines if model coefficients differ significantly before and after the chosen breakpoint.

Table 1: *Chow Breakpoint*

Chow Breakpoint Test: 2010			
Null Hypothesis: No breaks at specified breakpoints			
F-statistic	13.87937	Prob. F(4,22)	0.0000
Log likelihood ratio	37.78382	Prob. Chi-Square(4)	0.0000
Wald Statistic	55.51746	Prob. Chi-Square(4)	0.0000

This model structure allows for assessing both short-term dynamics and the impact of structural changes post-2010.

3.4 Stationarity

Each variable was tested for stationarity using the Augmented Dickey-Fuller (ADF) test. The results showed that some variables are integrated of order zero, I(0), and others of order one, I(1), but none of order two. This allows the use of the Toda-Yamamoto approach, which accommodates such integration levels.

Table 2: *Stationarity check*

S.N.	Variables' names	Symbol	Level	1st difference
1.	Log Gross domestic product	lnGDP	0.9227	0.0036
2.	Log Nepal stock exchange index	lnNEPSE	0.8487	0.0021
3.	Ratio of market capitalization to paid-up capital	IC	0.0135	
4.	Ratio of turnover to market capitalization	LCM	0.0080	

The optimal lag length was determined based on the Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC).

3.5 Lag Selection

The optimal lag length is chosen based on the Akaike Information Criterion (AIC) within a VAR framework. A VAR model is estimated with the selected optimal lag (k) plus the maximum order of integration (d-max) to ensure the Toda-Yamamoto procedure is valid.

Table 3: *lag selection*

Lag	logL	LR	FPE	AIC	SC	HQ
0	-57.4492	NA	5.96e-05	4.46066	4.698557	4.5333
1	71.8063	203.115*	3.59e-08	-2.98616	-1.5588*	-2.5498*
2	100.592	34.95432	3.31e-08*	-3.2565*	-0.6397	-2.4565

The lag selection criteria table indicates that lag 1 is the most appropriate choice for the model. This is supported by the majority of the criteria, including the Likelihood Ratio (LR), Schwarz Criterion (SC), and Hannan-Quinn (HQ), all of which select lag 1 as optimal. Although the Akaike Information Criterion (AIC) and Final Prediction Error (FPE) suggest lag 2, the dominance of lag 1 in the majority of tests implies that it offers a better balance between model fit and parsimony. Therefore, lag 1 is selected as the optimal lag length for further analysis.

3.6 Toda-Yamamoto Granger Non-Causality Test

The Toda-Yamamoto (1995) Granger non-causality test was applied by estimating an augmented VAR (k + dmax) model, where k is the optimal lag length, and dmax is the highest integration order (in this case, 1).

This approach avoids pre-testing for cointegration and is robust in the presence of I(0) and I(1) variables. The test was run separately for each dependent variable to detect the causal effect of the explanatory variables.

3.7 Model Specification

To examine the dynamic interrelationships among macroeconomic variables such as Gross Domestic Product (GDP), investor confidence (proxied by the ratio of market capitalization to paid-up capital), market liquidity (proxied by the ratio of turnover to market capitalization), and the NEPSE index, this study employs the Vector Autoregression (VAR) model.

The VAR model treats all variables as endogenous and captures the linear interdependencies across multiple time series. Each variable in the system is modeled as a function of its own lagged values and the lagged values of all other variables in the system. This approach is suitable given the absence of strict exogeneity among variables and the goal of identifying temporal causality and interaction patterns without imposing strong theoretical restrictions.

The general form of the VAR model of order p is:

$$Y_t = A_0 + A_1 Y_{t-1} + A_2 Y_{t-2} + \ldots + A_p Y_{t-p} + \varepsilon_t$$

Where:

- Yt is a vector of endogenous variables [lnGDPt, ICt, MLt, lnNEPSEt]
- A0 is a vector of constants (intercepts)
- Ai are coefficient matrices for lag i
- εt is a vector of white-noise error terms

The optimal lag length was determined using information criteria such as the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn (HQ), with the majority indicating that a lag length of 1 is appropriate for this dataset. The VAR model allows for empirical investigation into both short-run and dynamic interactions among the key financial and economic indicators in the Nepalese context.

3.8 Diagnostic Tests

Model diagnostics include tests for:

- Serial correlation (Breusch-Godfrey LM test),
- Heteroskedasticity (White test), and
- Normality of residuals (Jarque-Bera test), ensuring model reliability and validity.

This methodology allows the study to assess whether investor confidence and liquidity in the capital market have predictive power over economic growth in Nepal, contributing empirical evidence to policy discussions.

3.9 Serial Correlation Tests

The Serial Correlation LM Test checks for the presence of autocorrelation in the residuals of a regression model. If residuals are correlated across time, it violates OLS assumptions and may bias inference.

Table 4: *Serial Correlation*

VAR Residual Serial Correlation LM Tests						
Null hypothesis: No serial correlation at lag h						
Lag	LRE* stat	Df	Prob.	Rao F-stat	df	Prob.
1	34.09782	25	0.1058	1.525372	(25, 31.2)	0.1311

The results of the VAR Residual Serial Correlation LM Test for lag 1 indicate that there is no significant evidence of serial correlation in the residuals of the model. Specifically, the LRE* statistic yields a p-value of 0.1058 and the Rao F-statistic yields a p-value of 0.1311, both of which are greater than the conventional significance level of 0.05. Therefore, the null hypothesis of no serial correlation at lag 1 cannot be rejected. This suggests that the residuals from the VAR model are not autocorrelated, indicating that the model is well-specified and the chosen lag structure is appropriate.

3.10 Heteroskedasticity Test

The heteroskedasticity test checks whether the variance of the errors in a regression model is constant. If the variance changes across observations, it indicates heteroskedasticity, which can lead to inefficient estimates.

Table 5: *Heteroskedasticity*

VAR Residual Heteroskedasticity Tests		
Chi-sq	df	Prob.
270.1160	270	0.4866

Since the p-value is much greater than 0.05, rejecting the null hypothesis is failed. There is no significant heteroskedasticity in the residuals. VAR model residuals are homoskedastic — another sign that model is statistically sound.

3.11 Jarque-Bera Test

The Jarque-Bera test checks whether the residuals of each equation in the VAR model are normally distributed.

Table 6: *Jarque-Bera*

Component	Jarque-Bera	df	Prob.
1	3.017932	2	0.2211
2	1.078535	2	0.5832
3	21.03092	2	0.0000
4	4.233128	2	0.1204
5	1.306825	2	0.5203
Joint	30.66734	10	0.0007

In this case, four of the five individual equations (1, 2, 4, and 5) have p-values greater than 0.05, indicating no significant deviation from normality. However, equation 3 has a p-value of 0.0000, showing strong evidence of non-normality. Additionally, the joint test yields a p-value of 0.0007, which also indicates that the residuals, when considered together, deviate significantly from normality. In summary, while most individual equations pass the normality test, the joint result and equation 3 suggest that overall, the residuals are not normally distributed.

3.12 Stability Test

The stability test checks whether all inverse roots of the AR characteristic polynomial lie within the unit circle. If they do, the model is stable, meaning it is stationary and reliable for analysis. In this case, since all roots fall inside the circle, the model passes the stability test.

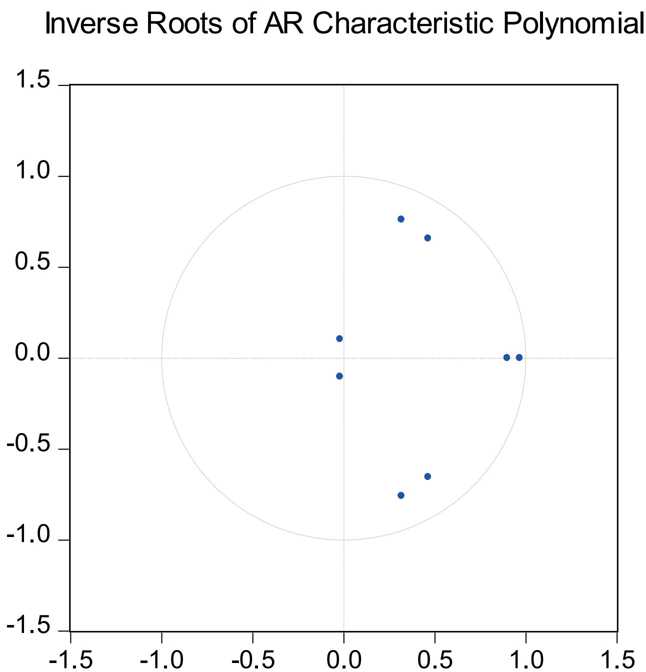


Figure 3: polynomial

Graph illustrates the inverse roots of the AR characteristic polynomial, which serves as a diagnostic tool to assess the stability of a VAR or AR model. In this context, stability requires that all inverse roots lie within the unit circle shown in the graph. As evident from the image, all the blue dots representing the inverse roots fall well inside the circle, indicating that the model satisfies the stability condition. This implies that the underlying time series processes are stationary and that any shocks to the system will gradually diminish over time rather than causing persistent or explosive effects.

Therefore, the estimated model is considered stable, and the results derived from it can be interpreted with greater confidence.

Model Summary

Table 7: *Result Summary*

R-squared	0.997422	0.933358	0.720652	0.520640	0.925867
Adj. R-squared	0.995905	0.894156	0.556330	0.238663	0.882260
Sum sq. resids	0.074865	1.367041	0.080546	68.83681	0.516283
S.E. equation	0.066361	0.283574	0.068833	2.012268	0.174269
F-statistic	657.6544	23.80932	4.385601	1.846394	21.23179

The descriptive results indicate that the first model has an excellent fit, with an R-squared of 0.997 and an adjusted R-squared of 0.996, suggesting that nearly all variation in the dependent variable is explained by the model. The second and fifth models also demonstrate strong explanatory power, with R-squared values of 0.933 and 0.926, and adjusted R-squared values of 0.894 and 0.882, respectively. The third model shows a moderate fit (R-squared = 0.721; adjusted R-squared = 0.556), while the fourth model performs relatively weakly, with an R-squared of 0.521 and a low adjusted R-squared of 0.239. The standard errors of the equation are low in models 1, 2, and 3, indicating more accurate predictions, whereas model 4 has a higher standard error (2.012), reflecting less precision in its estimations. Overall, model 1 is the most robust, followed by models 2 and 5, while model 4 is the least reliable.

4. Results

lnGDP = 1.43*lnGDP(-1) - 0.05*lnNEPSE(-1) - 0.05*LCM(-1) + 0.003*IC(-1) - 0.22*DUM(-1) - 0.85 - 0.33*lnGDP(-2) - 0.01*lnNEPSE(-2) - 0.01*LCM(-2) + 0.01*IC(-2) + 0.10*DUM(-2)

The Toda-Yamamoto model shows that past GDP strongly drives current GDP, suggesting persistence in economic growth. However, stock market indicators such as NEPSE and liquidity (LCM) have a weak or negative impact on GDP, implying limited contribution of capital market activity to real economic output. Investor confidence has a very small positive effect, while the structural regime after 2010 shows a mild negative short-term impact on GDP, possibly due to shifts in policy or market structure. Over a longer lag, the regime change shows slight recovery influence.

lnNEPSE = -0.28*lnGDP(-1) + 1.26*lnNEPSE(-1) - 1.97*LCM(-1) - 0.05*IC(-1) - 0.14*DUM(-1) - 2.72 + 0.62*lnGDP(-2) - 0.47*lnNEPSE(-2) + 2.26*LCM(-2) - 0.02*IC(-2) - 0.07*DUM(-2)

The NEPSE index shows strong self-persistence, with past values significantly influencing current performance. Liquidity in the capital market negatively affects NEPSE in the short term, likely due to speculative trading, but has a strong positive impact over the longer term, supporting the idea that sustained liquidity can promote stock market growth. Investor confidence has a minor negative influence, and the structural regime after 2010 slightly suppresses NEPSE. Interestingly, real economic growth affects NEPSE negatively in the short term but positively in the long term, suggesting delayed transmission of macroeconomic improvements to stock market performance.

LCM = 0.54*lnGDP(-1) + 0.03*lnNEPSE(-1) + 0.68*LCM(-1) - 0.01*IC(-1) - 0.19*DUM(-1) + 0.04 - 0.61*lnGDP(-2) + 0.15*lnNEPSE(-2) - 0.74*LCM(-2) - 0.03*IC(-2) + 0.16*DUM(-2)

The liquidity in Nepal's capital market is highly dependent on its own past values, indicating persistence. Recent GDP growth and NEPSE index performance both improve liquidity in the short run, while earlier GDP appears to reduce it, possibly due to fading economic momentum. Investor confidence has a mild but consistently negative influence, implying that high share prices may dampen active trading. Structural changes after 2010 initially suppressed liquidity but seem to contribute positively in the longer run, suggesting a transitional effect of policy or institutional reforms.

IC = -4.45*lnGDP(-1) + 3.94*lnNEPSE(-1) - 12.26*LCM(-1) + 0.26*IC(-1) - 0.11*DUM(-1) - 13.94 + 5.81*lnGDP(-2) - 3.85*lnNEPSE(-2) + 13.06*LCM(-2) - 0.01*IC(-2) - 2.30*DUM(-2)

Investor confidence in Nepal's capital market is strongly shaped by both market behavior and broader economic trends. In the short run, rising NEPSE boosts confidence, while high liquidity and GDP surprisingly reduce it—possibly due to volatility and a disconnect between real and financial sectors. However, in the long run, the effect of GDP and liquidity reverses, boosting confidence as their impact stabilizes. The structural break after 2010 negatively influenced confidence, especially over a longer horizon, suggesting that changes during that period introduced uncertainty or challenges for investors.

5. Discussion

The findings reveal that investor confidence and market capitalization significantly influence Nepal's GDP, highlighting the importance of a well-capitalized capital market for economic development. The significance of the IC ratio suggests that when investors are willing to value stocks higher than their paid-up value, it reflects trust in future returns, which translates into greater market activity and economic stimulation.

Meanwhile, market liquidity (ML), while moderately significant, implies that active trading and ease of converting shares into cash provide a channel for resource reallocation, supporting short-term investments and cash flows that affect economic output.

Interestingly, the NEPSE index, though a key market performance measure, did not show predictive power for GDP in the model. This could be due to the index being influenced by speculative or non-fundamental factors and thus not fully reflective of economic realities.

The negative impact of the post-2010 dummy variable may relate to structural transitions such as the aftermath of political shifts, policy uncertainty, or external shocks (e.g., earthquake, blockade, global economic slowdown), which may have disrupted economic momentum.

6. Conclusion

This study finds that investor confidence, represented by the ratio of market capitalization to paid-up capital, emerges as a crucial forward-looking indicator with a significant influence on GDP. This relationship highlights the role of investor sentiment in shaping broader economic performance. In addition to confidence, liquidity in the capital market—though with a relatively smaller effect—also contributes to GDP, underscoring the importance of efficient trading activity. However, the NEPSE index alone does not appear to be a strong predictor of economic growth, suggesting that stock prices may not fully capture the underlying fundamentals of the economy. Furthermore, structural shifts following 2010 have had a dampening effect on GDP, pointing to the need for deeper analysis into the impacts of policy and institutional changes during that period.

These findings suggest the need for strategic efforts to strengthen investor confidence, deepen capital markets, and improve liquidity. Enhancing these factors can enable the capital market to better perform its role in resource mobilization, investment support, and ultimately, economic transformation in Nepal.

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Appendix A

Date	NEPSE Index	IC	Lcm	GDP
1994	226	6.356887545	0.03183391	199272
1995	195.5	4.376730367	0.081331482	219175
1996	185.6	3.660860503	0.01707198	248913
1997	176.3	2.836591087	0.032776815	280513
1998	163.4	2.880962942	0.014178739	300845
1999	216.9	3.623639671	0.003139357	342036
2000	360.7	5.869191823	0.00657881	379488
2001	348.4	5.838191208	0.002761632	441519
2002	227.5	3.998064561	0.002331143	459442.6
2003	204.9	2.961842326	0.001835982	492230.8
2004	222	3.447486684	0.006167773	536749.1
2005	286.7	3.657957797	0.003226548	589411.7
2006	386.8	4.84837158	0.003388664	654084.1
2007	683.9	8.56715258	0.00768701	727827
2008	963.4	12.42992024	0.007230628	815658.2
2009	749.1	8.389582924	0.002875975	988271.5
2010	477.7	4.723527937	0.001555968	1192774
2011	362.9	3.227162354	0.002822394	1758379
2012	389.7	3.329374378	0.003417403	1949295
2013	518.3	4.081197646	0.003472551	2232525
2014	1036.1	7.215178573	0.007311247	2423638
2015	961.2	5.506180933	0.005907698	2608184
2016	1718.2	9.264453023	0.016747949	3077145
2017	1582.7	6.411916279	0.006641106	3455949
2018	1212.4	4.076000314	0.004621926	3858930
2019	1259	3.802019837	0.006892507	3888704
2020	1362.4	3.787076649	0.006198032	4352550
2021	2883.4	6.997042057	0.362617602	4976558
2022	2009.5	4.29700788	0.418946392	5348528
2023	2097.1	4.228695603	0.15150759	5704844