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Economic Policy Uncertainty and Private Investment in India: A Data-Consistent Dynamic Econometric Framework

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Abstract

Private investment is a central determinant of capital accumulation, productive capacity, employment creation, and long-run economic growth. This study examines the relationship between economic policy uncertainty (EPU) and private investment in India within a data-consistent dynamic time-series framework. The preferred dependent variable is gross fixed capital formation of private non-financial corporations, while real GDP, the real interest rate, private-sector credit, and public investment are considered as macroeconomic controls. The India EPU index is converted from monthly observations to financial-year averages so that it is aligned with India's National Accounts. Particular attention is given to the compatibility of the historical 2011–12-base national-accounts series and the newly introduced 2022–23-base system. Verified observations for FY2011–12 to FY2023–24 show substantial variation in both private investment and policy uncertainty, including pronounced uncertainty episodes during major macroeconomic shocks. However, the currently verified common annual sample is too short for a credible six-variable ARDL, bounds-test, ECM, and causality system. Accordingly, the present version does not report invented econometric statistics. Instead, it documents the verified dataset, its construction, descriptive properties, theoretical mechanism, and a reproducible estimation protocol. The paper's main methodological contribution is to demonstrate how policy-uncertainty research on Indian aggregate investment should address frequency alignment, national-account revisions, variable definitions, and small-sample identification before dynamic coefficients are interpreted.

JEL Classification: E22; E32; E44; E60; C22

1. Introduction

Private investment occupies a central position in the growth process. Through expenditure on plant, machinery, equipment, technology, and productive capacity, firms convert expectations about future opportunities into additions to the capital stock. For a large emerging economy such as India, sustained private capital formation is particularly important because public resources alone cannot finance the scale of investment required for infrastructure, industrial upgrading, technological transformation, and employment creation. The policy challenge is therefore not simply to increase the quantity of investment, but to understand the conditions under which private firms are willing to commit irreversible resources over long planning horizons.

Traditional investment theory emphasises expected demand, profitability, the user cost of capital, interest rates, access to finance, and cash-flow conditions. These determinants remain essential, but investment is also shaped by uncertainty. Firms making large and partly irreversible commitments must form expectations about future taxation, regulation, trade policy, monetary conditions, subsidies, government expenditure, and institutional implementation. When these conditions become difficult to predict, postponement may itself become economically rational. Bernanke (1983) established the importance of irreversibility for investment decisions, while Dixit and Pindyck (1994) developed the real-options interpretation in which the opportunity to wait has economic value. Bloom (2009) subsequently demonstrated how uncertainty shocks can generate broad macroeconomic contractions through delayed investment and employment decisions.

Economic policy uncertainty is especially relevant because it concerns uncertainty associated with government actions and the policy environment in which firms operate. Baker, Bloom, and Davis (2016) developed a systematic newspaper-based measure that enabled uncertainty to be studied empirically across countries. For India, the EPU index provides a monthly indicator of changes in perceived policy-related uncertainty and can therefore be linked to investment behaviour when its frequency is carefully aligned with macroeconomic data.

The Indian context has become even more important in recent policy discussions. The IMF's 2025 Article IV analysis devoted a separate assessment to reigniting private investment in India and reported that economic policy uncertainty is associated with fewer investment project announcements and more delayed, stalled, or abandoned projects. The report emphasised that tax and regulatory certainty can be directly relevant to investment incentives (IMF, 2025). Recent Indian research also strengthens the microeconomic evidence: Dhasmana (2025) finds that EPU significantly encourages underinvestment among Indian manufacturing firms, while a 2025 study of Indian manufacturing firms reports adverse consequences of EPU for firm performance and investment-related decisions (Economic Policy Uncertainty and Firm Performance, 2025).

Despite the growing relevance of the subject, credible aggregate analysis for India faces three serious empirical challenges. First, the monthly EPU index must be converted into a measure consistent with India's April–March National Accounts reference period. Second, changes in National Accounts base years and compilation methodology can create comparability problems if series are mechanically spliced. Third, the number of annual observations available in a fully verified common dataset may be too small for a large dynamic econometric system. These are not minor technical issues: they determine whether estimated coefficients represent economic relationships or artefacts of inconsistent measurement and overfitting.

This paper therefore asks a focused question: what can the currently verified Indian data legitimately establish about the relationship between economic policy uncertainty and aggregate private investment, and what additional evidence is required before causal dynamic claims can be made? The objective is not to replace empirical analysis with theory. Rather, it is to strengthen the empirical manuscript by preserving the actual data, adding updated evidence, performing transparent descriptive analysis, and preventing unsupported econometric claims.

2. Literature Review

2.1 Uncertainty and investment theory

Bernanke (1983) established an important theoretical foundation for the relationship between uncertainty and investment by highlighting the role of irreversibility and the option value of waiting. Dixit and Pindyck (1994) subsequently developed the real-options approach to investment under

uncertainty.

Bloom (2009) demonstrated that uncertainty shocks can generate substantial fluctuations in macroeconomic activity through their effects on firm-level decisions. These contributions imply that uncertainty can influence investment even when other conventional determinants remain unchanged.

2.2 Economic policy uncertainty and investment

Baker, Bloom, and Davis (2016) developed the EPU index as an empirical measure of policy-related uncertainty. Their evidence indicates that increases in policy uncertainty are associated with reductions in investment and economic activity.

Julio and Yook (2012) examined political uncertainty and corporate investment cycles and found evidence that firms reduce investment around periods of political uncertainty. Gulen and Ion (2016) similarly documented a negative association between policy uncertainty and corporate investment.

The newer literature reinforces the importance of heterogeneity and institutional context. Recent research on Indian firms shows that the consequences of EPU are not confined to a single aggregate channel. Dhasmana (2025) finds that policy uncertainty encourages underinvestment and that the relationship is nonlinear. A recent study of Indian manufacturing firms similarly reports that EPU adversely affects firm performance, with heterogeneous effects across firm size and life-cycle categories (Economic Policy Uncertainty and Firm Performance, 2025). Research published in 2026 also examines how political connections and bank–firm relationships can moderate the relationship between EPU and corporate investment, highlighting the importance of financial and institutional channels.

2.3 Evidence for India

Indian evidence suggests that uncertainty has played a role in investment dynamics. Earlier macroeconomic studies have identified uncertainty, financing conditions, demand conditions, public investment, and the cost of capital as important determinants of private investment.

Sahoo and Bishnoi's analysis of Indian private investment using an ARDL framework demonstrates the importance of dynamic macroeconomic relationships. More recent studies have increasingly examined uncertainty through firm-level datasets, identifying adverse effects on investment and investment efficiency.

The recent literature also indicates that the effect of uncertainty may not be uniform across firms or sectors. Financial constraints, political connections, firm size, and industry characteristics may modify the response of investment to uncertainty.

Nevertheless, firm-level evidence does not necessarily answer the aggregate macroeconomic question. Aggregate private investment reflects the combined response of firms and sectors and therefore captures broader investment conditions.

2.4 Research gap

The literature reveals four relevant gaps.

First, much of the recent Indian evidence is based on firm-level datasets. Although such studies provide valuable microeconomic evidence, they do not directly establish the dynamic relationship between aggregate private investment and national policy uncertainty.

Second, the distinction between short-run and long-run effects requires further attention. A negative contemporaneous association does not necessarily imply a stable long-run relationship.

Third, national-accounting revisions create a data-consistency issue that must be explicitly addressed in long-run Indian time-series analysis.

Fourth, evidence concerning causality, residual diagnostics, parameter stability, and robustness should be considered jointly rather than selectively.

This study addresses these gaps by combining official Indian national-account data with the India EPU index and applying a dynamic econometric framework.

3. Theoretical Framework

3.1 Investment under uncertainty

The theoretical relationship between uncertainty and investment can be derived from the irreversibility of capital expenditure. Consider an investment project requiring an irreversible expenditure I. The expected return from undertaking the project depends on future economic conditions, while uncertainty affects the distribution of future returns.

When investment is irreversible, an investor may prefer to wait rather than immediately commit resources if uncertainty is sufficiently high. The option to wait has economic value because new information may arrive in the future. Consequently, uncertainty can raise the investment threshold required before a project is undertaken.

Bernanke (1983) formalised this mechanism by showing that uncertainty concerning future profitability may generate a waiting effect. In this framework, an increase in uncertainty does not necessarily produce an immediate reduction in expected profitability; instead, it increases the value of postponing an irreversible investment.

The mechanism can be represented conceptually as:

higher EPU → greater uncertainty about future returns and policy conditions → higher value of waiting and/or higher financing risk → postponement or reduction of irreversible investment.

3.2 Economic policy uncertainty

Economic policy uncertainty differs from general economic uncertainty because it specifically reflects uncertainty associated with government policy, regulation, fiscal conditions, monetary policy, taxation, and related institutional decisions.

Baker, Bloom, and Davis (2016) construct EPU indices using newspaper-based measures of uncertainty and policy-related terminology. The India index similarly captures newspaper discussion of economic policy uncertainty.

For investment decisions, policy uncertainty can affect firms through several channels:

- 1. expected profitability;
- 2. financing costs;
- 3. regulatory risk;
- 4. taxation uncertainty;
- 5. demand expectations;
- 6. exchange-rate expectations;
- 7. access to credit;
- 8. timing of investment projects.

The expected aggregate relationship is therefore:

∂PI/∂EPU < 0.

where PI represents private investment, and EPU represents economic policy uncertainty.

3.3 Dynamic investment adjustment

Investment is unlikely to respond instantaneously to changes in uncertainty. Existing projects cannot always be cancelled immediately, while new projects require planning, financing, approvals, and implementation.

Accordingly, a change in EPU may initially affect investment intentions before affecting realised capital expenditure. This motivates a dynamic econometric framework.

A general long-run relationship can be represented as:

$$PI_t = \alpha_0 + \alpha_1 EPU_t + \alpha_2 GDP_t + \alpha_3 R_t + \alpha_4 CR_t + \alpha_5 PUBI_t + \epsilon_t$$

where:

- `$PI_t$` = private investment;
- `$EPU_t$` = economic policy uncertainty;
- `$GDP_t$` = economic activity;
- `$R_t$` = real interest rate/cost of capital;
- `$CR_t$` = private-sector credit or financial conditions;
- `$PUBI_t$` = public investment.

The expected sign of α_1 is negative.

4. Data and Variables

4.1 Data sources

The study uses annual financial-year observations for India.

The primary source for national-account variables is the Ministry of Statistics and Programme Implementation (MoSPI), Government of India. MoSPI identifies Statement 1.11 as the source for gross fixed capital formation by asset and institutional sector at current and constant prices. The National Accounts metadata identify the reference period as the financial year, April–March.

The historical investment series will be constructed using the consistent 2011–12-base National Accounts framework and its official back-series, rather than mechanically combining the 2011–12 and newly released 2022–23-base observations.

This distinction is important because MoSPI released the new 2022–23-base national-account series in February 2026, while the official FAQ states that the corresponding historical back-series is expected only by December 2026.

Consequently, the present empirical analysis does not splice the new 2022–23-base series into the older 2011–12-base series.

4.2 Economic Policy Uncertainty

The principal explanatory variable is India's Economic Policy Uncertainty index developed within the Baker–Bloom–Davis framework.

The India EPU index is based on seven English-language newspapers: “The Economic Times”, “The Times of India”, “Hindustan Times”, “The Hindu”, “The Statesman”, “Indian Express”, and “Financial Express”. The index identifies articles containing uncertainty-related, economic, and policy-related terms and normalises the resulting measure.

The underlying EPU series is monthly. It will therefore be converted to an annual financial-year measure to match the National Accounts data. The exact aggregation rule will be reported explicitly in the final data appendix.

4.3 Private investment

The preferred dependent variable is gross fixed capital formation of private non-financial corporations.

This measure is conceptually preferable to a broad aggregate GFCF measure because the research question concerns private investment rather than total economy-wide capital formation.

MoSPI's national-account framework explicitly separates private non-financial corporations from public non-financial corporations, financial corporations, government, and households.

4.4 Control variables

The baseline model considers the following macroeconomic controls:

real economic activity;

real interest rate/cost of capital;

private-sector credit;

public investment.

The final specification will be determined by data availability, theoretical relevance, degrees of freedom, multicollinearity diagnostics, and information criteria.

The model will deliberately avoid excessive parameterisation because the annual sample is relatively small.

5. Empirical Methodology

5.1 Stationarity analysis

Before estimating the dynamic model, the integration properties of the variables will be examined using Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests.

The purpose is to determine whether variables are stationary in levels, first differences, or both.

The ARDL methodology is appropriate when variables are a mixture of I(0) and I(1), provided that none is integrated of order two or higher.

The following general ADF representation is considered:

$$\Delta X_t t = \alpha + \beta_t + \gamma X_{t-1} + \sum_{i=1}^{p} \delta_i \Delta X_{t-i} + u_t$$

The null hypothesis is:

H_0: $\gamma = 0$

against:

H_1: $\gamma < 0$.

5.2 ARDL model

The baseline ARDL specification is:

$$PI_t = c + \sum_{i=1}^{p} \phi_i PI_{t-i} + \sum_{j=0}^{q_1} \beta_j EPU_{t-j} + \sum_{k=0}^{q_2} \gamma_k GDP_{t-k} + \sum_{1=0}^{q_3} \delta_1 R_{t-1} + \sum_{m=0}^{q_4} \theta_m CR_{t-m} + \sum_{n=0}^{q_5} \lambda_n PUBI_{t-n} + \epsilon_t$$

Where:

- PI_t = Private Investment
- EPU_t = Economic Policy Uncertainty
- GDP_t = Real Gross Domestic Product
- R_t = Real Interest Rate
- CR_t = Private Credit
- $PUBI_t$ = Public Investment
- c = Constant term
- ε_t = Error term
- p, q_1, q_2, q_3, q_4, q_5 = Optimal lag lengths

The optimal lag structure will be selected using information criteria, with particular attention to the Akaike Information Criterion and Schwarz Bayesian Criterion.

5.3 Bounds testing

The Pesaran, Shin, and Smith (2001) bounds-testing approach will be used to determine whether a long-run relationship exists among the variables.

The null hypothesis is:

H_0: No long-run relationship.

The calculated F-statistic will be compared with the relevant lower and upper critical bounds.

Three outcomes are possible:

1. 1. below the lower bound: no cointegration;
2. 2. above the upper bound: evidence of cointegration;
3. 3. between the bounds: inconclusive evidence.

The final paper will report the exact statistic, critical values, significance levels, sample size, deterministic specification, and lag structure.

5.4 Error-correction model

If a long-run relationship is established, the ARDL model will be reparameterised into an error-correction representation:

$$\Delta PI_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta PI_{t-i} + \sum_{j=0}^{q_1} \beta_j \Delta EPU_{t-j} + \sum_{k=0}^{q_2} \gamma_k \Delta X_{t-k} + \psi ECM_{t-1} + u_t$$

Where the error-correction term is:

$ECM_{t-1} = PI_{t-1} - (\theta_0 + \theta_1 EPU_{t-1} + \theta_2 GDP_{t-1} + \theta_3 R_{t-1} + \theta_4 CR_{t-1} + \theta_5 PUBI_{t-1})$

The coefficient ψ represents the speed of adjustment towards the long-run equilibrium. For a stable long-run relationship, it is generally expected that:

$\Psi < 0$

and it should be statistically significant.

5.5 Causality analysis

Dynamic causality will be examined after establishing the appropriate time-series properties.

The analysis will consider whether lagged EPU improves the prediction of private investment and whether investment conditions, in turn, contain predictive information for EPU.

The hypotheses are:

H_0: EPU ↛ PI

H_1: EPU → PI

and

H_0: PI ↛ EPU

H_1: PI →EPU

Here, ↛ denotes **does not Granger-cause**, while → denotes **Granger-causes**.

The interpretation will distinguish statistical predictive causality from structural or behavioural causality.

5.6 Diagnostic tests

The estimated model will be evaluated using:

Breusch–Godfrey LM test for serial correlation;

Breusch–Pagan/White-type test for heteroskedasticity;

Jarque–Bera test for residual normality;

Ramsey RESET test for functional-form misspecification.

These tests are not treated as decorative additions. They determine whether conventional inference from the estimated model is reliable.

5.7 Stability analysis

Parameter stability will be assessed using CUSUM and CUSUMSQ procedures.

The objective is to determine whether the estimated coefficients remain stable over the sample period.

This is particularly important for India because the sample encompasses major macroeconomic and institutional episodes, including the global financial crisis and COVID-19 shock.

6. Empirical Results and Data Validation

The empirical section is deliberately restricted to results that can be reproduced from the verified common data currently available. The baseline annual dataset covers FY2011–12 to FY2023–24 for private investment, EPU, real GDP, private credit and public investment. The verified real-interest-rate series contains observations through 2022; therefore, it is not used to manufacture a 2023–24 value.

6.1 Verified annual analysis dataset

Table 1 reproduces the verified annual dataset used in the original manuscript. All results in this section are descriptive calculations based directly on these observations; no unreported econometric estimates are introduced.

Table 1.

Table 1. Verified annual analysis dataset. Source: Dataset and variable construction preserved from the original manuscript; EPU aggregated to the April–March financial year.

The descriptive record reveals several economically important episodes. Private investment increased from ₹958,412 crore in FY2011–12 to ₹1,990,407 crore in FY2023–24, but the trajectory was not linear. The most visible disruption occurred during FY2020–21, when private investment fell by approximately 9.24% relative to FY2019–20. It then recovered by approximately 17.68% in FY2021–22 and continued to rise thereafter. These movements are consistent with the proposition that extraordinary shocks and uncertainty can alter the timing of investment, but they cannot by themselves identify EPU as the sole causal factor.

The EPU series also varies substantially. Its highest financial-year average in the verified sample occurs in FY2011–12, while uncertainty rises again around major episodes such as FY2019–20 and FY2020–21. This temporal variation is precisely what makes the series useful for empirical research, but the interpretation must account for the fact that investment and uncertainty are both influenced by broader macroeconomic conditions.

Correlation evidence: useful but not causal

Table 2.

Table 2. Descriptive Pearson correlations calculated from the verified dataset. The annual-change column is based on percentage changes and therefore has twelve observations rather than thirteen.

The level correlation between EPU and private investment is approximately − 0.684, indicating an inverse descriptive association in the sample. However, both macroeconomic levels and time trends can generate misleading correlations. When attention shifts to annual percentage changes, the EPU–private-investment association remains negative but weakens to approximately − 0.421. This difference is analytically important: it demonstrates that the apparent strength of a relationship in trending levels should not be interpreted as evidence of a stable structural coefficient.

Real GDP and public investment show strong positive level correlations with private investment, whereas private credit displays a negative level correlation in this particular sample. These patterns should not be converted into causal claims. The purpose of Table 2 is diagnostic: it illustrates why a future multivariate model must control for common trends, macroeconomic shocks, and dynamic adjustment rather than relying on bivariate associations.

6.2 Descriptive statistics

Table 3 presents the descriptive statistics for the variables used in the analysis. The results indicate substantial variation across the sample period. Private investment recorded a mean of ₹1,492,406.615 crore, ranging from ₹958,412.000 crore to ₹1,990,407.000 crore, with a standard deviation of ₹324,331.780 crore. This variation reflects significant changes in aggregate private capital formation over the sample period.

Table 3.

Table 3. Descriptive statistics. Source: Author's calculations based on data obtained from the Economic Policy Uncertainty Index for India (Baker, Bloom and Davis); National Accounts Statistics, Ministry of Statistics and Programme Implementation (MoSPI), Government of India; and the relevant official sources for real interest rates and private credit.

The descriptive evidence confirms substantial variation in the uncertainty and investment series. The EPU index reaches its highest financial-year average in FY2011–12 and remains comparatively elevated during the COVID-related period. Private investment increases strongly over the sample in nominally reported constant-price units, although the series also records a clear contraction in FY2020–21 before recovering. These descriptive patterns are informative but do not establish causality.

6.3 Annual EPU construction

The monthly EPU index is converted to a financial-year average. For example, FY2011–12 is constructed from April–December 2011 and January–March 2012. The same rule is applied consistently through FY2023–24. This procedure aligns the uncertainty measure with the April–March National Accounts reference period and avoids mixing calendar-year EPU observations with financial-year investment data.

6.4 Econometric estimation status

The originally proposed six-variable ARDL specification cannot be responsibly estimated as a conventional final empirical model from the currently verified annual sample. With only 13 annual observations, even a very parsimonious lag structure consumes a large share of the available degrees of freedom. ADF and PP tests also have weak finite-sample power in such a short annual sample. The problem is more serious for bounds testing, ECM estimation, causality testing, residual diagnostics, and CUSUM/CUSUMSQ stability analysis. Reporting apparently precise coefficients or p-values under these conditions would create a false impression of empirical certainty.

Accordingly, no ARDL coefficient, bounds F-statistic, long-run coefficient, ECM speed-of-adjustment coefficient, Granger/predictive causality statistic, diagnostic statistic, or stability statistic is reported in this version. These quantities must be generated directly from a sufficiently long and fully harmonised estimation dataset.

7. Discussion

The findings of this study should be interpreted through a clear distinction between economic relevance and econometric identification. The verified annual dataset for FY2011–12 to FY2023–24 reveals substantial variation in both economic policy uncertainty and private investment. In descriptive terms, the relationship between the two variables is negative: the correlation between EPU and private investment in levels is − 0.684, while the correlation between EPU and annual changes in private investment is − 0.421. The weakening of the association after transforming the data is itself an important result. It indicates that the stronger relationship observed in levels may partly reflect common trends, persistence, or the time-series properties of the variables rather than a stable structural relationship. Consequently, the descriptive evidence is consistent with the theoretical prediction that uncertainty can discourage or postpone investment, but it cannot by itself establish a causal coefficient.

This interpretation is consistent with the investment-under-uncertainty literature. When capital expenditure is partly irreversible, uncertainty increases the value of waiting for additional information before committing resources. The relevant mechanism is therefore not necessarily an immediate collapse in the expected profitability of every project. Rather, higher uncertainty can alter the timing threshold at which firms are willing to undertake irreversible expenditure. This distinction is particularly important for interpreting the Indian data. A temporary decline in realised investment may reflect postponed projects rather than permanent destruction of investment capacity. The subsequent recovery of private investment after the FY2020–21 contraction is therefore compatible with the possibility that some investment decisions were deferred and later resumed, although the aggregate data cannot identify the proportion attributable specifically to uncertainty.

The COVID-related episode illustrates why a simple one-variable interpretation would be misleading. Private investment fell by approximately 9.24 per cent in FY2020–21 relative to FY2019–20 and subsequently increased by approximately 17.68 per cent in FY2021–22. Policy uncertainty was elevated during this broader period, but the investment response also occurred alongside an unprecedented public-health shock, disruptions to production and mobility, changes in demand, financial stress, and extraordinary policy interventions. The episode therefore demonstrates both the economic relevance of uncertainty and the identification problem faced by aggregate time-series research: several shocks can move simultaneously, making attribution impossible without a sufficiently strong empirical design.

The descriptive correlations with the control variables reinforce this point. Real GDP and public investment exhibit strong positive correlations with private investment in levels, whereas private credit displays a negative level correlation in the verified sample. None of these correlations should be interpreted as structural elasticities. Trending macroeconomic series can generate high correlations even when the underlying causal relationship is more complex. In particular, the negative correlation between private credit and private investment does not imply that credit expansion necessarily reduces investment; it may instead reflect changes in financial-sector depth, denominator effects associated with GDP, structural shifts, or the timing of macroeconomic cycles. The results therefore support the inclusion of theoretically motivated controls in a future model while cautioning against causal interpretation of simple correlations.

The study's strongest contribution is thus methodological as well as substantive. The India EPU index is available at monthly frequency, whereas the National Accounts variables used in the analysis follow an April–March financial-year convention. Aggregating monthly EPU observations into corresponding financial-year averages is therefore essential for temporal consistency. Similarly, the transition to the 2022–23-base National Accounts system creates a serious comparability issue for long historical analysis. A longer dataset is not automatically superior if it is created by mechanically joining observations generated under different statistical frameworks. Preserving a consistent data vintage is preferable to producing artificial precision through an incompatible splice.

At the same time, the present evidence imposes a clear econometric boundary. The verified common annual sample contains only thirteen observations. This is insufficient for a conventional six-variable ARDL system with multiple lags, followed by bounds testing, error-correction estimation, predictive-causality tests, diagnostic procedures, and parameter-stability analysis. Such a specification would consume a substantial share of the available degrees of freedom and would be highly sensitive to lag selection and individual observations. The problem is not merely that estimates would be imprecise; a heavily parameterised model could produce apparently sophisticated results that are not statistically credible.

This limitation should not be presented as a weakness unique to the study. Instead, it defines the contribution of the paper: credible macroeconomic research requires the specification to be constrained by the information content of the data. The appropriate response to a short annual sample is not to maximise the number of tests, but to report transparently what the data can establish and to specify a reproducible strategy for future estimation. Once a sufficiently long, officially harmonised series becomes available, the proposed dynamic framework can be implemented in a parsimonious form, with careful attention to integration properties, lag selection, finite-sample considerations, structural breaks, and robustness across alternative specifications.

The broader policy interpretation is also more nuanced than a simple claim that uncertainty reduces investment. Recent evidence for India suggests that uncertainty can be associated with delayed, stalled, or abandoned investment projects, and firm-level research indicates that the response may vary across firms and institutional environments. Aggregate investment is therefore likely to reflect heterogeneous adjustment rather than a uniform response. Firms with stronger internal funds, better access to credit, diversified operations, or greater institutional capacity may be able to continue investing during periods of uncertainty, whereas financially constrained firms may postpone expenditure. Future research should therefore complement aggregate analysis with firm-level or sectoral evidence wherever comparable data are available.

Overall, the findings support a carefully qualified interpretation. The verified data show a negative descriptive association between policy uncertainty and private investment, and the theoretical mechanism provides a coherent explanation for why such an association may arise. However, the current annual sample does not permit a credible claim that the observed relationship is a stable long-run causal effect. The most defensible conclusion is therefore that policy uncertainty is a plausible and empirically relevant component of India's investment environment, but its independent quantitative effect must be estimated using a longer and statistically comparable dataset.

8. Robustness and Identification Requirements

Use a longer, fully consistent historical series for private non-financial corporation GFCF and every control variable before estimation.

Do not splice 2022–23-base national accounts into the historical 2011–12-base series until the official compatible back-series is available.

Freeze one vintage of the EPU and WDI/RBI series and record the retrieval date, release/version, units, and revision status.

Pre-specify the financial-year aggregation rule for monthly EPU and apply it without post-estimation adjustment.

Use parsimonious lag selection and report the exact deterministic specification and information criterion.

Generate all econometric tables directly from software output and preserve the underlying dataset and code for replication.

9. Policy Implications

The policy implications of this study are directly linked to its empirical findings. First, the negative descriptive association between economic policy uncertainty (EPU) and private investment suggests that reducing avoidable uncertainty in the policy environment may help limit the postponement of capital expenditure. Greater clarity regarding taxation, regulation, and policy implementation could therefore support investment planning by reducing uncertainty surrounding expected project costs and returns.

Second, the finding that the EPU–private investment relationship becomes weaker when annual changes are examined indicates that policy uncertainty should not be treated as the sole determinant of investment. This supports a broader policy approach in which greater policy predictability is combined with improvements in macroeconomic conditions rather than pursued in isolation.

Third, the substantial contraction in private investment during FY2020–21, followed by a strong recovery in FY2021–22, highlights the importance of maintaining resilient investment conditions during major shocks. Policies that improve access to finance, preserve productive capacity, and provide clear institutional guidance may reduce unnecessary delays in investment during periods of heightened uncertainty.

Finally, the observed relationships between private investment and real economic activity, credit conditions, and public investment reinforce the need for a coordinated policy framework. Predictable policies, supportive demand conditions, efficient financing, and productive public infrastructure should therefore be considered complementary components of a stronger private investment environment in India.

10. Conclusion

This study examined the relationship between economic policy uncertainty and private investment in India using a data-consistent framework that prioritises measurement quality, temporal alignment, and statistical credibility. The analysis focused on gross fixed capital formation of private non-financial corporations as the preferred measure of aggregate private investment and combined it with the India Economic Policy Uncertainty index and key macroeconomic indicators. A central methodological feature of the study was the conversion of monthly EPU observations into April–March financial-year averages so that the uncertainty measure corresponds to the reference period used in the Indian National Accounts.

The verified dataset for FY2011–12 to FY2023–24 documents substantial variation in both uncertainty and private investment. The descriptive evidence shows a negative correlation between EPU and private investment in levels (− 0.684), while the relationship remains negative but weaker when annual changes are considered (− 0.421). This difference is analytically significant because it demonstrates that the apparent strength of an association can depend on the transformation of trending macroeconomic data. The results are therefore consistent with the theoretical proposition that uncertainty may delay irreversible investment, but they cannot be interpreted as evidence of a stable structural or causal coefficient.

The study also highlights the importance of distinguishing investment postponement from permanent investment destruction. The contraction in private investment during FY2020–21 was followed by a substantial recovery in FY2021–22. This pattern is compatible with the real-options interpretation in which uncertainty and exceptional shocks induce firms to defer expenditure until conditions become clearer. Nevertheless, the aggregate data cannot isolate the effect of EPU from simultaneous changes in demand, financing conditions, public policy, global developments, and the exceptional circumstances associated with the pandemic.

The principal conclusion of the paper is therefore methodological and empirical at the same time: sophisticated econometric techniques cannot substitute for adequate data. With only thirteen verified annual observations, a heavily parameterised six-variable ARDL–bounds–ECM–causality framework would create serious degrees-of-freedom and finite-sample problems. Reporting precise coefficients, p-values, or long-run elasticities under such conditions would risk overstating what the evidence can support. The present study instead separates verified descriptive findings from dynamic claims that require stronger identification.

This approach strengthens the manuscript's academic contribution. Rather than treating data construction as a preliminary technical exercise, the study demonstrates that frequency alignment, institutional-sector definitions, National Accounts consistency, and sample adequacy are central to credible inference. The recent change in India's National Accounts base year further reinforces this point: historical observations should not be mechanically spliced across statistical systems without an officially harmonised back-series.

The policy implications should consequently be interpreted with appropriate caution. The evidence does not justify claiming that EPU is the sole or dominant determinant of private investment. Investment decisions also depend on expected demand, profitability, infrastructure, financing conditions, the cost and availability of credit, public capital formation, global economic conditions, and institutional quality. Nevertheless, the theoretical literature and recent evidence for India suggest that predictable tax, regulatory, and implementation environments can reduce incentives to delay irreversible projects. Policy certainty should therefore be viewed as one component of a broader strategy for strengthening private capital formation.

Future research should extend the present analysis when a sufficiently long, officially comparable historical dataset becomes available. The next stage should employ a parsimonious dynamic specification rather than an over-parameterised model, explicitly test the time-series properties of the variables, examine structural breaks, and compare results across alternative uncertainty measures and investment definitions where feasible. Such an approach would make it possible to distinguish short-run postponement effects from persistent long-run relationships and to assess whether the impact of uncertainty is stronger during periods of financial stress or major policy change.

In conclusion, the evidence presented here establishes that economic policy uncertainty is an important and empirically relevant dimension of India's investment environment, while also showing the limits of what the current annual sample can prove. The study's contribution lies in combining a

theoretically grounded investment mechanism with transparent data construction and disciplined empirical interpretation. Its central message is straightforward: credible evidence on uncertainty and investment requires not more econometric complexity, but better alignment between the research question, the data, and the statistical method used to answer it.

Declarations

Funding

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Competing Interests

The author declares that there are no competing interests related to this manuscript.

Ethics Approval

This study uses publicly available secondary macroeconomic data and does not involve human participants, identifiable personal information, or animal subjects. Ethics approval was therefore not required.

Consent to Participate

Not applicable.

Consent for Publication

Not applicable.

Author Contributions

The author conceived the study, developed the theoretical framework, harmonised the data, designed the empirical strategy, interpreted the evidence, and prepared the manuscript.

Data Availability

The study uses publicly available secondary data. National-account data are obtained from the Ministry of Statistics and Programme Implementation; macro-financial indicators are obtained from official/standard international statistical sources; and the India EPU series is obtained from the Economic Policy Uncertainty project. The final estimation dataset and code should be deposited in a public repository when the longer common sample is completed.

AI-Assisted Tools

Generative artificial intelligence may have been used for language editing and organisational assistance. The author remains responsible for data verification, research design, statistical analysis, interpretation, originality, and the final manuscript.

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Tables

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