Insight into the Influence of Economic Policy Uncertainty on the Indian Nifty 50 Index

نظرة ثاقبة لتأثير عدم اليقين في السياسة الاقتصادية على مؤشر نيفتي 50 الهندي

Shireen Rosario[1], CA Reginald H.J. Rosario[2]

[1] Lecturer, College of Commerce and Business Administration, Dhofar University, Salalah, Sultanate of Oman
[2] Chief Strategy Officer, Assarain Group of Companies, Muscat, Sultanate of Oman

[1] srosario@du.edu.om, [2] rosario@assarain.com

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Abstract:

Objective: Existing literature attests to the longstanding global concern regarding Economic Policy Uncertainty (EPU), recognizing its impact on economic growth, employment, and investments. Despite its acknowledged influence, studies on EPU in India have been comparatively limited. This paper addresses this gap by utilizing 83 months of data (from January 2017 to November 2023) from the recently formulated EPU Index of India and monthly closing values of the Nifty 50. The objective is to find if there is an influence of EPU on the stock markets in India.

Method: The study employs correlation analysis, Ordinary Least Squares (OLS), and Quantile regressions, to investigate the relationship between EPU and the Nifty 50, representing the Indian Stock Market.

Result: While overall findings indicate a low correlation, year-wise analyses reveal a notable negative correlation in specific years, notably during the COVID year. OLS and Quantile regressions further affirm a negative impact of EPU on Nifty 50, particularly evident in lower quantiles, with the effect diminishing in higher quantiles.

Conclusion: The study indicates the limited effect that EPU has on the stock market. Though there is a negative association, it could be temporary and a short-term variation. Given the novelty of the EPU index and limited studies in India, this paper contributes significantly to the existing literature, particularly in the Indian context.

Keywords: Financial; Economic policy; Uncertainty; Indicators; Nifty 50 index.

الملخص:

الأهداف: تشهد الأدبيات الموجودة على الاهتمام العالمي طويل الأمد بشأن عدم اليقين في السياسات الاقتصادية(EPU) ، مع إدراك تأثيره على النمو الاقتصادي والتوظيف والاستثمارات. على الرغم من تأثيرها المعترف به، كانت الدراسات حول EPU في الهند محدودة نسبيًا. وتتناول هذه الورقة هذه الفجوة من خلال استخدام بيانات 83 شهرًا (من يناير 2017 إلى نوفمبر 2023) من مؤشر EPU للهند الذي تمت صياغته مؤخرًا وقيم الإغلاق الشهرية لـ نيفتي 50. الهدف هو معرفة ما إذا كان هناك تأثير من جهة EPU على أسواق الأسهم في الهند.

المنهجية: تستخدم الدراسة تحليل الارتباط، والمربعات الصغرى العادية (OLS)، والانحدارات الكمية، لدراسة العلاقة بين EPU نيفتي 50 والذي يمثل سوق الأسهم الهندية.

النتائج: في حين تشير النتائج الإجمالية إلى وجود ارتباط منخفض، تكشف التحليلات السنوية عن وجود ارتباط سلبي ملحوظ في سنوات محددة، ولا سيما خلال عام كوفيد. تؤكد الانحدارات OLS والانحدار الكمي أيضًا على التأثير السلبي لـ EPU على نيفتي 50، وهو واضح بشكل خاص في الكميات المنخفضة، مع تناقص التأثير في الكميات الأعلى.

الخلاصة: تشير الدراسة إلى التأثير المحدود لـ EPU على سوق الأوراق المالية. وعلى الرغم من وجود ارتباط سلبي، إلا أنه قد يكون مؤقتًا وتغيرًا قصير المدى. ونظرًا لحداثة مؤشر EPU والدراسات المحدودة في الهند، تساهم هذه الورقة بشكل كبير في الأدبيات الموجودة، لا سيما في السياق الهندي.

الكلمات المفتاحية: السياسة المالية؛ السياسة الاقتصادية؛ عدم اليقين؛ المؤشرات؛ مؤشر نيفتي 50.

1 Introduction

Global unease is growing regarding economic policy uncertainty, stemming from events like the Global Financial Crisis and the Eurozone Crisis. These uncertainties are attributed to fiscal policy ambiguity in the US and Europe. There's a notable interest in scrutinizing financial decisions amidst this uncertainty, prompting researchers to employ intricate methods to measure and assess its impact on various financial outcomes.

In 2016, Professors Scott R Baker, Nicholas Bloom, and Steven J Davis (henceforth BBD) introduced a new index to quantify EPU. Uniquely, this index relies on terms found in newspaper articles reflecting economic conditions. A higher EPU index value signifies heightened policy uncertainty. BBD has extended this index to 30 countries, including the United States, Japan, the EU, India, and China. Widely adopted by researchers, the EPU index is instrumental in studying the impact of economic uncertainty on various aspects of the economy.

Launched in November 1995, the Nifty 50 Index is integral to the Indian equity market, serving as a crucial indicator for investors. Comprising 50 major Indian companies (please refer to Annexure 1 for the list), it collectively represents approximately 52% of total full market capitalization, about 63% of free-float market capitalization, and 41% of the total liquidity of traded equity stocks on the NSE, based on a 6-month average as of March 31, 2023 (please refer to Annexure 2 for Nifty 50 attributes over the years). As of the same date, the dominant sectors include Financial Services, Information Technology, and Oil, Gas, and Consumable Fuels, accounting for 63.9% (please refer to Annexure 3 for the sectoral composition across years). Notably, these sectors have experienced significant growth, aligning with broader economic trends, and the sectoral composition has evolved over the years in response to changes in the Indian economy.

The index has demonstrated positive returns in 19 of the past 25 calendar years, underscoring its resilience throughout various market cycles. The Nifty 50 Total Return Index, incorporating reinvested dividends, has yielded an annualized return of 13.5%, coupled with an annualized volatility of 22.7% since June 30, 1999. Over the last 15, 5, and 1 year(s), the Total Return Index has achieved Compound Annual Growth Rates (CAGRs) of 10.4%, 12.8%, and 0.6%, respectively, maintaining a reasonable risk-return profile. The increasing Assets Under Management (AUM) of passive funds tracking the Nifty 50, amounting to Rs. 2.34 trillion as of March 31, 2023, signifies the growing acceptance and acknowledgement of the index as a preferred benchmark in the Indian equity market.

1.1 Past Studies on EPU

The research of BBD highlights the substantial economic damage caused by policy uncertainty, which slows down economic growth. Similar concerns are also highlighted by Bonaime et al (2018). The newly introduced index by BBD has enthused a lot of research work in recent years. It is to be noted that the EPU is beyond the control of firms and stems from uncontrollable circumstances like political events, financial disturbances, and natural disasters to name a few.

Yong's (2017) analysis of Japanese investments during the US presidential elections and the Brexit Referendum revealed notable trends. The US EPU index surged during key election moments in June and November 2016, as well as in January 2017 when President Trump assumed office. Comparing this with Japanese Foreign Direct Investment (FDI), a decline from April 2016 was observed, in contrast to figures from 2014 and 2015. In the UK, the EPU index rose leading up to Brexit in 2016 but significantly dropped after the results. Japanese FDI in the UK spiked, indicating that reduced uncertainty facilitated more decisive company decisions. These findings are consistent with Julio & Yook's (2012) research, which revealed a nearly 13% drop in US FDI during election quarters, suggesting that heightened EPU negatively affected FDI flows into those countries.

Chen et al. (2016) examined the surge in EPU in China during the 2012 dispute with Japan over the Senkaku Islands. Widespread anti-Japan protests in China led to a spike in the Chinese EPU index. Japanese companies' sales dropped during the demonstrations but rebounded the following year.

Bhagat et al. (2013) studied the Indian EPU index and found a negative association between EPU and GDP as well as fixed investments. Their study also threw light on the negative association between EPU and the BSE Sensitive Index, the oldest stock index in India.

Arouri & Roubaud (2016) researched the EPU indexes of the USA, India and China about the stock market returns and volatility. Their findings reveal an inverse relation between EPU increase and stock market returns in India and the USA, accompanied by increased stock market volatility during EPU spikes. However, in China, changes in EPU do not significantly affect stock market returns or volatility. The impact on the US stock market is noted as negative and persistent, while India shows a negative effect with some persistence, and China's impact is non-significant.

Economic Policy Uncertainty (EPU) influences investment, consumption, savings, and employment decisions, impacting production and finance costs, and disrupting demand and supply. This uncertainty can lead to disinvestment and economic slowdown, especially in developing countries. EPU also heightens risks in financial markets by eroding government protection (Gulen & Ion, 2014; Kang et al., 2014; Julio, 2002; Fernandez et al., 2014; Pastor & Veronesi, 2012).

Chang et al. (2015) studied policy uncertainty in seven OECD countries, revealing divergent results from past literature regarding EPU's impact on stock returns and volatility increase. The study indicated varying effects for different countries, with Italy and Spain, showing an impact of political and economic uncertainty on stock prices, while the UK and the USA displayed the effect of stock prices on political uncertainty. Canada, France, and Germany remained neutral.

Researchers have delved into EPU's effects on GDP, investments, firm capital structure, and borrowing. Aizenman and Marion (1993) linked EPU to the real capital GDP of 46 developing countries, showing its influence on economic growth through investment. Research over the years has established a positive correlation between expected cash flows and investments. Hence, any uncertainty in cash flows would result in lower investments. In practical scenarios, where capital expenditures are irreversible and hiring or firing is costly, businesses may defer these decisions during heightened economic uncertainty (Bernanke, 1983).

1.2 Aim of the Study

The objective of this paper is to investigate if there is any impact of EPU on the Nifty 50 index which is one of the barometers of the Indian Equity Market. The study seeks to find out if the variation in the EPU affects the movement in the Nifty 50 index.

1.3 Data & Variables

We use the data from January 2017 up to November 2023. The monthly EPU index of India is obtained from www.policyuncertainty.com. The data on the Nifty 50 index is obtained from the National Stock Exchange (NSE) of India at www.nse.in. The Nifty 50 index values represent the end-of-the-month closing index values.

2   Method of Analysis

We employ correlation analysis to examine any correlation between Economic Policy Uncertainty (EPU) and the Nifty 50 Index. Subsequently, Ordinary Least Squares (OLS) regression is utilized to assess the influence of EPU on the Nifty 50, with EPU as the independent variable and Nifty 50 as the dependent variable. Quantile regression is employed to discern the impact of EPU on different quantiles of the Nifty 50 Index. The results from OLS and Quantile regression are then compared. The study methodology aligns with that of Bhagat et al. (2013).

3 Empirical Results and Discussion

Table (1): Summary Statistics.

	EPU	*NIFTY 50*
Mean	74.0	13536.4
Median	70.5	11877.5
Standard Deviation	27.1	3483.4
Kurtosis	1.9	-1.4
Skewness	1.0	0.4
Range	144.4	11571.9
Minimum	23.4	8561.3
Maximum	167.8	20133.2
Count	**83**	**83**

Source: EPU from www.policyuncertainty.com. Nifty 50 figures from www.nseindia.com.

The summary statistics suggest that there is a big range between the minimum and maximum values both in EPU as well as the Nifty 50 index. While the minimum value in EPU is 23.4 (November 2021), the maximum value is 167.8 (May 2020). In the case of Nifty 50, the minimum was 8561.3 (January 2017) and the maximum was 20133.2 (November 2023).

Table (2): Correlation.

	EPU	*NIFTY 50*
EPU	1	
NIFTY 50	-0.09	1

Source: EPU from www.policyuncertainty.com. Nifty 50 figures from www.nseindia.com

The correlation analysis Table (2) does not indicate much of a correlation between the two values of EPU and Nifty 50. It only indicates a very thin negative correlation between the values. However, when the correlation between the two values is analyzed year-wise Table (3), we see a negative correlation between the two values in some years. The negative correlation was highest in 2020, being the COVID year. The year-wise correlation analysis brings out the fact that there is a negative correlation between EPU and Nifty 50 in certain years. In other words, when the EPU spikes up, the Nifty 50 reacts negatively, and the stock index comes down.

Table 3: Year-wise Correlation Analysis.

2017

	EPU	*NIFTY 50*
EPU	1	
NIFTY 50	(0.36)	1

2018

	EPU	*NIFTY 50*
EPU	1	
NIFTY 50	0.33	1

2019

	EPU	*NIFTY 50*
EPU	1	
NIFTY 50	0.28	1

2020

	EPU	*NIFTY 50*
EPU	1	
NIFTY 50	(0.64)	1

2021

	EPU	*NIFTY 50*
EPU	1	
NIFTY 50	(0.40)	1

2022

	EPU	*NIFTY 50*
EPU	1	
NIFTY 50	0.22	1

2023

	EPU		*NIFTY 50*
EPU	1		
NIFTY 50	(0.19)		1

Table (4): Results of the OLS and Quantile regressions

Variable	OLS Regression	'p value	0 Quantile	0.25 Quantile	0.50 Quantile	0.75 Quantile	1.00 Quantile
Nifty 50	(11.38)	0.003	(23.55)	(8.41)	(10.28)	2.97	6.78
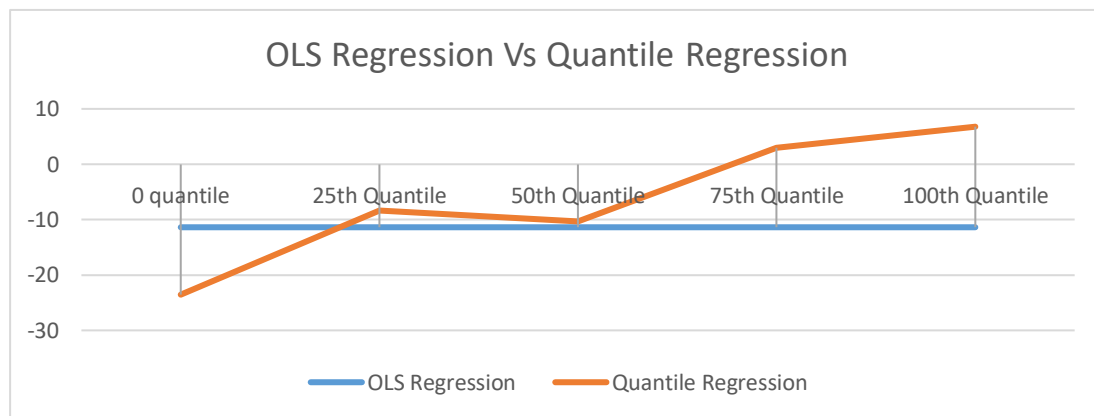
Fig. 1: OLS Regression Vs Quantile Regression
Source: Figures of EPU have been obtained from www.policyuncertainty.com. Data on Nifty 50 has been obtained from www.nseindia.com

The quantile regression is depicted using bars denoted by "l," representing estimated parameter values at various quantiles (0, 25th, 50th, 75th and 100th) where regression is conducted. The red line merely connects these bars. The blue line serves as an extrapolation of the Ordinary Least Squares (OLS) regression coefficient, allowing for a visual comparison with the quantile regression results.

Results of the OLS regression indicate that there is a negative association between EPU and the Nifty 50 Index. A one-point increase in EPU reduces Nifty 50 by 11.38 points. However, when we analyze the quantile regression in 0, 25th, 50th, 75th and 100th quantiles, the results indicate that EPU affects the Nifty 50 in lower quantiles but not in higher quantiles.

4   Conclusion and Policy Recommendations

The impact of Economic Policy Uncertainty has been a concern of policymakers for many years now. Studies have proved that EPU has been instrumental in the slowdown of economic growth, increase in the rate of unemployment and delay in investments. Since the establishment of the EPU index by Baker, Bloom and Davis (2016), there have been numerous studies to establish the impact of EPU on various economic indicators. In comparison with the US, in India, studies relating to EPU have been few. This paper attempts to examine the impact of EPU on the stock markets in India, by examining the impact of EPU on the Nifty 50 index, which is the barometer of the Indian Stock Market. The EPU monthly index data from January 2017 to November 2023 is compared with the month-end closing data of Nifty 50 to analyze if the changes in the EPU affect the Nifty 50 index.

The summary statistics indicate a high range in the EPU. Naturally, the high range is observed in the Nifty 50 also, as the index has considerably moved since January 2017. The correlation analysis indicates a negative correlation between EPU and Nifty 50 when we analyze the year-wise correlation. However, with the higher

values of Nifty 50, the negative correlation is weaker. The data is put through OLS regression, which indicates that there is a negative association between EPU and Nifty 50. To analyze the regression in various quantiles, the values are put through quantile regression, which shows a very strong negative association between EPU and Nifty 50 in 0, 25th and 50th quantiles. However, in the 75th and 100th quantile, the regression becomes positive, indicating that the higher values of Nifty 50 are not affected by the changes in EPU.

It is important for the investors and the people/institutions that constantly monitor the stock market indices to bear in mind the limited effect that EPU has on the stock market. Though there is a negative association, it could be temporary and a short-term variation. The long-term effect is based on the performance of sectors and companies. Given the novelty of the EPU index and limited studies in India, this paper contributes significantly to the existing literature, particularly in the Indian context.

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ANNEXURE 1
List of Companies in Nifty 50 (as on 1.4.2023)

1	Adani Enterprise		26	Infosys
2	Adani Ports		27	ITC
3	Apollo Hospital		28	JSW Steel
4	Asian Paints		29	Kotak Mahindra
5	Axis Bank		30	Larsen
6	Bajaj Auto		31	LTI Mindtree
7	Bajaj Finance		32	M&M
8	Bajaj Fin Serv		33	Maruti Suzuki
9	Bharti Airtel		34	Nestle
10	BPCL		35	NTPC
11	Britannia		36	ONGC
12	Cipla		37	Power Grid Corp
13	Coal India		38	Reliance
14	Divis Labs		39	SBI
15	Dr Reddy's Labs		40	SBI Life Insurance
16	Eicher Motors		41	Sun Pharma
17	Grasim		42	TATA Cons. Prod
18	HCL Tech		43	Tata Motors
19	HDFC Bank		44	Tata Steel
20	HDFC Life		45	TCS
21	Hero MotoCorp		46	Tech Mahindra
22	Hindalco		47	Titan Company
23	HUL		48	Ultratech Cement
24	ICICI Bank		49	UPL
25	IndusInd Bank		50	Wipro

Source: data obtained from www.nseindia.com

ANNEXURE 2
Nifty 50 Attributes Across Years

Attributes %	2023	2022	2015	2005	1995
Market Representation by Full MCAP (%) *	52.3	51.7	57.6	57.9	33.7
Market Representation by Average Turnover (%) *	40.7	37.7	45.1	42.2	62.2
Cumulative weight of top five stocks (%)	40.6	40.5	34.7	38.5	31.7
Cumulative weight of bottom five stocks (%	2.3	2.4	1.7	2	1.8

Source: www.nseindia.com

* Weight for 2023^ is as of last trading day of March, weight for 2022, 2015, 2005 and 1995 are as of last trading day of December. Weights for 2023, 2022 and 2015 are calculated based on Free-Float market capitalization; Weights for 2005 and 1995 are based on Full market capitalization. Market representation of the Nifty 50 for 2023 is calculated based on 6-month March 2023 ended avg. full market cap and avg. turnover data, Market representation of the Nifty 50 for 2022, 2015, 2005 & 1995 is calculated based on 6-month December ended avg. full market cap and avg. turnover data for the respective year.
Source: Nifty 50 White Paper, August 2023.

ANNEXURE 3
The Sectoral Composition Of Nifty 50 Across Years

Sector	2023	2022	2015	2005	1995
Financial Services	37.7	37.7	31	12.8	20
Information Technology	14.1	14	16.3	20	–
Oil, Gas & Consumable Fuels	12.1	12.7	10.6	25	9.8
Fast Moving Consumer Goods	9.6	8.6	8.7	8	19
Automobile and Auto Components	5.3	5.3	9.9	6.8	12.2
Metals & Mining	3.8	4.2	1.3	5.5	10.9
Healthcare	3.4	3.8	7.3	4.2	2.7
Construction	3.4	3.1	3.7	1.8	4.5
Consumer Durables	3.0	3.1	1.4	–	–
Telecommunication	2.4	2.5	2.2	6.3	–
Power	2.1	1.9	2.6	1.5	2
Construction Materials	1.9	1.8	2.8	2.5	5.5
Services	0.6	0.8	0.8	1.1	1.1
Chemicals	0.5	0.5	–	0.8	7.7
Media,	–	–	0.8	0.5	–
Entertainment & Publication	–	–	0.5	3.1	0.6
Capital Goods	–	–	–	–	2.2
Textiles	–	–	–	–	1.9
Consumer Services	–	–	–	–	1.9

Source: www.nseindia.com
Weights of the sectors are as of December 31 for the respective year. Weights for 2022 and 2015 are calculated based on Free-Float market capitalization; Weights for 2005 and 1995 are based on Full market capitalization.
*Weight of sector for 2023 are as of 31st March 2023 based on Free-Float market capitalization.
Source: Nifty 50 White Paper, August 2023.