

## Peer-reviewed research

# Nexus of Trend Sentiment and Economic Policy Uncertainty With Activity Trends in Derivatives Market

Prem Vaswani<sup>1</sup>, Padmaja M<sup>1</sup><sup>1</sup> National Institute of Technology, Tiruchirappalli, Tamil Nadu, India

Keywords: Derivatives market, EPU, Trend sentiment, Information flow, Google search, JEL: G10 G12 G23

<https://doi.org/10.46557/001c.74860>

---

## Asian Economics Letters

Vol. 5, Issue 4, 2024

---

This research attempts to examine the impact of trending information flow of stock market index on derivatives market activity by utilizing the new and innovative economic policy uncertainty index (EPU) and the Google Search Volume Index (GSVI). We discover that EPU and GSVI have significant and positive impact on derivatives' aggregate turnover. The findings contribute to the knowledge that financial innovation and market trend development help financial decision-makers to better manage credit and market risks.

### I. Introduction

This research attempts to scrutinize the stock market indexes' trending information flow by utilizing Economic Policy Uncertainty Index (*EPU*), Google Trends with keywords NIFTY+SENSEX, and India's VIX on derivatives market activity using derivatives' market aggregate turnover and its sub-segments of National Stock Exchange. The use of *EPU* and *GSVI* data in the context of derivatives market activity is the novelty of this study. The stock market, which accounts for more than 50 percent of the gross domestic product (GDP) of India, serves as a gauge for the size of the national stock market. The trading activity in the stock market has increased exponentially over the last two decades. In August 2022, the Indian Market Capitalization totaled \$3,527.328 billion, up from \$ 3,360.469 billion the month prior. The data peaked in value at \$ 3,575.778 billion in December 2021 and fell to a record low \$ 55.322 billion in April 1993 (CEIC DATA). In 2021, the National Stock Exchange of India is ranked fourth in the global cash equities market in number of trades per the World Federation of Exchanges (WFE) statistics.

The transactions in the capital market pose a substantial risk of liquidity and volatility with limited returns. Due to these limitations, the market participants are increasingly inclined towards the derivatives market for hedging and risk management; derivatives are widely used, requiring a low initial investment in the premium or marked-to-market settlements. Due to the frequent news sentiments on financial crisis, fraud claims, and the most recent almost-collapse of numerous market participants during the COVID-19 epidemic, the derivatives market has recently garnered increasing interest. Derivatives might, however,

significantly boost the economy if appropriately employed. The invention of financial derivatives and financial market trading are relevant since they enable commercial enterprises to adapt to this altered economic climate worldwide and reflect the health of the entire economy due to the enormous volume of turnover activity. Compared to the underlying assets, i.e., notional value outstanding at the end of December 2021, the derivatives market stands enormous at \$600 trillion, and the gross market value of derivatives contracts stands at \$12.4 trillion, as per the Bank for International Settlements (BIS) 2021 statistical release report. Our hypothesis is that trend sentiment is a significant variable in derivatives market activity. The findings contribute to the evidence that trend information assists market participants to judge the volatility of a market while making investment strategies, and it also affects activity levels of the market. We discuss the expected relationship between trend sentiment using *GSVI* and *EPU* in the following section.

### II. Literature Review on Trend Sentiment using *GSVI* and *EPU*

Traditional economic theories, like Efficient Market Hypothesis (EMH), presuppose that asset prices immediately incorporate new information, which implies that any information load must be instantly processed mentally. The efficient market hypothesis (see Merton, 1987) also suggests that despite having access to a wealth of information, investor awareness of various equities is inadequate, and this limitation greatly influences the valuation of equity assets. More specifically, a portion of the market may momentarily overlook information that changes prices. As a result, trad-

---

a Corresponding author email: [capremvaswani@gmail.com](mailto:capremvaswani@gmail.com)

ing activity lags after the availability of information, slowing the absorption of information into pricing (DellaVigna & Pollet, 2008).

Given that more people are accessing the internet via mobile devices, the channels that affect trend sentiments include Google search history and *EPU* based on Indian economic news. The *GSVI* provides insightful data about people's interests and attentiveness (Narita & Yin, 2018). The empirical evidence in earlier investigations related to application of trend sentiments include Carneiro and Mylonakis (2009) have utilized the Google trend data to monitor illness outbreaks. The flow of information and internet inclusion are key factors in the fight against pandemics (Chundakkadan & Ravindran, 2020). The specialized area of stock market activity also has seen the emergence of *GSVI* and its implications. A significant association with conventional measurements and timely findings shows that *GSVI* is a trustworthy proxy for investor attentiveness (Aouadi et al., 2013; Da et al., 2011). According to empirical findings, this new indicator also influences the liquidity and volatility of stock market just like the conventional measures (Ding & Hou, 2015). The use of trending sentiment data, using Google search, in financial prediction has already been attempted in terms of stock market activity. In the context of Vietnam, Nguyen et. al. (2018) and Bui et. al. (2019) demonstrate that increased market attention causes equities to become less liquid and more volatile in Vietnam. Preis et. al. (2010, 2013) find that investment strategies formed based on Google search data outperform the market index. Baker and Stein (2004) offer a theoretical framework, including a category of irrational investors in exceptionally high liquidity and inflated markets, for underreacted trading results. Different liquidity metrics, including turnover and dollar volume, are used in later empirical research to assess the state of the US market (Lei, 2005; Liu, 2015).

Concerns over unclear policies, particularly those pertaining to economic and financial decisions, are developing because of the recent global financial crisis and the intensifying political policy conflicts. The recent slow economic development in many nations that are now dealing with policy uncertainty is proof that policy uncertainties have always played a crucial role in determining economic results. Recent research looks specifically at how uncertainty, particularly political and macroeconomic uncertainty, affects stability, size, and stock market returns (Barrero et al., 2017; Bloom, 2009; Christou et al., 2017). Firms are more vulnerable to the effects of uncertainty during these times, and ambiguity in economic policy enhances general market volatility (Shahzad et al., 2017).

The EMH theory and empirical literature discussed above motivates us to examine the trend sentiment information on stock market and the same is expected to stand valid for derivatives market. This paper, thus, uses *EPU* data and *GSVI* data in the context of derivatives market activity which attracts investors due to low investment requirements with the possibilities of higher returns along with higher risks. No other existing study focuses on such an examination.

### III. Data and Findings

To achieve the objective of this article, we use *GSVI* data from <https://trends.google.com/> of India for the monthly period ranging from April 2013 to September 2022. The derivatives market information is obtained from the NSE website; the news based Indian *EPU* index is used, following the same approach as Baker et al. (2016) and Baker and Stein (2004). The trend graph over the period is presented in [Figure 1](#).

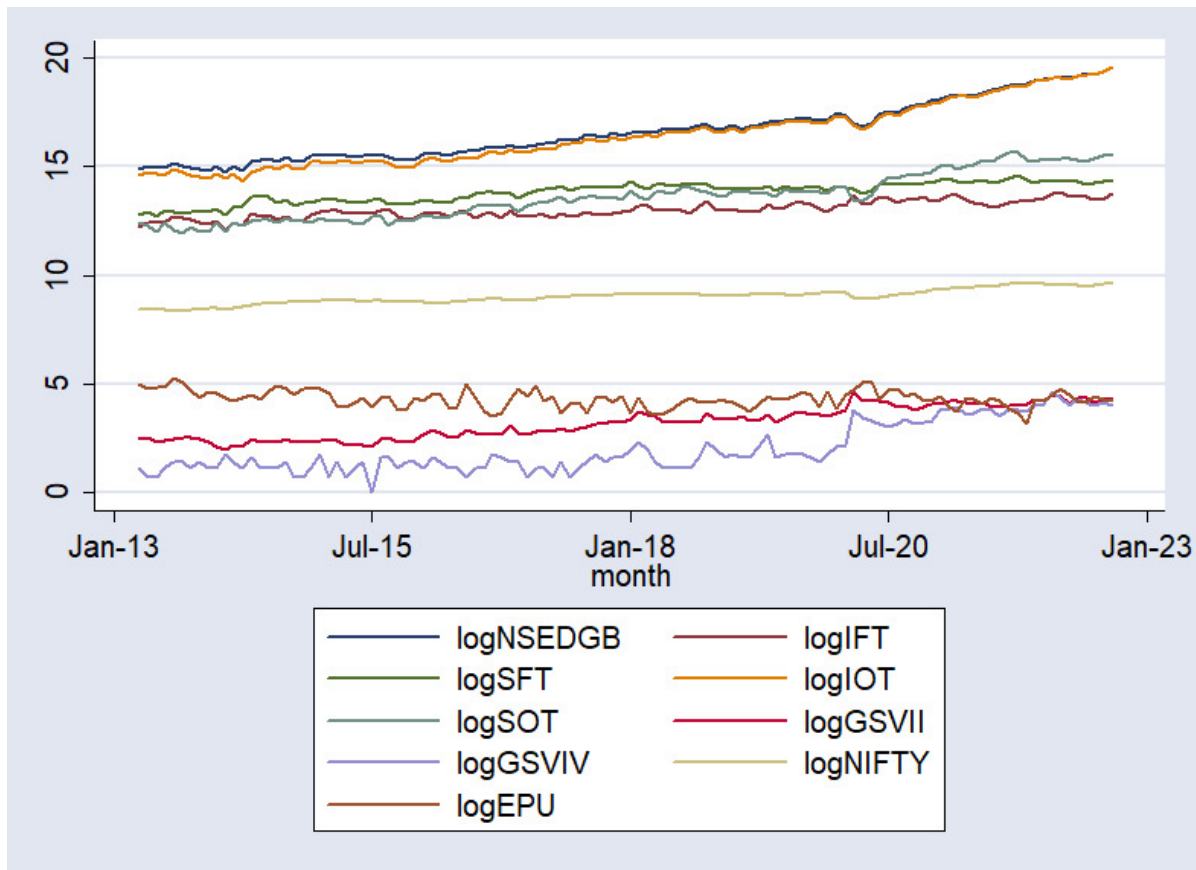
In [Table 1](#), we display the outcomes of our estimation. We regress the log of total turnover of the derivatives market on the trend sentiment Google search index along with a control variable i.e., log of monthly average of the *NIFTY 500* index. The estimation outcomes suggest that coefficients of lagged *GSVI(I)*, *GSVI(V)* and *EPU* have a positive and statistically significant (1 percent) impact on aggregate activity level of derivatives market. Furthermore, to verify the robustness of the findings, we also regress the trend sentiment information flow of index and volatility on the segment turnover activities of the derivatives market.

The results, with respect to *GSVI(I)*, are positive and consistent across all the segments. *GSVI(V)* also has a positive impact on aggregate derivatives market activity. However, out of all four segments, *GSVI(V)* has the strongest negative significant impact only on stock futures segment, the reason for change from positive (at aggregate) to negative impact for this segment might be due to high volatility of individual stocks at spot rate which negatively impacts the stock futures market.

The findings suggest that if the index search starts to trend more, then this data may help traders and investors to understand market sentiments and exploit this opportunity to gain abnormal returns. The findings contribute to the existing literature. First, these trend patterns help financial decision-makers better manage credit and market risks. Second, they encourage financial innovation and market development, which strengthen the market's resilience to shocks. A highly favourable effect of market awareness on derivative market activity and volatility is discovered. Meanwhile, our findings report that search sentiment based on Index and volatility affects the activity of all of the four segments of derivative market; the impact is weak but significant at aggregate and in all segments. This might be since changes in economic policies have an aggregate effect on the stock market and not on a specific firm or industry. Furthermore, policy uncertainty brings out volatility and a possibility of earning higher returns, hence the positive effect on the index segment rather than on individual stocks segment. The emphasis on the market raises the level of uncertainty and the desire for information, which results in excessive trading and erratic pricing.

### IV. Final Remarks

This article contributes to the existing well-accepted literature on *GSVI* and derivatives instruments. Firstly, by using data from India, a growing economy, and secondly, by establishing the connection between Google search-based sentiment and activity in Indian derivatives market. Ac-



**Figure 1. Plots of variables used in this study**

Note: This figure plots data for all variables used in this study.

**Table 1. Trend Sentiment and derivatives market behavior**

Variable	Derivative market performance				
	Derivative Growth (DGB)	Index Futures (IFT)	Stock Futures (SFT)	Index Options (IOT)	Stock Options (SOT)
$\log GSVI_{t-1}(I)$	0.3823*** (0.1009)	0.1706*** (0.0586)	0.3234*** (0.0593)	0.4874*** (0.1056)	0.3754*** (0.1186)
$\log GSVI_{t-1}(V)$	0.2584*** (0.0371)	0.0671** (0.0293)	-0.1505*** (0.0307)	0.2436*** (0.0399)	0.1298*** (0.0445)
$\log NIFTY500_t$	2.4815*** (0.2025)	0.5171*** (0.1130)	1.0583*** (0.1142)	2.6233*** (0.2141)	2.0236*** (0.2319)
$\log EPU$	0.1840*** (0.0605)	0.0960*** (0.0445)	-0.0165 (0.0431)	0.1932*** (0.0653)	0.0619 (0.0614)
Constant	-8.2553*** (1.7201)	7.2710*** (1.0222)	3.6327*** (1.0217)	-10.0736*** (1.8256)	-6.3677*** (1.9645)
R-Squared	0.9696	0.7933	0.8782	0.9706	0.9417

Notes: This table displays the link between google search trend sentiment and derivatives market activity growth. The search trend sentiment is captured using the monthly average of Google Search Volume index (GSVI). Keywords NIFTY+SENSEX for past month( $\log GSVI_{t-1}(I)$ ) and India VIX( $\log GSVI_{t-1}(V)$ ) are used. Robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at 10%, 5%, and 1% level, respectively.

cording to this research, tracking Index-related information through Google searches may be a useful strategy for determining the market's trajectory and seizing investment opportunities in derivatives market. Economic policy uncertainty also has a positive influence on the activity in the derivatives market except for the stock futures' and stock options' segment.

The results show that high  $GSVI(I)$ ,  $GSVI(V)$  and  $EPU$  indeed lead to high derivatives market activity. Our results also point to the presence of trading practices that are not supported by facts. This phenomenon tends to be more common in less transparent markets like India. The limitations include non-inclusion of certain Google trend search keywords that investors might use while researching their investment decisions and the impact of lagged effect of

variables on the results. These can be covered in future studies.

.....

## Acknowledgement

The authors are grateful to the Editor and the anonymous referees for helpful suggestions.

Submitted: November 30, 2022 AEDT, Accepted: January 20, 2023 AEDT



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-SA-4.0). View this license's legal deed at <https://creativecommons.org/licenses/by-sa/4.0> and legal code at <https://creativecommons.org/licenses/by-sa/4.0/legalcode> for more information.

## References

- Aouadi, A., Arouri, M., & Teulon, F. (2013). Investor attention and stock market activity: Evidence from France. *Economic Modelling*, 35, 674–681. <https://doi.org/10.1016/j.econmod.2013.08.034>
- Baker, M., & Stein, J. C. (2004). Market liquidity as a sentiment indicator. *Journal of Financial Markets*, 7(3), 271–299. <https://doi.org/10.1016/j.finmar.2003.11.005>
- Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, 131(4), 1593–1636. <https://doi.org/10.1093/qje/qjw024>
- Barrero, J. M., Bloom, N., & Wright, I. (2017). *Short and long run uncertainty* (No. No. w23676). National Bureau of Economic Research. <https://doi.org/10.3386/w23676>
- Bloom, N. (2009). The impact of uncertainty shocks. *Econometrica*, 77(3), 623–685. <https://doi.org/10.3982/ecta6248>
- Bui, V. X., & Nguyen, H. T. (2019). Stock market activity and Google Trends: the case of a developing economy. *Journal of Economics and Development*, 21(2), 191–212. <https://doi.org/10.1108/jed-07-2019-0017>
- Carneiro, H. A., & Mylonakis, E. (2009). Google trends: a web-based tool for real-time surveillance of disease outbreaks. *Clinical Infectious Diseases*, 49(10), 1557–1564. <https://doi.org/10.1086/630200>
- Christou, C., Cunado, J., Gupta, R., & Hassapis, C. (2017). Economic policy uncertainty and stock market returns in PacificRim countries: Evidence based on a Bayesian panel VAR model. *Journal of Multinational Financial Management*, 40, 92–102. <https://doi.org/10.1016/j.mulfin.2017.03.001>
- Chundakkadan, R., & Ravindran, R. (2020). Information flow and COVID-19 recovery. *World Development*, 136, 105112. <https://doi.org/10.1016/j.worlddev.2020.105112>
- Da, Z., Engelberg, J., & Gao, P. (2011). In search of attention. *The Journal of Finance*, 66(5), 1461–1499. <https://doi.org/10.1111/j.1540-6261.2011.01679.x>
- DellaVigna, S., & Pollet, J. (2008). Investor inattention and Friday earnings announcements. *Journal of Finance*, forthcoming, 744.
- Ding, R., & Hou, W. (2015). Retail investor attention and stock liquidity. *Journal of International Financial Markets, Institutions and Money*, 37, 12–26. <https://doi.org/10.1016/j.intfin.2015.04.001>
- Lei, Y. C. (2005). *The trading volume trend, investor sentiment, and stock returns*. Louisiana State University and Agricultural & Mechanical College.
- Liu, S. (2015). Investor sentiment and stock market liquidity. *Journal of Behavioral Finance*, 16(1), 51–67. <https://doi.org/10.1080/15427560.2015.1000334>
- Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information. *The Journal of Finance*, 42(3), 483–510. <https://doi.org/10.1111/j.1540-6261.1987.tb04565.x>
- Narita, M. F., & Yin, R. (2018). In search of information: use of google trends' data to narrow information gaps for low-income developing countries. *IMF Working Papers*, 18(286), 1. <https://doi.org/10.5089/9781484390177.001>
- Nguyen, D., & Pham, M. (2018). Search-based sentiment and stock market reactions: an empirical evidence in Vietnam. *Journal of Asian Finance, Economics and Business*, 5(4), 45–56. <https://doi.org/10.13106/JAFEB.2018.VOL5.NO4.45>
- Preis, T., Moat, H. S., & Stanley, H. E. (2013). Quantifying trading behavior in financial markets using Google Trends. *Scientific Reports*, 3(1), 1–6. <https://doi.org/10.1038/srep01684>
- Preis, T., Reith, D., & Stanley, H. E. (2010). Complex dynamics of our economic life on different scales: insights from search engine query data. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 368(1933), 5707–5719.
- Shahzad, S. J. H., Raza, N., Balcilar, M., Ali, S., & Shahbaz, M. (2017). Can economic policy uncertainty and investors sentiment predict commodities returns and volatility? *Resources Policy*, 53, 208–218. <https://doi.org/10.1016/j.resourpol.2017.06.010>