



Government-sourced categorical economic policy uncertainty

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ABSTRACT

This study develops a novel framework for measuring Categorical Economic Policy Uncertainty (GovCEPU) by analysing textual data from official government communications rather than traditional news media. Using Vietnam as a theoretical test case, a transition economy where centralised policy signals are paramount, we construct distinct monthly indices of monetary, fiscal, and trade policy uncertainty (2004-2023). Comparative analysis reveals that GovCEPU measures capture higher volatility and provide signals of policy shifts different from news-based counterparts, reflecting ex-ante deliberation in state-led contexts. Employing a Diebold-Yilmaz (2012, 2014) connectedness framework to account for systemic endogeneity, we demonstrate that monetary and fiscal uncertainties function as primary net shock transmitters to the

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macroeconomic system, whereas trade policy uncertainty operates as a net receiver. At the micro-level, heightened monetary and fiscal policy uncertainty have significant impacts on banks' loan loss provisions and risk-taking, while trade policy uncertainty impairs non-financial firms' performance and capital expenditures. These findings suggest that government-sourced indices offer a direct, cost-effective, and theoretically grounded alternative to media-based metrics for evaluating policy-related risks in emerging markets.

1. Introduction

This paper proposes a new approach to measure economic policy uncertainty via textual analysis of government-sourced text data. While conventional text-mining approaches rely on online newspaper data to quantify Economic Policy Uncertainty (EPU) and Categorical EPU (CEPU) across the globe (Arbatli et al., 2022; Baker et al., 2016; Caldara et al., 2020; Husted et al., 2020), the information value of public media data faces significant criticism. Online newspapers may inadvertently capture non-policy-related uncertainties (Gulen & Ion, 2016) or reflect generic ex-post public sentiment rather than ex-ante policy deliberation. Distinguishing between these structural dimensions is critical because granular categories, including monetary, fiscal, and trade policy uncertainties, serve as distinct drivers of financial and corporate friction (Arbatli et al., 2022; Bianconi et al., 2021; Husted et al., 2020). EPU can exert significant impacts on a variety of economic activities, including investment decisions (Drobtz et al., 2018; Gulen & Ion, 2016), household spending (D'Acunto et al., 2022), employment (Caggiano et al., 2017), and international trade (An et al., 2023). Monetary policy is crucial for controlling inflation and maintaining financial stability. Fiscal policy is critical in shaping aggregate demand through taxation, spending, and borrowing. Trade policy is an important tool for protecting domestic industries, promoting exports, managing trade deficits or surpluses, and ensuring fair competition in international markets. Identifying their independent propagation channels is vital for economic forecasting and mitigating shocks to aggregate growth (Gu et al., 2021; Phan et al., 2021).

The macro-micro transmission of policy shocks is highly contingent upon institutional architectures. It is especially pronounced in emerging market transition economies such as Vietnam, where state leadership and strategic economic interventions are pervasive. Over the past few decades, Vietnam's economic policies have shifted towards a market-oriented economy, with monetary policy focusing on macroeconomic stability, fiscal policy supporting growth through strategic investments, and trade policy emphasizing liberalization and integration into global supply chains through various free trade agreements. On the one hand, Vietnam's economic relationship with the U.S. has significantly deepened, with bilateral trade reaching \$149.6 billion in 2024 and strategic partnerships expanding across sectors. On the other hand, Vietnam maintains a nuanced relationship with China, leveraging its geopolitical position to balance economic ties with both major powers, while navigating challenges such as trade tensions and currency management. Due to this international relations strategy, Vietnam has faced significant trade policy uncertainty, such as the impact of U.S. tariffs and trade flow diversion during the U.S.-China trade war. During the Trump administration, Vietnam has been labeled a currency manipulator twice by the U.S. government, highlighting the challenges in monetary policymaking to maintain competitiveness without triggering criticisms from the West. Furthermore, fiscal uncertainty is particularly prevalent in Vietnam, where ongoing tax reforms and rising public expenditure on infrastructure development create a persistently uncertain fiscal pressure. The unique context of Vietnam implies the need to understand the monetary, fiscal, and trade policy uncertainty's impacts in a more granular approach to ensure their smooth coordination to achieve economic development. Despite its significance, analyzing this policy mix requires rigorous measurement tools, yet such tools remain scarce.

To address these measurement challenges, we develop a new and robust framework to measure EPU in Vietnam by employing textual data analysis of government bodies' websites. This approach prioritises official policy information over public media reflection of policy uncertainty. In this study, we attempt to answer two research questions: (i) *What are the trends of CEPU (monetary, fiscal, and trade) in Vietnam over time?* (ii) *How do Vietnam's CEPU indices interact with macroeconomic and micro-economic factors?*

To examine the developments of CEPU in Vietnam, we employ text analysis to construct government-sourced CEPU (*GovCEPU*) indices, including monetary policy uncertainty (MPU), fiscal policy uncertainty (FPU), and trade policy uncertainty (TPU). Instead of using the popular news-based approach that uses online newspaper articles to measure policy uncertainty (Arbatli et al., 2022; Baker et al., 2016; Husted et al., 2020), we use text data from official websites of regulatory bodies of the Vietnamese government, including the State Bank of Vietnam (SBV), the Ministry of Finance (MOF), and the Ministry of Industry and Trade (MOIT). By shifting the analytical lens to these primary data sources, we capture the administrative deliberation phase before policy signals are dispersed into secondary media environments. We measure MPU, FPU, and TPU using the number of related keyword combinations scaled by the total number of articles published on the websites of SBV, MOF, and MOIT, respectively.

Moving beyond traditional recursive VAR impulse responses, which are constrained by restrictive variable-ordering assumptions and exogeneity paradoxes, we evaluate our new indices using the generalised forecast error variance decomposition (GFEVD) connectedness framework of Diebold and Yilmaz (2012, 2014). This allows us to model policy uncertainty as an endogenous network of spillovers. Our *GovCEPU* indices exhibit robust predictive validity, co-moving systematically with realised macroeconomic volatility, the World Uncertainty Index (WUI) and Global Economic Policy Uncertainty (GEPU). To compare our approach with the traditional *news-based* approach in the literature, we construct alternative CEPU measures using the same methodology but using data from major Vietnamese newspapers (i.e., the news-based CEPU indices for Vietnam). While our *GovCEPU* indices correlate highly with news-based indices, they show higher volatility and capture a complementary dimension of policy uncertainty. In addition, we find that while the MPU and FPU measures are highly correlated, the TPU measures appear less correlated with the other two indices.

We answer the research questions at the same time as we validate the proposed measurement of CEPU via empirical analysis. To examine the interaction between the *GovCEPU* indices and the macroeconomic environment, and to bypass the exogeneity and variable-ordering constraints inherent in traditional Cholesky-ordered VARs, we employ the Diebold-Yilmaz (2012, 2014) connectedness framework based on Generalised Forecast Error Variance Decomposition (GFEVD). We examine a multivariate network containing MPU, FPU, TPU, GDP growth, inflation, the World Uncertainty Index (WUI) for Vietnam (Ahir et al., 2022), exports, imports, and the USD/VND exchange rate. Our network analysis reveals that MPU acts as a significant net shock transmitter within the system. Pairwise directional spillovers demonstrate that MPU shocks transmit directly to inflation and imports. This linkage suggests that domestic businesses and consumers rapidly adjust their expectations and pricing behaviours in response to monetary uncertainty, driving price fluctuations and shifting import demands via credit and exchange rate channels. Conversely, the net spillovers from MPU to GDP growth and currency valuation are remarkably small, suggesting that MPU's impact on aggregate growth operates indirectly through latent channels like corporate investment and consumer spending. The findings are broadly consistent with the intended relationship between MPU and macroeconomic factors (Arbatli et al., 2022; Arce-Alfaro & Blagov, 2023; Husted et al., 2020).

In contrast, the transmission dynamics of FPU are highly sensitive to real economic conditions. The strongest pairwise spillovers occur within the FPU-GDP and FPU-WUI pairs. Notably, GDP growth acts as a net shock transmitter to FPU, implying that fiscal policy deliberations in Vietnam are systematically endogenous and highly responsive to economic growth shocks. Once generated, however, FPU acts as a net transmitter to the WUI, indicating that uncertainty in fiscal policy directly feeds back into and exacerbates overall macroeconomic uncertainty. Interestingly, our results are well aligned with the findings on the endogenous nature of fiscal policy (Heimberger, 2023) and its association with economic growth shocks (Anzuini et al., 2020; Arbatli et al., 2022).

Crucially, TPU emerges as the sole net shock receiver among the three *GovCEPU* indices. This underscores Vietnam's unique institutional positioning as an export-oriented, price-taking economy. TPU is heavily linked to imports and the WUI, acting as an intermediate node that absorbs global macroeconomic shocks. Furthermore, TPU exhibits an asymmetric relationship with trade indicators: it is strongly shaped by domestic import activities - likely due to the immediate impact of tariff or regulatory changes on domestic input costs - while export variations remain primarily driven by exogenous foreign trade policies rather than domestic TPU shifts. Again, the findings are well in line with those from the trade policy literature (Caldara et al., 2020; Handley & Limão, 2015, 2017, 2022).

At micro level, we provide empirical evidence using firm- and bank-level multivariate panel regression analysis. The results demonstrate that heightened monetary and fiscal policy uncertainty fundamentally changes banking operations. Sourced directly from institutional channels, MPU significantly affects the risk-taking behaviour of Vietnamese commercial banks, consistent with the precautionary bank behaviour under uncertainty (Bordo et al., 2016; Valencia, 2017). Concurrently, FPU influences loan loss provisions of banks, following Ng et al. (2020), Silva (2021), and Tran and Houston (2021). Notably, we document a significantly higher predictive precision when using the government-sourced FPU index compared to the news-based proxies while government-sourced MPU provides slightly better predictive precision relative to its counterparts. For non-financial firms, panel regressions demonstrate that trade policy uncertainty (TPU) negatively affects profits and capital expenditures are sensitive to international trade shocks (Benguria et al., 2022; Chen et al., 2024; Imbruno, 2019). While both metrics (government-sourced and news-based CEPU indices) confirm the negative real options "wait-and-see" effects (Gulen & Ion, 2016), our government-sourced TPU slightly outperforms media-based TPU indices in predictive precision.

This study offers two important contributions to the literature. Our primary contribution is an alternative text-based approach to construct *GovCEPU* indices using official text data instead of text data from secondary public media outlets as commonly used in previous studies (Ahir et al., 2022; Arbatli et al., 2022; Baker et al., 2016; Caldara et al., 2020; Husted et al., 2020). We leverage the use of text data from regulatory bodies' websites (i.e., the primary sources of data for policy changes and uncertainty), offering a more direct approach to quantify government policy uncertainty. This approach offers several advantages. The first advantage is that regulatory websites provide the timeliest information, as they are the first and official outlets to publish the government's announcements about policy changes or rule proposals. The data from these primary sources is highly authoritative and reliable as they come directly from policymaking bodies. Secondly, our approach is methodologically more cost-effective than the original online media data approach. Typically, government text data is open to access with no charges to the public. Most studies in news-based EPU literature construct their EPU-related indices using data from major online newspapers with paid subscriptions to the publications or to databases such as Factiva, LexisNexis, among others. The subscriptions come with certain dollar costs ranging from a few hundred to a few thousand USD on a monthly basis, depending on subscription plans and the number of users per subscription.¹ Thirdly, the time cost of collecting and processing text data from government sources is lower than the conventional approach using online newspaper data. Generally, online newspaper articles are not only about economic policies since they cover all aspects of socio-political and daily events, including entertainment and other non-economic content, leading to an enormous number of articles published per month in each of the publications. As most EPU and CEPU indices are constructed by computing the frequency of EPU-related articles scaled by the number of articles published during the same period, then normalizing the results (Ahir et al., 2022; Baker et al., 2016; Caldara et al., 2020; Husted et al., 2020), the time costs of scraping and processing text data, plus human auditing costs, are significant. As the content in each government website is concentrated and related to its regulatory assignments, the amount of text data to collect and process is generally lower and therefore requires less time in comparison to the conventional news-based approach.²

The second contribution we offer to the literature is the *GovCEPU* indices of Vietnam. These measures provide valuable insights into

¹ Quotes for Factiva subscription cost are available from: <https://www.dowjones.com/professional/factiva/pricing-page/>.

² See Table 4 for more details about the numbers of text articles from government websites versus major online newspapers in this study.

the dynamics of policy uncertainty across different sectors and policy domains, offering important understanding for policymakers, businesses, and researchers to assess how *GovCEPU* factors interact with the macroeconomy, investment decisions, and overall bank/firm performance in Vietnam. As we find no prior studies proposing a measure of categorical policy uncertainty for Vietnam, this study is the first to provide government-sourced measurements of MPU, FPU, and TPU in the country while validating the measurement empirically via analyzing their correlation and interaction with macroeconomic factors as well as with corporate outcomes. Our proposed approach promises a new avenue of research on *GovCEPU* and its impacts at macro- and micro-level, especially amid the contemporary era of increasing economic uncertainty and geopolitical tensions across the globe.

The rest of the paper proceeds as follows. Section 2 reviews the literature on measuring policy uncertainty. Section 3 presents our research methodology and data. Section 4 evaluates the effectiveness of the constructed *GovCEPU* indices through empirical tests. Section 5 concludes the paper and highlights potential areas for future research.

2. Literature review

2.1. Evolution of EPU measurement: from proxies to textual analysis

Extant literature utilises four primary approaches to quantify uncertainty: (i) event-based dummy variables for national elections, global summits (Bhattacharya et al., 2017; Julio & Yook, 2012; Kelly et al., 2016) or crises (Abreu & Gulamhussen, 2013; Ahir et al., 2022; Buigut & Kapar, 2023; Minford & Zhu, 2024); (ii) macroeconomic and financial volatility proxies (Afonso & Furceri, 2010; Bloom, 2009; Connolly et al., 2005; Jurado et al., 2015; Kellogg, 2014); (iii) survey-based expert forecasts (Abel et al., 2016; Bachmann et al., 2013; Boero et al., 2015; Jo & Sekkel, 2019; Sill, 2012); and (iv) text-mining of public discourse (Baker et al., 2016; Husted et al., 2020). While event dummies and volatility proxies are readily available and provide continuous data, they often fail to isolate policy-specific shocks from general economic noise and suffer from endogeneity, as macroeconomic and financial variables are simultaneously determined with policy shifts. Similarly, while the surveys can capture nuanced views on policy uncertainty, they are constrained by sample size, respondent bias, and the frequency of data collection (Jurado et al., 2015).

The news-based approach proposed by Baker et al. (2016) has become the common practice for capturing high-frequency, policy-specific uncertainty. While news-based indices are commonly constructed using newspaper coverage (Elkamhi et al., 2024; Ghirelli et al., 2019; Husted et al., 2020), news-based indices assume a media environment that independently aggregates information - a condition that may not hold in transition economies, countries with high degrees of political polarization, or state-led institutional frameworks. Furthermore, media reporting often acts as a second-order reflection of official discourse, and it may capture public perception rather than underlying policy deliberation.

2.2. The macro-micro transmission of policy shocks

The literature identifies a “wait-and-see” effect, where economic policy uncertainty (EPU) distorts the intertemporal decisions of economic actors (Bloom, 2009). While traditional models treat uncertainty as a latent variable, our framework explicitly models the transmission of policy shocks from institutional origins to macroeconomic as well as microeconomic outcomes.

At the macro level, shocks to EPU correlate with reduced output and heightened realised volatility. Consistent with Real Options Theory, EPU leads firms to postpone irreversible capital expenditures (Bloom, 2009; Gulen & Ion, 2016; Julio & Yook, 2012). However, the direction of this relationship is often contested as being endogenous. To address this, we utilise a network-connectedness approach (Diebold & Yilmaz, 2012), which reveals that *GovCEPU* is not a passive reflection of economic conditions, but a net transmitter of systemic risk. Monetary (MPU) and fiscal policy uncertainty (FPU) act as primary shock transmitters, reflecting the centralised nature of domestic policy steering. Meanwhile, Trade Policy Uncertainty (TPU) is particularly disruptive for export-oriented economies. Existing literature often focuses on trade liberalization, confirming that reduced TPU spurs export growth (Handley & Limão, 2015), lowers prices, and increases consumers’ real income (Handley & Limão, 2017). Our findings demonstrate that in price-taking economies like Vietnam, TPU acts as a net shock receiver, effectively absorbing global volatility (World Uncertainty Index - WUI) or bilateral trade tensions, and subsequently impairing domestic manufacturing performance.

At the micro level, policy signals affect banks and firms through different channels. For banks, uncertainty shapes risk-taking and lending standards over the business cycle (Acharya & Naqvi, 2012), and the literature points to two competing channels. Under the risk-taking channel, banks search for yield and take on more risk (Greenspan, 2004; Paligorova & Santos, 2017), and recent evidence links higher monetary policy uncertainty (MPU) to greater bank risk-taking (Ge et al., 2023; Sun et al., 2026). Under the precautionary channel, banks respond to uncertainty by strengthening their balance sheets and tightening lending (Bordo et al., 2016; Valencia, 2017). Policy uncertainty also affects how banks recognise expected credit losses. Literature show that banks raise loan loss provisions when they expect more uncertainty, particularly fiscal policy uncertainty (FPU), to weaken the economy (Ng et al., 2020; Silva, 2021; Tran & Houston, 2021). For non-financial firms, TPU raises the cost and risk of trade-related activities. As a result, TPU reduces the investment and profitability of firms exposed to international trade (Benguria et al., 2022; Chen et al., 2024; Imbruno, 2019), consistent with the wait-and-see effect (Gulen & Ion, 2016).

Finally, EPU influences household consumption and investment decisions. Heightened uncertainty encourages precautionary savings (Fernández-Villaverde et al., 2015; Wu & Zhao, 2022), the postponement of durable goods consumption (Aaberge et al., 2017; Eberly, 1994), and adjustments in labor supply (Giavazzi & McMahon, 2012). This behaviour reduces the efficacy of countercyclical stimuli, as households become less responsive to tax or interest rate adjustments during periods of high policy uncertainty, in line with predictions of Real Options Theory (Bloom, 2009; Bloom et al., 2007).

By constructing categorical indices (MPU, FPU, TPU) directly from official institutional sources, this study provides a granular map of how specific government signals propagate through the financial and corporate sectors. This approach allows us to disentangle the sources of uncertainty, offering a theoretically grounded alternative to the aggregate, news-based metrics common in the existing literature.

3. Methodology and data

3.1. Index construction

We follow the established text-based methodology proposed by Baker et al. (2016) and Arbatli et al. (2022) to construct *GovCEPU* indices for Vietnam. Baker et al. (2016) count the number of articles published in the top ten leading US newspapers containing word combinations that represent US economic policy uncertainty. Our approach differs primarily in terms of text data approach. While Baker et al. (2016) and a line of follow-up literature (Ahir et al., 2022; Arbatli et al., 2022; Caldara et al., 2020; Husted et al., 2020) use text data from major online newspapers to capture policy uncertainty reflected in the public's perception, we measure *GovCEPU* using official text data from the websites of regulatory bodies in Vietnam. Using similar dictionaries adapted to Vietnamese bureaucratic language to construct the policy uncertainty indices, our proposed data approach provides an alternative way to capture policy uncertainty using primary, official policy data sources.

There are two main differences between our approach and the original approach of Baker et al. (2016). First, we focus on the data from official sources (e.g., regulatory bodies) rather than public media. Public media articles often contain varying personal opinions from journalists, analysts, interviewees, and specialists about policy, politics, and uncertainty. As those opinions do not always support one another, they may generate biases in the public perception of uncertainty in unknown directions. By only using official data sources, we can eliminate this sentiment factor from our constructed indices.

Second, existing literature on text-based policy uncertainty (Arbatli et al., 2022; Baker et al., 2016; Caldara et al., 2020; Husted et al., 2020) measures uncertainty by counting uncertainty-related keywords scaled by the number of newspaper articles in the same period. This approach may cause additional biases since newspapers cover diverse topics, with the increasing coverage of entertainment, technology, and other trendy topics. In contrast, official websites of regulatory bodies in Vietnam only deliver official statements of those bodies, official news related to their field, changes in related regulations and policies, without including public opinions.

We advocate for the government-sourced text-based measures due to the public accessibility of these documents and their smaller corpus size, in contrast to the higher costs associated with various media news subscriptions. This approach uses publicly accessible documents, offering a cost-effective and time-efficient alternative to expensive news subscriptions. The smaller corpus size of government documents further reduces the time investment required for analysis. Specifically, we scrape all publicly accessible articles from the official websites of the State Bank of Vietnam (SBV), the Ministry of Finance (MOF), and the Ministry of Industry and Trade (MOIT) for the construction of the monetary policy uncertainty index (MPU), fiscal policy uncertainty index (FPU), and trade policy uncertainty index (TPU), respectively.³ It is important to note that the websites of those ministries and SBV (and other government bodies in the country) do not only exhibit official policy documentation (such as Law, Decision, Decree, Resolution, Directive) but also post event and news articles, macroeconomic and policy discussion. In fact, official law and policy documentation only account for a small portion of text data on these websites as other types of text documents or articles are updated on a daily basis.

To construct government-sourced MPU, FPU, and TPU indices, we count the frequencies of specific keywords representing uncertainty in the relevant categories of economic policy from previous literature (Baker et al., 2016; Husted et al., 2020). We adapt these keyword lists to the Vietnamese context to ensure their relevance. The keyword combinations are structured as follows.

Exhibit 1. The structure of keyword combinations used to construct the categorical policy uncertainty indices.

{any keyword in the **Keyword Group 1** – Uncertainty/status terms} and {any keyword in the **Keyword Group 2** – Object (instrument) terms} and {any keyword in the **Keyword Group 3** – Policy and policymaking terms} and {any keyword in the **Keyword Group 4** – Identification terms for Vietnamese policymaking and regulatory bodies}

We compute the monthly frequency with which specific keyword combinations appear in the articles published on the regulatory body's website.⁴ The specific rule of thumb is that counted articles must contain at least one term of each of the four above keyword groups to be labeled as a policy uncertainty article. A document that merely describes a new regulation without signalling uncertainty would not satisfy all keyword conditions simultaneously. The indices are constructed using Vietnamese language keywords. The keywords and combinations are presented in Tables 1–3.

Using the three sets of keyword combinations, we calculate the relative frequency of uncertainty-related keywords for each policy

³ SBV's official website is at: <https://sbv.gov.vn/>. MOF's official website is at: <https://mof.gov.vn/>. MOIT's official website is at: <https://moit.gov.vn/>.

⁴ The Python libraries used to construct the indices in this study include BeautifulSoup, VnCoreNLP, Pandas, Matplotlib, and Wordcloud.

type (MPU, FPU, TPU). For each dataset obtained from the authorised government agencies' websites, we normalise it by dividing the raw monthly count of keyword combinations related to MPU, FPU, and TPU by the total monthly article count of the website, respectively. This method accounts for variations in publication volume over time.

$$pu(t) = \frac{pu_frequency(t)}{total_articles(t)} \quad (1)$$

where $pu(t)$ stands for the corresponding categorical policy uncertainty index (e.g., MPU, FPU, or TPU) during month t . We do not further standardise the data using the time-series' standard deviation and average value of the time-series as suggested in Baker et al. (2016) because of one main reason: the outputs of the normalised index will change if we update new values to the index in the future update, and such changes will cause difficulties for users in replicating and comparing empirical results. The same normalization approach is presented in the study of Dang et al. (2023) when measuring energy-related uncertainty.

For comparison analysis, we further scrape data from two leading online Vietnamese newspapers, Vietnamnet (VNN) and CafeF (CFF), and use the same method to construct alternative news-based indices: MPU_VNN and MPU_CFF for news-based monetary policy uncertainty, FPU_VNN and FPU_CFF for news-based fiscal policy uncertainty, TPU_VNN and TPU_CFF for trade policy uncertainty.⁵ We compare these newspaper-based indices with the MPU, FPU, and TPU indices to examine the differences between our approach and that of Baker et al. (2016).⁶

Our approach can be well applied to measure categorical EPU in other country contexts under three conditions: (i) accessible online official government documentation, (ii) centralised policy communication, and (iii) a reasonably stable institutional vocabulary amenable to keyword-based analysis, even if the specific keywords require adaptation to local institutional and linguistic contexts. Accordingly, Vietnam serves as a good theoretical test case in which the three conditions manifest well, especially the third condition as indicated by Garschagen (2013) and Bui (2017). Vietnam's one-party governance structure means that government websites are the primary channel for policy communication, with relatively little intermediation by an independent press. This makes Vietnam a good setting to isolate the information content of government-sourced uncertainty measures.

3.2. Data

The text data for constructing the GovCEPU indices comes from different sources. We extract Vietnamese text data from the websites of the State Bank of Vietnam (<https://sbv.gov.vn/>), the Ministry of Finance (<https://mof.gov.vn/>), and the Ministry of Industry and Trade (<https://moit.gov.vn/>) of Vietnam to construct the monthly government-sourced MPU, FPU, and TPU indices, respectively. The data for constructing news-based indices comes from two major Vietnamese online newspapers: Vietnamnet (<https://vietnamnet.vn/>), a state-owned newspaper, and CafeF (<https://cafe.vn/>), owned by VCCorp, a major private multimedia corporation in Vietnam. Table 4 shows the number of news articles with identified keyword combinations from different sources of data.

We use different data to validate our proposed indices. Bank-level data are from a database of the Vietnamese banking sector contributed by Le et al. (2022). Firm-level data on Vietnamese public firms are from the COMPUSTAT database. Macroeconomic data are from DataStream, Asian Development Bank, and Trading Economics databases. Uncertainty measures, including World Uncertainty Indices (Ahir et al., 2022), Global Economic Policy Uncertainty Index (Baker et al., 2016), and Geopolitical Risk Index (Caldara & Iacoviello, 2022), are obtained from <https://policyuncertainty.com/>. We annualise the MPU, FPU, and TPU indices by calculating the average monthly values of each index for each year. We merge the annualised indices with other datasets for analyzing the impact of CEPU on macroeconomic factors, bank risk, and non-financial firms' performance in Vietnam.

The initial bank-level dataset covers 45 commercial banks in Vietnam from 2002 to 2023. After merging with GovCEPU indices' data and excluding observations with missing values, the final bank sample consists of 549 bank-year observations of 45 commercial banks in Vietnam during 2004–2022. The initial non-financial firm dataset covers 687 Vietnamese listed firms during the 2002–2022 period. After merging with GovCEPU indices' data and excluding observations with missing values, the final non-financial firm sample consists of 5048 firm-year observations of 555 Vietnamese firms listed in the Ho Chi Minh Stock Exchange and the Hanoi Stock Exchange during 2006–2022. All variable descriptions and summarised statistics are presented in Appendix A3.

4. Validating the GovCEPU indices

4.1. Matching with macroeconomic events

We first evaluate our measures of GovCEPU (MPU, FPU, and TPU) by examining their correlation with other proxies of uncertainty and testing the responses of macroeconomic factors to each type of GovCEPU. Our indices are constructed using data from official government sources to reflect the real and immediate changes in government policies relating to monetary, fiscal, and trade matters.

Fig. 1 presents the time-series plot of the MPU index. Fig. 1 shows that our MPU index fluctuates with drops and spikes, reflecting significant monetary policy changes in Vietnam during the 2004–2023 period. MPU is particularly sensitive to major monetary policy shifts and uncertainty shocks. Key examples include policy decisions to raise interbank rates to deal with the elevated inflation in

⁵ Vietnamnet is at: <https://vietnamnet.vn/> and CafeF is at <https://cafe.vn/>.

⁶ The text data processing workflow is presented in Appendix A1, and examples of text from the text data vendors are presented in Appendix A2.

Table 1

Keyword combinations for the construction of the MPU index.

Keyword group	Vietnamese keywords	English equivalents
Group 1 – uncertainty/status terms	“bất ổn” “căng thẳng” “biến động” “áp lực” “thắt chặt” “nới lỏng”	“uncertainty” “uncertain” “uncertainties” “pressure” “tighten” “loosen”
Group 2 – object (instrument) terms	“tỷ giá” “lãi suất” “lạm phát” “giảm phát” “dự trữ bắt buộc” “tiền tệ” “dự trữ ngoại hối” “ngoại tệ”	“exchange rate” “interest rate” “inflation” “deflation” “mandatory reserve” “monetary” “foreign currency reserve” “foreign currency”
Group 3 – policy and policymaking terms	“chính sách” “quy định” “điều hành” “điều chỉnh” “quản lý”	“policy” “regulation” “adjustment” “regulate” “manage”
Group 4 – Vietnamese policy maker and regulatory bodies identification terms	“Hà Nội” “Việt Nam” “Quốc hội” “Nhà nước” “Chính phủ” “Ngân hàng Nhà nước”	“Hanoi” “Vietnam” “Congress” “Federal” “Government” “State Bank”

Table 2

Keyword combinations for the construction of the FPU index.

Keyword group	Vietnamese keywords	English equivalents
Group 1 – uncertainty/status terms	“bất ổn” “căng thẳng” “biến động” “áp lực” “thắt chặt” “nới lỏng”	“uncertainty” “uncertain” “uncertainties” “tense” “pressure” “tighten” “loosen”
Group 2 – object (instrument) terms	“đầu tư công” “cân đối thu chi” “ngân sách” “chi thường xuyên” “chi đầu tư phát triển” “trái phiếu”/“công trái”	“state investment” “state budget balance” “government budget” “recurring government expenditure” “development investment expenditure” “bond”/“government bond”/“municipal bond”
Group 3 – policy and policymaking terms	“chính sách” “chính sách tài khóa” “quy định” “điều hành” “điều chỉnh” “quản lý”	“policy” “fiscal policy” “regulation” “adjustment” “regulate” “manage”
Group 4 – Vietnamese policy maker and regulatory bodies identification terms	“Hà Nội” “Việt Nam” “Quốc hội” “Nhà nước” “Chính phủ” “Bộ Tài chính”	“Hanoi” “Vietnam” “Congress” “Federal” “Government” “Ministry of Finance”

February 2005, constraints placed on commercial banks' deposit interest rates in February 2008, and the currency devaluation by 8.5% against the USD in February 2011. The MPU index also reacts to other events such as the adoption of Basel II in 2019, the quantitative easing in early 2020, the stimulus announced in January 2022, and the Saigon Commercial Bank fraud and subsequent bank run at the end of 2022. Additionally, broader global events like the Russia-Ukraine conflict in 2022 and the pressure from high interest rates worldwide during the post-COVID-19 period have their impacts on the MPU index.

Fig. 2 illustrates the changes in our FPU index during the 2014–2023 period. There were two major fluctuations during the 2015–2016 and 2020–2023 periods. In the first period, several factors contributed to FPU's variations, including the rising public debt, fiscal deficit, and state-owned enterprises privatization reform in the country. During this period, global oil prices fluctuated and led to a marked decrease in Vietnam's fiscal income, high levels of non-performing loans in the banking sector, and a decrease in income from

Table 3

Keyword combinations for the construction of the TPU index.

Keyword group	Vietnamese keywords	English equivalents
Group 1 – uncertainty/status terms	“bất ổn” “căng thẳng” “biến động” “thâm hụt” “thặng dư” “ảnh hưởng”	“uncertainty” “uncertain” “uncertainties” “deficit” “surplus” “affect”
Group 2 – object (instrument) terms	“thuế quan” “hạn ngạch thương mại” “xuất khẩu” “nhập khẩu” “chống bán phá giá” “tự do hóa thương mại” “bảo hộ mậu dịch” “hiệp định thương mại” “thương mại” “cán cân vãng lai” “cán cân thương mại” “hàng hóa” “độc quyền” “cạnh tranh” “thị trường” “chính sách” “quy định” “điều hành” “điều chỉnh” “quản lý” “hàng rào kỹ thuật”	“tariff” “quota” “export” “import” “anti-dumping” “trade freedom” “trade protectionism” “trade agreement” “trade” “balance of payments” “balance of trades” “goods” “monopoly” “competition” “market” “policy” “regulation” “adjustment” “regulate” “manage” “technical barrier”
Group 3 – policy and policymaking terms	“Hà Nội” “Việt Nam” “Quốc hội” “Nhà nước” “Chính phủ” “Bộ Công Thương” “Tổng cục Hải quan”	“Hanoi” “Vietnam” “Congress” “Federal” “Government” “Ministry of Industrial and Trade” “General Department of Vietnam Customs”
Group 4 – Vietnamese policy maker and regulatory bodies identification terms		

Table 4

Text-based data sources and availability.

Source	Number of articles	Data availability period
SBV	15,474	Jul 2004 – Jun 2023
MOF	5618	Mar 2014 – Jun 2023
MOIT	22,756	Jan 2012 – Jun 2023
Vietnamnet	69,835	Nov 2010 – Jun 2023
CafeF	305,542	Oct 2007 – Jun 2023

This table reports the sources and availability of text-based data used for the constructions of the categorical policy uncertainty indices. Data availability period is determined by the longest period of time the article archiver can be accessed.

tariffs due to new free trade agreements. During 2020–2023, the FPU index showed an overall upward trend with multiple fluctuations. The main reasons for this increase are the economic slowdown and fiscal fluctuations caused by the COVID-19 pandemic, along with an expansionary fiscal policy to boost domestic demand, resulting in a large fiscal deficit. Several new regulations and policies were announced during 2021–2023, including Resolution 43/2022/QH15 to implement a large fiscal and monetary stimulus package and Value-Added Tax reduction from 10% to 8%, Decision 508/QĐ-TTg on tax system reform, Decree 91/2022/ND-CP on changes in income tax, and Decree 12/2023/ND-CP on tax payment deferrals, EPT and other tax cuts that increase revenue pressure for the government.

Fig. 3 shows how our TPU index changes over the 2012–2023 period. The index is highly volatile from 2014 to 2020, reflecting the developments in trade policy and trade-related external shocks to the economy. During this period, Vietnam expanded its global economic integration through key trade agreements, including the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the European Union–Vietnam Free Trade Agreement (EVFTA). The TPU's volatility can be explained by the changes in the trade-related regulations and laws, trade talks, the trade war between the U.S. and China in 2018–2019, and the COVID-19 pandemic in 2020–2022, causing trade disruptions across the globe. During the U.S.–China trade war, trade rerouting to the U.S. via Vietnam invited tight scrutiny over tariff evasion and currency undervaluation, and therefore caused the trade tension between Vietnam and the U.S.

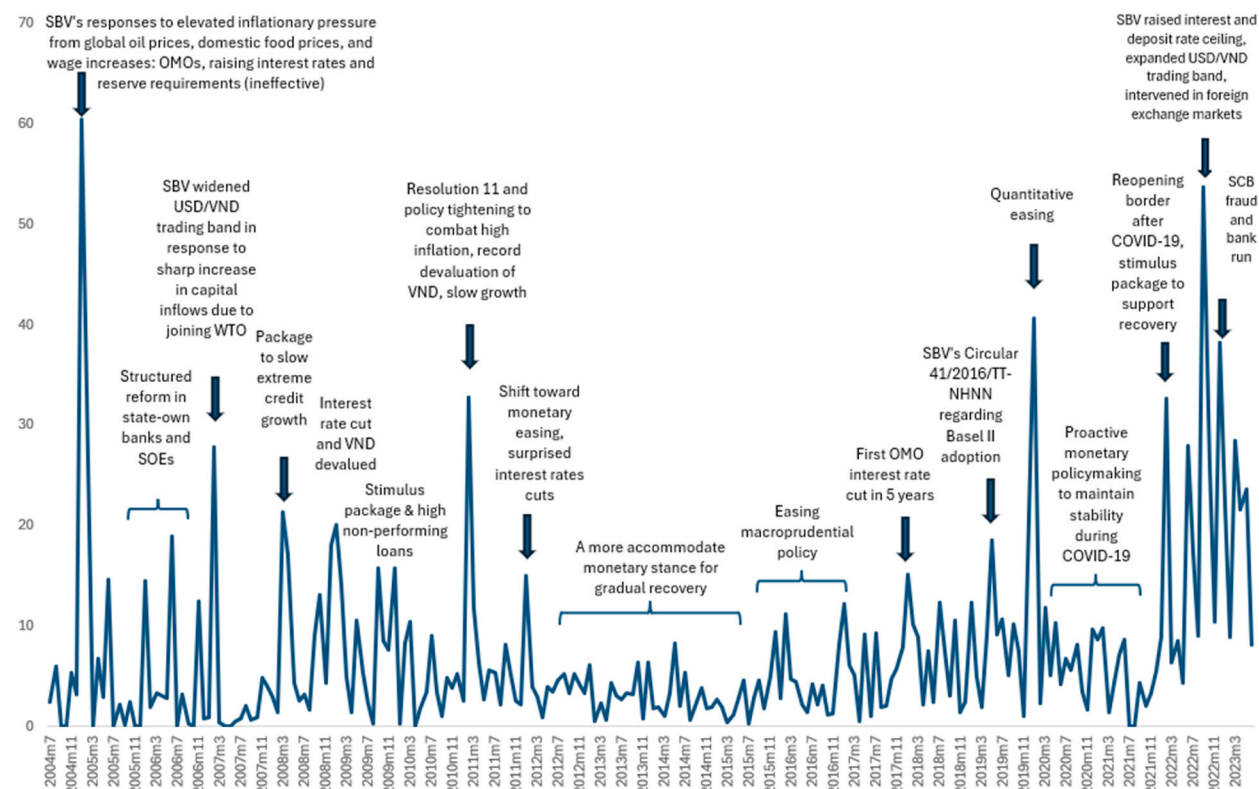


Fig. 1. Annotated graph of the monthly Monetary policy uncertainty (MPU) index.

4.2. Correlation analysis

Comparing our *GovCEPU* indices with the news-based CEPU indices constructed for monetary, fiscal, and trade policy uncertainty using data from Vietnamnet and CafeF, we document some similarities and differences. While the *GovCEPU* indices (i.e., MPU, FPU, and TPU) are significantly and positively correlated with most of their news-based counterparts (i.e., MPU_VNN, MPU_CFF, FPU_VNN, FPU_CFF, TPU_CFF), there is an exception in the case of TPU and TPU_VNN. Table 5 shows the correlation matrix between the *GovCEPU* indices. The correlation matrix shows that TPU is only weakly correlated with MPU (0.156, p -value < 0.10) and is not correlated with FPU (-0.062, p -value > 0.10). While trade policy, monetary policy, and fiscal policy serve as key government instruments for economic influence, they function in distinct domains with separate objectives. This explains why trade policy shows movements independent of monetary and fiscal policies.

Figs. 4–6 plot each *GovCEPU* index against its news-based alternatives. Consistent with Table 5, the series move together, but the government-sourced measures are visibly more volatile than the news-based measures. These differences suggest that the two approaches capture different dimensions of policy uncertainty. Government-sourced measures reflect source-level signals from official policy communication, while news-based measures incorporate media interpretation and public perception. This finding supports our argument that the choice of data source influences the information content of CEPU measures.

Table 6 compares the *GovCEPU* indices with other uncertainty measures. MPU is positively correlated with stock market volatility (VNINDEX_VOL, 0.229, p -value < 0.05), global economic policy uncertainty (EPU_GLOBAL, 0.235, p -value < 0.01), and the global World Uncertainty Index (WUI_WORLD, 0.134, p -value < 0.10). FPU is positively correlated with VNINDEX_VOL (0.227, p -value < 0.05) and EPU_GLOBAL (0.321, p -value < 0.01). TPU is not significantly correlated with any of these measures. None of the three indices is significantly correlated with the World Uncertainty Index for Vietnam (WUI_VN) or the geopolitical risk index (GPR). These moderate correlations suggest that the *GovCEPU* indices share some information with existing uncertainty measures while capturing a distinct, policy-specific component.

One may have concern that government communication is designed strategically for reassuring the public when economic uncertainty is high, thus undermining the credibility of the approach we proposed.⁷ Building on recent calls for institutional specificity (Ahir et al., 2022), we argue that government-sourced communication represents an ex-ante measure of uncertainty, capturing the deliberation phase before policies enter public news cycles. In the institutional context of countries characterised by centralised state

⁷ We thank the anonymous referee for this comment.

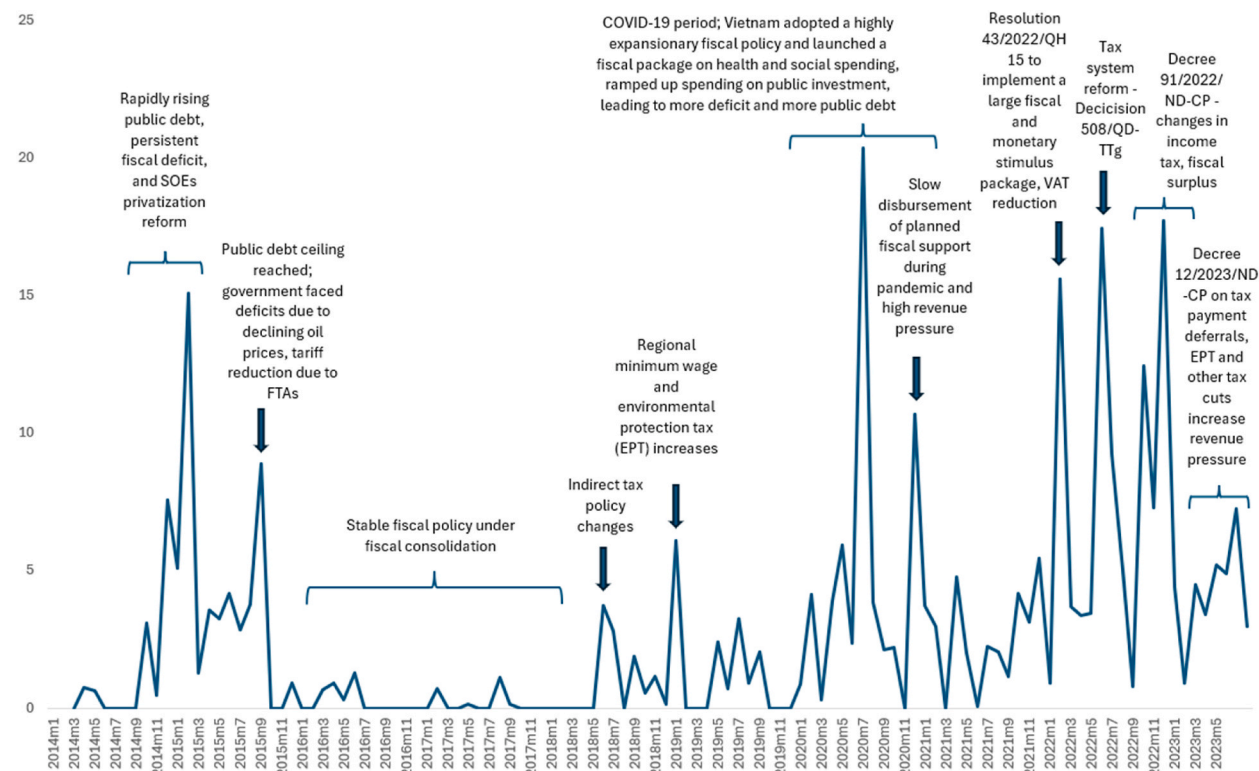


Fig. 2. Annotated graph of the monthly Fiscal policy uncertainty (FPU) index.

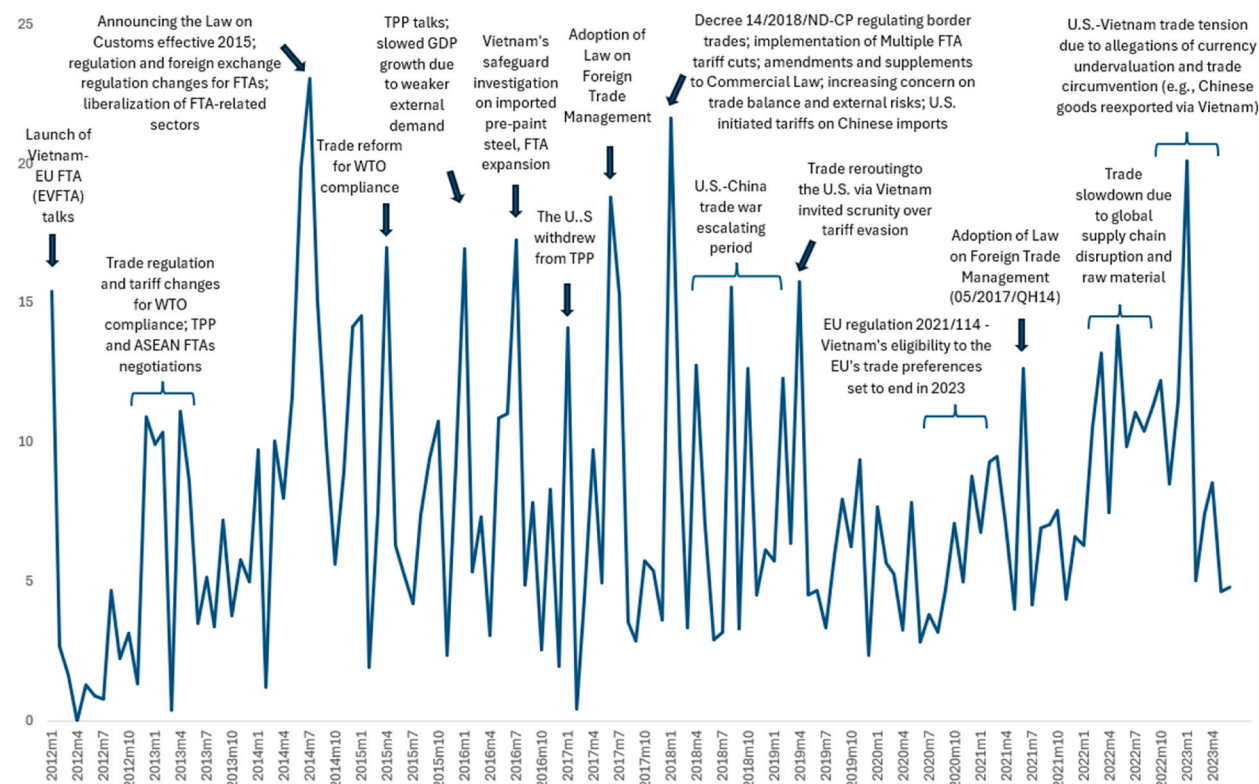


Fig. 3. Annotated graph of the monthly Trade policy uncertainty (TPU) index.

Table 5
Correlation between GovCEPU and news-based CEPU indices.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) MPU	1.000								
(2) MPU_VNN	0.516***	1.000							
(3) MPU_CFF	0.574***	0.422***	1.000						
(4) FPU	0.237**	0.184*	0.255***	1.000					
(5) FPU_VNN	0.391***	0.790***	0.315***	0.224**	1.000				
(6) FPU_CFF	0.606***	0.615***	0.767***	0.295***	0.538***	1.000			
(7) TPU	0.156*	0.126	0.273***	-0.062	0.089	0.230***	1.000		
(8) TPU_VNN	0.306***	0.719***	0.184**	0.315***	0.747***	0.369***	0.085	1.000	
(9) TPU_CFF	0.477***	0.530***	0.643***	0.307***	0.452***	0.756***	0.192**	0.497***	1.000

This table reports the pairwise correlation matrix of MPU, FPU, TPU, and news-based alternatives (i.e., MPU_VNN, MPU_CFF, FPU_VNN, FPU_CFF, TPU_VNN, and TPU_CFF). Variable descriptions are in [Appendix A3](#). ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

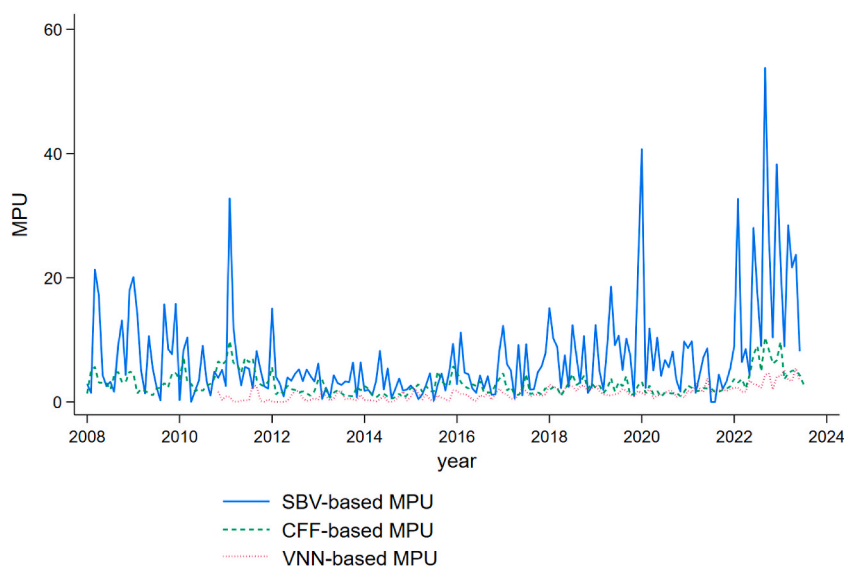


Fig. 4. SBV-based MPU index versus news-based MPU indices.

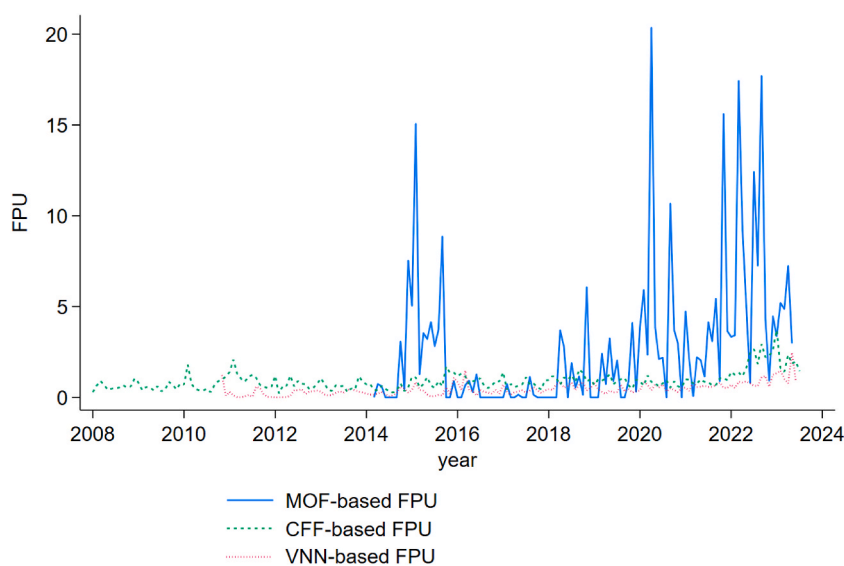


Fig. 5. MOF-based FPU index versus news-based FPU indices.

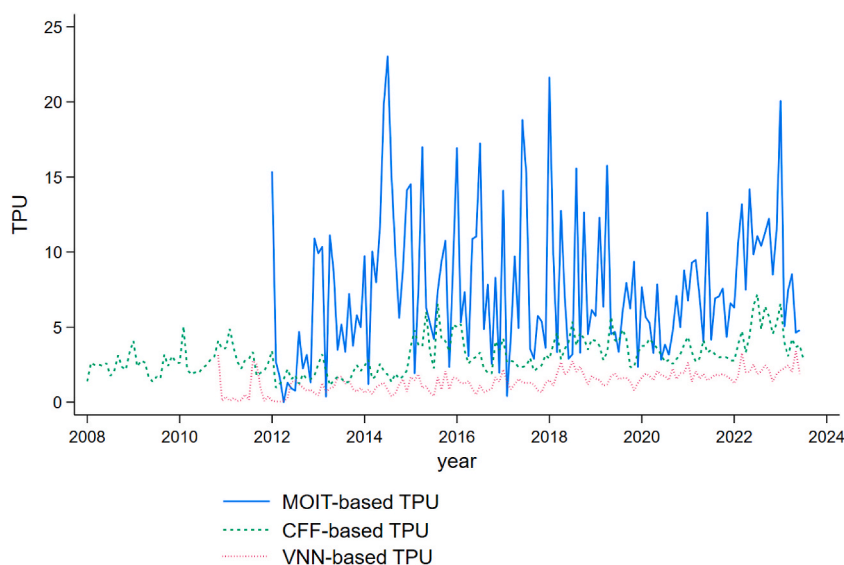


Fig. 6. MOIT-based TPU index versus news-based TPU indices.

Table 6

Correlation between GovCEPU and other macro-level uncertainty indicators.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) MPU	1.000							
(2) FPU	0.237**	1.000						
(3) TPU	0.156*	−0.062	1.000					
(4) WUI_VN	−0.118	0.061	0.009	1.000				
(5) VNINDEX_VOL	0.229**	0.227**	0.136	0.290***	1.000			
(6) WUI_WORLD	0.134*	0.002	−0.073	−0.143**	0.047	1.000		
(7) EPU_GLOBAL	0.235***	0.321***	−0.065	−0.228***	0.344***	0.451***	1.000	
(8) GPR	0.106	−0.101	−0.014	−0.157**	0.045	0.496***	0.172***	1.000

This table reports the pairwise correlation matrix of MPU, FPU, TPU, and other uncertainty proxies, including the World Uncertainty Index for Vietnam, World Uncertainty Index (Global), global economic policy uncertainty index, and Geopolitical risk for Vietnam. Variable descriptions are in [Appendix A3](#). ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

steering, government-sourced texts act as a first-order signal of policy intent, in contrast to the second-order role of news media. To alleviate this concern, we argue that if government sources were purely strategic or reassuring signals, they should be negatively correlated with macroeconomic volatility. To test this argument, we compute the correlation coefficients between the GovCEPU indices and realised macroeconomic volatility proxies, which are calculated as the rolling 12-month standard deviations of macroeconomic variables (GDP growth, inflation, world uncertainty index for Vietnam (WUI), exports, imports and the VND/USD exchange rate). [Table 7](#) presents the correlation analysis results.⁸

We find that the GovCEPU indices are positively correlated with the volatility in GDP growth, WUI, exports, imports and the exchange rate, and many of these correlation coefficients are statistically significant. All GovCEPU indices are negatively correlated with inflation volatility; however, these correlations are statistically insignificant. Based on this, we alleviate the concern that the government uses communication tools to affect the perception of the public about macroeconomic uncertainty.

4.3. The connectedness between categorical economic policy uncertainty and macroeconomic factors

We examine the connectedness among MPU, FPU, TPU and macroeconomic variables in [Fig. 7](#) and [Table 8](#). The connectedness method ([Diebold & Yilmaz, 2012; 2014](#)) is based on generalised forecast error variance decomposition (GFEVD). The advantage of this

⁸ Another concern is that changes in the GovCEPU indices may be attributable to the implementation of new policies or laws or regulatory circulars rather than an escalation of policy uncertainty. To alleviate this concern, we test the correlation between our GovCEPU indices and dummy indicator of the implementation of corresponding types of policies/laws/regulations by the Vietnamese government. We find that all three correlation coefficients are statistically not different from zero, suggesting that MPU, FPU, and TPU do not significantly correlate with the implementation of major policies in the corresponding dimensions. The results are available upon request. We thank the anonymous referee for this comment.

Table 7
Correlation between GovCEPU indices and realised macroeconomic volatility.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) FPU	1.000								
(2) MPU	0.158*	1.000							
(3) TPU	−0.032	0.114	1.000						
(4) GDP growth	0.163*	0.252***	0.062	1.000					
(5) Inflation	−0.039	−0.010	−0.134	−0.094	1.000				
(6) WUI	0.147*	−0.097	0.211***	0.330***	0.033	1.000			
(7) Exports	0.107	0.310***	0.052	0.668***	−0.322***	0.032	1.000		
(8) Imports	0.051	0.314***	0.010	0.652***	−0.228***	0.083	0.946***	1.000	
(9) VND/USD exchange rate	0.100	0.248***	0.123	0.137*	0.351***	0.222***	−0.071	−0.028	1.000

This table reports the pairwise correlation matrix of MPU, FPU, TPU, and the rolling 12-month standard deviations of macroeconomic variables, including inflation, the World Uncertainty Index for Vietnam, exports, imports, and VND/USD exchange rate. Variable descriptions are in [Appendix A3](#) ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

approach compared to the IRFs is that it analyses the interdependence between the variables in a multivariate system, thereby allowing us to identify how shocks transmit across the network and to identify the major transmitters and receivers of shocks. Additionally, since the connectedness indices are based on GFEVD, the model coefficients are not dependent on the ordering of the variables. By applying this method, we can identify not only the directional transmission of uncertainty shocks to variables such as output, inflation, and employment, but also how the strength and duration of these linkages evolve over time.

[Fig. 7](#) and [Table 8](#) present the connectedness network among the GovCEPU indices and other macroeconomic variables. All variables are log-differenced to ensure stationarity. The size of the nodes reflects the absolute values of the net connectedness indices. Larger blue nodes indicate larger net shock transmitters, while larger yellow nodes indicate larger net shock receivers. [Fig. 7](#) suggests that MPU and FPU are net shock transmitters in the system, while TPU is a net shock receiver. Among the macroeconomic variables,

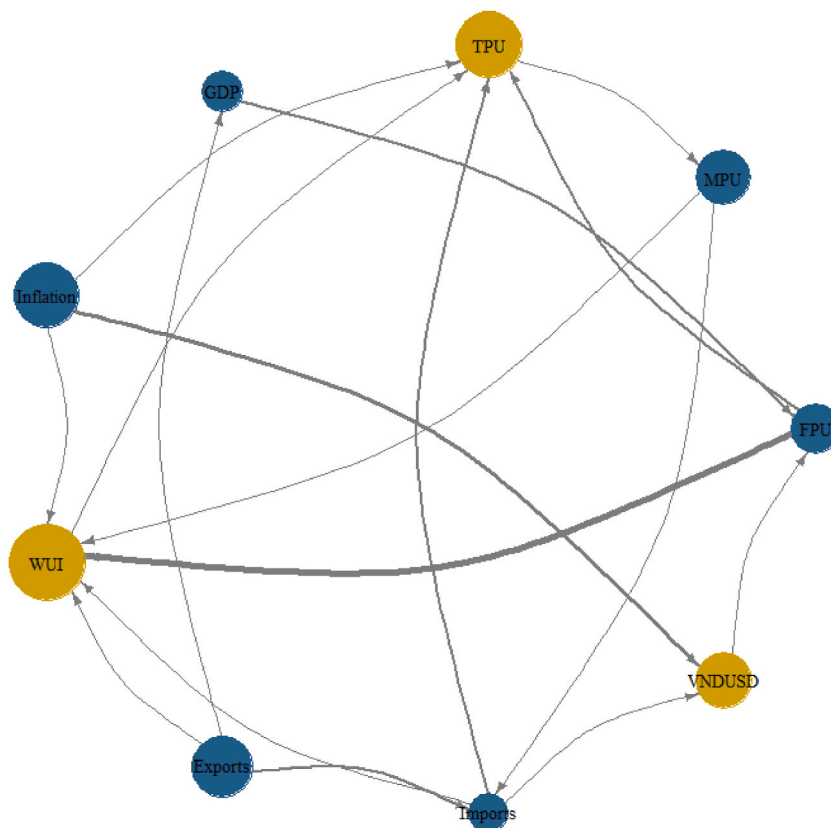


Fig. 7. Connectedness network among GovCEPU and macroeconomic variables.

Note: The figure presents the connectedness network among GOVEPU macroeconomic variables. The size of the nodes reflects the absolute values of the net connectedness indices. Larger blue nodes indicate larger net shock transmitters, while larger yellow nodes indicate larger net shock receivers. The edges capture the pairwise relationship between any two variables in the system. Specifically, the edges' arrows capture the direction of the pairwise spillovers, while their thickness indicates the strength of the pairwise spillovers.

Table 8
Connectedness among GovEPU and macroeconomic variables.

	FPU	MPU	TPU	GDP	Inflation	WUI	Exports	Imports	VNDUSD	FROM
FPU	80.02	4.14	5.67	3.21	2.51	0.53	1.22	1.14	1.55	19.98
MPU	3.56	81.38	3.00	1.38	1.25	2.93	4.30	2.07	0.11	18.62
TPU	8.71	1.98	77.43	0.03	3.61	3.39	0.71	3.86	0.29	22.57
GDP	0.51	1.14	0.41	92.03	0.67	0.07	2.99	1.50	0.69	7.97
Inflation	1.85	2.19	2.09	0.21	91.06	1.32	0.06	0.40	0.83	8.94
WUI	7.18	5.29	1.59	0.22	3.69	77.08	1.44	2.76	0.76	22.92
Exports	1.20	3.78	0.04	1.54	0.07	0.27	55.21	36.98	0.90	44.79
Imports	0.27	4.42	0.66	1.40	0.22	1.73	40.50	49.81	0.99	50.19
VNDUSD	0.40	1.01	0.38	0.87	5.16	1.05	0.79	1.99	88.34	11.66
TO	23.70	23.94	13.84	8.86	17.18	11.29	52.01	50.69	6.12	TCI
NET	3.72	5.32	-8.73	0.89	8.24	-11.62	7.22	0.5	-5.54	23.07

Note: The table presents the connectedness among GovEPU and macroeconomic variables using the connectedness framework of [Diebold and Yilmaz \(2012, 2014\)](#). All variables are log-differenced to ensure stationarity. Each cell corresponds to the percent of the forecast error variance decomposition (GFEVD) of the row variable explained by the column variable. The column "FROM" captures the percent of the GFEVD in the row variable explained by all other variables. The row "TO" captures the percent of the GFEVD in all other variables explained by the column variable. The row "NET" is the difference between the "TO" connectedness and the "FROM" connectedness indices. A positive (negative) net connectedness indicates a net shock transmitter (receiver). The total connectedness index (TCI) is at the bottom right corner of the table, which captures the overall connectedness among the variables in the system.

GDP, inflation, exports, and imports are net shock transmitters, while the world uncertainty index (WUI) and the VND/USD exchange rate are net shock receivers. Note that the node sizes and colours reflect the average role of each variable in the system, therefore, they may not reflect the pairwise relationship between the macroeconomic variables and the GovCEPU indices.

The edges in [Fig. 7](#) allow us to zoom into the pairwise relationship between the GovCEPU indices and the macroeconomic variables. Specifically, the edges' arrows capture the direction of the pairwise spillovers, while their thickness indicates the strength of the pairwise spillovers. First, we find that the FPU is most closely related to the WUI and GDP, as indicated by the thickness of the edges between the FPU-WUI and the FPU-GDP pairs, compared to the edges between the FPU and other variables. GDP is a net shock transmitter to the FPU, suggesting fiscal policy is the most sensitive to economic growth shocks. The FPU is a net shock transmitter to the WUI, indicating that FPU contributes to overall macroeconomic uncertainty. The findings are broadly consistent with the endogenous nature of fiscal policy ([Heimberger, 2023](#)) and its association with economic growth shocks ([Anzuini et al., 2020](#); [Arbatli et al., 2022](#)).

Second, MPU acts as a net shock transmitter to inflation, WUI and imports. The linkage between monetary policy and inflation suggests that businesses and consumers may adjust their expectations and behaviours in response to MPU, leading to fluctuations in prices. The linkage between monetary policy and imports implies that international trade is sensitive to MPU, possibly due to its effects on exchange rates and credit conditions. Furthermore, the spillovers between MPU and GDP and the VND/USD exchange rate are small, suggesting that MPU may impact overall economic growth and currency valuation indirectly, possibly through other channels such as investment and consumer spending. Finally, the linkage between MPU and WUI reflects the role of the central bank of Vietnam in shaping broader economic uncertainty in Vietnam. The findings are in line with previous findings in the literature examining the relationship between MPU and macroeconomic factors ([Arbatli et al., 2022](#); [Arce-Alfaro & Blagov, 2023](#); [Husted et al., 2020](#)).

Finally, TPU is the only net shock receiver among the three GovCEPU indices. This highlights the unique role of trade policy in the macroeconomic landscape. Specifically, trade policy uncertainty is closely linked to inflation, WUI and imports. Note that TPU is more strongly related to imports than to exports. This suggests that import activities play a more significant role in shaping trade policies, possibly due to the immediate impact of domestic trade policies on import costs and availability. In contrast, exports are more likely to be influenced by foreign trade policies, such as tariffs imposed by other countries on Vietnamese goods. These findings corroborate the established evidence in the trade policy uncertainty literature ([Caldara et al., 2020](#); [Handley & Limão, 2015, 2017, 2022](#)).⁹

In summary, the results from the Diebold-Yilmaz connectedness framework show the diverse interdependence between the GovEPU indices and the macroeconomic environment of Vietnam. Overall, the results suggest that the FPU and MPU contribute to the overall macroeconomic uncertainty of Vietnam, as they are both shock transmitters to the WUI. This, in turn, translates into higher TPU, as the TPU is a shock receiver from the WUI.

⁹ In further connected tests reported in [Appendix A4](#), we use the same connectedness method ([Diebold & Yilmaz, 2012; 2014](#)) to examine the connectedness among the news-based policy uncertainty indices and the same macroeconomic variables. Panel A, [Appendix A4](#) reports the results using FPU_VNN, MPU_VNN, and TPU_VNN (Vietnamnet-based indices), while Panel B presents the results using FPU_CFF, MPU_CFF, and TPU_CFF (CafeF-based indices). The analysis shows conflicted findings between the two sets of indices constructed from different media vendors. Although both result sets consistently show that FPU is a net shock transmitter among the variables, the directional connectedness is oppositely reported for MPU, TPU, and WUI. This further supports the notion that text data from online media is inherently noisy ([Barberá et al., 2021](#); [Jarlbrink & Snickars, 2017](#)) and justifies our government-sourced approach.

4.4. The effects of MPU and FPU on banks' operations

In this section, we examine the impacts of GovCEPU on bank behaviour in Vietnam, focusing on loan loss provisions and bank risk-taking. We expect policy uncertainty to affect both outcomes, following the evidence from the banking literature (Ge et al., 2023; Greenspan, 2004; Ng et al., 2020; Paligorova & Santos, 2017; Silva, 2021). For fiscal policy uncertainty, the literature suggests that higher FPU raises loan loss provisions (Ng et al., 2020; Silva, 2021; Tran & Houston, 2021). This positive relationship arises because bank managers anticipate the depressive effects of fiscal policy uncertainty on the economy and reflect this expectation through higher loan loss provisions (Tran & Houston, 2021). Hence, we expect that our government-sourced FPU index is positively associated with loan loss provisions.

Regarding monetary policy uncertainty, the literature identifies two competing channels with opposing predictions for bank risk-taking. Under the risk-taking channel of monetary policy, accommodative conditions encourage banks to search for yield and take on more risk (Greenspan, 2004; Paligorova & Santos, 2017). Extending this direction, Sun et al. (2026) argue that higher monetary policy uncertainty raises active risk-taking. In contrast, a precautionary channel suggests that heightened monetary policy uncertainty leads banks to adopt a more cautious approach. When the policy is uncertain, banks protect themselves by strengthening their balance sheets, tightening lending standards, and reducing risk exposure, which improves stability (Bordo et al., 2016; Valencia, 2017). The net effect of monetary policy uncertainty on bank risk-taking is therefore an empirical question, which we examine using our government-sourced MPU index.

Using the Vietnamese banks' annual data, we regress the loan loss provision ratio on the FPU measures, i.e., the government-sourced FPU index (FPU), controlling for common bank-level characteristics such as bank size (BANKSIZE), bank profit (BPROFIT), cost-to-income ratio (CIR), non-performing loan ratio (NPL), year dummies and fixed effects. In our regressions, FPU is lagged by one period. Standard errors are clustered by bank following Petersen (2009). To compare the effect across different measures of FPU, we conduct two additional tests using the news-based FPU indices (FPU_VNN and FPU_CFF) as the alternative explanatory variables. In all three regression specifications, the FPU variables are lagged by one period. Column 1 of Table 9 reports the regression results. The coefficient of FPU is positive and significant at the 5% significance level, suggesting that FPU is positively associated with commercial banks' average loan loss provision ratio. The finding is well consistent with the intended effect of fiscal policy uncertainty on loan loss provisions of banks as documented in the literature (Ng et al., 2020; Silva, 2021; Tran & Houston, 2021), further validating our FPU measure, while the news-based FPU_CFF shows insignificant effect on loan loss provisions.

Columns 2 of Table 9 show a positive impact of FPU_VNN and significant at a 10% significance level. In Column 3, the regression results using FPU_CFF, another news-based FPU measure using CafeF data, show a positive but insignificant coefficient. The results indicate that the news-based FPU indices predict loan loss provision with more noises and produce inconsistent results.

Table 10 presents the regression results of our MPU variables on bank risk-taking measured by the natural logarithm of Z-score following Laeven and Levine (2009).¹⁰ A higher Z-score value indicates greater bank stability and lower bank risk-taking. Similar to the analysis in Table 9, we use the government-sourced MPU measure (MPU) for the main analysis and the news-based MPU measures (MPU_VNN and MPU_CFF) for comparisons. We regress Z-score (lnZSCORE) on MPU, where the MPU variables are lagged by one year, and control for bank characteristics. Table 10 reports the estimation results.¹¹

In general, the regression results align well with the findings in the literature. The positive coefficients suggest that commercial banks reduce risk-taking when monetary policy uncertainty rises. This pattern is consistent with a precautionary response in which banks self-insure under uncertainty (Bordo et al., 2016; Valencia, 2017). The finding is not consistent with the alternative risk-taking channel (Sun et al., 2026). Our evidence suggests that the precautionary channel dominates in the Vietnamese setting. The MPU results are also in line with evidence that central bank communication influences bank risk-taking behaviour as discussed by Montes and Scarpari (2015). Overall, our MPU measures effectively capture the intended effects of MPU on bank risk-taking. We next plot the kernel density distribution of the residuals of the models to further compare them in Appendix A5.

Figure A5 in Appendix A5 plots the kernel density distributions of residuals from the three FPU model specifications (Panel a) and three MPU model specifications (Panel b). We note three interesting key points. First, all six models produce residual distributions centred near zero, confirming the absence of systematic prediction bias and supporting the adequacy of all three specifications in both settings. Second, for the FPU models (Panel a, Figure A5), the government-sourced FPU and FPU_VNN models produce sharper, more concentrated distributions around zero relative to the FPU_CFF model, whose flatter peak and substantially longer tails, indicate greater prediction dispersion and more frequent large under-prediction errors. This distributional evidence corroborates the regression results in Table 9, where FPU_CFF fails to achieve statistical significance. Third, for the MPU models (Panel b, Figure A5), the three distributions are more tightly clustered, reflecting the broader comparability of MPU model specifications, though the government-sourced MPU model again exhibits the sharpest peak. Taken together, Appendix A5 provides visual confirmation that the government-sourced FPU and MPU indices generate more precise and concentrated residual distributions than their news-based counterparts, particularly in the FPU setting, reinforcing the advantage of the government-sourced measures for capturing the institutional dimensions of policy uncertainty relevant to bank behaviour in Vietnam.

To summarise, our government-sourced MPU and FPU measures capture the intended impacts of monetary and fiscal policy

¹⁰ Z-score is computed as the total of a bank's return on assets ratio and the capital-to-assets ratio, then scaled by the standard deviation of the return on assets ratio.

¹¹ In these regressions, we use the same set of control variables: BANKSIZE, BPROFIT, CIR, and NPL, then adding bank fixed effects and year dummies.

Table 9
Impacts of FPU on bank loan loss provision.

VARIABLES	(1)	(2)	(3)
	LLP	LLP	LLP
FPU	25.751** (12.810)		
FPU_VNN		1.562* (0.886)	
FPU_CFF			0.373 (0.523)
Controls	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes
Observations	213	358	471
Adjusted R-squared	0.492	0.488	0.449

This table presents the regression results of the loan loss provision on FPU variables. The dependent variable is the loan loss provision ratio (LLP). FPU is lagged by one year. Variable descriptions are in [Appendix A3](#). Numbers in parentheses are standard errors. Standard errors are clustered by bank following the guidance of [Petersen \(2009\)](#). ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

Table 10
Impacts of MPU on bank risk-taking.

VARIABLES	(1)	(2)	(3)
	lnZSCORE	lnZSCORE	lnZSCORE
MPU	0.642*** (0.128)		
MPU_VNN		0.350** (0.144)	
MPU_CFF			0.705*** (0.195)
Controls	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes
Observations	549	361	475
Adjusted R-squared	0.834	0.890	0.863

This table presents the regression results of bank risk-taking on MPU variables. The dependent variable is bank risk-taking (lnZSCORE). MPU is lagged by one year. Variable descriptions are in [Appendix A3](#). Numbers in parentheses are standard errors. Standard errors are clustered by bank following the guidance of [Petersen \(2009\)](#). ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

uncertainty on bank loan loss provisions and bank risk-taking, consistent with those reported in the literature. Further comparison analysis results affirm the statistical differences between the government-sourced indices and their news-based counterparts. From there, we underscore the importance of drawing on primary institutional sources when measuring policy uncertainty, noting that the commonly used newspapers' data only transmit second-order policy signals.

4.5. The firm-level effects of TPU

The literature on the impact of uncertainty in trade policy suggests TPU has significant economic impacts on firms that are dependent on international trade ([Bianconi et al., 2021](#)). Specifically, TPU negatively affects corporate investment and profitability ([Benguria et al., 2022](#); [Chen et al., 2024](#)) via increasing compliance and regulatory costs for firms involved in trade activities. [Benguria et al. \(2022\)](#) show that a one-standard-deviation increase in TPU during the China-US trade war led to a 2.3% decrease in corporate investment and an 11.5% decrease in profits of Chinese firms. Similarly, [Graham et al. \(2025\)](#) and [Chen et al. \(2024\)](#) suggest that TPU negatively affects the investment of non-financial firms in the U.S. and China, as more uncertainty generally discourages firms from making investment decisions ([Dixit & Pindyck, 1994](#); [Gulen & Ion, 2016](#)). Moreover, [Imbruno \(2019\)](#) argues that Chinese firms facing the risk of a drastic change in tariffs following their importing activities generally suffer a decrease in profitability. Collectively, there are consistent findings on the impact of TPU on corporate profitability and investment, but not in the context of Vietnam because of the lack of measures of Vietnam's TPU. Given the similarity in the contexts of Vietnam and China, we expect similar impacts of TPU from our TPU indices.

To evaluate how well our measures capture the intended impacts of TPU on corporate profitability and investment of non-financial firms in Vietnam, we conduct empirical tests by regressing firm profitability (PROFIT) and corporate investment (CAPEX) on TPU measures, namely TPU, TPU_VNN, and TPU_CFF. We control for common firm-level characteristics, including firm size (SIZE), financial leverage (LEVERAGE), and cash flow (CASHFLOW). We expect that our TPU measure has a negative impact on profit margins and capital expenditure. In our model, TPU variables are lagged by one period. Firm fixed effects and year dummies are included.

Standard errors are clustered by firm following Petersen (2009). The regression results are presented in Table 11.

In Table 11, Columns 1-3, the coefficients of the government-sourced TPU variable are consistently negative and statistically significant, which is consistent with the findings in the literature (Benguria et al., 2022; Imbruno, 2019) that TPU is detrimental to profitability. The findings suggest that the TPU indices capture the expected impact of TPU on firm performance. In Columns 4-6, the corporate investment analysis yields similarly consistent results. The coefficients of all TPU measures are negative and statistically significant at the 1% level, suggesting a negative impact of TPU on corporate investment of Vietnamese firms. This finding is consistent with the previous literature of TPU (Benguria et al., 2022; Chen et al., 2024; Graham et al., 2025) that non-financial firms become more cautious when making investment decisions under increased TPU and international trade disputes. Overall, our measures capture the intended effect of TPU on corporate investment and profitability.

We further plot the distributions of the three PROFIT-TPU models' residuals for comparison in the figure in Appendix A6. All three distributions are sharply centred at zero, confirming the absence of systematic prediction bias across specifications. The zoomed panel reveals subtle but visible differences at the peak - the government-sourced TPU model produces the highest and sharpest peak density, indicating the most concentrated residuals and visually better predictive precision relative to TPU_VNN model. The TPU_CFF model exhibits a similar peak to the government-sourced TPU and a slightly wider spread.

Next, we compare the distributions of residuals in CAPEX-TPU model specifications using the figure in Appendix A7. The residual distributions presented in Figure A7 offer further validation of the government-sourced TPU index. Across all three CAPEX-TPU specifications, residuals cluster tightly around zero, suggesting all models are adequately specified without systematic bias. The meaningful differences emerge at the peak - the zoomed panel clearly shows the government-sourced TPU model generating a sharper and taller density than both news-based counterparts, with its peak extending above the horizontal benchmark set at the TPU_VNN model's maximum density. The residual distribution figure confirms that the government-sourced TPU and TPU_CFF models achieve comparable predictive precision for CAPEX. This comparability is particularly noteworthy given that the TPU_CFF index draws on 305,542 news articles to replicate a fit achieved by the government-sourced TPU index using only 22,756 official MOIT articles (See Table 4 for details), suggesting that official government communications contain substantially richer policy-relevant information per article than general financial media coverage.

In summary, the empirical validation confirms that the government-sourced TPU index reliably captures trade policy uncertainty's intended effects on non-financial firms, with all three measures producing consistently negative impacts on profitability and investment. The residual distribution visualization demonstrates that the government-sourced TPU index generates statistically distinguishable predictions from news-based alternatives, while achieving comparable or superior predictive precision despite drawing on substantially fewer input articles.

5. Concluding remarks

This study measures economic policy uncertainty in Vietnam by developing categorical EPU in three different aspects: monetary, fiscal, and trade policy from official government sources. The measurement follows the news-based textual analysis approach in the economic literature (Arbatli et al., 2022; Baker et al., 2016; Caldara et al., 2020; Husted et al., 2020), however using text data from corresponding government agencies' websites instead of major online newspapers. Our focus is on the governmental sources rather than news media to attenuate the noise in public media and more directly reflect the official policy signal. The GovCEPU indices (MPU, FPU, and TPU) capture uncertainties in government policies in Vietnam and provide interesting insights, while the results are sometimes noisier using news-based indices. This is the first study to propose this approach to measure categorical policy uncertainty indices.

The empirical results suggest that the GovCEPU indices capture a distinct and unique meaning from the news-based measures, highlighting the role of state policy communication in shaping economic expectations in Vietnam. The key findings show that

Table 11
Impact of TPU on non-financial firms in Vietnam.

VARIABLES	(1) PROFIT	(2) PROFIT	(3) PROFIT	(4) CAPEX	(5) CAPEX	(6) CAPEX
TPU	−0.011* (0.006)			−0.014*** (0.004)		
TPU_VNN		−0.069** (0.034)			−0.073*** (0.019)	
TPU_CFF			−0.043*** (0.017)			−0.053*** (0.009)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3158	3523	4543	3245	3654	4846
Adjusted R-squared	0.472	0.466	0.444	0.288	0.271	0.261

This table presents the regression results of firm performance and capital expenditure on TPU variables. The dependent variables are firm profit (PROFIT) in model specifications in Columns 1-3, and capital expenditure scaled by lagged total assets (CAPEX) in Columns 4-6. TPU is lagged by one year. Firm fixed effect and year dummies are included. Variable descriptions are in Appendix A3. Numbers in parentheses are standard errors. Standard errors are clustered by firm. ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

monetary and fiscal policy uncertainty act as net transmitters of shocks to the macroeconomic system. At the bank level, higher monetary policy uncertainty is associated with greater caution and lower risk-taking, while higher fiscal policy uncertainty is associated with higher loan loss provisions. At the firm level, higher trade policy uncertainty is associated with lower profitability and investment among non-financial firms.

We offer some implications from our findings. First, in managing macroeconomic stability, Vietnamese authorities should enhance the clarity of policy communication, especially during times of economic adjustment or international uncertainty. More specifically, enhancing the transparency in monetary policy objectives and outcomes may reduce the adverse reactions from the investors and banks, leading to a reduction in the risk in the financial sector. Second, the fiscal policy should provide consistent and clear guidance on expenditure and taxation to bolster firm confidence. Finally, regarding the trade policy, Vietnamese policymakers should consider the effects of geopolitical shifts and trade disputes on domestic industries. Also, increasing engagement with diverse international trade partners and implementing a proactive trade policy can shield Vietnamese firms from global trade concerns, and promote a more robust economic landscape.

This study contributes to the literature by offering a more direct, government-derived measure of categorical policy uncertainty in Vietnam. In this vein, our findings suggest that text data extracted from government agencies' websites is informative about policy uncertainty and is useful for future research. Through this study, we provide a new approach for future research to investigate the economic impacts of categorical policy uncertainty. Further studies may explore how this approach can be applied in other economies, specifically developing countries, to support the policy decision-making under uncertainty.

CRediT authorship contribution statement

Khanh Hoang: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Formal analysis, Conceptualization. **Linh Pham:** Writing – review & editing, Writing – original draft, Validation, Project administration, Formal analysis, Data curation, Conceptualization. **Thanh Ngo:** Writing – review & editing, Writing – original draft, Validation, Project administration, Data curation, Conceptualization. **Thuy Dao:** Writing – original draft, Validation, Investigation. **Hung Do:** Writing – review & editing, Writing – original draft, Validation, Investigation, Funding acquisition. **Hieu Doan:** Writing – original draft, Software, Methodology, Data curation, Conceptualization. **An Duong:** Writing – original draft, Validation, Investigation. **Oanh Ha:** Writing – original draft, Validation, Investigation. **Nhan Huynh:** Writing – original draft, Validation, Investigation. **Phuong Le:** Writing – original draft, Visualization, Validation, Methodology. **Trung Le:** Writing – original draft, Validation, Investigation. **Chi Mai:** Writing – original draft, Validation, Investigation. **Thoi Mai:** Writing – original draft, Visualization, Validation, Methodology, Investigation. **Nga Nguyen:** Writing – original draft, Validation, Investigation. **Giang Phung:** Writing – review & editing, Writing – original draft, Investigation. **Tam Nguyen:** Writing – original draft, Validation, Investigation. **Thao Nguyen:** Writing – original draft, Validation, Investigation, Data curation. **Ha Truong:** Writing – original draft, Validation, Investigation. **Diem Vo:** Writing – original draft, Validation, Investigation. **Harris Vu:** Writing – review & editing, Writing – original draft, Visualization, Software, Methodology, Formal analysis.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work, the authors used Claude in order to proofread the final draft of the revised manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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Declaration of competing interests

None.

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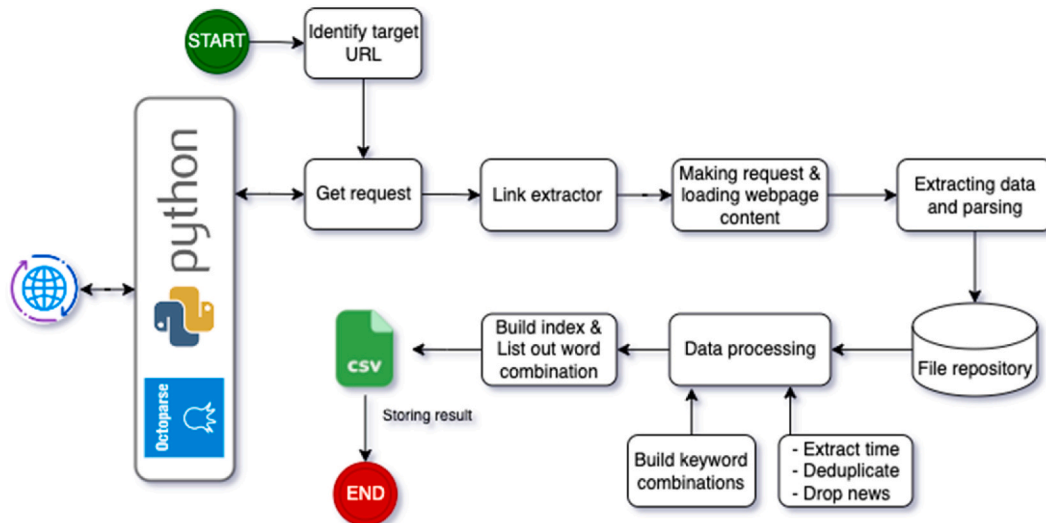
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This study was conducted within the Finance and Banking Network (FBNNet), a non-profit network of the Association of Vietnamese Scientists and Experts Global (AVSE Global). Building on Baker et al. (2016), we set out to measure categorical policy uncertainty in Vietnam across three domains, namely monetary, fiscal, and trade. We organized the work into three sub-teams, one for each domain, supported by a core team responsible for aggregating and reconciling the findings. Each sub-team has seven to eight members, and the

core team was drawn from the lead members of the three sub-teams. This design accounts directly for the size of the author list.

The categorical EPU data is now upto June 2025 and available for download at: <https://fbnetavse.org/data-sharing/>, and is expected to be updated on an annual basis.

Appendix A1. Data processing workflow



1. Identifying target URL:
 - o Define Data Requirements: Begin by clearly defining the data to scrape using the word combinations representing monetary policy, trade policy, and fiscal policy.
 - o Identify the Website or Webpage: Determine the websites where the desired data is located, including the websites of MOF, MOIT, SBV, and the online newspapers CafeF and Vietnamnet.
 - o Analyse Website Structure: Explore the structure of the website to understand how the data is organised and then identify the specific page or pages containing the information.
2. Getting request:

Use Python and Octoparse as technical platforms to extract URLs of news on the websites.

- o Create a GET Request: Using the BeautifulSoup library and Octoparse to create a GET request to the target URL.
 - o Send the GET Request: Send the constructed GET request to the target URL to get the links of news received from the server response.
3. Making requests and loading webpage content:
 - o Continue to get requests to target the URL of each piece of news.
 - o Retrieve and process the response received from the server and load website content.
 4. Extracting data and parsing:
 - o Extract and parse the content of the response to extract the specific data of the news: time, content of the news.
 - o Store the extracted data in CSV files.
 5. Data processing:
 - o Build keyword combinations from defined keywords. The lists of keyword combinations are from [Tables 1–3](#)
 - o Keyword combinations are constructed after reviewing Vietnamese policy document to ensure they are used in Vietnamese bureaucratic language. Each term signals uncertainty or ambiguity (not final decisions) in the official Vietnamese language.
 - o Deduplicating news.
 - o Remove error news or no-content news like videos, and magazines.
 6. Building index:
 - o Use Python libraries to count the frequencies of the word combinations in each newspaper.
 - o List out all word combinations that appear in each article.

Appendix A2. Examples of text from government-sourced articles reflecting CEPU

EPU category	Data outlet (website)	Date	Article title (in Vietnamese)	Example text (in Vietnamese)
MPU	SBV	05/05/2023	Chính sách giảm lãi suất được triển khai quyết liệt	“... Theo Phó Thống đốc, giảm lãi suất là một trong tám giải pháp mà Ngân hàng nhà nước đã triển khai trong 4 tháng đầu năm nhằm hỗ trợ doanh nghiệp và nền kinh tế. Cụ thể, Ngân hàng nhà nước đã điều hành chính sách tiền tệ nhằm tạo ổn định giá trị đồng tiền, đảm bảo ổn định tỷ giá - đây là điều kiện tiên quyết; quan trọng nhất.”
	VNN	28/07/2022	Một loại lãi suất điều hành của NHNN tăng vọt, giai đoạn tiền rẻ đã chính thức đi qua?	“... Trước đó, mức lãi suất 2,5%/năm được Ngân hàng Nhà nước (NHNN) trực tiếp giảm từ tháng 9/2020, trong đợt giảm đồng loạt các lãi suất điều hành nhằm hỗ trợ nền kinh tế trước tác động sâu sắc của đại dịch COVID-19. Dù tiến hành theo phương thức đấu thầu lãi suất, không trực tiếp ấn định lãi suất nhưng việc NHNN chỉ chấp nhận cho 8/20 thành viên tham gia thị trường vay gần 15.000 tỷ với lãi suất 3,8% thay vì 2,5% cho thấy nhà điều hành đã không còn sẵn sàng cho hệ thống ngân hàng vay vốn với chi phí rẻ như trước nữa”
	CFF	03/10/2018	Điều hành chính sách tiền tệ: Điểm tựa vững chắc cho nền kinh tế	“... Là cơ quan quản lý nhà nước về tiền tệ, NHNN Việt Nam đã chủ động triển khai nhiều giải pháp để góp phần kiểm soát lạm phát. Việc tín dụng tăng trưởng thấp hơn so với cùng kỳ cũng không nằm ngoài mục tiêu này. Nhờ đó, lạm phát cơ bản tháng 9/2018 tăng 0,14% so với tháng trước và tăng 1,61% so với cùng kỳ năm trước. Lạm phát cơ bản bình quân 9 tháng năm 2018 tăng 1,41% so với bình quân cùng kỳ năm 2017. Một thành công rất đáng ghi nhận nữa là mặc dù áp lực lạm phát tăng cao, song NHNN vẫn duy trì được sự ổn định của mặt bằng lãi suất, thậm chí mặt bằng lãi suất cho vay còn giảm nhẹ so với cuối năm trước”
FPU	MOF	04/05/2023	Chính sách tài khóa giúp phục hồi và phát triển kinh tế	“... Bước sang năm 2023, tình hình thế giới và trong nước diễn biến ngày càng phức tạp đã tác động tới nền kinh tế, đời sống của người dân và tình hình sản xuất - kinh doanh của doanh nghiệp. Nhằm tháo gỡ khó khăn cho doanh nghiệp, một loạt giải pháp đã được Bộ Tài chính chủ động nghiên cứu và xây dựng. Theo đó, Bộ Tài chính đã đề xuất với cấp có thẩm quyền các giải pháp giảm, gia hạn thuế, phí và tiền thuê đất áp dụng cho năm 2023 với tổng quy mô gói hỗ trợ khoảng 198,4 nghìn tỷ đồng, trong đó, số tiền miễn, giảm là 77,2 nghìn tỷ đồng và số tiền gia hạn là 121,2 nghìn tỷ đồng ...”
	VNN	03/01/2019	Lãi suất, tỷ giá biến động ra sao trong năm 2019?	“... Bức tranh tài khóa của Việt Nam đã bớt căng thẳng trong năm 2017 và 2018 khi thâm hụt ngân sách/GDP giảm mạnh nhờ nguồn thu từ thoái vốn nhà nước tại các doanh nghiệp và mức tăng trưởng GDP khả quan. Tuy nhiên các nguồn thu từ thoái vốn doanh nghiệp nhà nước không phải là nguồn thu ổn định do đó về dài hạn tình trạng căng thẳng tài khóa của Việt Nam vẫn còn. MBS dự báo, áp lực ngân sách sẽ trở lại vào năm 2020 và 2021. Thu ngân sách Nhà nước 2018 ước đạt trên 1,35 triệu tỷ đồng; chi ngân sách hơn 1,56 triệu tỷ đồng. Như vậy, bội chi ngân sách 204.000 tỷ đồng (khoảng 8,8 tỷ USD), bằng 3,67% GDP, tương ứng với tỷ lệ bội chi kế hoạch Quốc hội giao. Tuy nhiên, thâm hụt ngân sách tính theo phương pháp mới (không tính chi trả nợ gốc) sẽ khó phản ánh được thực trạng căng thẳng ngân sách. Chi trả nợ gốc trong năm 2018 dự kiến khoảng 147 nghìn tỷ VND vẫn sẽ gây áp lực lên chính sách tài khóa của Việt Nam”
	CFF	28/07/2012	Nhìn lại chính sách tài khóa nửa chặng đường; ng 2012	“... Về thu ngân sách, biểu hiện trước hết là tổng thu so với GDP trong 6 tháng đầu năm đạt 27,6%. Đó là một tỷ lệ cao so với định hướng (25%), một mặt do công tác hành thu đã bám sát dự toán được duyệt, bám sát yêu cầu chi ngân sách; mặt khác có một phần do quy mô GDP tính theo giá thực tế trong 6 tháng đầu năm nay không tăng cao như cùng kỳ năm trước cũng như khi lập dự toán của năm nay. GDP tính theo giá thực tế tăng thấp, do hai yếu tố ...”
TPU	MOIT	22/12/2017	Cải cách hành chính năm 2017 tại Bộ Công Thương: Chuyển biến từ nhận thức đến hành động	“... Năm 2017, Bộ Công Thương đã ban hành hai quyết định quan trọng về cải cách hành chính là Quyết định 4846 (ngày 9/12/2016) và Quyết định 3610a (ngày 20/9/2017) về phê duyệt phương án tổng thể đơn giản hóa thủ tục hành chính và phương án cắt giảm, đơn giản hóa điều kiện đầu tư, kinh doanh thuộc lĩnh vực quản lý nhà nước của Bộ Công Thương giai đoạn 2017–2018 được cộng đồng doanh nghiệp đánh giá rất cao. Số điều kiện hiện còn là 541 so với dự kiến là 752. Đã phân cấp 141 thủ tục hành chính cấp tỉnh, 10 thủ tục cấp huyện và 2 cấp xã. Công tác xây dựng văn bản đạt tỷ lệ cao theo đó trong năm 2017, Bộ Công Thương phải xây dựng và trình Chính phủ ban hành 53 văn bản trong đó có 11 nghị định, 3 quyết định và 39 thông tư ...”
	VNN	05/11/2015	Việt Nam công bố toàn văn Hiệp định TPP	“Toàn văn Hiệp định Đối tác Thương mại Xuyên Thái Bình Dương (TPP) bằng tiếng Anh vừa được Bộ Công Thương Việt Nam công bố

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(continued)

EPU category	Data outlet (website)	Date	Article title (in Vietnamese)	Example text (in Vietnamese)
	CFF	13/07/2012	Bộ Công Thương đẩy mạnh triển khai Nghị quyết 13/NQ-CP	chiều 5/11. Các thành viên dự kiến sẽ ký kết hiệp định vào quý I/2016. Chiều 5/11, Vụ Chính sách thương mại đa biên, Bộ Công Thương vừa công bố bản dự thảo toàn văn tiếng Anh của Hiệp định TPP. Theo đó, bên cạnh các quy định chung mà 12 nước thành viên đều tuân thủ ở 30 chương của hiệp định, Việt Nam đã đạt được thoả thuận song phương với 9 trên tổng số 11 thành viên còn lại về các lĩnh vực quan trọng ...” “Triển khai Nghị quyết số 13/NQ-CP, Bộ Công Thương đã tổ chức nhiều buổi làm việc với các Tập đoàn, Tổng công ty, doanh nghiệp thuộc Bộ, các Sở Công Thương để xây dựng kế hoạch thực hiện. Trên cơ sở đó, đến nay, Bộ đã có kiến nghị với các cơ quan chức năng liên quan nhằm tạo điều kiện tháo gỡ khó khăn về sản xuất kinh doanh, về tài chính cho các doanh nghiệp như kiến nghị về giá bán than, thuế suất nhập khẩu than, thuế suất nhập khẩu nhôm, việc bảo lãnh vay vốn cũng như cơ chế xử lý lỗi của các đơn vị ...”

Appendix A3. Variable description

Variable	Description	Obs	Mean	P50	SD	Min	Max
Macro-level variables							
MPU	The monthly monetary policy uncertainty index constructed using textual analysis of data from the website of State Bank of Vietnam (SBV-based MPU). For bank-level analysis, monthly MPU is annualised into annual MPU by taking the mean of the 12-months in a year.	228	6.957	4.315	8.537	0.000	60.417
MPU_VNN	The monthly monetary policy uncertainty index constructed using textual analysis of data from the website of Vietnamnet newspaper (VNN-based MPU). For bank-level analysis, monthly MPU_VNN is annualised into annual MPU_VNN by taking the mean of the 12-months in a year.	152	1.433	1.243	1.104	0.000	5.453
MPU_CFF	The monthly monetary policy uncertainty index constructed using textual analysis of data from the website of CafeF newspaper (CFF-based MPU). For bank-level analysis, monthly MPU_CFF is annualised into annual MPU_CFF by taking the mean of the 12-months in a year.	190	2.925	2.338	1.892	0.517	10.399
FPU	The monthly fiscal policy uncertainty index constructed using textual analysis of data from the website of Ministry of Finance (MOF-based FPU). For bank-level analysis, monthly FPU is annualised into annual FPU by taking the mean of the 12-months in a year.	111	2.793	1.146	4.049	0.000	20.351
FPU_VNN	The monthly fiscal policy uncertainty index constructed using textual analysis of data from the website of Vietnamnet newspaper (VNN-based FPU). For bank-level analysis, monthly FPU_VNN is annualised into annual FPU_VNN by taking the mean of the 12-months in a year.	152	0.456	0.385	0.350	0.000	2.463
FPU_CFF	The monthly fiscal policy uncertainty index constructed using textual analysis of data from the website of CafeF newspaper (CFF-based FPU). For bank-level analysis, monthly FPU_CFF is annualised into annual FPU_CFF by taking the mean of the 12-months in a year.	190	0.901	0.761	0.522	0.183	3.711
TPU	The monthly trade policy uncertainty index constructed using textual analysis of data from the website of the Ministry of Industrial and Trade (SBV-based TPU). For firm-level analysis, monthly TPU is annualised into annual TPU by taking the mean of the 12-months in a year.	138	7.634	6.962	4.753	0.000	23.028
TPU_VNN	The monthly trade policy uncertainty index constructed using textual analysis of data from the website of Vietnamnet newspaper (VNN-based TPU). For firm-level analysis, monthly TPU_VNN is annualised into annual TPU_VNN by taking the mean of the 12-months in a year.	152	1.366	1.374	0.700	0.037	3.394
TPU_CFF	The monthly trade policy uncertainty index constructed using textual analysis of data from the website of CafeF newspaper (CFF-based TPU). For firm-level analysis, monthly TPU_CFF is annualised into annual TPU_CFF by taking the mean of the 12-months in a year.	190	3.048	2.844	1.220	0.930	7.184

(continued on next page)

(continued)

Variable	Description	Obs	Mean	P50	SD	Min	Max
WUI_VN	The monthly World Uncertainty Index for Vietnam (Ahir et al., 2022)	186	0.105	0.095	0.103	0.000	0.441
WUI_WORLD	The monthly World Uncertainty Index (global) (Ahir et al., 2022)	186	22,740.990	20,596.000	9079.864	9050.000	57,518.000
VNINDEX_VOL	The standard deviation of daily VN-Index during the month. VN-Index is the main stock market index of stocks in Ho Chi Minh Stock Exchanges, Vietnam.	89	19.767	15.281	15.357	3.106	84.884
EPU_GLOBAL	The monthly Global economic policy uncertainty index (Baker et al., 2016)	234	155.615	134.315	78.644	49.225	431.542
GPR	The monthly Geopolitical risk index of Vietnam (Caldara & Iacoviello, 2022)	234	0.076	0.060	0.057	0.000	0.380
Firm/bank-level variables							
LLP	The ratio of loan loss provision in percentage of total loans	606	1.242	1.120	0.765	-0.490	5.260
lnZSCORE	The natural logarithm of bank risk-taking measure of the bank, calculated as Zscore = (ROA + CAR)/σ(ROA), in which ROA is the return on assets ratio, CAR is the capital-to-assets ratio (Laeven & Levine, 2009).	656	2.689	2.690	0.633	1.154	4.461
BANKSIZE	The natural logarithm of the total deposits of the bank	667	17.207	17.481	1.934	8.898	21.208
CIR	The Cost-to-income ratio of the bank (in percentage)	622	79.439	82.475	15.975	14.420	102.14
BPROFIT	Net income to total assets ratio of the bank (in percentage)	619	1.312	1.060	1.071	-0.420	5.380
NPL	Non-performing loan ratio of the bank	578	1.847	1.620	1.517	0.000	10.83
SIZE	The natural logarithm of total assets of the non-financial firms	7278	13.548	13.466	1.648	9.634	19.581
LEVERAGE	Long-term debt to total assets ratio	6812	0.085	0.023	0.131	0.000	0.931
CASHFLOW	Net operating cash flow on total assets ratio	5706	0.068	0.058	0.169	-0.482	0.698
PROFIT	The profit margin ratio of the non-financial firm	6046	0.062	0.050	0.234	-1.443	0.661
CAPEX	Capital expenditure scaled by the beginning balance of total assets	5265	0.070	0.031	0.107	0.000	0.639

Appendix A4. Connectedness among news-based policy uncertainty and macroeconomic variables

Panel A. Vietnamnet-based policy uncertainty measures and macroeconomic variables										
	FPU_VNN	MPU_VNN	TPU_VNN	GDP	Inflation	WUI	Exports	Imports	VNDUSD	FROM
FPU_VNN	59.32	9.41	17.30	0.15	1.75	1.32	0.67	0.03	10.04	40.68
MPU_VNN	12.26	61.57	14.27	2.30	0.45	1.01	1.97	2.56	3.61	38.43
TPU_VNN	16.40	11.01	64.38	0.13	1.07	0.42	2.01	1.06	3.53	35.62
GDP	0.68	4.17	0.13	89.19	0.54	0.04	2.88	1.47	0.90	10.81
Inflation	1.80	0.34	2.12	0.14	93.25	1.22	0.13	0.02	0.98	6.75
WUI	1.17	2.86	0.55	0.05	3.45	86.92	1.09	3.38	0.53	13.08
Exports	0.60	2.16	0.23	1.31	0.27	0.44	55.91	38.54	0.53	44.09
Imports	0.78	1.96	0.43	1.17	0.21	2.02	42.27	50.60	0.56	49.40
VNDUSD	9.88	4.12	4.85	0.87	4.14	0.78	0.34	0.89	74.13	25.87
TO	43.56	36.04	39.86	6.13	11.88	7.24	51.36	47.95	20.69	TCI
NET	2.89	-2.39	4.24	-4.69	5.13	-5.83	7.27	-1.44	-5.18	29.41

Panel B. CafeF-based policy uncertainty measures and macroeconomic variables										
	FPU_CFF	MPU_CFF	TPU_CFF	GDP	Inflation	WUI	Exports	Imports	VNDUSD	FROM
FPU_CFF	39.94	21.60	18.21	0.34	2.63	3.29	6.13	7.03	0.82	60.06
MPU_CFF	22.99	42.15	20.18	0.47	2.73	3.94	4.18	3.12	0.25	57.85
TPU_CFF	19.50	21.23	42.64	0.29	0.50	4.72	5.97	5.02	0.12	57.36
GDP	0.83	1.00	0.32	92.03	0.63	0.24	2.89	1.22	0.84	7.97
Inflation	3.05	3.75	2.30	0.18	87.54	2.31	0.41	0.17	0.29	12.46
WUI	3.98	3.49	2.76	0.23	3.10	82.21	0.91	2.42	0.89	17.79
Exports	5.21	3.88	5.37	1.23	0.41	0.76	49.18	33.03	0.91	50.82
Imports	6.36	4.56	4.14	1.49	0.54	3.00	35.92	42.93	1.07	57.07
VNDUSD	2.89	3.49	3.48	0.90	4.02	1.53	0.76	2.43	80.50	19.50
TO	64.82	63.00	56.75	5.14	14.56	19.78	57.18	54.44	5.19	TCI
NET	4.76	5.14	-0.60	-2.83	2.10	1.99	6.36	-2.63	-14.30	37.87

Note: The table presents the connectedness among news-based categorical policy uncertainty and macroeconomic variables using the connectedness framework of Diebold and Yilmaz (2012, 2014). All variables are log-differenced to ensure stationarity. Each cell corresponds to the percent of the forecast error variance decomposition (GFEVD) of the row variable explained by the column variable. The column "FROM" captures the percent of the GFEVD in the row variable explained by all other variables. The row "TO" captures the percent of the GFEVD in all other variables explained by the column variable. The row "NET" is the difference between the "TO" connectedness and the "FROM" connectedness indices. A positive (negative) net connectedness indicates a net shock transmitter (receiver). The total connectedness index (TCI) is at the bottom right corner of the table, which captures the overall connectedness among the variables in the system.

Appendix A5. FPU and MPU models' residual distributions

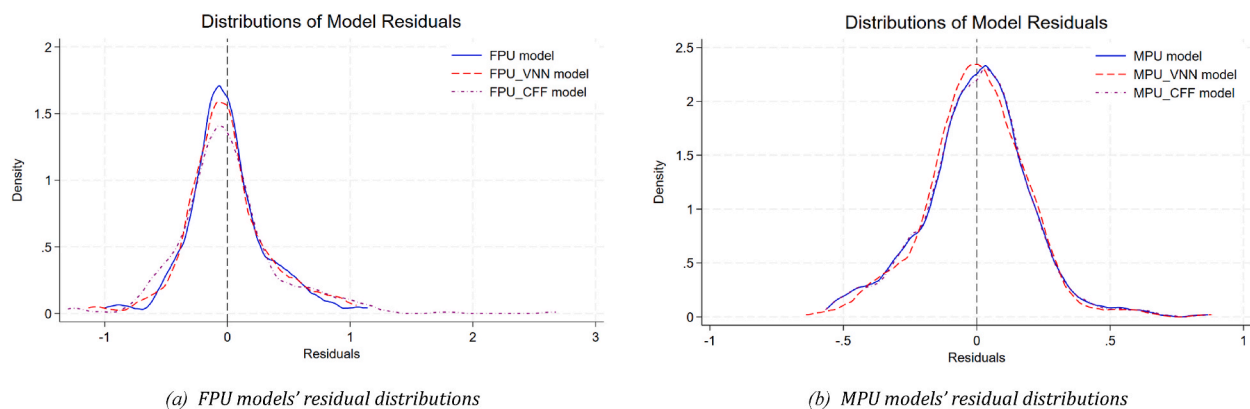


Fig. A5. FPU and MPU models's residual distributions

Appendix A6. PROFIT-TPU Models' residual distributions

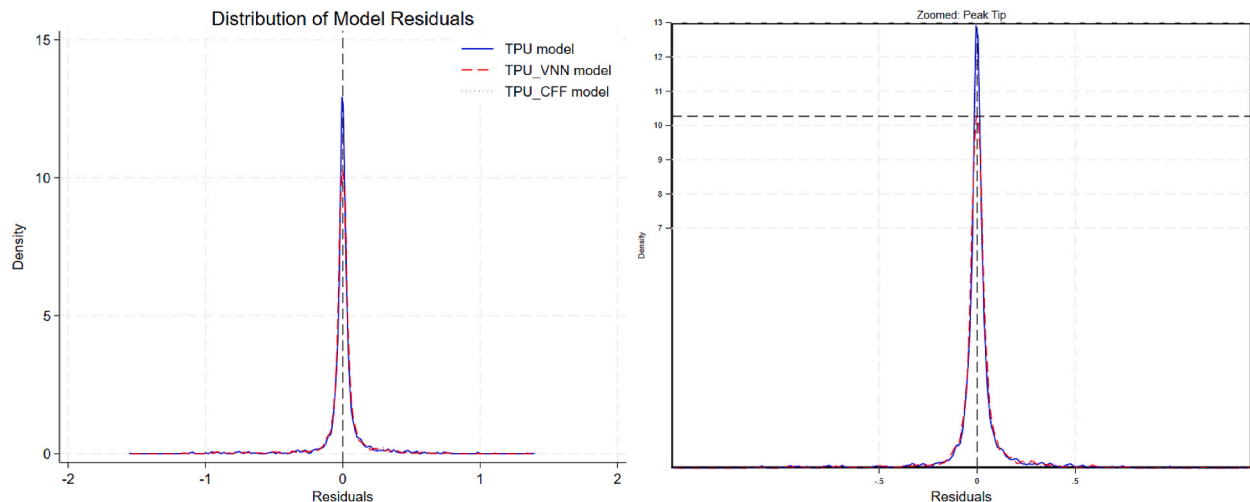


Fig. A6. Distributions of PROFIT-TPU models' residual and comparison

Notes: The figure plots the kernel density distributions of residuals from the three PROFIT-TPU model specifications. The right panel presents a zoomed view to highlight distributional differences across models. The vertical dashed line at zero serves as a reference for unbiased residuals. The horizontal dashed line in the right panel caps the peak of TPU_VNN model residual distribution. Residuals are obtained from estimations with controls and firm-fixed effect, and standard errors clustered by firm. TPU, TPU_VNN, and TPU_CFF denote the government-sourced, Vietnamnet-based, and CafeF-based trade policy uncertainty indices, respectively.

Appendix A7. CAPEX-TPU Models' residual distributions

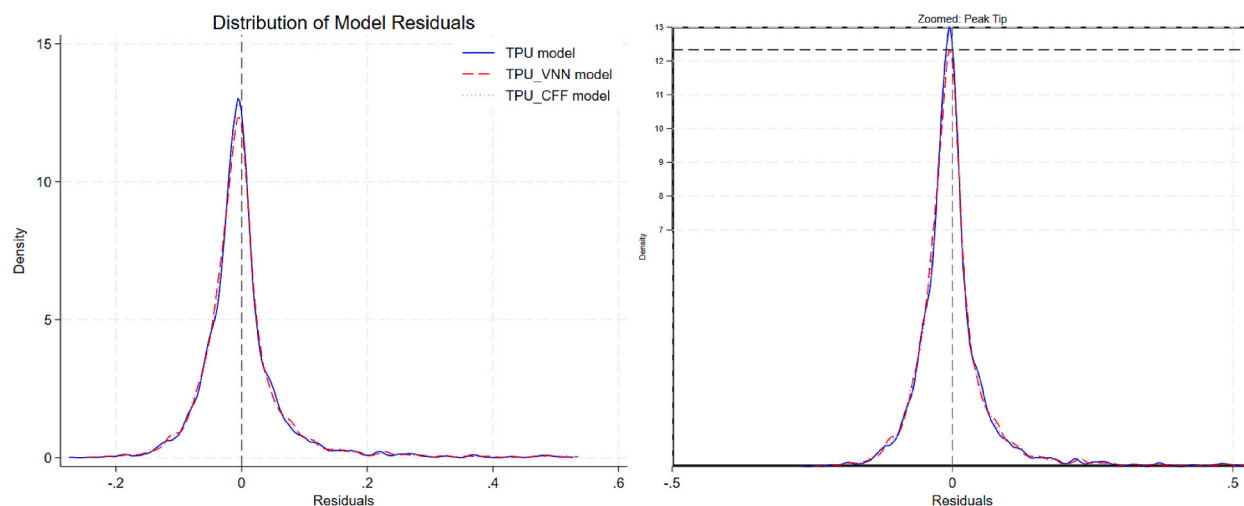


Fig. A7. Distributions of CAPEX-TPU models' residual and comparison

Notes: The left panel plots the kernel density distributions of residuals from the three CAPEX-TPU model specifications. The right panel presents a zoomed view to highlight distributional differences across models. The vertical dashed line at zero serves as a reference for unbiased residuals. Residuals are obtained from estimations with controls and firm-fixed effect, and standard errors clustered by firm. TPU, TPU_VNN, and TPU_CFF denote the government-sourced, Vietnamnet-based, and CafeF-based trade policy uncertainty indices, respectively.

Data availability

The data that support the findings of this study are available from publicly accessible sources and proprietary databases, as described in the manuscript. Restrictions may apply to the availability of proprietary data. The constructed indices and supporting data are available from the corresponding author upon reasonable request, subject to applicable data-provider restrictions.

References

- Aaberge, R., Liu, K., & Zhu, Y. (2017). Political uncertainty and household savings. *Journal of Comparative Economics*, 45(1), 154–170. <https://doi.org/10.1016/j.jce.2015.12.011>
- Abel, J., Rich, R., Song, J., & Tracy, J. (2016). The measurement and behaviour of uncertainty: Evidence from the ECB survey of professional forecasters. *Journal of Applied Econometrics*, 31(3), 533–550. <https://doi.org/10.1002/jae.2430>
- Abreu, J. F., & Gulamhussen, M. A. (2013). Dividend payouts: Evidence from US bank holding companies in the context of the financial crisis. *Journal of Corporate Finance*, 22, 54–65. <https://doi.org/10.1016/j.jcorpfin.2013.04.001>
- Acharya, V., & Naqvi, H. (2012). The seeds of a crisis: A theory of bank liquidity and risk taking over the business cycle. *Journal of Financial Economics*, 106(2), 349–366. <https://doi.org/10.1016/j.jfineco.2012.05.014>
- Afonso, A., & Furceri, D. (2010). Government size, composition, volatility and economic growth. *European Journal of Political Economy*, 26(4), 517–532. <https://doi.org/10.1016/j.ejpolco.2010.02.002>
- Ahir, H., Bloom, N., & Furceri, D. (2022). *The world uncertainty index*. National Bureau of Economic Research Working Paper Series, Article 29763. <https://doi.org/10.3386/w29763>
- An, X., Barnett, W. A., Wang, X., & Wu, Q. (2023). Brexit spillovers: How economic policy uncertainty affects foreign direct investment and international trade. *The European Journal of Finance*, 29(16), 1913–1932. <https://doi.org/10.1080/1351847X.2022.2134812>
- Anzuini, A., Rossi, L., & Tommasino, P. (2020). Fiscal policy uncertainty and the business cycle: Time series evidence from Italy. *Journal of Macroeconomics*, 65, Article 103238. <https://doi.org/10.1016/j.jmacro.2020.103238>
- Arbatli, S. E. and C., Davis, S. J., Ito, A., & Miake, N. (2022). Policy uncertainty in Japan. *Journal of the Japanese and International Economies*, 64, Article 101192. <https://doi.org/10.1016/j.jjie.2022.101192>
- Arce-Alfaro, G., & Blagov, B. (2023). Monetary policy uncertainty and inflation expectations. *Oxford Bulletin of Economics & Statistics*, 85(1), 70–94. <https://doi.org/10.1111/obes.12516>
- Bachmann, R., Elstner, S., & Sims, E. R. (2013). Uncertainty and economic activity: Evidence from business survey data. *American Economic Journal: Macroeconomics*, 5(2), 217–249. <https://doi.org/10.1257/mac.5.2.217>
- Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *Quarterly Journal of Economics*, 131(4), 1593–1636. <https://doi.org/10.1093/qje/qjw024>
- Barberá, P., Boydston, A. E., Linn, S., McMahon, R., & Nagler, J. (2021). Automated text classification of news articles: A practical guide. *Political Analysis*, 29(1), 19–42. <https://doi.org/10.1017/pan.2020.8>
- Benguria, F., Choi, J., Swenson, D. L., & Xu, M. J. (2022). Anxiety or pain? The impact of tariffs and uncertainty on Chinese firms in the trade war. *Journal of International Economics*, 137, Article 103608. <https://doi.org/10.1016/j.jinteco.2022.103608>
- Bhattacharya, U., Hsu, P. H., Tian, X., & Xu, Y. (2017). What affects innovation more: Policy or policy uncertainty? *Journal of Financial and Quantitative Analysis*, 52(5), 1869–1901. <https://doi.org/10.1017/S0022109017000540>

- Bianconi, M., Esposito, F., & Sammon, M. (2021). Trade policy uncertainty and stock returns. *Journal of International Money and Finance*, 119, Article 102492. <https://doi.org/10.1016/j.jimonfin.2021.102492>
- Bloom, N. (2009). The impact of uncertainty shocks. *Econometrica*, 77(3), 623–685. <https://doi.org/10.3982/ECTA6248>
- Bloom, N., Bond, S., & Van Reenen, J. (2007). Uncertainty and investment dynamics. *The Review of Economic Studies*, 74(2), 391–415. <https://doi.org/10.1111/j.1467-937X.2007.00426.x>
- Boero, G., Smith, J., & Wallis, K. F. (2015). The measurement and characteristics of professional forecasters' uncertainty. *Journal of Applied Econometrics*, 30(7), 1029–1046. <https://doi.org/10.1002/jae.2400>
- Bordo, M. D., Duca, J. V., & Koch, C. (2016). Economic policy uncertainty and the credit channel: Aggregate and bank-level U.S. evidence over several decades. *Journal of Financial Stability*, 26, 90–106. <https://doi.org/10.1016/j.jfs.2016.07.002>
- Bui, N. T. (2017). Managing anti-China nationalism in Vietnam: Evidence from the media during the 2014 oil rig crisis. *The Pacific Review*, 30(2), 169–187. <https://doi.org/10.1080/09512748.2016.1201132>
- Buigut, S., & Kapar, B. (2023). How did Brexit impact EU trade? Evidence from real data. *The World Economy*, 46(6), 1566–1581. <https://doi.org/10.1111/twec.13419>
- Caggiano, G., Castelnuovo, E., & Figueres, J. M. (2017). Economic policy uncertainty and unemployment in the United States: A nonlinear approach. *Economics Letters*, 151, 31–34. <https://doi.org/10.1016/j.econlet.2016.12.002>
- Caldara, D., & Iacoviello, M. (2022). Measuring geopolitical risk. *The American Economic Review*, 112(4), 1194–1225. <https://doi.org/10.1257/aer.20191823>
- Caldara, D., Iacoviello, M., Molloy, P., Prestipino, A., & Raffo, A. (2020). The economic effects of trade policy uncertainty. *Journal of Monetary Economics*, 109, 38–59. <https://doi.org/10.1016/j.jmoneco.2019.11.002>
- Chen, D., Hu, N., Liang, P., & Swink, M. (2024). Understanding the impact of trade policy effect uncertainty on firm-level innovation investment. *Journal of Operations Management*, 70(2), 316–340. <https://doi.org/10.1002/joom.1285>
- Connolly, R., Stivers, C., & Sun, L. (2005). Stock market uncertainty and the stock-bond return relation. *Journal of Financial and Quantitative Analysis*, 40(1), 161–194. <https://doi.org/10.1017/S0022109000001782>
- D'Acunto, F., Hoang, D., & Weber, M. (2022). Managing households' expectations with unconventional policies. *Review of Financial Studies*, 35(4), 1597–1642. <https://doi.org/10.1093/rfs/hhab083>
- Dang, T. H. N., Nguyen, C. P., Lee, G. S., Nguyen, B. Q., & Le, T. T. (2023). Measuring the energy-related uncertainty index. *Energy Economics*, 124, Article 106817. <https://doi.org/10.1016/j.eneco.2023.106817>
- Diebold, F. X., & Yilmaz, K. (2012). Better to give than to receive: Predictive directional measurement of volatility spillovers. *International Journal of Forecasting*, 28(1), 57–66. <https://doi.org/10.1016/j.ijforecast.2011.02.006>
- Diebold, F. X., & Yilmaz, K. (2014). On the network topology of variance decompositions: Measuring the connectedness of financial firms. *Journal of Econometrics*, 182(1), 119–134. <https://doi.org/10.1016/j.jeconom.2014.04.012>
- Dixit, A. K., & Pindyck, R. S. (1994). *Investment under uncertainty*. Princeton university press. <https://doi.org/10.2307/j.ctt7sncv>
- Drobetz, W., El Ghoul, S., Guedhami, O., & Janzen, M. (2018). Policy uncertainty, investment, and the cost of capital. *Journal of Financial Stability*, 39, 28–45. <https://doi.org/10.1016/j.jfs.2018.08.005>
- Eberly, J. C. (1994). Adjustment of consumers' durables stocks: Evidence from automobile purchases. *Journal of Political Economy*, 102(3), 403–436. <https://doi.org/10.1086/261940>
- Elkamhi, R., Jo, C., & Salerno, M. (2024). Measuring “state-level” economic policy uncertainty. *Journal of Financial and Quantitative Analysis*, 59(7), 3230–3266. <https://doi.org/10.1017/S0022109023000807>
- Fernández-Villaverde, J., Guerrón-Quintana, P., Kuester, K., & Rubio-Ramírez, J. (2015). Fiscal volatility shocks and economic activity. *The American Economic Review*, 105(11), 3352–3384. <https://doi.org/10.1257/aer.20121236>
- Garschagen, M. (2013). Resilience and organisational institutionalism from a cross-cultural perspective: An exploration based on urban climate change adaptation in Vietnam. *Natural Hazards*, 67(1), 25–46. <https://doi.org/10.1007/s11069-011-9753-4>
- Ge, X., Liu, Y., & Zhuang, J. (2023). Monetary policy uncertainty, market structure and bank risk-taking: Evidence from China. *Finance Research Letters*, 52, Article 103599. <https://doi.org/10.1016/j.frl.2022.103599>
- Ghirelli, C., Pérez, J. J., & Urtasun, A. (2019). A new economic policy uncertainty index for Spain. *Economics Letters*, 182, 64–67. <https://doi.org/10.1016/j.econlet.2019.05.021>
- Giavazzi, F., & McMahon, M. (2012). Policy uncertainty and household savings. *The Review of Economics and Statistics*, 94(2), 517–531. https://doi.org/10.1162/REST_a_00158
- Graham, N. P., Huang, X., & Yang, L. (2025). Navigating trade policy uncertainty: Conservatism in cash holding and investment. *Applied Economics*, 57(13), 1415–1433. <https://doi.org/10.1080/00036846.2024.2312265>
- Greenspan, A. (2004). Risk and uncertainty in monetary policy. *The American Economic Review*, 94(2), 33–40. <https://doi.org/10.1257/0002828041301551>
- Gu, X., Cheng, X., Zhu, Z., & Deng, X. (2021). Economic policy uncertainty and China's growth-at-risk. *Economic Analysis and Policy*, 70, 452–467. <https://doi.org/10.1016/j.eap.2021.03.006>
- Gulen, H., & Ion, M. (2016). Policy uncertainty and corporate investment. *Review of Financial Studies*, 29(3), 523–564. <https://doi.org/10.1093/rfs/hhv050>
- Handley, K., & Limão, N. (2015). Trade and investment under policy uncertainty: Theory and firm evidence. *American Economic Journal: Economic Policy*, 7(4), 189–222. <https://doi.org/10.1257/poi.20140068>
- Handley, K., & Limão, N. (2017). Policy uncertainty, trade, and welfare: Theory and evidence for China and the United States. *The American Economic Review*, 107(9), 2731–2783. <https://doi.org/10.1257/aer.20141419>
- Handley, K., & Limão, N. (2022). Trade policy uncertainty. *Annual Review of Economics*, 14, 363–395. <https://doi.org/10.1146/annurev-economics-021622-020416>
- Heimberger, P. (2023). The cyclical behaviour of fiscal policy: A meta-analysis. *Economic Modelling*, 123, Article 106259. <https://doi.org/10.1016/j.econmod.2023.106259>
- Husted, L., Rogers, J., & Sun, B. (2020). Monetary policy uncertainty. *Journal of Monetary Economics*, 115, 20–36. <https://doi.org/10.1016/j.jmoneco.2019.07.009>
- Imbruno, M. (2019). Importing under trade policy uncertainty: Evidence from China. *Journal of Comparative Economics*, 47(4), 806–826. <https://doi.org/10.1016/j.jce.2019.06.004>
- Jarlbink, J., & Snickars, P. (2017). Cultural heritage as digital noise: Nineteenth century newspapers in the digital archive. *Journal of Documentation*, 73(6), 1228–1243. <https://doi.org/10.1108/JD-09-2016-0106>
- Jo, S., & Sekkel, R. (2019). Macroeconomic uncertainty through the lens of professional forecasters. *Journal of Business & Economic Statistics*, 37(3), 436–446. <https://doi.org/10.1080/07350015.2017.1356729>
- Julio, B., & Yook, Y. (2012). Political uncertainty and corporate investment cycles. *The Journal of Finance*, 67(1), 45–83. <https://doi.org/10.1111/j.1540-6261.2011.01707.x>
- Jurado, K., Ludvigson, S. C., & Ng, S. (2015). Measuring uncertainty. *The American Economic Review*, 105(3), 1177–1216. <https://doi.org/10.1257/aer.20131193>
- Kellogg, R. (2014). The effect of uncertainty on investment: Evidence from Texas oil drilling. *The American Economic Review*, 104(6), 1698–1734. <https://doi.org/10.1257/aer.104.6.1698>
- Kelly, B., Pástor, L., & Veronesi, P. (2016). The price of political uncertainty: Theory and evidence from the option market. *The Journal of Finance*, 71(5), 2417–2480. <https://doi.org/10.1111/jofi.12406>
- Laeven, L., & Levine, R. (2009). Bank governance, regulation and risk taking. *Journal of Financial Economics*, 93(2), 259–275. <https://doi.org/10.1016/j.jfineco.2008.09.003>
- Le, T. D. Q., Ho, T. H., Ngo, T., Nguyen, D. T., & Tran, S. H. (2022). A dataset for the Vietnamese banking system (2002–2021). *Data*, 7(9), 120. <https://doi.org/10.3390/data7090120>
- Minford, P., & Zhu, Z. (2024). Modeling the effects of Brexit on the British economy. *Journal of Forecasting*, 43(4), 1114–1126. <https://doi.org/10.1002/for.3076>

- Montes, G. C., & Scarpari, A. (2015). Does central bank communication affect bank risk-taking? *Applied Economics Letters*, 22(9), 751–758. <https://doi.org/10.1080/13504851.2014.975325>
- Ng, J., Saffar, W., & Zhang, J. J. (2020). Policy uncertainty and loan loss provisions in the banking industry. *Review of Accounting Studies*, 25, 726–777. <https://doi.org/10.1007/s11142-019-09530-y>
- Paligorova, T., & Santos, J. A. (2017). Monetary policy and bank risk-taking: Evidence from the corporate loan market. *Journal of Financial Intermediation*, 30, 35–49. <https://doi.org/10.1016/j.jfi.2016.11.003>
- Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies*, 22(1), 435–480. <https://doi.org/10.1093/rfs/hhn053>
- Phan, D. H. B., Iyke, B. N., Sharma, S. S., & Affandi, Y. (2021). Economic policy uncertainty and financial stability—Is there a relation? *Economic Modelling*, 94, 1018–1029. <https://doi.org/10.1016/j.econmod.2020.02.042>
- Sill, K. (2012). Measuring economic uncertainty using the survey of professional forecasters. *Federal Reserve Bank of Philadelphia Business Review*, Q4, 16–27. Available at: https://www.philadelphiafed.org/-/media/frbp/assets/economy/articles/business-review/2012/q4/brq412_measuring-economic-uncertainty-using-spf.pdf.
- Silva, F. B. G. (2021). Fiscal deficits, bank credit risk, and loan-loss provisions. *Journal of Financial and Quantitative Analysis*, 56(5), 1537–1589. <https://doi.org/10.1017/S0022109020000472>
- Sun, J., Hu, H., & Shen, Y. (2026). US monetary policy uncertainty and active risk-taking by China's commercial banks. *Economic Modelling*, 159, Article 107579. <https://doi.org/10.1016/j.econmod.2026.107579>
- Tran, D. V., & Houston, R. (2021). The effects of policy uncertainty on bank loan loss provisions. *Economic Modelling*, 102, Article 105575. <https://doi.org/10.1016/j.econmod.2021.105575>
- Valencia, F. (2017). Aggregate uncertainty and the supply of credit. *Journal of Banking & Finance*, 81, 150–165. <https://doi.org/10.1016/j.jbankfin.2017.05.001>
- Wu, W., & Zhao, J. (2022). Economic policy uncertainty and household consumption: Evidence from Chinese households. *Journal of Asian Economics*, 79, Article 101436. <https://doi.org/10.1016/j.asieco.2021.101436>