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Revisiting the Trade Policy Uncertainty Index

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Abstract

Newspaper coverage-based uncertainty measures are made popular by [Baker et al. \(2016\)](#), who created the Trade Policy Uncertainty (TPU) index by analyzing appearances of uncertainty-, economy-, policy- and trade-related search terms. This paper shows their set of search terms leads to systematic inaccuracies such as misclassification and omission of articles. I then construct an improved U.S. TPU index by expanding and modifying the set of search terms, and restricting attention to national newspapers. The new set of search terms uncovers 31 times more articles, and the individual newspaper-level series that aggregate up to the new TPU index are more highly correlated, hence agreeing more with each other about the movements of U.S. trade policy uncertainty. I also provide a detailed mapping between major U.S. trade policy events and the new U.S. TPU index, and shows that [Baker et al. \(2016\)](#)'s U.S. TPU index sometimes mistakes financial market and political uncertainty for trade policy uncertainty.

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1 Introduction

“In this world nothing can be said to be certain, except death and taxes.”

– Benjamin Franklin

There has been great uncertainty about trade policies around the world in recent years. From the North American Free Trade Agreement (NAFTA) renegotiations, to the many debates surrounding Brexit, to the United States-China trade war, many countries have been plagued by this uncertainty, though to varying degrees. It can also negatively affect economic prospects, as the International Monetary Fund (IMF) revised its October 2019 global growth forecast downwards by 0.3 percentage points, citing “higher tariffs and prolonged uncertainty surrounding trade policy” (IMF 2019, Foreword) as the main culprit behind the sluggish growth. This paper presents a new measure of trade policy uncertainty based on newspaper coverage.

Newspaper-based uncertainty measures are made popular by Baker et al. (2016), who developed the Economic Policy Uncertainty (EPU) index that measures uncertainty based on the appearances of uncertainty-, economic- and policy-related terms in newspapers. While these measures can potentially be affected by editorial choices, they tend to reflect uncertainty in real time and are available frequently. Moreover, they allow researchers to tailor the measure to be specific to their research question, in terms of both the type and the geographical location of the uncertainty. In fact, Baker et al. (2016) (henceforth BBD) also created a Trade Policy Uncertainty (TPU) index for the United States, which takes into account search terms relating to trade policies as well. Following this, Caldara et al. (2020) (henceforth CIMPR) also created their version of a TPU index, with different search terms, newspaper selections, and aggregation method. I will, however, show in the present paper that both sets of search terms lead to systematic inaccuracies, such as misclassification and omission of newspaper articles. I then proceed to make modifications to improve the reliability of the index.

An index tailored specifically to trade policy uncertainty can help quantify its effects, aiding policymakers in their decisions and contributing to further research in this growing literature.¹ Hence, it is important to ensure that the TPU index is reliable. I propose a modified set of search terms that uncovers 31 times more articles from 1988 to 2020 than

¹See Handley and Limão (2017), Steinberg (2019), CIMPR, and Alessandria et al. (2019) for research on trade policy uncertainty.

the set used by BBD. It shows that the 4 national U.S. newspapers used in the new TPU index agree more with each other about the level of trade policy uncertainty when the new set of search terms is adopted. The new U.S. TPU index displays different episodes of high trade policy uncertainty in the U.S. throughout the years, which map well to major U.S. trade policy events. I show that the new U.S. TPU index better reflects, when compared to BBD and CIMPR, the events leading up to the U.S.-Japan automobile trade dispute in 1995, the failed WTO meeting in 2003 and the controversial “Buy American” provisions in the stimulus package in 2009. Moreover, I also show, using rolling regressions, that the BBD TPU index sometimes mistakes financial market and political uncertainty for trade policy uncertainty.

This paper is organized as follows. Section 2 examines a variety of uncertainty measures and provides an in-depth literature review. Section 3 details the construction of the new Trade Policy Uncertainty index. Section 4 offers a thorough analysis of the new TPU index and a comparison with the BBD U.S. TPU index.² Section 5 considers the relationship between the BBD U.S. EPU index and both the new and the BBD TPU indices by using rolling regressions. Section 6 concludes.

2 Uncertainty Measures

Uncertainty is an ex-ante concept that could be measured using detailed forecasters’ survey data. Besides point forecasts for macroeconomic variables, the Federal Reserve Bank of Philadelphia (Philadelphia Fed) Survey of Professional Forecasters (SPF) and the European Central Bank (ECB) SPF also provide information on forecast uncertainty. This is measured by asking each forecaster for information about the probability density of their forecast, by providing the probabilities with which realizations in specific intervals are likely to occur. The standard deviation of the probability distribution of a forecaster then captures how uncertain the forecaster is when making their forecast. However, this measurement is not without its limitations – both the Philadelphia Fed SPF and the ECB SPF are only available at a quarterly frequency, and density forecasts are not always readily available. Moreover, the number and sizes of the bins that forecasters can attach their probabilities to have changed over time, thus affecting the precision of the uncertainty measure.

To cope with the limitations imposed by the absence of density forecasts, researchers

²The comparison with the CIMPR U.S. TPU index is in Appendix B.

have tried to use survey data of point forecasts to construct other proxies for uncertainty, e.g. by using (ex-ante) forecast disagreement and (ex-post) forecast errors. The forecast disagreement methodology attempts to capture uncertainty by measuring how different the point forecasts are from each other. However, [Rich and Tracy \(2021\)](#) has shown that forecast disagreement is not a reliable proxy for uncertainty as forecast disagreement is more defined by time effects while forecasters' uncertainty is more affected by individual effects. [Bachmann et al. \(2013\)](#) instead used qualitative information from German and U.S. business survey data to construct a business-level uncertainty index based on ex-post forecast errors. They showed that this measure of ex-post forecast errors is highly correlated with ex-ante disagreements. However, ex-post measures might not be suitable for uncertainty, an ex-ante concept.

Surveys that are based on business expectations are also gaining popularity. The Federal Reserve Bank of Atlanta has been running the Survey of Business Uncertainty (SBU) since 2014, where they collect firms' subjective probability distributions over their own future sales growth, employment, and capital expenditure.³ Similarly, the Bank of England, joint with Stanford University and the University of Nottingham, created the Decision Maker Panel (DMP) in 2016.⁴ The DMP also focuses on questions such as the importance of Brexit as a source of uncertainty and firms' belief on when uncertainty around Brexit will be resolved. These surveys provide the benefit of analyzing firm and sectoral characteristics but they both are only available on a monthly basis. Moreover, as each survey can only have a limited number of questions and there are many different issues to cover in each survey wave, questions tend to have a shorter time series.

Given that survey-based measures are lacking in their frequency and specificity, there have been various types of proxies. Stock market-based proxies based on implied volatility, thus following the ex-ante concept, are available on a daily basis. In particular, the Chicago Board Options Exchange (CBOE) S&P 100 Volatility Index (VXO) and the CBOE Volatility Index (VIX) measure uncertainty based on option contracts written on the S&P 100 Index and the S&P 500 Index respectively.⁵ However, VXO and VIX measure uncertainty in financial markets, which may not be representative for uncertainty in the whole economy or specific aspects, such as trade policy. Moreover, VIX has been shown to reflect not just stock market uncertainty, but also a different concept – risk aversion ([Bekaert et al., 2013](#)).

³See [Altig et al. \(2020\)](#) for a detailed description of how SBU uses the subjective probability distributions to construct a private sector uncertainty index.

⁴See [Bloom et al. \(2019\)](#) for a detailed description of the DMP survey.

⁵VXO and VIX are only available from 1986 and 1990 respectively, thus studies like [Bloom \(2009\)](#) and [Jurado et al. \(2015\)](#) have spliced the indices with realized S&P volatility data. They were able to find high correlation between the realized volatility and the actual index, which is based on implied volatility.

To capture macroeconomic uncertainty beyond financial market uncertainty, the literature has also relied on two types of econometric models to get uncertainty measures. The first type uses the conditional variance from Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models, first developed by [Engle \(1982\)](#), to proxy for uncertainty. For instance, [Elder and Serletis \(2010\)](#) applied this methodology to estimate the effects of oil-price volatility on GDP. The second type relies on Autoregressive Stochastic Volatility (AR-SV) models, where the level of a variable is assumed to follow an AR process and the stochastic volatility follows another AR process. This is preferred over GARCH models for research that focuses solely on the effects of uncertainty shocks as it allows for the separation between level innovations and uncertainty innovations.⁶ This methodology has been used by [Fernández-Villaverde et al. \(2011\)](#) to study real interest rate uncertainty in developing countries, [Basu and Bundick \(2017\)](#) to analyze uncertainty shocks in a general equilibrium model with sticky prices, and [Bonciani and Oh \(2019\)](#) to assess the long run effects of uncertainty in an endogenous growth model. However, these again are ex-post measures as they rely on the volatility of regression residuals. Moreover, these uncertainty measures are likely to be affected by model misspecifications.

Motivated by the need to capture uncertainty at an aggregate and macro level, [Jurado et al. \(2015\)](#) constructed a measure that proxies for uncertainty by considering the forecastability of a large set of macroeconomic variables. Their index aggregates the conditional volatility of regression residuals of over 100 macroeconomics time series. It uses the diffusion index forecasting method à la [Stock and Watson \(2002\)](#) to correct for omitted information in forecasting, and thus is less affected by model misspecifications, unlike the uncertainty measures extracted from GARCH and AR-SV models. This index displays low correlation with VXO and indicates fewer episodes of uncertainty. However, this series relies on macroeconomic data that are subject to revision, and thus it takes time to get accurate data on uncertainty. This does not help in assisting economists in obtaining real-time measures. Moreover, while the [Jurado et al. \(2015\)](#) framework focuses on ex-ante expected errors, in practice, observable ex-post errors are used instead.

Given the limitations posed by the different types of uncertainty measures, this paper focuses on an uncertainty measure that uses a newspaper-based search term methodology. Text search methods have previously been used in economic studies in other contexts,⁷ but

⁶See [Born and Pfeifer \(2014\)](#)'s Appendix for a comparison between GARCH and the AR-SV model.

⁷[Gentzkow and Shapiro \(2010\)](#) built an ideological slant index based on the partisan language used in news articles, while [Hoberg and Phillips \(2010\)](#) analyzed product descriptions after mergers and acquisitions. Closer to the BBD index, [Alexopoulos and Cohen \(2009\)](#) showed, using VIX and an uncertainty index based on New York Times articles, that business cycle fluctuations can be driven by uncertainty shocks.

its use as a measurement for uncertainty was made popular by BBD. They developed the Economic Policy Uncertainty (EPU) index to measure aggregate uncertainty about economic policy, by analyzing the frequency of policy, uncertainty, and economy-related keywords in newspaper articles. This type of measure tends to capture real-time uncertainty and is available as frequently as daily.

As the text search methodology uses search terms set by the researcher, it provides the flexibility to focus on specific categorical policy uncertainty. In fact, BBD developed a series of categorical policy uncertainty indices for the United States, including the Trade Policy Uncertainty (TPU) index. CIMPR developed another newspaper coverage-based U.S. TPU index, but with different search terms and newspaper sources, as well as a different aggregation method.⁸ [Ahir et al. \(2019\)](#) developed a World Trade Uncertainty index, though by using *Economist Intelligence Unit* (EIU) country reports instead of newspapers. Due to the systematic structure of the EIU country reports, [Ahir et al. \(2019\)](#)’s methodology allows for cross-country comparison. However, as the EIU country reports are only available quarterly, unlike newspapers which are available as frequently as daily, the World Trade Uncertainty index is only available at a quarterly frequency.

Text-based methodology can also be modified to suit particular research questions. For example, [Pierce and Schott \(2016\)](#) track search terms “most favored nation” and “normal trade relations”, together with “China” and “uncertainty”, in 3 U.S. newspapers to identify the uncertainty associated with the annual Normal Trade Relations (NTR) status renewal for China.⁹

As trade policy uncertainty is becoming more significant, it is thus important to build a robust Trade Policy Uncertainty index carefully to ensure the search terms are accurate and adequate. The next section details the BBD and CIMPR methodologies and subsequently shows that their search terms for the Trade Policy Uncertainty index need modifications in order to improve their reliability.

⁸CIMPR also created a firm-level text-based trade policy uncertainty index constructed using transcripts of U.S. publicly listed firms’ quarterly earnings conference calls.

⁹Between 1980 and 2000, China was subject to an annual NTR status renewal by the U.S. Congress, leading to huge political uncertainty especially following the Tiananmen Square incident in 1989. See [Pierce and Schott \(2016\)](#) for the details.

3 New TPU Index

3.1 Background

Newspaper-based uncertainty measures are made popular by BBD, who developed the Economic Policy Uncertainty (EPU) index to capture economic policy uncertainty over time across countries, as well as a set of indices for various category-specific policy uncertainties (e.g. healthcare, trade, and national security) in the United States. The EPU index measures uncertainty by considering the number of *relevant* newspaper articles each month. A newspaper article is considered to be *relevant* for the EPU index if it contains at least one word from each of the following three key term categories: the economy (E), uncertainty (U), and policy (P).

The EPU index underwent various robustness checks. BBD conducted an audit study, where a team of auditors coded articles based on a guidebook and reported a highly similar index as the computer-based one. The audit study also helped in selecting the keywords that determined an article’s relevance. Using [Gentzkow and Shapiro’s \(2010\)](#) media slant index, it was also found that political slant of the newspaper does not distort the EPU index as after splitting the index into two series based on Left-Democratic vs Right-Republican newspapers, the two series still have a correlation of 0.92. The EPU index also displayed high correlation with the market-based uncertainty indicator VIX.

The methodology for BBD’s category-specific indices follows the general one, but *relevant* articles now need to contain at least one word from an extra category that is specific to the area of uncertainty of interest, such as the trade (T) category for the Trade Policy Uncertainty (TPU) index. Following this, [Ahir et al. \(2019\)](#) created a World Trade Uncertainty index while CIMPR created their version of the Trade Policy Uncertainty index. CIMPR’s version of the TPU index takes into consideration an expanded set of search terms in the U category, and has a combined trade policy (TP) category instead of separating the trade and policy-related terms. On the other hand, the World Trade Uncertainty index developed by [Ahir et al. \(2019\)](#) considers the number of relevant words instead of the number of relevant articles. In particular, it considers the number of times uncertainty-related search terms and trade-related search terms are within 10 words of each other. However, the number of times uncertainty-related terms are used near trade-related words depends heavily on the writing style and phrasing of the writer(s), so the present paper does not adopt this methodology.

The BBD methodology has been applied by other researchers to construct country-specific EPU, e.g. [Zalla \(2017\)](#) analyzed uncertainty in Ireland, [Hardouvelis et al. \(2018\)](#) studied the Greek economic crisis, and [Luk et al. \(2020\)](#) investigated uncertainty spillovers in Hong Kong. On the other hand, the more specific Trade Policy Uncertainty (TPU) index has not been studied. Given the world has been facing trade policy uncertainty in recent years, I will now discuss the shortcomings in BBD's and CIMPR's methodology and show how my new TPU index improves theirs.

3.2 Methodology

To construct the revised version of the Trade Policy Uncertainty index, I focus on the United States in order to compare with the existing measures. Regarding the sample period, while BBD start tracking the series from 1985, and CIMPR's is from 1960, this present paper's index starts from January 1, 1988 due to limited data availability, and runs till December 31, 2020. I will now describe the newspaper selection and the construction of the series, then proceed to detail the search terms.

3.2.1 Newspaper Selection and the Construction of the Series

BBD use 10 newspapers to build their TPU index while CIMPR use 7, both of which contain newspapers that will not give an accurate representation of trade policy uncertainty experienced in the U.S..^{10,11} For example, BBD's index includes the New York Post and the Los Angeles Times, which has primary service area in the New York metropolitan area and the Los Angeles metropolitan area respectively. CIMPR's index considers The Guardian, which is based in the U.K. In addition, some of the newspapers chosen in BBD are not the daily newspapers with the highest circulations and hence the selection appears to be arbitrary.¹² As a result, I consider only the following 4 sources: USA Today, The Washington Post, The New York Times, and The Wall Street Journal. These are national newspapers in the U.S. and thus are more representative of national rather than regional news. Moreover,

¹⁰BBD consider USA Today, The Washington Post, The New York Times, The Wall Street Journal, Miami Herald, Chicago Tribune, Los Angeles Times, San Francisco Chronicle, The Dallas Morning News, and The Boston Globe.

¹¹CIMPR consider The Washington Post, The New York Times, and The Wall Street Journal, The Boston Globe, Chicago Tribune, The Guardian, and Los Angeles Times.

¹²For example, according to Alliance for Audited Media data provided by Statista, the Miami Herald only had a daily circulation of 75,300 in 2019.

Table 1: **Brief Summary of Newspaper Sources for the new U.S. TPU index**

	First Factiva Issue	Frequency	Q1 2020 Circulation
USA Today	April 1987	Mon to Fri	486,579
The Washington Post	January 1977	Daily	206,824
The New York Times	June 1980	Daily	410,562
The Wall Street Journal	June 1979	Mon to Sat	994,600

Note: Newspaper sources used in constructing the new U.S. TPU index. Newspaper articles are obtained from Factiva, an online database of business and news publications from countries worldwide. Circulation is defined as the average weekday print circulation. Source: Alliance for Audited Media and [Turvill \(2020\)](#)

the 4 newspapers have the top 4 average weekday print circulations in the U.S. in Q1 2020 ([Turvill, 2020](#)). I only consider the print versions as online versions are only available at a much later date.¹³ Table 1 exhibits a brief overview of the 4 publications used in constructing the new U.S. TPU index.

For each newspaper source, the monthly numbers of *relevant* newspaper articles (determined through a set of search terms discussed in section 3.2.2) are obtained from Factiva, which is a database of business and news publications from countries worldwide. As the number of articles that gets published in each month by different newspaper sources varies significantly, each monthly count is then divided by the total number of articles published by the same source in that month, again obtained via Factiva. This thus yields 10 scaled newspaper-level series for the BBD TPU index. This differs from CIMPR’s TPU index, which divides the monthly total number of relevant articles across their 7 newspaper sources by the monthly total number of articles published by these sources, hence resulting in only one aggregate series but no newspaper-level series. As it is important to retain each newspaper’s individual characteristics, as well as examine whether they agree with each other on the level of uncertainty present in the economy, I thus follow BBD and construct 4 scaled newspaper-level series for the new TPU index.

BBD standardize each of their 10 newspaper-level series such that it has a unit standard deviation from 1985 to 2009. A mean index is then obtained by taking a simple average across the 10 standardized series. The final step involves multiplying the mean index by 100 and dividing it by the 1985 to 2009 average such that the index would be normalized to have a mean of 100 in this time frame. However, standardizing the individual newspaper-level series forces an equal weight on each of them. This is not an appropriate assumption as some newspapers focus more on political and business issues and thus should not be forced

¹³For example, for USA Today, it is only available on Factiva from 2016.

to have the same weight as newspapers that also focus heavily on sports and entertainment (e.g. USA Today). Furthermore, normalization does not allow for cross-country comparisons, making it impossible to assess whether some countries have systematically higher trade policy uncertainty. Also, the selection of the standardization and normalization time periods appears arbitrary. As a result, I choose to simply take the mean of the four scaled newspaper-level series and multiply it by 100. Hence, the level of the new TPU index has a straightforward interpretation as 1 point on the index corresponds to 1% of newspaper articles relating to trade policy uncertainty. This is similar to CIMPR’s index, which is also without any standardization nor normalization.¹⁴

3.2.2 Search Terms

The construction of newspaper-based uncertainty measures relies heavily on the search terms. Hence, it is vital that they are inclusive and reflective of the area of interest. I will first discuss the search terms in BBD’s and CIMPR’s TPU indices and show that they lead to systematic inaccuracies such as misclassification and omission of news articles. I then propose a new set of search terms to address these issues.

BBD’s search terms are shown in Table 2 while those from CIMPR are shown in Table 3. Both indices require articles to contain keywords from various categories to be considered *relevant* to the index. While BBD requires articles to match keywords from 4 categories (E, P, U and T), CIMPR only requires 2 categories. In particular, the latter removes the E category and merges the P and T categories together. CIMPR also greatly expanded the U category. Thus, CIMPR’s TPU index would yield significantly more articles than BBD. However, this does not necessarily mean an improvement if the search terms are not selected carefully.

A careful inspection of both sets of search terms shows there are various issues in all categories. BBD’s set of search terms place “deficit” and “deficits” in the P category, but “trade deficit” is not exactly a policy variable and belongs in the T category instead. As a result, articles on trade policy uncertainty may not be counted based on these criteria for the TPU index. Hence, “deficit(s)” is removed from the P category, while “budget deficit” and “fiscal deficit” are added to it, together with “budget surplus” and “fiscal surplus”, as uncertainty can still occur when there is a surplus. Furthermore, “budget balance”, “fiscal

¹⁴A 100 points on the CIMPR index can be interpreted as 1% of the articles being relevant to trade policy uncertainty.

Table 2: Search Terms for the Baker et al. (2016) TPU Index

Category	Search Terms
Economic	economic OR economy
Uncertainty	uncertain OR uncertainty OR uncertainties
Policy	regulation OR deficit OR legislation OR congress OR white house OR federal reserve OR the fed OR regulations OR regulatory OR deficits OR congressional OR legislative OR legislature
Trade	import tariffs OR import duty OR import barrier OR government subsidies OR government subsidy OR wto OR world trade organization OR trade treaty OR trade agreement OR trade policy OR trade act OR doha round OR uruguay round OR gatt OR dumping

Note: Each newspaper article needs to contain at least one search term from each category in order to be considered as a relevant article for the BBD Trade Policy Uncertainty index. The total number of relevant articles is then divided by the total number of articles published each month by each newspaper to obtain the newspaper-level TPU series.

balance” and “balanced budget” are added to it. “Trade deficit/surplus”, “trade balance” and “balanced trade” are then added to the T category.

On the other hand, “government subsidy” and “government subsidies” are treated as trade terms by BBD. However, a subsidy itself need not relate to international trade, but could be given by the government for other purposes (e.g. research or renewable energy). As a result, inclusion of these two terms could lead to the TPU index inappropriately counting articles that are not relevant to trade policy uncertainty (if those articles do not contain any other keywords from the T category). A search in Factiva shows that 135 articles within the 1988 – 2020 period contain one of these two terms but not any of the other T search terms. This accounts for 6% of the total number of articles (i.e. 2,267) that will get picked up by the BBD set of search terms from January 1, 1988 to December 31, 2020 in the four national newspapers listed in Table 1.¹⁵ Hence, these two terms are removed from the T category and instead included in the P group. The word “government” in them is dropped to make them more general, and “subsidize”, “subsidizes”, “subsidized” and “subsidizing” are added as variations. In addition, “taxation” and its variants “tax”, “taxes”, and “taxed” are added to the P category as well.

Both BBD and CIMPR include “dumping” as a search term. When using BBD’s search

¹⁵Instead, the subsidies relate to a wide range of other areas, such as the Japanese whaling industry, R&D in energy technologies and health plans.

Table 3: Search Terms for the [Caldara et al. \(2020\)](#) TPU Index

Category	Search Terms
Uncertainty	uncertain* OR risk* OR dubious OR unclear OR potential* OR probabl* OR predict* OR danger*
Trade Policy	tariff* OR import dut* OR import barrier* OR trade treat* OR trade polic* OR trade act* OR dumping OR import fee* OR tax* (<i>within 10 words of</i> foreign good* OR foreign oil OR import*) OR import* (<i>within 10 words of</i> surtax* OR surcharge*)

Note: Each newspaper article needs to contain at least one search term from each category in order to be considered as a relevant article for the CIMPR Trade Policy Uncertainty index. The total number of relevant articles in all 7 newspapers is then divided by the total number of articles published each month across all sources to get the aggregate TPU series. Asterisks indicate that variations of the search term are also included.

terms, 298 are picked up due to this term, but a read-through shows that around 283 of these are irrelevant to trade policies. Instead, the majority of these articles are related to equity and shares, and the rest are related to miscellaneous topics that range from dumping pollution to dumping dead bodies. A similar problem also arises when using CIMPR’s search terms. I study articles that contain the term “dumping” but no other TP terms in the 4 newspapers that I use in constructing my new TPU index, and this search yields 10,634 articles. Among these articles, 7,048 (i.e. about 18% of the total number of articles picked up) of them are related to the aforementioned miscellaneous topics and are irrelevant to trade policy uncertainty. I therefore drop this search term to avoid the misclassification of articles.

Another potential issue with CIMPR is that their search terms include variations of “import”. It is unclear whether they restricted their attention to only including “import”, “imports”, “imported”, “importee”, “importing” and “importation” when setting up their searches, or they allowed the search engine to pick up all possible variations. If the latter was the case, the search would in fact pick up 9,546 articles relating to “important” or “importunate” tax. This constitutes 24.5% of the total number of articles (38,992) picked up by CIMPR’s search terms.

CIMPR has a much longer list in the U category compared to BBD. In particular, many synonyms of “uncertainty” have been added to the category. However, not all of the words actually carry the same connotation as “uncertainty”. Variations of “potential” and “probable” are included, which is problematic as phrases such as “high potential” or “highly

probable” can indicate a good outcome. For example, if there is high potential that world leaders can close a trade deal, we should see a reduction in trade policy uncertainty.

I now propose a new set of search terms and use BBD’s U.S. TPU index as a benchmark to evaluate the changes. From January 1, 1988 to December 31, 2020, there have been more than 6.6 million articles published by the 4 newspapers in Table 1. Using the key terms proposed by BBD in Table 2, 35,368 of them contain at least one word from each of the economy-related (E), uncertainty-related (U), and policy-related (P) categories, hence are relevant to the Economic Policy Uncertainty index. And 2,267 of those articles contain at least one term from the trade (T) category, thus are relevant to the Trade Policy Uncertainty index.

To consider potential T terms to be included in the Trade Policy Uncertainty index, searches for different trade and trade-policy-related words are made, combined with BBD’s original Economic, Uncertainty and Policy terms. To assess whether these new search terms are important, Table 4 shows the number of additional newspaper articles that are picked up that do not already contain any of the original trade terms. If a search term yields a high number of additional articles, then this signifies that it is able to pick up many trade-related articles that the original set of trade terms missed. Table 4 shows that the original set of search terms should be expanded by 23 terms to prevent the omission of trade policy uncertainty-related news articles. On the other hand, keywords such as “non-tariff barrier” and “trade quota” do not uncover a significant number of articles and thus are not included in the new set of terms to keep it concise.

As shown in Table 4, I now include “import” as a Trade term. Hence, the original BBD trade term “import tariffs” is now rendered redundant. I therefore change the term to “tariff” and “tariffs” instead. As this pair of terms may pick up articles that are not related to trade tariffs, but instead relate to utilities, I study articles that contain either “tariff” or “tariffs” but no other T terms, as well as one word relating to utilities.¹⁶ The search yields 335 articles, of which 26 articles are irrelevant to trade policy uncertainty. The latter are evenly distributed across the years, with at most 3 irrelevant articles in 1999, 2003, and 2013. These account for 1.75%, 1.54% and 2.27% of the total articles picked up by the new TPU index in these three years respectively. As a result, even though the two terms picked up some articles that are irrelevant to trade policy uncertainty, this number is still small enough that the terms should not be excluded as 309 relevant articles would otherwise be

¹⁶Searches were conducted with these keywords: “utility”, “utilities”, “water”, “electricity”, “energy”, “gas”, “carbon”.

omitted from the new index, amounting to 13.6% of the total TPU-related articles across all years.

Table 4: **Number of Additional Results for Potential Trade Terms**

Search Terms	Additional Articles	
border checks OR customs checks	10	
border delays OR customs delays	4	
border inspection(s) OR customs inspection(s)	6	
border procedure(s) OR customs inspection(s)	3	
customs duty OR customs duties	19	*
customs union OR customs unions	43	*
export OR exports OR import OR imports	4,521	*
foreign trade OR international trade	398	*
free trade	426	*
NAFTA OR USMCA	69	*
non-tariff barrier OR non-tariff barriers	1	
trade balance OR balanced trade	18	*
trade deal OR trade deals	410	*
trade deficit OR trade surplus	1,116	*
trade negotiation(s)	129	*
trade quota OR trade quotas	1	
trade war(s)	690	*

Note: Number of articles in the USA Today, The Washington Post, The New York Times, and the Wall Street Journal from 1988 to 2020 that contain the corresponding search terms but no other trade-related terms from the BBD U.S. TPU index. Asterisk indicates that the search term should be added to the T category to prevent omission of articles.

Turning to the U category, I expand it to include the keywords in Table 5. Similar to the process used to explore potential Trade terms, I find the additional newspaper articles that are picked up that do not already contain any of the original BBD uncertainty terms. Table 5 shows that each search term yields a high number of additional articles. While the keyword “risky” mainly yields articles relating to international trade, the third most relevant keyword for the articles is “risky asset”. As such, I removed any articles relating to “risky assets”.¹⁷

Similar to CIMPR, I explore the option of removing the Economy category. All search terms in the T category are related to the economy, and thus the index can do without the E category. Within the T category, there are search terms that are more policy-related, such as “trade deal” and “customs duties”, and terms that are related to the macroeconomic

¹⁷This is achieved by requiring articles to not include any of the following keywords: risky asset(s)/investment/bond(s)/securit(y/ies)

Table 5: Number of Additional Results for Potential Uncertainty Terms

Search Terms	Additional Articles	
danger OR dangers OR dangerous	6,867	*
doubt OR doubts OR doubtful	7,129	*
dubious	581	*
risk OR risks OR risky	15,450	*
threat OR threats OR threaten OR threat- ens OR threatened OR threatening	18,228	*
unclear	2,407	*
undecided	528	
unsure	304	

Note: Number of articles in the USA Today, The Washington Post, The New York Times, and the Wall Street Journal from 1988 to 2020 that contain the new E, P, T category search terms but no other uncertainty-related terms. Asterisk indicates that the search term should be added to the U category to prevent omission of articles.

variables only. These are, for examples, “export” and “trade balance”. Any policy-related trade term is sufficient to uncover articles that are specifically about trade policies. On the other hand, the terms that are related to the macroeconomic variables only need to be paired with a policy term in order to become relevant to trade policies. As a result, I now reformat the structure of the search terms such that the T category is divided into a Trade Policy (TP) category and a Trade (T) category. The former group pertains to search terms that are more policy-related, thus can be used independently. The latter group, however, needs to also contain at least a word from the P category to be related to trade policy uncertainty.

As such, an article is considered *relevant* if it at least contains a search term from the U category and either (i) a search term from the TP category, or (ii) a search term each from the T and P categories. With the search terms having such structure, it is apparent that the search term relating to the UK referendum to leave the European Union, “Brexit”, belongs to the P category. Brexit has implications on the economy far beyond international trade, as firms with high EU labor also experience high uncertainty.

The full set of new search terms is displayed in Table 6. With the modifications done to the P terms and the expansion of the T category, there are now 70,412 articles that are relevant to the Trade Policy Uncertainty index from January 1, 1988 to December 31, 2020, which is 31 times the number that BBD’s search terms can uncover using the same newspaper sources. This is also 1.8 times more than the articles picked up by CIMPR’s search terms.¹⁸

¹⁸It is important to recall here that, if we are to take CIMPR’s descriptions of their search terms as stated in the paper, there would be over 42% (around 24.5% from the variations of “important” and “importunate”

While it is apparent that the new set of search terms can yield significantly more articles than BBD’s search terms, I will later show (in section 4.3) that these are indeed improvements. Since, as I discussed earlier, it is unclear whether the CIMPR index is constructed with a set of appropriately defined search terms, I henceforth focus on the comparison between my new TPU index and the BBD index only.

and around 18% from “dumping”) of the articles picked up being irrelevant to trade policies.

Table 6: Search Terms for the New Trade Policy Uncertainty Index

Category	Search Terms
Uncertainty	uncertain OR uncertainty OR uncertainties OR risk OR risks OR risky OR danger OR dangers OR dangerous OR dubious OR unclear OR threat OR threats OR threaten OR threatens OR threatened OR threatening

AND EITHER OF THE TWO COMBINATION:

(1) Trade Policy **OR** (2) (Trade **AND** Policy)

Trade Policy	trade treaty OR trade treaties OR trade agreement OR trade agreements OR trade policy OR trade policies OR trade act OR trade acts OR trade deal OR trade deals OR trade negotiation OR trade negotiations OR trade war OR trade wars OR customs union OR customs unions OR trade barrier OR trade barriers OR customs duty OR customs duties OR WTO OR World Trade Organization OR GATT OR NAFTA OR USMCA OR Doha round OR Uruguay round
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OR

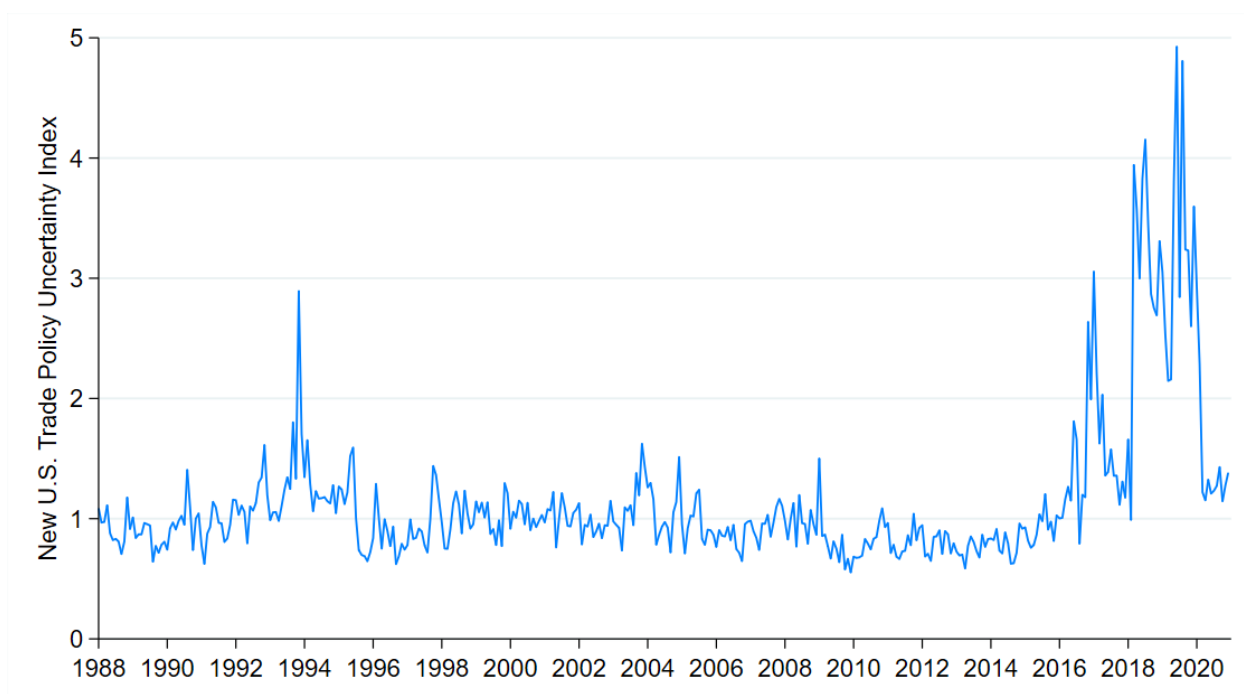
Policy	budget deficit OR budget surplus OR fiscal deficit OR fiscal surplus OR budget balance OR fiscal balance OR balanced budget OR legislation OR legislative OR legislature OR regulation OR regulations OR regulatory OR congress OR congressional OR tax OR taxes OR taxation OR taxed OR subsidy OR subsidies OR subsidize OR subsidizes OR subsidized OR white house OR federal reserve OR the fed OR Brexit
Trade	export OR exports OR import OR imports OR tariff OR tariffs OR international trade OR foreign trade OR free trade OR trade surplus OR trade deficit OR trade balance OR balanced trade

Note: Each newspaper article needs to contain at least one word from each category of the search terms in order to be counted as a relevant article for the new Trade Policy Uncertainty index. The total number of relevant articles is then divided by the total number of articles published each month by each newspaper to get the newspaper-level TPU series.

4 Analysis of the New TPU Index

The new U.S. Trade Policy Uncertainty index constructed using the new set of terms is displayed in Figure 1. From the Figure, it is apparent that there has not been much trade policy uncertainty in the U.S. until recent years, except some local peaks at different periods of time. Trade policy uncertainty in the U.S. was relatively higher from 1992 to 1994, with the peak happening in November 1993. While NAFTA was already signed in December 1992, ratification was delayed due to significant opposition in the U.S. and Canada.¹⁹ The H.R. 3450 North American Free Trade Agreement Implementation Act was ultimately passed in the House of Representative on November 17, 1993 and in the Senate on November 20, 1993 (Hammond, 2020). NAFTA came into force on January 1, 1994, which then saw trade policy uncertainty declining gradually afterwards.

Figure 1: New U.S. Trade Policy Uncertainty Index from 1988 to 2020



Note: New U.S. Trade Policy Uncertainty (TPU) index from Jan 1988 to Dec 2020. The value of the TPU index corresponds to the average percentage of newspaper articles from USA Today, The Washington Post, The New York Times, and The Wall Street Journal containing at least one search term from each of the four categories in Table 6 in each month. Source: Author's calculation

In mid-1995, trade policy uncertainty in the U.S. rose as the United States was in a trade

¹⁹It ultimately led to two side agreements – the North American Agreement on Environmental Cooperation and the North American Agreement on Labor Cooperation.

dispute with Japan over automobiles. The U.S.-Japan tension had been ongoing since the 1970s, especially as Japan's rising position in the world economy posed a threat to the U.S.. The automobiles dispute led to huge trade policy uncertainty, with the U.S. threatening to impose a 100% tariff on Japanese luxury cars and the two countries on a brink of a trade war. Following the dispute settlement, the level of trade policy uncertainty dropped rapidly, leading to a trough in 1996.

Trade policy uncertainty once again began to rise in late 1997, with a peak in October 1997. This coincides with the introduction of the H.R. 2621 Reciprocal Trade Agreement Authorities Act of 1997 and the S. 1269 Reciprocal Trade Agreements Act of 1997 on October 7, 1997 and October 8, 1997 respectively. These (related) bills would have renewed the Trade Promotion Authority (TPA), which allows for expedited consideration of trade deals in Congress following the President's trade negotiations, but these bills' failure instead led to a TPA lapse till 2002.

In September 2003, the fifth WTO Ministerial Conference in Cancun failed to reach any agreements relating to reductions in agricultural support payments and liberalizing market access for nonagricultural products ([United States International Trade Commission, 2009](#)). This caused much uncertainty for the Doha Development Agenda (also known as Doha Round) negotiations, which was scheduled to conclude by January 2005 ([United States General Accounting Office, 2004](#)). Trade policy uncertainty picked again up in 2005, as the WTO missed the January deadline for trade negotiations and thus had to continue the talks in the sixth WTO Ministerial Conference held in Hong Kong. The United States also signed the Dominican Republic-Central America FTA (CAFTA-DR) with 6 small developing countries, which was met with great opposition (See [Finley-Brook and Hoyt \(2009\)](#)). The H.R.3045 FTA implementation was passed with a 217-215 House of Representatives vote and a 55-45 Senate vote in July 2005.

Following this, trade policy uncertainty in the U.S. began to come from global economic conditions rather than legislation and discussions on trade deals. There was high uncertainty surrounding the Great Trade Collapse in 2008-2009, when trade volume fell by 20%.²⁰ In an effort to stimulate economic growth, the U.S. government passed the American Recovery and Reinvestment Act in January 2009. Among this Recovery Act, there was an "Buy American" provision that stated all funded projects could only use iron and steel produced in the U.S. This would violate U.S. trade obligations, hence likely lead to retaliations from

²⁰See [Novy and Taylor \(2020\)](#) for a theoretical analysis on how uncertainty can explain the Great Trade Collapse.

trading partners ([Hufbauer and Schott, 2009](#)).

In 2011, there was another slight increase in policy uncertainty as the U.S. was dealing with the aftermath of the financial crisis, as well as reduced demand from Europe due to its sovereign debt crisis. As part of the plan to promote economic recovery, then-President Obama urged Congress to pass bills relating to the ratification of free trade agreements with Panama, South Korea, and Colombia. All these treaties had been signed as early as 2006 under the George W. Bush administration but were shelved for years. As a result, the prospect that they may finally be passed in Congress increased trade policy uncertainty.

Trade policy uncertainty started to rise drastically in 2016, due to increased discussions around trade reforms raised by the then-U.S. presidential candidate Donald Trump. In a speech on one of his campaign stops on June 28, 2016, the then Republican Party’s presumptive presidential nominee Donald Trump called NAFTA “the worst trade deal in history”, China’s entry into the WTO “disastrous”, and the newly-signed Transpacific Partnership “a death blow” ([Trump, 2016](#)). It declined in 2017 as the Trump administration focused on matters other than trade policies, but rose again in 2018 and even further in 2019 due to the renegotiation of NAFTA and the ongoing trade war between the U.S. and China. All these led to the level of trade policy uncertainty in the U.S. reaching a historic high in recent years.

The next subsection compares the newly-constructed U.S. TPU index with the BBD U.S. TPU index. This is followed by an analysis of the effect of the changes that were made regarding standardization and normalization (in section [4.2](#)), and search terms (in section [4.3](#)).

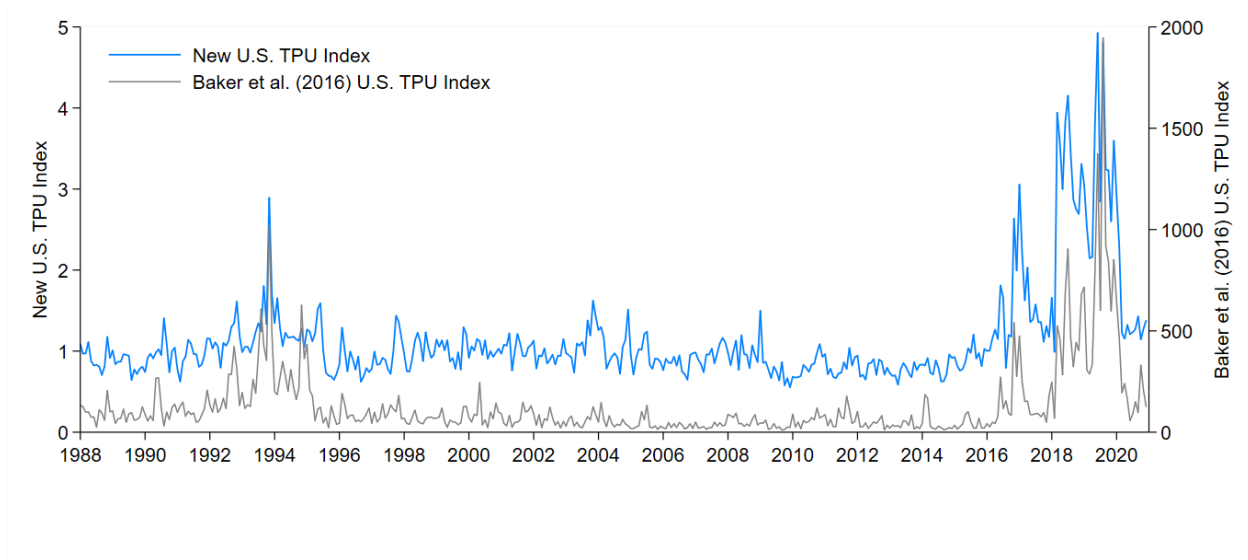
4.1 Comparison with the [Baker et al. \(2016\)](#) TPU Index

This section focuses on the comparison with the BBD U.S. TPU index. The analysis with the CIMPR TPU index can be found in Appendix [B](#).

The new U.S. TPU index and the original BBD U.S. TPU index are displayed in Figure [2](#). The overall behaviors of the two indices are similar, having a huge spike in 1993, but otherwise low trade policy uncertainty until roughly around 2016. Afterwards, it began to rise significantly, aside from a temporary decline in 2017 and another decline in 2020. They have a Pearson correlation coefficient of 0.856 from 1988 to 2020, confirming the robustness of the newspaper-based methodology as substantial changes to the search terms do not alter

the index drastically.

Figure 2: New U.S. TPU Index vs. Baker et al. (2016) U.S. TPU Index



Note: The new U.S. TPU index takes a simple average of the relative frequency of articles in newspapers in Table 1 based on the search terms in Table 6. The BBD U.S. TPU index, taken from *policyuncertainty.com*, considers articles from 10 newspapers using the search terms in Table 2, and it is standardized and normalized such that it has a unit standard deviation for each of the 10 newspaper-level series and a mean of 100 for the index from 1985 to 2009. Sample period: Jan 1988 to Dec 2020. Source: Author's calculation and *policyuncertainty.com*

First, the two TPU indices display the greatest differences from late 1993 to late 1995. The BBD U.S. TPU index shows a sharper spike in November 1993 when then-President Clinton and then-Vice President Al Gore continued to make pitches for NAFTA, followed by the U.S. House of Representatives and Senate voting to approve legislation implementing the trade deal. However, afterwards the average level of trade policy uncertainty from January 1996 to December 2015 decreased by around half compared to the average level before 1993, whereas the average remained similar for the new TPU index. Although the implementation of NAFTA meant that the U.S. had secured preferential tariff treatment for trade with Canada and Mexico, there were still many amendments relating to NAFTA that needed to be passed in Congress afterwards. All these contributed to trade policy uncertainty, and thus suggesting that average post-NAFTA trade policy uncertainty would not be lower than the average pre-NAFTA level.

Another period of difference occurred in 1995. While the BBD index illustrates a peak in early 1995, the peak for the new U.S. TPU index is later, in mid-1995. The U.S.-Japan trade dispute over automobiles occurred in May and June 1995, thus suggesting the peak

should only appear in mid-1995. The new index shows that trade policy uncertainty in the U.S. picked up once again in 2003 and 2005, but the impact on the BBD index is more muted. As mentioned, the 2003 WTO meeting in Cancun failed to reach any agreements, leading to much uncertainty before the January 2005 deadline.

The new U.S. TPU index shows increased uncertainty in early 2009, while BBD shows increased trade policy uncertainty in late 2008. The American Recovery and Reinvestment Act of 2009, as well as the reversal of the “Buy American” provision, happened in January and February 2009. Hence, trade policy uncertainty should only be increasing in 2009. Another difference emerged in early 2014, where BBD picked up heightened uncertainty but the new TPU index remained low. However, there were neither discussions nor votes on any free trade agreements or the Trade Promotion Authority during this period. In fact, articles that were picked up by the BBD search terms were due to an assortment of topics, such as a potential trade agreement between Taiwan and China, as well as the Ukraine-Russia relations. As such, it is unlikely that there was an increase in trade policy uncertainty for the U.S. in early 2014.

Although both indices show that trade policy uncertainty in the U.S. increased drastically in recent years, the new U.S. TPU index started rising before the BBD index did. According to the new U.S. TPU index, trade policy uncertainty already reached the November 1993 level in November 2016. On the other hand, the BBD index showed that the level of trade policy uncertainty in November 2016 was only about half the level present in 1993. However, following Donald Trump’s victory in the presidential election that month, it was obvious that many of the trade agreements set by previous administrations would be unravelled and that the U.S. would be going into trade protectionism.

The new U.S. TPU index showed that trade policy uncertainty in recent years was persistently above the 1993-level, starting from March 2018, when then President Trump signed the Presidential Memorandum on the Actions by the United States Related to the Section 301 Investigation on March 22, 2018. This memorandum directed actions relating to the imposition of tariffs on Chinese products and the filing of a WTO case against China, which thus kick-started the U.S.-China trade war. However, according to the BBD U.S. TPU index, the level of trade policy uncertainty in March 2018 was still only around half the level in November 1993, and in fact did not even quite reach the 1993-level except in July 2018, June 2019 and August to September 2019. Given the uncertainties due to the recurrent trade retaliations by both the U.S. and China, the difficult renegotiation of NAFTA and the fraught Brexit situation, it seems unlikely that the level of trade policy uncertainty in the

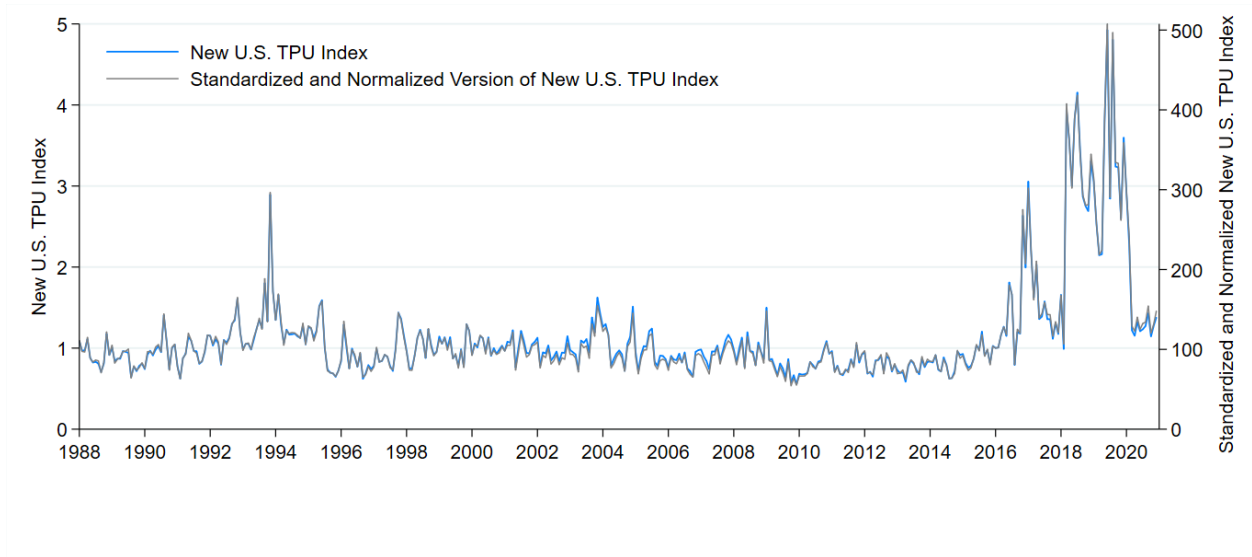
U.S. since mid 2016 was mostly lower than during the passing of NAFTA legislation.

All these suggest that the new Trade Policy Uncertainty index can better reflect the level of trade policy uncertainty surrounding NAFTA, as well as the events leading up to the recent NAFTA renegotiation and the U.S.-China trade war.

4.2 Analyzing the Effects of Standardization and Normalization

As mentioned, BBD standardized each of the 10 newspaper-level series such that it had a unit standard deviation from 1985 to 2009. The average of these standardized series was then normalized to have a mean of 100 from 1985 to 2009. To see the effects of the standardization and normalization processes, the two procedures are applied to the new index just like in BBD, but the reference period is set to 1988 to 2009 (due to data availability). The new U.S. TPU index is plotted together with the series with standardization and normalization in Figure 3. While the index is robust to the two processes as the correlation of the two series is extremely high at 0.999, the new U.S. TPU index will remain without any standardization or normalization processes. This is to ensure that newspaper sources that focus more on political and economic issue have appropriate weights and to allow for cross-country comparisons should other countries' TPU index be created using the same methodology. It also has the additional benefit of ensuring a simple interpretation for the index.

Figure 3: New U.S. TPU Index with and without Standardization and Normalization



Note: The newly-constructed U.S. Trade Policy Uncertainty (TPU) index from 1988 to 2020, with and without standardization and normalization. The standardized and normalized version has a unit standard deviation for each of the 4 newspaper-level series and a mean of 100 for the index from 1988 to 2009. Source: Author's calculation.

While CIMPR did not standardize or normalize their index, they pooled their newspaper sources together to create their aggregated index. The effects of pooling different newspaper sources together can be found in Appendix B.1, where I compare the new U.S. TPU index with a pooled version of it.

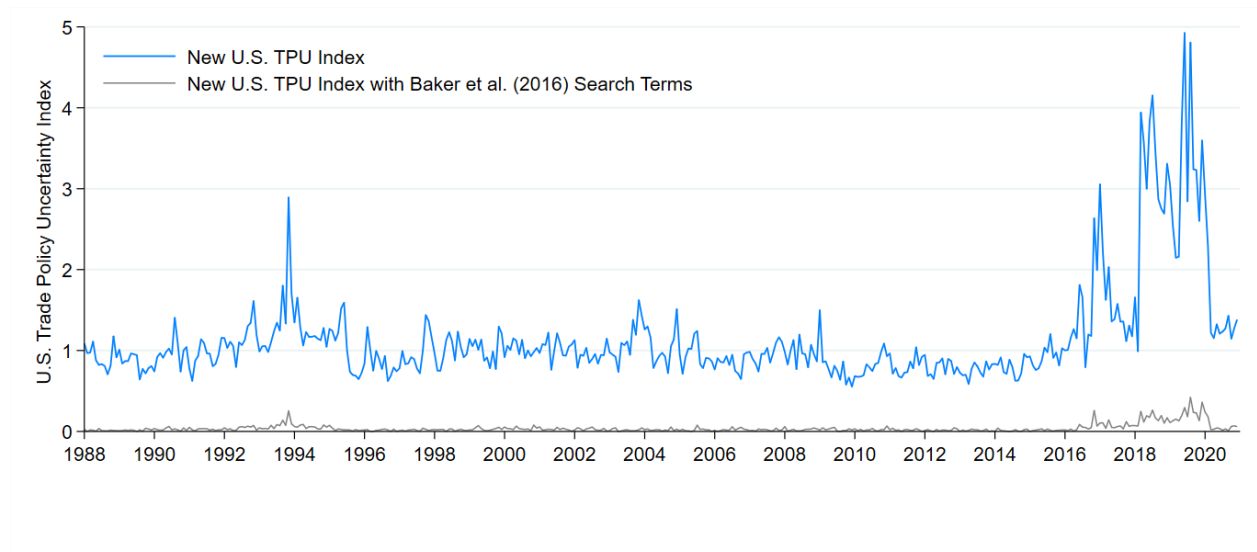
4.3 Analyzing the Effects of the New Search Terms

Although the new set of search terms can help pick up more trade policy uncertainty-related articles, it remains to show whether the changes made are indeed improvements. To consider the effects of modifying and extending the search terms, *ceteris paribus*, I first construct an index with BBD's search terms but using the methodology of the new index (i.e. 4 newspapers and neither standardization nor normalization).²¹ Reconstructing the index also allows for analysis to be carried out at the newspaper level rather than just at the aggregate level. Figure 4 plots the new U.S. TPU index and this reconstructed BBD to show the effects of the new search terms. From the Figure it is clear that the two series are highly correlated,

²¹A comparison of the actual BBD U.S. TPU index and the reconstructed series is presented in Appendix A to show that the analysis of the search terms is robust to the selection of newspaper sources.

with a Pearson correlation coefficient of 0.880 from 1988 to 2020, but the new set of search terms consistently leads to more articles.

Figure 4: **New U.S. TPU Index with and without the New Set of Search Terms**



Note: The new U.S. Trade Policy Uncertainty (TPU) index with and without the new set of search terms in Table 6. The latter version uses the search terms in BBD instead. Both series take a simple average of the relative frequency of relevant articles in the 4 newspaper sources in Table 1 and use neither standardization nor normalization. Sample period: Jan 1988 to Dec 2020. Source: Author's calculation.

To further analyze the effects of expanding the set of search terms, I now consider the series at the newspaper level instead of the aggregate level. The summary statistics for each newspaper are displayed in Table 7. The average numbers of TPU-relevant articles have increased substantially for all sources after expanding the set of search terms, with the largest absolute increase for the Wall Street Journal and the largest relative increase for USA Today, which increased 35- fold. Based on observing the correlation between the original and new newspaper-level series for each source, the USA Today series exhibits the biggest change after revising the search terms as it has the lowest correlation.

As different newspaper sources should be reporting similar movements of trade policy uncertainty in the economy, one would expect the newspaper-level series to be highly correlated with each other. The correlation matrices in Table 8 show the Pearson correlation coefficients for the 4 newspaper sources using the original set and new set of search terms respectively. The newspaper-level correlations have increased significantly after adopting the new search terms. In particular, the correlations between USA Today and the rest of the newspaper sources have increased substantially from less than 0.3 to around 0.7 after adopt-

Table 7: **Summary Statistics for Each Newspaper**

Percentage of relevant TPU articles	USA Today	The Washington Post	The New York Times	The Wall Street Journal
Original Avg	0.017%	0.029%	0.035%	0.074%
New Avg	0.597%	0.929%	0.983%	2.06%
Correlation	0.277	0.709	0.887	0.839

Note: The original and new averages represent the average percentage of relevant articles from Jan 1988 to Dec 2020, according to the set of search terms in BBD and in Table 6, respectively. Correlation represents the Pearson correlation coefficient between the original and the new series for each newspaper-level series.

ing the new set of search terms. This again shows that the new version is an improvement as its newspaper-level series are much more strongly correlated, providing a more coherent measure of trade policy uncertainty.

Table 8: **Correlation Matrices for Newspaper-level U.S. TPU Series**

	USA	WaPo	NYT	WSJ
USA	1			
WaPo	0.265	1		
NYT	0.235	0.685	1	
WSJ	0.281	0.655	0.781	1

(a) Replication of BBD U.S. TPU index

	USA	WaPo	NYT	WSJ
USA	1			
WaPo	0.697	1		
NYT	0.686	0.911	1	
WSJ	0.705	0.830	0.891	1

(b) New U.S. TPU index

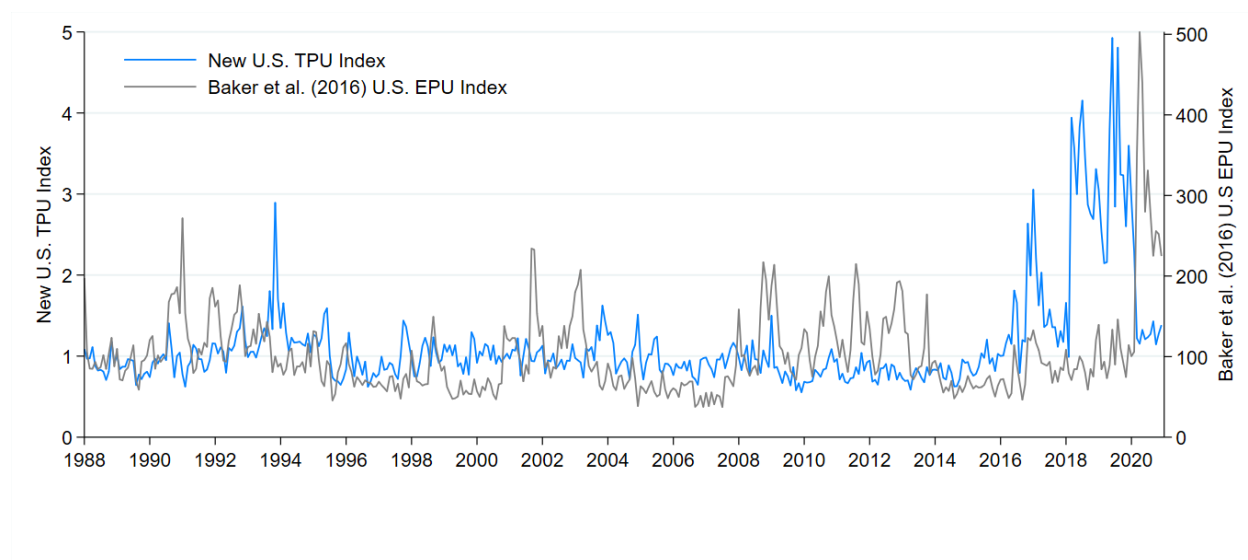
Note: Pearson correlation coefficients between the 4 newspaper-level series for the USA Today (USA), The Washington Post (WaPo), The New York Times (NYT), and The Wall Street Journal (WSJ), from Jan 1988 to Dec 2020 using the set of search terms in BBD and in Table 6, respectively.

5 Relation with the EPU Index

As trade policy uncertainty is only a specific type of economic uncertainty and uncertainty can stem from other areas, it is of interest to study how trade policy uncertainty moved differently from economic policy uncertainty throughout the sample period. Figure 5 compares the newly-constructed U.S. TPU index with the BBD U.S. EPU index, which is available at *policyuncertainty.com*. Even though the two indices are on different scales, one can easily observe that the two indices behave in very different manners. The TPU index has been relatively low until 2016, when it begins to increase dramatically. the average increased by more than twofold during 2016 - 2019. On the other hand, the averages for the U.S. EPU

index pre 2016 and during 2016 - 2019 are of similar values, showing that the overall amount of economic policy uncertainty in the U.S. has not changed much throughout the sample period prior to the pandemic.

Figure 5: **U.S. Trade Policy Uncertainty Index vs. U.S. Economic Policy Uncertainty Index**



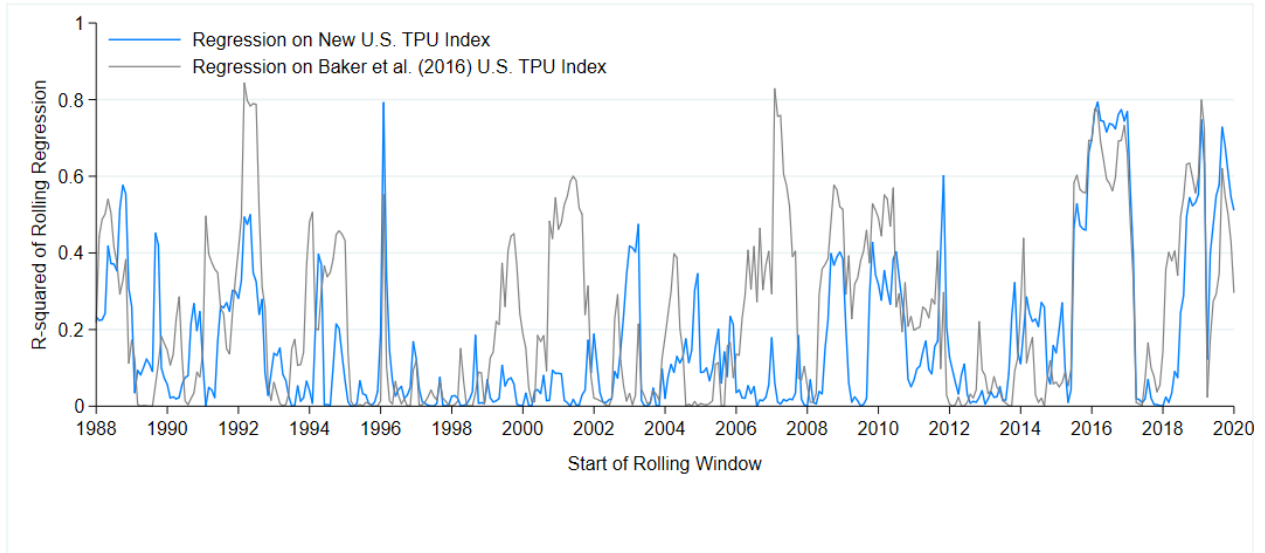
Note: The new U.S. Trade Policy Uncertainty (TPU) index takes a simple average of the relative frequencies of articles in newspapers in Table 1 using the search terms in Table 6. BBD's U.S. Economic Policy Uncertainty (EPU) index is taken from *policyuncertainty.com* and takes into account articles from 10 newspaper sources that contain at least one search term from each of the E, U and P categories in Table 2. The latter index is standardized and normalized such that it has a unit standard deviation for each of the 10 newspaper-level series and a mean of 100 for the index from 1985 to 2009. Sample period: Jan 1988 to Dec 2020. Source: Author's calculation and *policyuncertainty.com*.

Economic policy uncertainty in the U.S. was high from late 1990 to late 1992, with the sharpest spike caused by Gulf War I, which lasted from August 1990 to February 1991. This was then followed by the United States presidential election in November 1992. Another episode of high economic policy uncertainty occurred from late 2000 to 2004. Following a slight increase due to the presidential election in November 2000, the next two spikes in the EPU index were due to the September 11 attacks and the invasion of Iraq, which begun in March 2003. The Global Financial Crisis led to high and persistent economic policy uncertainty in the U.S. from 2008 to 2014. While these events led to high economic policy uncertainty in the U.S., they were not tightly related to trade policies and thus trade policy uncertainty showed only limited fluctuations during these periods. In 2020, the U.S., along with the rest of the world, faced huge uncertainty from the Covid-19 pandemic. While it did affect supply chain, trade policies themselves are not affected. Hence, the new TPU index returned to just slightly above the pre-2016 level, while the EPU index has reached a historic

high.

The Pearson correlation coefficient between the two indices over the entire sample period is 0.047, which is very low. However, this is unable to capture the full dynamics between trade policy uncertainty and economic policy uncertainty. Hence, I now consider the R-square's of rolling simple linear bivariate regressions of the BBD EPU index on both the new and the BBD U.S. TPU indices to analyze how much of economic policy uncertainty's variation is explained by trade policy uncertainty over time. The rolling window is 12 months; hence there are 385 regressions from January 1988 to December 2020, with the last regression starting in January 2020.

Figure 6: **R-squared's from 12-Month Rolling Regressions of EPU Index on TPU Indices**



Note: R-squared's from 12-month window rolling regressions of the BBD U.S. Economic Policy Uncertainty index on both the new and the original BBD U.S. Trade Policy Uncertainty indices from January 1988 to December 2020. There are a total of 385 rolling regressions, with the last one starting in January 2020. Source: Author's calculation and policyuncertainty.com

The R-squared's, shown in Figure 6, fluctuate significantly throughout the sample period for both indices. The R-squared for the new TPU index has greater variability, as it has a coefficient of variation of 117% while the original BBD just has a CV of 94%. This implies the new TPU index is able to capture the various dynamics. For the regressions on the new TPU index, the R-squared reaches as high as 0.794 and as low as 0, with a mean of 0.169. This is slightly lower than the regressions on the original TPU index, where the R-squared has a maximum of 0.844, a minimum of 0, and a mean of 0.238 over the sample period. While this suggests that the new U.S. TPU index does not explain as much variation in the EPU index as the BBD TPU index does, it is important to note that the new U.S. TPU

index is not a strict subset of the BBD U.S. EPU index, given that the search terms have undergone significant changes.

The two series of R-squared's are both consistently over 0.5 for regressions with start windows in 2016, from October 2018 to March 2019 and from September 2019 to November 2019, meaning that more than half of the variation of the EPU index can be explained by variations in the TPU index. However, there are also a number of major differences. For example, Figure 6 indicates BBD attributes almost all of the variations in the U.S. EPU index in 1992 to variations in their U.S. TPU index. This period coincided with the Gulf War, suggesting that uncertainty should be caused by political uncertainty instead. Their index also appears to be picking up significantly more variation than the new TPU index in 2001, which was around the September 11 attacks. These suggest that the BBD U.S. TPU index sometimes picks up uncertainty that should have been mainly attributed to political uncertainty.

BBD's U.S. TPU index also appears to get intertwined with uncertainty in the financial market. Figure 6 shows that the BBD U.S. TPU index once again picks more of the variations in the U.S. EPU index around 1999, when the Russian financial crisis occurred. While this led to uncertainty in the financial markets, it should not have affected trade policy uncertainty. Similarly, between late 2006 to late 2007, the BBD U.S. TPU index appears to be explaining the majority of the variation of the U.S. EPU index. However, uncertainty in the U.S. during this period was due to the housing bubble problem preceding the Global Financial Crisis. Hence, the uncertainty experienced in the U.S. during these periods should not be attributed to trade policy uncertainty.

6 Conclusion

This paper has compared various uncertainty measures and highlighted that the newspaper-based methodology has several advantages over traditional ones such as survey-based or model-based measures. Newspaper-based measures are real-time, available as frequently as daily and can be tailored to specific types of uncertainty. Focusing on the topic of trade policy uncertainty, I have demonstrated that the newspaper coverage-based U.S. Trade Policy Uncertainty (TPU) index first proposed by BBD, and later recreated by CIMPR, has multiple shortcomings, and then proposed improvements.

First, I have limited the newspaper selection to 4 U.S. national newspapers. This allows

the index to give an accurate representation of the trade policy uncertainty experienced in the U.S., instead of being affected by editorial choices of local newspapers. Second, I did not normalize nor standardize the new TPU index as the processes would force an equal weight on the different newspaper-level series, as well as make cross-country comparison impossible.

Finally, I showed that both BBD's and CIMPR's sets of search terms led to systematic inaccuracies such as misclassification and omission of articles. After modifying and expanding the set of search terms, the number of trade policy uncertainty-related articles increased by 31 times. The series for the 4 U.S. national newspaper that aggregate up to the TPU index are also much more strongly correlated with each other when the new set of search terms is used, hence showing the new index is a more coherent measure.

The new U.S. TPU index identifies several episodes of high trade policy uncertainty in the U.S. throughout the years, such as the implementation of NAFTA in 1993, the Trade Promotion Authority lapse in 1997, the failed Cancun WTO Ministerial Conference in 2003, the Great Trade Collapse in 2008-2009, as well as the U.S.-China trade war in recent years. I also analyzed the dynamics between trade policy uncertainty and economic policy uncertainty and showed that the new U.S. TPU index can better explain the variation of BBD's U.S. Economic Policy Uncertainty index. In fact, BBD's U.S. TPU Index occasionally mistakes financial market uncertainty and political uncertainty for trade policy uncertainty.

It will be important to continue this index to track trade policy uncertainty, especially with the ongoing Brexit and U.S.-China trade debates, and the newly signed United States-Mexico-Canada Agreement. It will also be useful in the future to apply the new search terms to track trade policy uncertainty in other countries, such as Canada and the United Kingdom. More importantly, it will be beneficial to incorporate this type of index into theoretical models.

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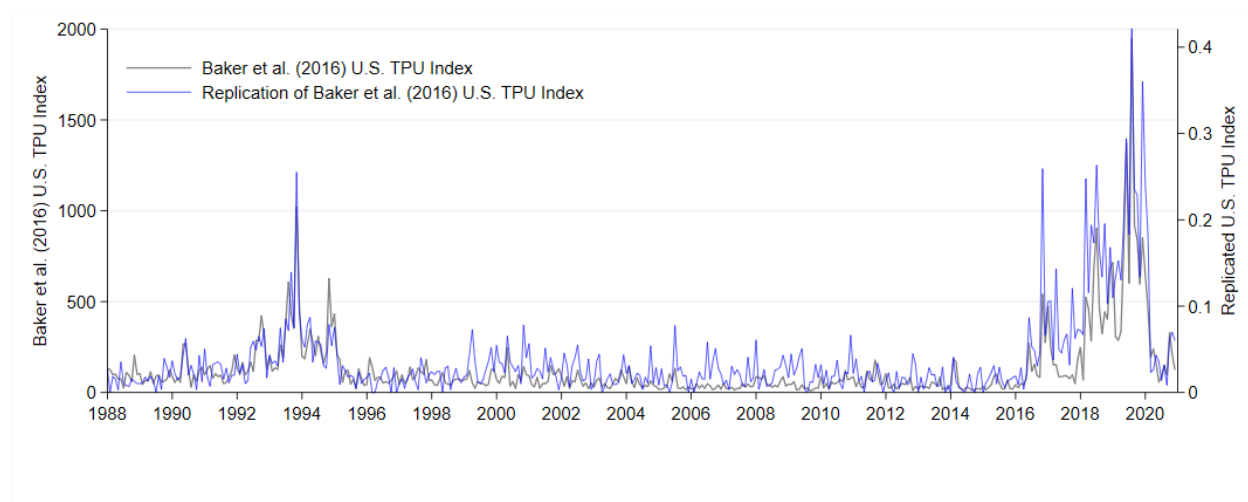
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A Replicated Baker et al. (2016) U.S. TPU Index

To analyze the effects of changing the search terms, *ceteris paribus*, I replicated the BBD U.S. TPU index by reconstructing the index with the original search terms but restricting the attention to the 4 newspapers used for the new TPU index: USA Today, The Washington Post, The New York Times, and The Wall Street Journal. The replicated series also did not undergo standardization and normalization. To assess the effects of these changes, Figure 7 compares the actual BBD U.S. TPU index with the replicated one from January 1, 1988 to December 31, 2020. The two indices appear to be highly correlated, with a Pearson correlation coefficient of 0.878. They also have a similar variability, with the original BBD index having a coefficient of variation of 147% while the replicated one's is 135%. They tend to move closely together throughout the sample period, tracing out a sharp peak in late 1993 and an even greater and more prolonged increase in trade policy uncertainty in 2016, as well as in 2018 to 2019.

Figure 7: **BBD U.S. TPU Index and its Replication**

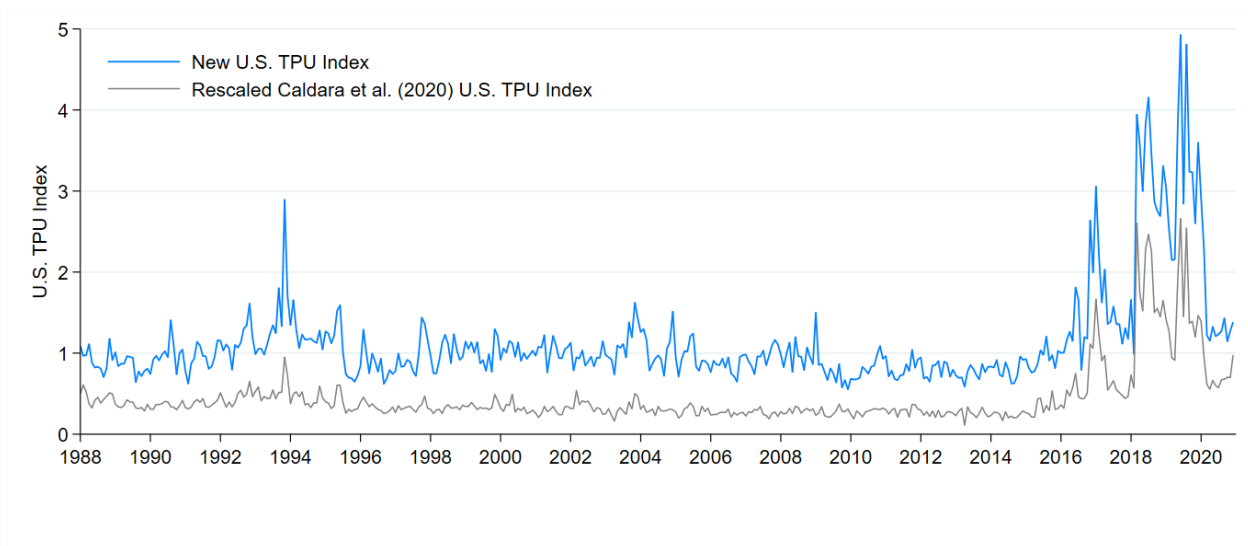


Note: BBD U.S. Trade Policy Uncertainty (TPU) is taken from *policyuncertainty.com*. Both series use the search terms in Table 2 but instead of the 10 newspapers in BBD's index, the replicated series restricts the sources to the 4 newspapers in Table 1. BBD's index is standardized and normalized such that it has a unit standard deviation for each of the 10 newspaper-level series and a mean of 100 for the index from 1985 to 2009. Sample period: Jan 1988 to Dec 2020. Source: *policyuncertainty.com* and Author's calculation.

B Comparison with the Caldara et al. (2020) TPU Index

The new U.S. TPU index and CIMPR’s U.S. TPU index are displayed in Figure 8, where the latter index is divided by 100 to have the same unit as the new U.S. TPU index for better comparison. As CIMPR’s index considers an expanded set of U category search terms, and articles do not need to contain any words from the E or P category to be considered relevant, their index also picks up more trade policy uncertainty-related articles than BBD’s index. However, the new U.S. TPU index built in this paper still picks up more articles consistently. The new U.S. TPU index and the CIMPR index have a high Pearson coefficient of correlation of 0.950 from January 1, 1988 to December 31, 2020. They follow the same general pattern, tracing out a local peak in late 1993. Subsequently, they both remain low until rising drastically in 2016, declining in 2017 and maintaining a heightened level in 2018 and 2019. However, CIMPR’s index is unable to capture the peaks in 1995, 2005 and 2009, which was when the U.S. had the auto trade dispute with Japan, the WTO missed the Doha Round negotiations deadline and the Recovery Act featured a controversial “Buy American” provision, respectively.

Figure 8: New U.S. TPU Index vs. CIMPR U.S. TPU Index

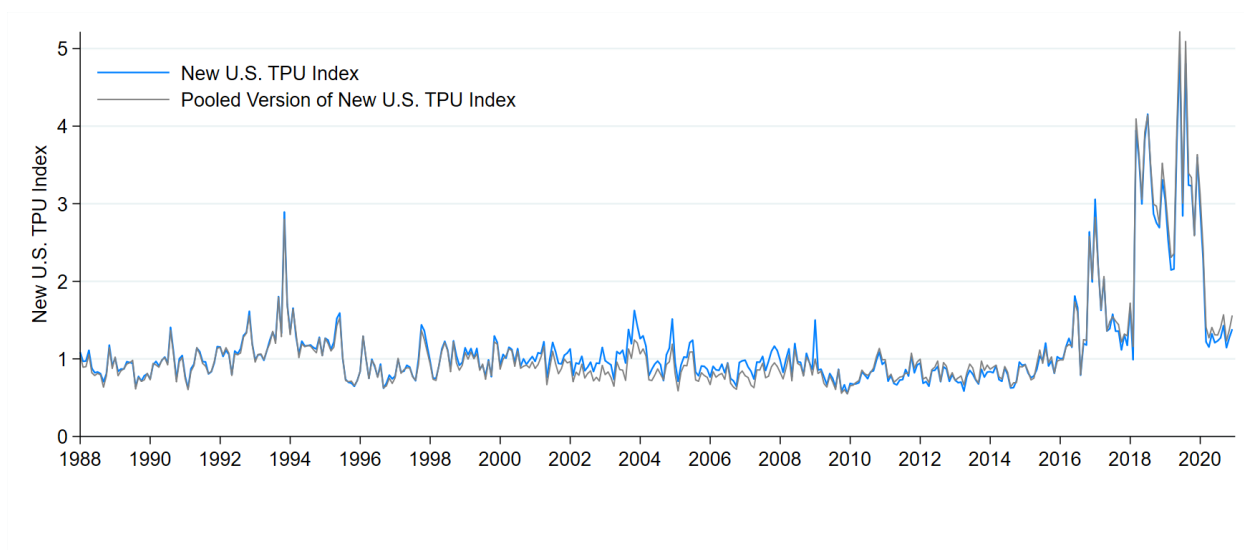


Note: The new U.S. Trade Policy Uncertainty (TPU) index takes a simple average of the relative frequency of articles in newspapers in Table 1 using the search terms in Table 6. CIMPR’s U.S. TPU index, taken from <https://www.matteoiacoviello.com/tpu.htm>, counts the relative frequency of total articles in the Boston Globe, Chicago Tribune, The Guardian, Los Angeles Times, New York Times, The Wall Street Journal, and The Washington Post based on the search terms in Table 3. Sample period: Jan 1988 to Dec 2020. Source: Author’s calculation and <https://www.matteoiacoviello.com/tpu.htm>.

B.1 Pooled Version of U.S. TPU Index

CIMPR pooled their 7 newspaper series together to create their TPU index, specifically by scaling the total number of *relevant* articles within all 7 newspapers by the total number of published articles in each month. To see the effects of pooling newspapers together, I pool together the 4 national newspapers used in building the new TPU index. The new U.S. TPU index is plotted together with the pooled version of the series in Figure 9. The two series have a very high Pearson correlation coefficient of 0.992, and the pooled version is able to trace out most of the peaks in the new TPU index. However, the pooled version is unable to capture all of the dynamics from 2000 to 2010, with the level just slightly below the unaltered version throughout this period.

Figure 9: New U.S. TPU Index and its Pooled Version



Note: The newly-constructed U.S. Trade Policy Uncertainty (TPU) index from 1988 to 2020, together with a pooled version of the index. The pooled version is calculated from the ratio of total number of *relevant* articles over the total number of published articles among all 4 newspapers. Source: Author's calculation.