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RISING POLICY UNCERTAINTY

Steven J. Davis

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ABSTRACT

I review evidence of rising policy uncertainty in the U.S. and global economies, drawing heavily on newspaper-based measures. Examples from countries around the world illustrate the role of political and policy developments as drivers of fluctuations in economic uncertainty. I also highlight the prominent role of trade policy as a source of uncertainty and stock market volatility since March 2018, when U.S.-China tensions began to escalate. Lastly, I offer remarks on the interplay between policy uncertainty and economic performance.

Steven J. Davis
Booth School of Business
The University of Chicago
5807 South Woodlawn Avenue
Chicago, IL 60637
and NBER
Steven.Davis@ChicagoBooth.edu

I. Rising Policy Uncertainty

Figure 1 displays a monthly index of Economic Policy Uncertainty (EPU) for the United States that I developed with Scott Baker and Nick Bloom.[1] In constructing this index, we aim to capture uncertainty about *who* will make economic policy decisions, *what* economic policy actions will be undertaken and *when*, and the economic *effect*s of policy actions (or inaction) – including uncertainties related to the economic ramifications of "non-economic" policy matters, e.g., military actions. To do so, we first count articles in 10 leading U.S. newspapers that contain the following triple of terms: "economic" or "economy"; "uncertain" or "uncertainty"; and one or more of "congress," "deficit," "Federal Reserve," "legislation," "regulation" or "White House." Next, we scale the raw EPU count by the number of all articles in the same paper and month, standardize the variability of the scaled EPU counts, and average over newspapers by month. Finally, we normalize the mean index value to 100 from 1985 to 2009. Thus, the index value of 284 in January 2019 is 2.84 times its 1985-2009 average.

Our U.S. EPU index spikes near tight presidential elections, Gulf Wars I and II, the 9/11 attacks, major fiscal policy battles from 2011 to 2013 and in reaction to the June 2016 Brexit referendum, Donald Trump's surprise election victory in November 2016, and escalating trade policy tensions in 2018 and 2019. The EPU index tends to rise in recessions, but many of the largest spikes and highest index values occur during the long, ongoing expansion that began in the second half of 2009. Measures of policy uncertainty derived from textual analysis of the Federal Reserve System's periodic Beige Books and from transcripts of quarterly earnings conference calls of publicly listed firms exhibit similar time-series patterns.[2] Baker et al. (2014) present and discuss evidence that policy-related economic uncertainty in the United States followed an upward trajectory in the 1960s and 1970s, stabilized somewhat in the 1980s and 1990s, and rose again after the late 1990s.

Using the same approach, we and others construct monthly newspaper-based EPU indices for 20 additional countries: Australia, Brazil, Canada, Chile, China, Colombia, France, Germany, Greece, India, Ireland, Italy, Japan, Mexico, the Netherlands, Russia, South Korea, Spain, Sweden, and the United Kingdom.[3] We rely on own-country newspapers in constructing the

[1] See Baker, Bloom and Davis (2016). Monthly updates are available at www.PolicyUncertainty.com.
[2] See Baker et al. (2016) on Beige Books and Hassan et al. (2019) on earnings calls.
[3] See Cerda et al. (2016) on the EPU index for Chile, Baker et al. (2013) for China, Gil and Silva

national EPU indices and perform all searches in the language of the newspaper. To help develop suitable E, P and U term sets, we consulted persons with native fluency and economics expertise in the relevant language and country. Our P term set differs across countries for reasons both obvious (e.g., using "BOJ" for Japan) and idiosyncratic (e.g., inclusion of "customs duties" for India). Monthly data for all 21 national EPU indices are available and regularly updated at www.PolicyUncertainty.com.

To construct an index of Global Economic Policy Uncertainty, I proceed as follows in Davis (2016): First, I re-normalize each national EPU index to a mean of 100 from 1997 (or first year) to 2015. Second, I impute missing values for certain countries using a regression-based method.[4] This step yields a balanced panel of monthly EPU index values for 21 countries from January 1997 to the present. Third, I compute the Global EPU index value for each month as the GDP-weighted average of the 21 national EPU index values, using GDP data from the IMF's World Economic Outlook Database. Figure 2 plots the resulting index.

The Global EPU index rises sharply in reaction to the Asian and Russian Financial Crises, the 9/11 terrorist attacks, the U.S.-led invasion of Iraq in 2003, the Global Financial Crisis in 2008-09, the European immigration crisis in 2015, and several other developments.[5] It fluctuates around consistently high levels from mid 2011 to early 2013, a period characterized by recurring sovereign debt and banking crises in the Eurozone, intense battles over fiscal and healthcare policies in the United States, and a generational leadership transition in China. Seven of nine members on the Standing Committee, China's most powerful decision-making body, were slated for retirement in 2012. Other senior leadership bodies in China experienced similarly high turnover rates due to retirement, leading Li (2011) to characterize 2012 as the fourth "generational transfer of power" in the history of Communist China. Two previous generational

(2018) for Colombia, Hardouvelis et al. (2018) for Greece, Zalla (2016) for Ireland, Arbatli et al. (2019) for Japan, Kroes et al. (2015) for the Netherlands, Ghirelli et al. (2019) for Spain, and Armelius et al. (2017) for Sweden. EPU data for the other countries are updates to the indices developed in Baker et al. (2016) and new indices that we developed using the same methods.

[4] For example, I regress the EPU index for Australia from 1998 onwards on contemporaneous EPU index values for all countries with no missing data. I then use predicted values from this regression to impute the missing Australian values for 1997.

[5] Baker et al. (2015) present and discussion a suite of newspaper-based indices of immigration-related fears and policy uncertainty for France, Germany, the United Kingdom, and the United States. Updates are available at http://www.policyuncertainty.com/immigration_fear.html.

transitions coincided with tragedy and turmoil in the form of the Cultural Revolution and the 1989 Tiananmen Square protests and massacre.

Eurozone developments in the period from mid 2011 to early 2013 include a rescue package for Portugal in May 2011, a bailout package for Greece in July 2011 (amidst widespread speculation that Greece would leave the Eurozone), large yield increases on Spanish and Italian government bonds in August 2011, April 2012 and June 2012, a May 2012 election in which most Greek voters rejected a proposed bailout agreement, and multiple extraordinary actions by the European Central Bank in response to these and other developments. Across the Atlantic, bitterly partisan disputes over the direction of U.S. fiscal policy led to a "debt-ceiling" fight in summer 2011 that threatened to curtail critical government functions and delay payments on U.S. Treasury securities, and an extraordinary "fiscal cliff" episode with last-minute resolutions of major uncertainties about tax and spending policies. Uncertainties surrounding U.S. healthcare policy were also extraordinarily high in this period. For example, an appellate court struck down the Affordable Care Act ("Obamacare") in August 2011, concluding that Congress lacked the constitutional authority to require individuals to purchase health insurance or pay a penalty, and threatening the viability of the entire Act.[6] The issue remained unsettled until June 2012, when the Supreme Court reversed the appellate court in a surprise, closely divided decision.[7]

Russia's annexation of Crimea in 2014 and its military incursions in eastern Ukraine led to international sanctions and an uncertain environment that curtailed foreign investment in Russia and contributed to its weak economic performance (European Parliament, 2016). The Russia-Ukraine conflict and its unsettled nature harmed the Ukrainian economy as well and deterred foreign investment there (Morelli, 2016). China's aggressive pursuit of sovereignty claims in the South China Sea has raised concerns about threats to ship-borne trade in some of the world's busiest international waters.[8] Recent geopolitical tensions in the Persian Gulf, U.S.-led economic sanctions on Iran, and the Iranian seizure of oil tankers in the Straits of Hormuz have renewed concerns about petroleum supplies.[9]

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[6] See "Health Law Is Dealt Blow by a Court on Mandate," *New York Times*, 12 August 2011.
[7] See "Court Backs Obama on Health Law," *Wall Street Journal*, 29 June 2012.
[8] "South China Sea ruling increases uncertainty for shipping, trade," *Wall Street Journal*, 14 July 2016.
[9] See, for example, "What Happens When the World Cannot Rely on the US?" *Financial Times*, 9 August 2019.

Syria has been the epicenter of a many-sided military conflict and humanitarian catastrophe since 2011, with devastating consequences and highly uncertain long-term implications. The catastrophe produced a flood of migrants into neighboring countries and Europe in 2014 and 2015, stoking security fears, creating anxiety about social and economic consequences, and placing enormous strains on the Schengen zone arrangements for free mobility in a border-less Europe.[10]

Several major political and policy developments have rocked national economies and the global economic outlook since 2016. Leading examples include the June 2016 Brexit referendum, Donald Trump's surprise election victory in November 2016, and the strength of populist political movements in several European countries. These developments have injected new sources of political and economic uncertainties into the global economy.

There are many other recent examples of economic uncertainty emanating from political developments. In South Korea, political scandal led to the impeachment of President Park Geun-hye in December 2016 and her removal from office in March 2017. In Brazil, a long and severe recession, an extraordinary wave of corruption investigations, the criminal convictions of many leading political figures, and the impeachment and removal of President Dilma Rouseff in 2016 combined to upend the political landscape. Brazil's next president, Michel Temer, promised to restore growth by reversing several major policies of his predecessor.[11] In Argentina, new fears that the Peronist party would regain political power in upcoming elections triggered a spectacular 15 percent depreciation of the Argentine Peso on 12 August 2019 and a 38 percent plunge in the stock market the same day.[12]

In Turkey, after squashing an attempted coup d'état in July 2016, the government set about arresting and firing more than a hundred thousand teachers, military officers, judges,

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[10] See Baker et al. (2015), Halla et al. (2015), Dustmann et al. (2016) and "Schengen: Controversial EU free movement deal explained," BBC News, 24 April 2016 at http://www.bbc.com/news/world-europe-13194723.

[11] "Time for Temer: The new president takes over a country in crisis," *The Economist*, 3 September 2016.

[12] "Argentine Peso Dives after Populist Peronists Gain Edge in Vote," *Wall Street Journal*, 12 August 2019; "Argentina Elections: Why investors believe Macri's time is up," *Financial Times*, 13 August 2019; and
"Argentine Financial Markets Steady, but Political Uncertainty Drives Uncertainty," *Wall Street Journal*, 15 August 2019.

mayors, civil servants, and others.[13] Ten weeks after the failed coup, Moody's Investor Service downgraded Turkey's sovereign credit rating – citing external funding risks, slowing growth and "further concerns regarding the predictability and effectiveness of government policy and the rule of law."[14] The coup attempt and its aftermath have also strained international relations between Turkey and several of its allies.[15] Intense pressures on the foreign exchange value of the Turkish Lira have prompted dramatic policy moves by the Turkish Central Bank since 2018 and the dismissal of the Bank's Governor in July 2019.[16]

II. The New Prominence of Trade Policy Uncertainty

Trade policy has become both more uncertain and more protectionist under the Trump presidency. Particulars include the U.S. withdrawal from the Trans-Pacific Partnership (TPP) Agreement in January 2017, President Trump's early threats to jettison the North American Free Trade Agreement (NAFTA), doubts about U.S. congressional ratification of a NAFTA-replacement treaty, and a large number of tariff hikes, tariff threats and tariff reversals. The average U.S. tariff rate rose from less than 2% in December 2017 to 4% in May 2019. It is slated to reach an estimated 5-8% by the end of 2019.[17] Threats of additional tariff hikes would, if fully implemented, bring the average U.S. tariff rate to an estimated 9-11% by the end of 2019.[18] The trade-weighted average U.S. tariff on Chinese imports rose from 3.1% in 2017 to 12.4% in 2018

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[13] "Turkey uses post-coup emergency decree to purge mayors and teachers," *New York Times*, 9 September 2016; and "Turks see purge as witch hunt of 'medieval' darkness," *New York Times*, 16 September 2016.

[14] "Moody's cuts Turkey's credit rating to 'junk'," Reuters, 24 September 2016.

[15] "The aftermath of Turkey's failed coup threatens its ties with Western allies," *Washington Post*, 21 September 2016.

[16] See "Turkey takes action on strained economy with big rate rise," *Wall Street Journal*, 13 September 2018; "Russia, Turkey take contrasting approaches in push for looser monetary policy," *Wall Street Journal*, 26 July 2019; and "Turkey's central bank governor was sacked after resisting 300 point rate cut: sources," Reuters, 22 July 2019.

[17] I am unaware of authoritative, up-to-the-moment statistics on average U.S. tariff rates. Statistics cited in the text are a composite of estimates attributed to Deutsche Bank and UBS Group in "Costly Tariff Spat Masks Deeper Trade Problems," *Wall Street Journal,* 18 August 2019 and a chart attributed to Oxford Economics in "The Daily Shot: How High Will the Average U.S. Tariff Rate Get?" *Wall Street Journal,* 7 June 2019.

[18] These figures are also estimates reported in "Costly Tariff Spat Masks Deeper Trade Problems" and "The Daily Shot: How High Will the Average U.S. Tariff Rate Get?" They do not incorporate President Trump's announcement on 23 August 2019 of additional tariff hikes on Chinese imports.

and 18.3% in May 2019. Current U.S. plans will take the average U.S. tariff rate on Chinese imports to an estimated 21.4% in December 2019 (Brown and Zhang, 2019).

U.S. tariff hikes and President Trump's rhetorical attacks on trading partners invite retaliation. Indeed, tit-for-tat tariff hikes between the United States and China have been underway since April 2018. Canada, India, Mexico, Turkey and the European Union have also imposed new tariffs on American imports in reaction to U.S. tariff hikes. In short, the shift to greater protectionism in U.S. trade policy has prompted other countries to respond in kind.

Trump Administration officials often asserts that its aggressive trade policy stance will yield new trade deals that are more favorable to the United States. Developments to date offer scant support for this assertion. The U.S. and South Korea renegotiated and signed a revised Korea-U.S. Free Trade Agreement in September 2018, but the new agreement involves "only limited changes to the original pact" (Schott and Jung 2018). On 30 November 2018, Canadian Prime Minister Trudeau, Mexican President Nieto and President Trump signed the U.S.-Mexico-Canada Agreement to replace NAFTA. As of August 2019, however, its ratification by the U.S. Congress looks unlikely.[19] The tone of recent statements from the U.S. and Chinese sides suggest dim prospects in the next few months for a significant resolution of outstanding trade policy conflicts and a reversal of recent tariff hikes. Nor is there any sign that the United States will soon resolve its trade policy conflicts with India, Turkey or the European Union.

Trade policy under the Trump administration also has a capricious, back-and-forth character that amplifies uncertainty and undermines a rules-based trading order. Less than three months after withdrawing from the TPP, President Trump said he would consider rejoining for a substantially better deal, only to throw cold water on the idea a few days later.[20] Robert Lighthizer, the U.S. Trade Representative justified steel tariffs on the laughable grounds that Canada, for example, presents a national security threat.[21] But President Trump tweeted that

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[19] As of 17 August 2019, PredictIt assesses a 30% probability that "both houses of the U.S. Congress shall ratify the United States-Mexico-Canada Agreement, by passing a bill to implement such agreement" by the end of 2019. See, also, "Trump's North America Trade Deal at Risk of Stalling in Congress," *Washington Post*, 29 March 2019; and "Hopes Dim for Passage of Trump Trade Deal," The Hill, 5 July 2019.

[20] "Trump Says U.S. Could Rejoin TPP If Deal Improved," Reuters, 16 April 2018; and @realDonald Trump on 17 April 2018 at https://twitter.com/realdonaldtrump/status/986436520444866560.

[21] "Lighthizer Calls Canada a National Security Threat in Defense of Steel Tariffs," *The Globe and Mail*, 26 July 2018.

tariffs on Canadian steel were really a response to Canadian tariffs on U.S. dairy products.[22] In August 2018, the President tweeted that he "just authorized a doubling of Tariffs on Steel and Aluminum with respect to Turkey" for reasons unclear.[23]

Under President Trump, tariffs are threatened, announced, delayed, reversed, announced again, imposed, and removed – often in quick succession. Some countries get tariff exemptions, some don't. Exemptions vary in duration, and they come and go in a head-spinning manner. The recent treatment of steel imports exemplifies this aspect of U.S. trade policy under President Trump. See Brown and Kolb (2019) for a detailed account.

Another example involves the latest round of announcements about new tariffs on Chinese imports, which Brown (2019) summarizes this way: "On Aug. 1, President Trump abruptly announced on Twitter that he would impose on Sept. 1 a 10% levy on roughly $300 billion in Chinese goods, an apparent response to what he described as China's failure to commit to promised U.S. agricultural purchases." Less than two weeks later, the plan was revised to "impose 10 percent tariffs on $112 billion of Chinese imports starting on September 1 … followed by a second round of duties on a different set of products, covering $160 billion of imports, on December 15." China retaliated on 23 August, announcing plans to levy new tariffs of 5 to 10% on $75 billion of U.S. imports. President Trump responded later the same day, announcing that he would raise existing and planned tariffs on $550 billon of Chinese imports by an additional 5 percentage points.[24]

Trump Administration trade policy also gives greater discretion over tariffs to bureaucrats, creating added complexity and uncertainty for individual businesses and compelling them, as a matter of business necessity, to become enmeshed in the tariff-exemption process. For example, the Department of Commerce rolled out a slow-working, burdensome process for requesting company-specific exemptions from steel and aluminum tariffs, as neatly recounted in the *Wall Street Journal*:[25]

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[22] "Trump Tweets That His 232 Tariffs Aren't Really About National Security," *Washington Examiner*, 12 June 2018.
[23] "Trump Vox to Double Metals Tariffs on Turkey as Dispute Escalates Over Detained American," *Wall Street Journal*, 11 August 2018; and "In Break from Precedent, Trump's Moves Aggravate Turkey's Currency Crisis, Rather than Calm It," *Wall Street Journal*, 11 August 2018.
[24] "Trump Lashes Out at China, Sending Markets Falling," *Wall Street Journal*, 23 August 2019.
[25] "Trump's Political Tariff Bureaucracy," *Wall Street Journal*, 6 August 2018.

> [C]ompanies must submit a request attesting that their imports aren't made in the U.S. in "a satisfactory quality" or "sufficient and reasonably available amount." Companies must state the uses for their steel product, their average annual consumption of the product, as well as the number of days required to take delivery, manufacture and ship the product. They must also estimate the maximum and minimum composition of 24 chemical elements in their products including molybdenum, antimony and vanadium. There are dozens of other queries, but we'll spare you.
>
> Oh, and a separate request is required for *each* width, length, grade shape, and form of steel or aluminum product. A single company, Primrose Alloys, has submitted more than 1,200 steel product requests, according to Commerce's database. All 14 that have been reviewed so far were denied.
>
> Businesses may also submit statements to support their requests, which naturally turn political…

These various developments have led to a tremendous upsurge in anxiety and uncertainty about trade policy and its economic fallout. To attach some numbers to this point, Figure 3 displays a newspaper-based index of Trade Policy Uncertainty (TPU) for the United States. The TPU index reflects the frequency of articles in U.S. newspapers that discuss economic policy uncertainty *and* trade policy matters.

Two periods stand out. The first runs from August 1992 to March 1995 and reflects uncertainties around the negotiation, ratification and implementation of the North American Free Trade Agreement (NAFTA). The second commences with Donald Trump's election victory in November 2016. The TPU index rose above 300 in reaction to the election outcome, the U.S. withdrawal from the TPP Agreement in January 2017, and U.S. tariffs on steel and aluminum imports in March 2018. It rose even higher later in 2018 and in 2019, as U.S.-China trade policy conflicts intensified. The TPU index value averages 301 from March 2018 to July 2019 – 7.7 times its average from 2013 to 2015 and 5.3 times its average from 1996 to 2015.

Table 1 presents evidence on the new prominence of trade policy uncertainty in China and Japan as well as the United States. Like Figure 3, Table 1 relies on frequency counts of own-country newspaper articles about trade policy uncertainty, but the scaling is different. In Figure 3, the raw TPU counts are scaled by the count of all articles in the same newspapers and normalized to 100 from 1985 to 2009. In contrast, Table 1 reports the percentage of EPU articles that discuss trade policy matters. All three countries show a dramatic rise in this percentage since November 2016, even more so since March 2018. Consider, for example, a comparison of the 2000-2015 period to the period from March to December in 2018: The trade policy share of EPU

articles rose from 2 to 15% in the United States, from 7 to 27% in Japan, and from 20 to 48% in China. These comparisons support two conclusions: first, the rise in trade policy uncertainty under the Trump presidency has reverberated globally; second, the level of anxiety about trade policy is higher for major U.S. trading partners.

Trade policy concerns have also become a major source of stock market gyrations since 2018. For example, the S&P 500 index fell more than 2.5 percent on 22 March 2018, reacting to news about new U.S. tariffs on tens of billions of dollars of Chinese imports. Four days later, the index rose more than 2.7 percent on news the U.S. and China had begun trade negotiations. Nevertheless, tariffs and tariff threats between the two countries have ratcheted upwards in the ensuing fifteen months.

In Baker, Bloom, Davis and Sammon (2019), my coauthors and I examine the role of trade policy developments and fifteen other news categories in large daily stock market moves. We first identified every daily move of more than 2.5 percent, up or down, in the U.S. stock market. By this criterion, there were 1,114 large daily moves from January 1900 to July 2019. For each large move, we read next-day news articles in the *Wall Street Journal* to classify perceptions of what moves the market.

Table 2 summarizes our evidence regarding the role of trade policy as a trigger for large daily moves in the U.S. stock market. The *Journal* attributed 7 of 1,103 large moves from 1900 to February 2018 mainly to news about trade policy, as compared to 4 of 11 large moves from March 2018 to July 2019.[26] By this metric, the prominent role of trade policy in recent U.S. stock market swings is historically unprecedented. In a complementary analysis, Huang et al. (2018) examine firm-level equity returns from March 21 to March 23. They find larger negative returns for U.S.-listed firms with greater exposure to trade with China over this period and larger negative returns for Chinese-listed firms with greater sales to the United States.

In Baker, Bloom, Davis and Kost (2019), my coauthors and I take a different approach to the analysis of newspaper content. We first use automated methods to identify articles about stock market volatility in 11 leading U.S. newspapers and to construct an Equity Market Volatility (EMV) tracker. Our newspaper-based EMV tracker performs well in the sense that it moves closely with actual stock market volatility. Parsing the text in the EMV articles, we then

[26] The four dates and the corresponding value-weighted returns on the S&P 500 are 22 March 2018, -2.52%; 26 March 2018, 2.72%; 4 December 2018, -3.24%; and 4 January 2019, 3.43%

quantify journalist perceptions of what drives volatility in equity returns and classify the drivers into about thirty categories, many of which pertain to particular types of policy. This approach lets us assess the importance of each category to the average level of stock market volatility and its movements over time.

As seen in Figure 4, trade policy gets attention in 26% of articles about equity market volatility in leading U.S. newspapers from March to December 2018. In glaring contrast, trade policy matters receive attention in a mere 2.7% of articles about equity market volatility from 1985-2015.[27] In other words, trade policy went from a virtual non-factor in U.S. equity market volatility in recent decades to one of its leading sources in 2018.

III. The Interplay between Policy Uncertainty and Economic Performance

Politics and policy decision-making are often messy and fraught with uncertainty about political outcomes, policy decisions, near-term consequences, and long-term implications. Sections I and II offer a variety of examples, many of them recent, drawn from countries around the world. They include the U.S. debt-ceiling crisis in August 2011, the U.S. fiscal cliff and government shutdown episodes in 2012 and 2013, the Syrian catastrophe, multiple Eurozone crises since 2010, Russian military incursions in Ukraine, the European immigration crisis, the ongoing Brexit saga, a coup attempt and crackdown in Turkey, the removal of South Korea's president, corruption scandals and presidential removal in Brazil, a sharp escalation of U.S.-China trade policy conflicts in 2018 and 2019, and more. These examples illustrate the role of governments and political processes as sources of economic uncertainty. That uncertainty weighs

[27] To construct Figure 4, we first compute the ratio, (count of EMV articles that contain Trade Policy terms)/(count of all EMV articles), in each month from January 1985 to December 2018. The "count of all EMV articles" in the denominator is the number of articles in 11 leading U.S. newspapers that contain at least one term in each of the following three sets: (E)conomy: {economic, economy, financial}; Stock (M)arket: {"stock market", equity, equities, "Standard and Poors", "Standard & Poors", "Standard and Poor", "Standard and Poor's", "Standard & Poor's"}; and (V)olatility: {uncertain, uncertainty, volatility, volatile, risk, risky}. The numerator is the count of the subset of EMV articles that also contains one or more terms in Trade Policy: {trade policy, tariff, import duty, import barrier, import restriction, trade quota, dumping, export tax, export duty, trade treaty, trade agreement, trade act, wto, world trade organization, Doha round, Uruguay round, gatt, export restriction investment restriction, Nafta, North American Free Trade Agreement, Trans-Pacific Partnership, TransPacific Partnership, Federal Maritime Commission, International Trade Commission, Jones Act, trade adjustment assistance}.

negatively on economic performance. At least in a proximate sense, causality run from political processes and policy uncertainty to aggregate economic performance in these examples.

Economic developments also give rise to uncertainty, directly and through their impact on policy making. As a leading example, the global financial crisis (GFC) of 2007-09 confronted policymakers with extraordinary and complex challenges, especially in the immediate wake of the financial panic in September 2008. There was great uncertainty about how policymakers should and would respond, and what would be the economic consequences. In this episode, the financial crisis and its economic fallout drove a sharp rise in policy uncertainty. In turn, high policy uncertainty contributed to the severity of the crisis and the weakness of the ensuing recovery.

There is also evidence that major financial crises lead to higher levels of policy uncertainty for many years. Funke, Schularick and Trebesch (2016) draw on data for many countries over 140 years to document a pattern of rising political polarization in the years following systemic financial crises, contributing to higher levels of policy uncertainty. Mian, Sufi and Trebbi (2014) also find evidence that financial crises breed political polarization, which sometimes results in political gridlock and policy uncertainty.

A key point: The potential for negative shocks to drive policy uncertainty depends on the underlying environment, which is partly shaped by past policy decisions.[28] Consider again the GFC. It was precipitated by a collapse in U.S. housing prices and mortgage-backed security values (Mian and Sufi, 2015). The shock was large, and many banks were highly exposed to it. The shock led to a systemic financial crisis, because banks were poorly capitalized and heavily dependent on flight-prone forms of debt to fund their investments. If policymakers had required banks to rely more heavily on run-proof funding, the crisis would have been less severe – and perhaps avoided altogether. In this and other respects, the pre-crisis regulatory regime set the stage for a major financial crisis (Admati and Hellwig, 2013 and Duffie, 2019) and the ensuing policy uncertainty.

[28] The effects of policy uncertainty also depend on the environment. For example, Basu and Bundick (2017) and Nakata (2017) examine uncertainty shocks in New Keynesian models. Both papers conclude that higher uncertainty has a larger negative effect on output when the monetary authority's policy rate is closer to the zero bound. Caggiano et al. (2017) find empirical support for this prediction.

As another example, there is less need for discretionary fiscal stimulus in response to negative shocks when robust automatic fiscal stabilizers are in place. Automatic fiscal stabilizers lessen the political conflicts, decision delays, implementation lags and policy uncertainty that comes with efforts to deploy discretionary fiscal tools. Especially when monetary policy is hampered by an effective lower bound on policy rates, inadequate or poorly designed automatic fiscal stabilizers almost ensure that political leaders will turn to discretionary fiscal policy as a response to the next large economic downturn.

High policy uncertainty in the past decade has stimulated empirical research on its economic consequences. Durnev (2012), Julio and Yook (2012, 2016), Giavazzi and McMahon (2012) and Kelly, Pastor and Veronesi (2016), among others, investigate the effects of election-related uncertainty on corporate investment, international capital flows, precautionary savings, and stock price volatility. By and large, this literature finds that election-related uncertainty reduces investment, discourages inward FDI, raises precautionary savings and increases stock price volatility. Aaberge, Liu and Zhu (2017) find that political uncertainty associated with the 1989 Tiananmen Square Movement led to sharp savings increases by Chinese households. Wiemann and Lumsdaine (2019) find that increases in uncertainty about U.S. healthcare policy lowers the consumption spending of married households, more so for those with worse health.

Handley and Limao (2015) develop evidence that lower uncertainty about trade policy stimulates investment in export capacity. Caldara et al. (2019) find evidence that higher trade policy uncertainty since 2017 has dampened U.S. business investment.[29] Gulen and Ion (2016) find negative effects of policy uncertainty on corporate investment using the U.S. EPU measure in Figure 1. Similarly, Baker et al. (2016) find larger negative effects of EPU on investment rates and employment growth, and larger positive effects on stock price volatility, for firms with greater exposure to policy risks. Hassan et al. (2019) use transcripts of earnings conference calls to construct time-varying measures of firm-level policy uncertainty. They also find that higher uncertainty discourages investment and employment. Using the EPU index for India, Anand and

[29] Although they cannot cleanly disentangle uncertainty effects from (negative) anticipation effects, Altig et al. (2019) report survey evidence that trade policy developments in 2018 caused a small drop in U.S. business investment. Similarly, Bloom et al. (2019) find survey evidence that Brexit-related developments have caused a sizable drop in U.K. business investment over the past three years.

Tulin (2014) find negative effects of policy uncertainty on firm-level investment flows, with stronger effects on new projects.

A larger literature considers the effects of economic uncertainty in general, rather than policy uncertainty in particular. Important early analyses of how income uncertainty affects consumption behavior include Zeldes (1989), Kimball (1990) and Carrol (1997). Eberly (1994) finds that high uncertainty leads households to defer costly-to-reverse purchases of durable goods. Bloom (2009) finds that high uncertainty leads firms to cut or delay investment expenditures. These two studies and many others stress that heightened uncertainty provides an incentive to delay or forego investments that are costly to reverse. Uncertainty can also depress investment by raising risk premiums, as stressed by Pastor and Veronesi (2013), Christiano et al. (2014), Gilchrist et al. (2014), and Arellano et al. (2016). Insofar as high uncertainty depresses investment and discourages the reallocation of capital and labor, it also slows the growth of productivity and output. See Bloom (2014) for a fuller discussion of how uncertainty affects economic activity.

Another branch of the literature investigates the dynamic relationship of policy uncertainty, or economic uncertainty more broadly, to macroeconomic performance. Examples include Stock and Watson (2012), Colombo (2013), International Monetary Fund (2013), Jurado et al. (2015), Ludvigson et al. (2015), Baker et al. (2016), Baker, Bloom and Terry (2016), Leduc and Liu (2016), Arbatli et al. (2019) and Ghirelli et al. (2019). These studies typically find that higher (policy) uncertainty foreshadows a deterioration in macroeconomic performance. Romer (1990) marshals evidence that the 1929 stock market crash triggered a sharp rise in income uncertainty that led households to forego purchases of consumer durables, accentuating the collapse of aggregate demand at the onset of the U.S. Great Depression. Evidence in Constantinescu et al. (2017) suggests that high policy uncertainty depresses international trade in goods and services.

In summary, a variety of studies find evidence that high (policy) uncertainty undermines economic performance by leading firms to delay or forego investments and hiring, by slowing productivity-enhancing factor reallocation, and by depressing consumption expenditures. This evidence points to a positive payoff in the form of stronger macroeconomic performance if policymakers can deliver greater predictability in the policy environment. A smaller literature finds that greater uncertainty causes households and firms to become less responsive on the

margin to cuts in interest rates and taxes, in line with predictions of real options theory. See Bertola et al. (2005), Bloom et al. (2007), Bloom (2009), Aastveit et al. (2013) and Vavra (2014). These studies suggest that a stronger policy framework also increases the potency of countercyclical stabilization policies.

IV. Concluding Remarks

U.S. and global policy uncertainty have been highly elevated in recent years. According to Figure 1 and evidence in Baker et al. (2014), the past dozen years have seen the highest levels of U.S. economic policy uncertainty in the past 60 years. According to Figure 2, Global EPU in 2017 and 2018 is running at even higher levels than during the Global Financial Crisis. The huge rise in trade policy uncertainty since early 2018 is an extraordinary departure from recent history, as is the prominent role of trade policy in recent stock market volatility.

There is now a sizable body of empirical research that supports the proposition that high policy uncertainty harms macroeconomic performance. The evidence in this literature implies that greater predictability in the policy environment yields better macroeconomic performance. A smaller literature suggests that standard monetary and fiscal policy tools are also more effective in environments with greater policy predictability.

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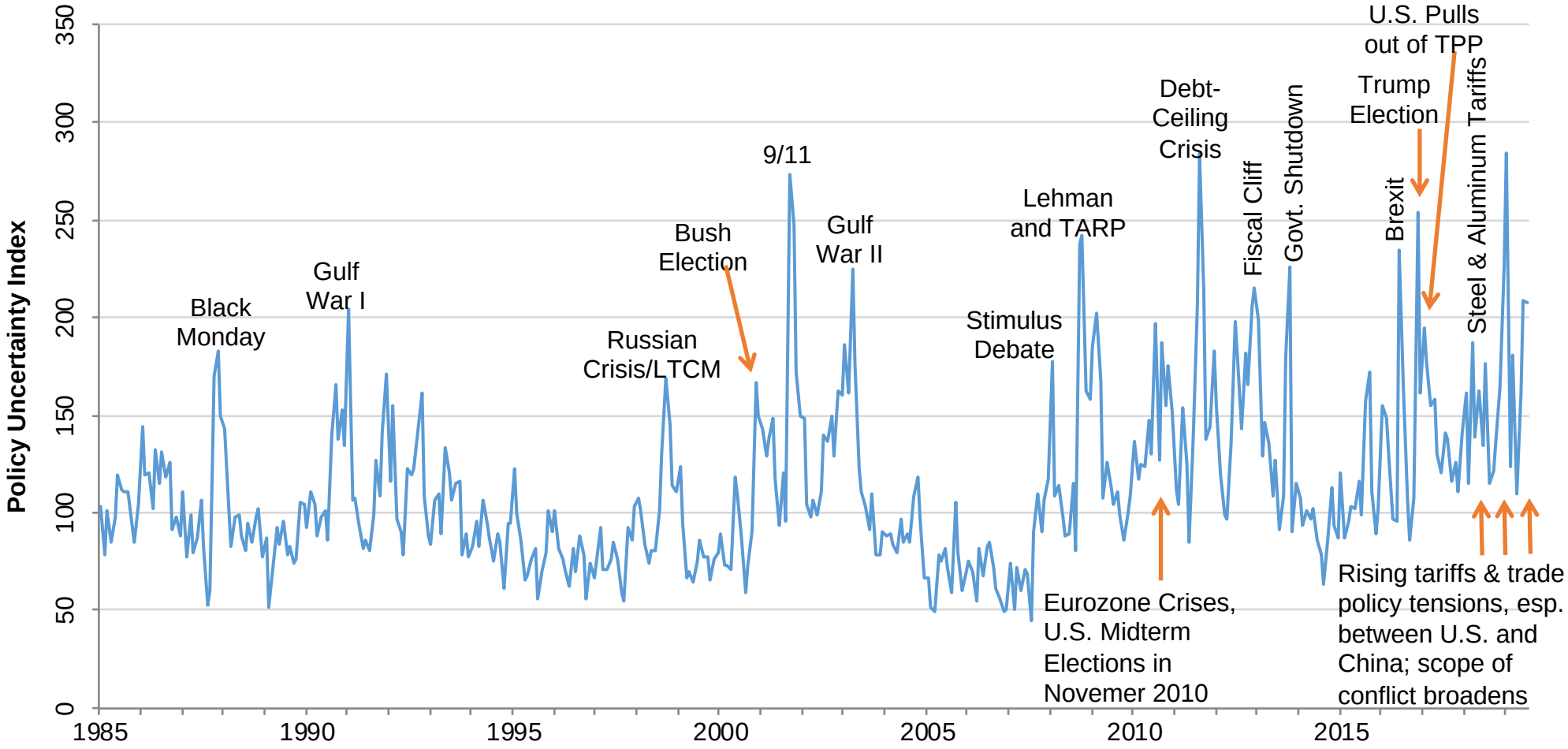
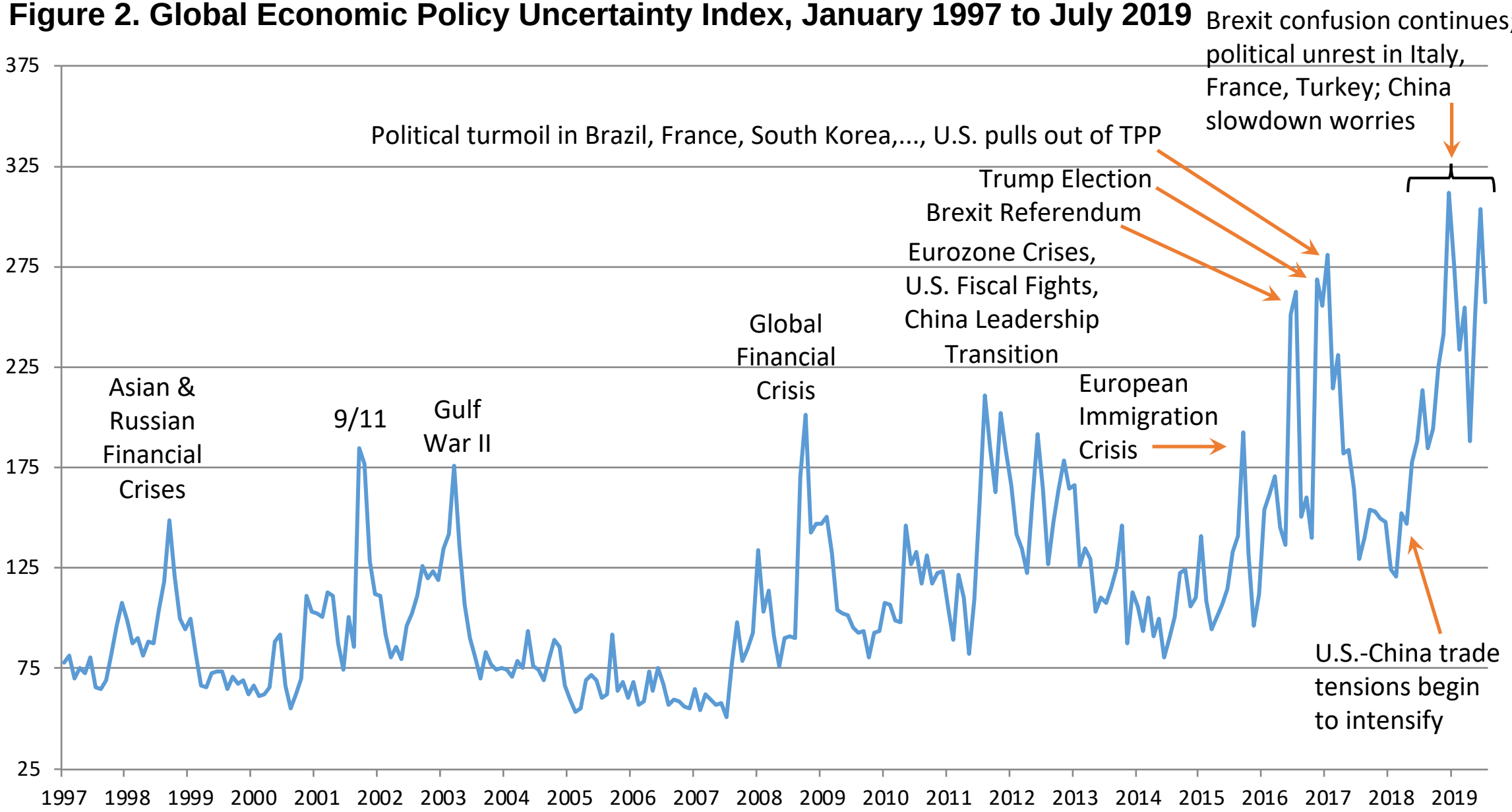
Figure 1. US Economic Policy Uncertainty Index, 1985 to July 2019



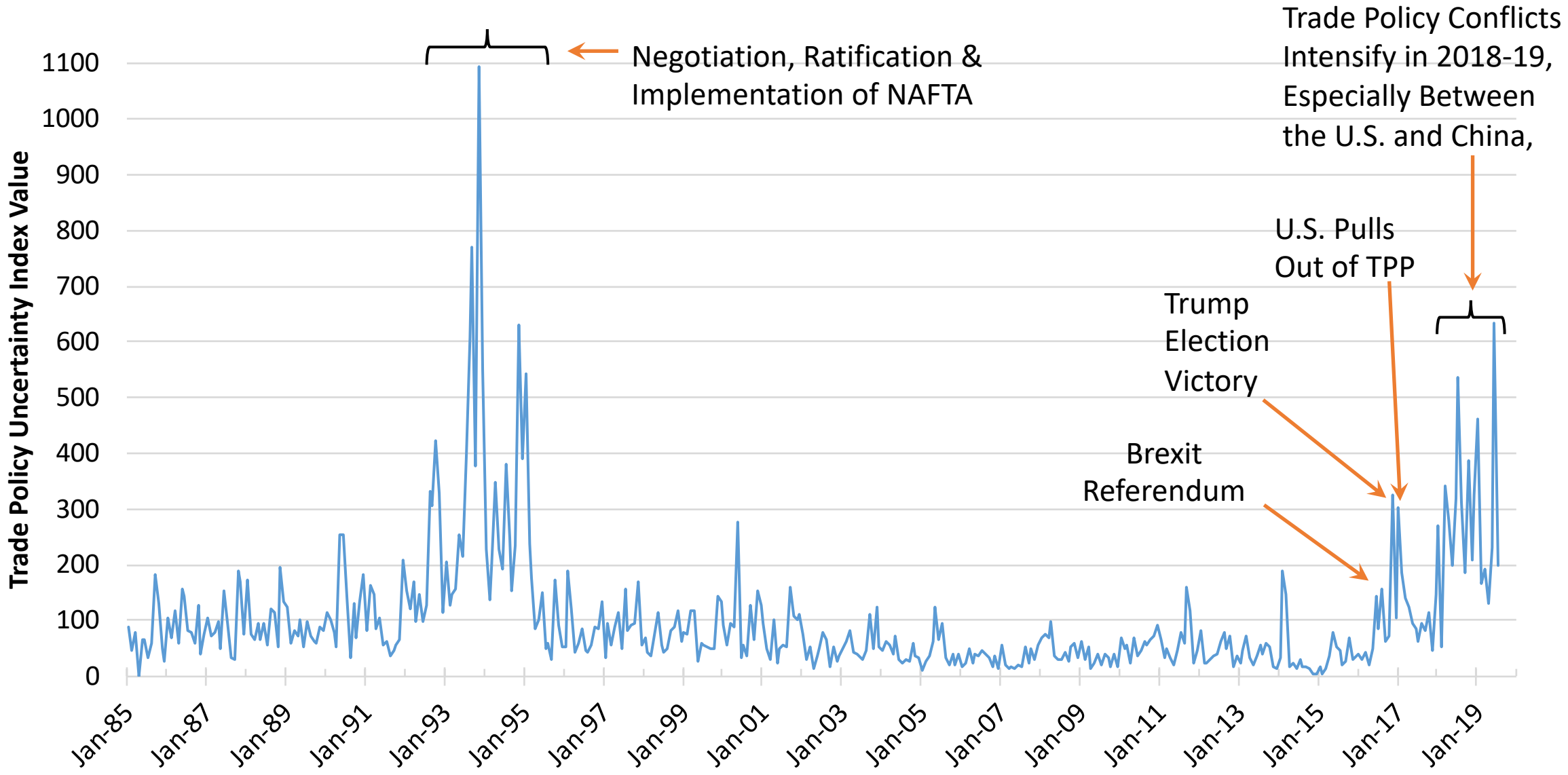
Source: "Measuring Economic Policy Uncertainty" by Scott R. Baker, Nicholas Bloom and Steven J. Davis, as updated at www.policyuncertainty.com. Monthly data normalized to 100 from 1985 to 2009.

Figure 2. Global Economic Policy Uncertainty Index, January 1997 to July 2019



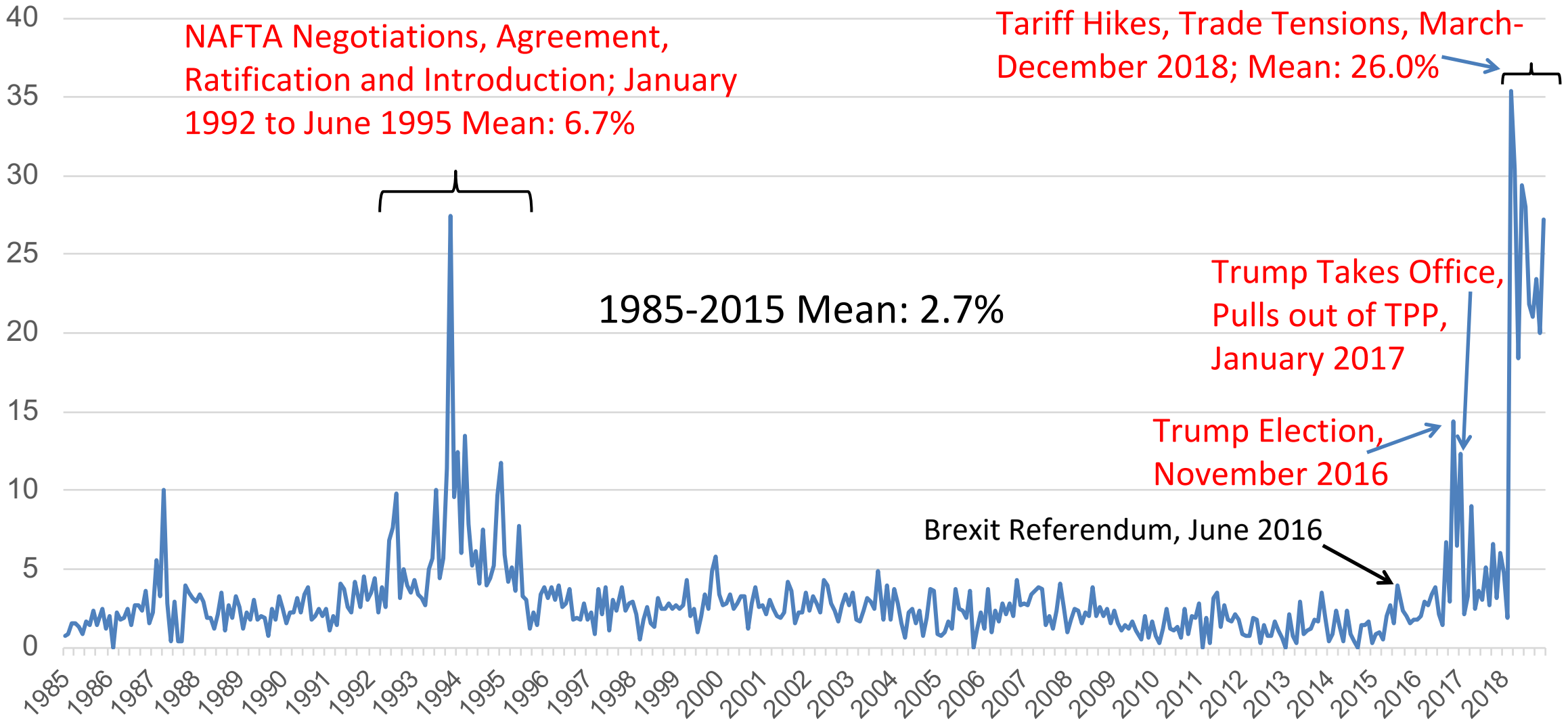
Notes: Using data for 21 countries that account for 80% of global GDP at current prices. Normalized to 100 from 1997 to 2015. Sources: Baker, Bloom and Davis (2016), Davis (2016) and PolicyUncertainty.com.

Figure 3. U.S. Trade Policy Uncertainty Index, January 1985 to July 2019



Source: "Measuring Economic Policy Uncertainty" by Scott R. Baker, Nicholas Bloom and Steven J. Davis, as updated at www.policyuncertainty.com. Monthly data normalized to 100 from 1985 to 2009.

Figure 4. Percent of Articles about Equity Market Volatility in Leading U.S. Newspapers that Discuss Trade Policy Matters, 1985 to 2018



Note: Computed from automated readings of newspaper articles about Equity Market Volatility and (Equity Market Volatility + Trade Policy) in 11 major U.S. newspapers. **Source:** Baker, Bloom, Davis and Kost (2019).

Table 1. Trade Policy Share of EPU Articles, Selected Times Periods for Three Major Economies

Time Period	United States	Japan	China
1987-2015	4	8	16
2000-2015	2	7	20
NAFTA: January 1992 to June 1995	11	11	10
China WTO Accession: Jan 2000 to Dec 2002	3	5	36
November 2016 to December 2018	9	20	39
March-December 2018	15	27	48
January-July 2019	12	29	42

Note: Table entries report the percent of articles about Economic Policy Uncertainty that discuss trade policy matters in leading newspapers for the indicated countries. They are tabulated from data developed by Baker et al. (2016) for the United States, Arbatli et al. (2019) for Japan and Davis et al. (2019) for China.

Table 2. Trade Policy News Jolted the U.S. Stock Market in 2018 and 2019

	Number of Daily Stock Market Jumps Greater than |2.5%|	Number Attributed to Trade Policy News	Percent
January 1900 to February 2018	1,103	7	0.6%
March 2018 to July 2019	11	4	35.7%

Note: This table is a tabulation of results in Baker, Bloom, Davis and Sammon (2019), who consider all daily jumps in the U.S. stock market greater than 2.5%, up or down, since 1900. They classify the reason for each daily stock market jump into 16 categories based on human readings of next-day accounts in the *Wall Street Journal*. The table reports the total number of jumps in the indicated time periods and the number attributed primarily to news about trade policy, according to the human readings. The four dates from March 2018 to July 2019 attributed to trade policy, and the corresponding value-weighted returns on the S&P 500, are 22 March 2018, -2.52%; 26 March 2018, 2.72%; 4 December 2018, -3.24%; and 4 January 2019, 3.43%.