Policy Uncertainty vs. the VIX: Streets and Horizons

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Newspaper-based measures of U.S. and Global Economic Policy Uncertainty (EPU) are highly elevated in recent years (but down sharply in recent months). In glaring contrast, the VIX fell precipitously after the Global Financial Crisis, fell again after the U.S. Debt Ceiling Crisis in 2011, and is at historically low levels in the past year. How should we think about this contrast?

As a measure of uncertainty about equity returns, the VIX offers a distinctly Wall Street perspective. Only 1/3 of national income goes to capital. Moreover, listed firms account for less than 30 percent of private sector employment, and they skew toward bigger, older, capital-intensive, skill-intensive and multinational firms. Changes in the mix of listed firms and their leverage choices also affect the VIX.

The Baker-Bloom-Davis EPU indices focus on policy-related concerns and rely on newspapers, yielding a Main Street perspective. Unlike the standard 30-day VIX, the effective horizon of newspaper-based EPU indices varies through time with the mix of economic and policy-related risks, the electoral cycle, and more. Given major differences in coverage, scope and horizon, dissimilar time paths for EPU and the VIX should come as no surprise.
Summary, 2

Horizons: Longer-horizon measures of implied volatility in equity returns show much smaller declines in recent years. While the 30-day VIX fell 70% from Q4 2008 to 2016 and 51% from August-September 2011, the 10-year implied equity return volatility (IERV) fell only 13-15%. As of 2016 (my most recent data), the 10-year IERV remains above its pre-GFC levels. In monthly data from 2002 to 2016, The EPU correlation with implied volatility rises with the return horizon, from 0.56 for the 30-day VIX to 0.80 or more for the 3-, 5- and 10-year IERV.

Streets: Other evidence points to the Wall St./Main St. divide as another reason for the VIX-EPU contrast. (2) In contrast to overall EPU, and more consonant with the 30-day VIX, the BBD newspaper-based index of Monetary Policy Uncertainty (MPU) drifts down since 2011 and is near historic lows in 2017. I attribute this pattern to low and stable inflation rates and interest rates in recent years.
Summary, 3

A quick tour of text-based uncertainty indicators for selected countries illustrates several additional points:

1. The EPU impact of “global” events (e.g., the GFC) varies greatly across countries.

2. EPU reflects a wide and varying mix of events and concerns across countries and time.

3. Longer-term EPU drift differs greatly across countries.

4. U.S. policy uncertainty often reverberates globally. Recent concerns about the direction of U.S. trade policy are a prominent example.

5. Newspaper-based indices of monetary policy uncertainty for the United States and Japan correlate at about 0.3 in monthly data.

6. According to a simple text-based VIX tracker, 38% of all newspaper articles about equity market uncertainty refer to monetary policy.
Outline of Today’s Remarks

1. Quick look at U.S. Economic Policy Uncertainty (EPU), Global EPU, VIX

2. Why the VIX-EPU divergence?
   - Horizon matters
   - Street Matters
   - Monetary Policy Uncertainty
   - More horizon matters

3. Quick tour across and within countries
   - Highlighting a variety of domestic and global factors associated with EPU movements.
   - Category-level EPU measures for the US & Japan
   - Text-based VIX tracker
Our Economic Policy Uncertainty Indices rely on computer-automated newspaper searches

How it works for the U.S. Monthly EPU Index:

• For 10 major US papers, get monthly counts of articles that contain at least one word from each of three term sets:

  E: \{economic or economy\}
  P: \{regulation or deficit or “federal reserve” or congress or legislation or “white house”\}
  U: \{uncertain or uncertainty\}

  Include “the Fed”, “regulatory” and other variants.

• Scale the EPU count for each paper and month by the count of all articles in the same paper and month

• Standardize each paper’s scaled count to unit St. Dev., then sum over the 10 papers by month to get the U.S monthly index
U.S. Economic Policy Uncertainty Index, January 1985 to August 2017

More Newspaper-Based EPU Indices

• Monthly indices for 19 countries and Global EPU Index. More countries on the way.
• Historical indices from 1900 for US and UK
• Category-level indices for the US and Japan
• Daily indices for the US and UK
• Daily U.s. Equity Market Uncertainty Index
• Immigration Fear and Policy Uncertainty indices for the US, France, Germany, UK

Downloadable and regularly updated at http://www.policyuncertainty.com
Global Economic Policy Uncertainty Index, 1997 to Aug. 2017
Using Data for 18 Countries that Account for 2/3 of Global Output

Notes: Global EPU calculated as the GDP-weighted average of monthly EPU index values for US, Canada, Brazil, Chile, UK, Germany, Italy, Spain, France, Netherlands, Russia, India, China, South Korea, Japan, Ireland, Sweden, and Australia, using GDP data from the IMF’s World Economic Outlook Database. National EPU index values are from www.PolicyUncertainty.com and Baker, Bloom and Davis (2016). Each national EPU Index is renormalized to a mean of 100 from 1997 to 2015 before calculating the Global EPU Index.
Global EPU, U.S. EPU and 30-Day VIX
Quarterly Averages, 1990Q1 to 2017Q3

Understanding the Divergence Between the 30-Day VIX and EPU

- Horizon Matters
- Street Matters
- Monetary Policy Uncertainty
- More Horizon Matters: Uncertainty drivers and effects also vary by horizon
Horizon Matters

1. The standard VIX reflects options on the S&P 500 with a roughly 30-day horizon.
2. Movements in long-horizon IERV measures differ greatly from that of the 30-day VIX.
3. The effective horizon of our newspaper-based EPU is an empirical matter. It presumably varies over time with the mix of economic and policy-related risks, the electoral cycle, etc.
4. EPU and long-horizon IERV measures have remained elevated in recent years, even as the 30-day VIX fell to very low levels.
5. Broadly consistent with the story in Pastor and Veronesi (2017), but I lack the post-election data required to check their story directly.
Implied S&P 500 Return Volatility, Horizons from 30 Days to 10 Years, July 2002 to July 2016

Source: Data kindly supplied by the authors of Barrero, Bloom and Wright (2017).
### Implied Equity Return Volatility: Remarkably Low or Still High?

The 30-Day VIX fell more than 2/3 from Q4 2008 to 2016, and more than half since August-September 2011. In contrast, the 10-Year IERV fell only 13-15 percent.

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<tbody>
<tr>
<td>30 Days</td>
<td>12.4</td>
<td>58.0</td>
<td>35.5</td>
<td>17.4</td>
<td>11.1</td>
<td>7.0</td>
<td>70%</td>
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<td>51%</td>
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<tr>
<td>2 Years</td>
<td>16.5</td>
<td>39.6</td>
<td>31.4</td>
<td>23.5</td>
<td>4.0</td>
<td>4.0</td>
<td>41%</td>
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<td></td>
<td></td>
<td>25%</td>
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<tr>
<td>5 Years</td>
<td>19.1</td>
<td>36.4</td>
<td>31.7</td>
<td>25.6</td>
<td>3.7</td>
<td>3.7</td>
<td>30%</td>
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<td>19%</td>
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<tr>
<td>10 Years</td>
<td>22.3</td>
<td>33.2</td>
<td>32.5</td>
<td>28.4</td>
<td>3.4</td>
<td>3.4</td>
<td>15%</td>
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<td>13%</td>
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EPU Correlation with Implied Equity Return Volatility at Shorter and Longer Horizons, July 2002 to July 2016

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Correlation</th>
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<tbody>
<tr>
<td>1m</td>
<td>0.56</td>
</tr>
<tr>
<td>3m</td>
<td>0.61</td>
</tr>
<tr>
<td>6m</td>
<td>0.67</td>
</tr>
<tr>
<td>1y</td>
<td>0.73</td>
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<tr>
<td>2y</td>
<td>0.78</td>
</tr>
<tr>
<td>3y</td>
<td>0.80</td>
</tr>
<tr>
<td>5y</td>
<td>0.82</td>
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<tr>
<td>10y</td>
<td>0.81</td>
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Main Street vs. Wall Street

The stock market is not the economy.

1. Only 1/3 of national income goes to capital.
2. Listed firms: 29% of private sector employment in 2000 (Davis et al., 2007), almost surely less in recent years.
3. Some distinguishing characteristics of listed firms:
   – Bigger, older, more capital-intensive
   – Big role for multinationals, with much activity abroad
   – A different industry mix than private sector as a whole
4. Big trends in number and character of listed firms:
   – Huge influx of riskier, younger firms in 80s and 90s (Fama & French, 2004, Davis et al., 2007, Brown and Kapadia, 2007)
   – Huge net exit since early 2000s (Gao et al., 2013, Doidge et al., 2017)
5. Leverage affects equity returns volatility.
The behavior of the Monetary Policy Uncertainty (MPU) Index of Baker, Bloom and Davis (2016) is broadly consistent with the Street Matters interpretation of the VIX-EPU contrast.

- 28% of newspaper articles meeting their EPU criteria contain “the Fed” or other terms pertaining to monetary policy.
- Their newspaper-based MPU Index drifts down since 2011 and – like the VIX, but unlike EPU – is near historic lows in 2017.
- I attribute this MPU pattern to low and stable inflation rates and interest rates in recent years, which apparently drive news coverage of monetary policy uncertainty more than the concerns about unconventional policies that capture the attention of monetary economists and Fed watchers.
- Bekaert et al. (2013) provide evidence that monetary policy plays an important role in the movements of the 30-day VIX.
Baker-Bloom-Davis Newspaper-Based Monetary Policy Uncertainty Index, 1985Q1 to 2017Q3

Husted-Rogers-Sun Newspaper-Based Monetary Policy Uncertainty Index, 1985M1 to 2015M1

Source: Husted, Rogers and Sun (2016). This figure displays their baseline MPU index from January 1985 to December 2015.
Two MPU Indices: Inconsistent Messages?

The HRS Monetary Policy Uncertainty Index shows no downward drift in recent years. How do we square that pattern with the behavior of the MPU Index from BBD?

1. The HRS and BBD indices differ with respect to newspaper coverage, term sets and scaling factors.

2. BBD scale newspaper-level MPU counts by the count of all articles in the same paper and month. HRS scale MPU counts by the count of articles mentioning the Fed in the same paper and month. *Thus, if newspapers devote less coverage to monetary policy as concerns about inflation and interest rates diminish, it yields a downward drift in the BBD, but not the HRS, measure.*

3. In addition, HRS restrict attention to the WSJ, NY Times and Washington Post, high-end papers that offer more coverage of arcane MP matters (quantitative easing, forward guidance, etc.) than the much broader set of newspapers used by BBD.
Uncertainty Drivers and Effects Also Vary with Horizon

Barrero et al. (2017) study the behavior of implied equity return volatility at horizons from 30 days to 10 years. Using firm-level data, they find:

- Large effects of oil price uncertainty on the 30-day VIX. Larger effects of policy uncertainty on implied volatility at longer horizons. CEO turnover effects on implied volatility at shorter and longer horizons.

- R&D, capex and employment growth respond more negatively to longer-horizon implied volatility measures than short-horizon implied volatility. This pattern is more pronounced for R&D than for capex, and more pronounced for both than for employment growth.
Quick Look Abroad

The next slides present newspaper-based EPU indices for Mexico, Brazil and Russia. They illustrate four points:

1. The EPU impact of “global” events (e.g., the Global Financial Crisis) varies greatly across countries

2. EPU reflects a wide mix of events and concerns across countries and time:
   - Mexico: Financial crises, political transitions
   - Brazil: Currency and financial crises, political corruption
   - Russia: Military conflicts and geopolitical tensions

3. Longer term EPU drift differs greatly across countries – e.g., Mexico offers a sharp contrast to Brazil

4. U.S. policy matters can reverberate globally: U.S. policy during the GFC is prominent example, but so are recent concerns about the direction of U.S. trade policy.
Economic Policy Uncertainty Index for Mexico, January 1996 to July 2017 (Beta Version)

Notes: Index reflects scaled monthly counts of articles in El Norte, Mural and Reforma containing (económica OR economía) and (incerto OR incertidumbre) and one or more policy-relevant terms. Normalized to a mean of 100 from 1996 to 2016. Index methods follow “Measuring Economic Policy Uncertainty” by Baker, Bloom and Davis. Data at www.PolicyUncertainty.com.
Kizlyar hostage crisis; PM Chubais resigns

Acting PM Gaidar resigns

Constitutional Crisis

Russian financial crisis

Russian military exits Chechnya

First Chechen War

Second Chechen War

Putin becomes PM

Russian Revolution in Ukraine

Orange Revolution in Ukraine

Timoshenko resigns; Terror attack in Nalchik

Parliament dismissed in Ukraine

Terror attack in Nalchik & Stavropol

Medvedev election

Putin election

Taper Tantrum

Lehman Brothers Failure

Ukraine Conflict

Duma elections and protests against election fraud

Kiev Euromaidan; Crimea annexation

First Chechen War

EPU Index for Russia, October 1992 to August 2014

Some Closer Looks with Text-Based Measures

1. U.S. Financial Regulation Uncertainty Index
2. U.S. Healthcare Policy Uncertainty Index
3. Monetary Policy Uncertainty Indices for Japan and the United States Compared
4. Japan Trade Policy Uncertainty Index
5. A Simple Text-Based VIX Tracker
Financial Regulation Uncertainty Index, 1985Q1 to 2017Q3

Fannie & Freddie emergency measures, Lehman failure, AIG takeover, Reserve Primary Fund “breaks the buck”, short selling bans, and more

Iraqi Invasion of Kuwait
1987 Stock Market Crash
FDIC Improvement Act of 1991
Dodd-Frank Act, QE2
Sarbanes-Oxley Act of 2002
9/11 Attacks
Obama-Romney Election
TARP, QE1, New Fed, Treasury and FDIC guarantees & lending facilities, new bank regulations, and more

Affordable Care Act: Legislative and electoral battles, uncertainty about effects, constitutional challenges, implementation snafus

Bush announces Medicare reform initiative, leading to Medicare Act of 2003

Clinton healthcare reform initiative

Monetary Policy Uncertainty Indices (BBD) for the U.S. and Japan Compared

Correlation of about 0.3, although the US and Japan Monetary PU indices co-move more closely in certain periods, e.g., 2007-2011.

Husted et al. (2016b) find a correlation of 0.36 for their Japan and U.S. MPU indices.

Reproduced from “Policy Uncertainty in Japan” by Arbatli et al. (2017).
Japan Trade Policy Uncertainty Index

Reproduced from “Policy Uncertainty in Japan” by Arbatli et al. (2017).
A Simple Text-Based VIX Tracker

Following BBD (2016), Baker et al. (2017) first construct a text-based index of Equity Market Uncertainty (EMU):

- For 9 major US papers, get monthly counts of articles that contain at least one term from each of following sets:
  
  **E:** \{economic or economy or business or financial\}
  
  **M:** \{“stock market” or equity or equities or “S&P” or ”S & P”\}
  
  **U:** \{uncertain or uncertainty\}

- Scale the EMU count for each paper and month by the count of all articles in the same paper and month

- Standardize each paper’s scaled count to unit St. Dev., then sum over the papers by month to get the monthly index

In a second step, they regress the VIX (monthly averages of daily values) on contemporaneous and lagged EMU values from January 1990 to August 2017. The fitted values of this regression yields their text-based VIX tracker
VIX (Blue) and Fitted VIX (Red), January 1990 to August 2017

Fitted from $VIX_t = \alpha + 4.46EMU_t + 3.54EMU_{t-1}$.  

$n = 331, \quad R^2 = 0.51$
Percent of EMU Articles that Contain One or More Terms in Selected Category, 1990-2017

Using a 20% Sample of EMU Articles from Four Newspapers

<table>
<thead>
<tr>
<th>Category</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Taxes</td>
<td>29</td>
</tr>
<tr>
<td>Government Spending, Deficits, Debt</td>
<td>8</td>
</tr>
<tr>
<td>Trade Policy</td>
<td>4</td>
</tr>
<tr>
<td>Healthcare Policy</td>
<td>4</td>
</tr>
<tr>
<td>Financial Asset Prices</td>
<td>32</td>
</tr>
<tr>
<td>National Security</td>
<td>20</td>
</tr>
<tr>
<td>Monetary Policy</td>
<td>38</td>
</tr>
<tr>
<td>Energy &amp; Environmental Regulations</td>
<td>1</td>
</tr>
<tr>
<td>Labor Regulations</td>
<td>1</td>
</tr>
<tr>
<td>Financial Regulations</td>
<td>8</td>
</tr>
<tr>
<td>All Regulations</td>
<td>14</td>
</tr>
<tr>
<td>Litigation Matters</td>
<td>8</td>
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</tbody>
</table>

For the category-specific term sets, see the appendix to Davis (2017).
Additional Slides –
Not for Prepared Remarks
Japan EPU Index, January 1987 to March 2017

Shaded areas denote recessions.
Japan & U.S. Uncertainty Indices for Fiscal Policy Compared

Sources: Baker et al. (2016) and authors' calculations.
Hassan et al. (2017) use machine-learning methods to construct PRisk from the transcripts of quarterly earnings conference calls.
References


References


