THE WORLD UNCERTAINTY INDEX

Hites Ahir (IMF), Nick Bloom (Stanford University) and Davide Furceri (IMF)

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Outline

- Motivation and contribution
- Construction of the WUI
- Reliability checks
- Stylized facts
- New evidence on the effect of uncertainty
- Next steps
Motivation and contribution

Why an other measure?
- Existing measures available mostly for advanced economies...
- ...and often not comparable across countries.

What we do?
- We construct a new index of uncertainty—the World Uncertainty Index (WUI)—for 143 individual countries on a quarterly basis from 1952 onwards using standardized and cross-country consistent sources: the Economist Intelligence Unit (EIU) country reports.
Construction of the WUI-The EIU Reports

**Focus**
- The country report typically covers politics, economic policy, the domestic economy, foreign and trade payments events, and on their overall impact on the country risk. In short, these reports examine and discuss the main economic, financial, and political trends in a country.

**Process**
- In the *writing* step, field experts prepare a draft and send it to country experts based at headquarters.
- In the *editing* step, country experts at headquarters integrate the draft with their own inputs, and make sure the structure of the report is consistent and standardized. They also check that the report is consistent with the EIU’s global and regional views.
- In the second *check* step, a senior staff at headquarters does a thorough check of the draft.
- In the *sub-editing* step, sub-editors do a check to make sure that the report is well drafted, consistent, accurate, and do fact checking.
- In the *production* step, the report is checked to make sure that the report is properly coded and styled adequately.
Construction of the WUI

- We count the number of times uncertainty is mentioned in the EIU country reports. Specifically, for each country and quarter, we search through the EIU country reports for the words “uncertain”, “uncertainty”, and “uncertainties”.

- To make the WUI comparable across countries, we scale the raw counts by the total number of words in each report. (note: no systematic difference in the number of words across countries and over time).
Construction of the WUI

Pros
- Comparability of the WUI across countries:
  - The index is based on a single source that has specific topic coverage—economic and political developments.
  - The reports follow a standardized process and structure which helps to mitigate concerns about the accuracy, ideological bias and consistency of the WUI.

Cons
- We only have one EIU report per country per quarter, so a far smaller body of text than the EPU index, so the sampling noise is likely to be substantial higher.
- We are reliant on the accuracy of the EIU reports, which to our knowledge are extremely high quality, but it still raises potential concerns over reliance on one underlying source.
Note: The World Uncertainty Index (WUI) is computed by counting the frequency of uncertain (or the variant) in EIU country reports. The WUI is then normalized by total number of words, rescaled by multiplying by 1,000. Here is also rescaled by the global average of 1996Q1 to 2010Q4 such that 1996Q1-2010Q4=100. A higher number means higher uncertainty and vice versa. For the other countries covered by the EPU the median correlation is about 0.4.

EPU more global in nature, WUI more country-specific (Chile a remarkable example).
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### Reliable? WUI vs. EPU & Volatility—panel framework

<table>
<thead>
<tr>
<th>Dependent Variable WUI</th>
<th>(I)</th>
<th>(II)</th>
<th>(III)</th>
<th>(IV)</th>
<th>(V)</th>
<th>(VI)</th>
<th>(VII)</th>
<th>(VIII)</th>
<th>(IX)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EPU</strong></td>
<td>123.843*** (2.96)</td>
<td>129.064*** (4.60)</td>
<td>59.941*** (3.52)</td>
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<tr>
<td><strong>Stock Vol</strong></td>
<td>0.353*** (3.30)</td>
<td>0.131** (2.08)</td>
<td>0.128** (2.19)</td>
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<td><strong>Growth</strong></td>
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<td></td>
<td>-0.025*** (-4.41)</td>
<td>-0.017*** (-3.58)</td>
<td>-0.007* (-1.90)</td>
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<tr>
<td><strong>Country FE</strong></td>
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<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<td><strong>Year FE</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
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<td><strong>N</strong></td>
<td>1558</td>
<td>1558</td>
<td>1558</td>
<td>3766</td>
<td>3766</td>
<td>3766</td>
<td>4768</td>
<td>4768</td>
<td>4768</td>
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<tr>
<td><strong>R² (within R²)</strong></td>
<td>0.10</td>
<td>0.10</td>
<td>0.42</td>
<td>0.02</td>
<td>0.00</td>
<td>0.38</td>
<td>0.01</td>
<td>0.01</td>
<td>0.29</td>
</tr>
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</table>

Note: The World Uncertainty Index (WUI) is computed by counting the frequency of uncertain (or the variant) in EIU country reports. The WUI is then normalized by total number of words and rescaled by multiplying by 1,000. The WUI is then normalized by total number of words, rescaled by multiplying by 1,000. A higher number means higher uncertainty and vice versa.

*,**,*** denote statically significance at 10, 5, and 1 percent respectively. T-statics in columns (I), (IV) and (VII) based on clustered standard errors. T-statics in the remaining columns based on Driscoll-Kraay standard errors. R² reported for columns (I), (IV) and (VII); otherwise within R² reported.
### Reliable? WUI & Elections

<table>
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<tr>
<th></th>
<th>t-2</th>
<th>t-1</th>
<th>t</th>
<th>t+1</th>
<th>t+2</th>
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<tbody>
<tr>
<td><strong>All elections</strong></td>
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<td></td>
<td>-0.002(-0.29)</td>
<td>0.022*** (2.63)</td>
<td>0.044*** (4.64)</td>
<td>0.047*** (4.78)</td>
<td>0.023** (2.90)</td>
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<tr>
<td><strong>Exogenous</strong></td>
<td>-0.003(-0.19)</td>
<td>0.036** (2.44)</td>
<td>0.074*** (4.21)</td>
<td>0.053*** (3.54)</td>
<td>0.015 (1.17)</td>
</tr>
</tbody>
</table>

Note: The World Uncertainty Index (WUI) is computed by counting the frequency of uncertain (or the variant) in EIU country reports. The WUI is then normalized by total number of words and rescaled by multiplying by 1,000. The WUI is then normalized by total number of words, rescaled by multiplying by 1,000. A higher number means higher uncertainty and vice versa.

t denotes time (quarter) of election. Dates for elections from Alesina et al. (2019). Sample: 377 election in 72 “democratic” countries, among which 166 are exogenous.

*,**,*** denote statically significance at 10, 5, and 1 percent respectively. T-statics in columns (I), (IV) and (VII) based on clustered standard errors.

T-statics in the remaining columns based on Driscoll-Kraay standard errors.
Note: The World Uncertainty Index (WUI) is computed by counting the frequency of uncertain (or the variant) in EIU country reports. The WUI is then normalized by total number of words and multiplying by 1,000. The WUI is then normalized by rescaling it using the average of 1996Q1 to 2010Q4 such that 1996Q1-2010Q4=100. A higher number means higher uncertainty and vice versa.
Stylized fact 2-Uncertainty higher in developing economies

The World Uncertainty Index (WUI) is computed by counting the frequency of uncertain (or the variant) in EIU country reports. The WUI is then normalized by total number of words and rescaled by multiplying by 1,000. A higher number means higher uncertainty and vice versa.
Stylized fact 3 - inverted U-shape between uncertainty and democracy

Note: The World Uncertainty Index (WUI) is computed by counting the frequency of uncertain (or the variant) in EIU country reports. The WUI is then normalized by total number of words and rescaled by multiplying by 1,000. A higher number means higher uncertainty and vice versa.
Stylized fact 4: Uncertainty spikes more synchronized in advanced economies

<table>
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<tr>
<th></th>
<th>Synchronization</th>
<th>Correlation</th>
<th>Variance Explained by 1st Factor—PCA</th>
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<tbody>
<tr>
<td>All countries</td>
<td>-0.167</td>
<td>0.071</td>
<td>0.150</td>
</tr>
<tr>
<td>Advanced economies</td>
<td>-0.146</td>
<td>0.121</td>
<td>0.221</td>
</tr>
<tr>
<td>Emerging and low-income</td>
<td>-0.185</td>
<td>0.011</td>
<td>0.144</td>
</tr>
<tr>
<td>economies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>European</td>
<td>-0.134</td>
<td>0.224</td>
<td>0.283</td>
</tr>
</tbody>
</table>

Note: synchronization between country $i$ and $j$ at time $t$ defined as: $\varphi_{i,j,t} = -|U_{i,t} - U_{j,t}|$, where $U$ denotes the WUI.
Stylized fact 4—with higher trade and financial linkages

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<tr>
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<th>(I)a</th>
<th>(II)a</th>
<th>(III)</th>
<th>(IV)</th>
<th>(V)</th>
<th>(IV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade linkages</td>
<td>0.113** (2.37)</td>
<td>0.741** (2.47)</td>
<td>0.738** (2.49)</td>
<td>0.746** (2.52)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial linkages</td>
<td>0.131** (2.32)</td>
<td>0.314** (1.95)</td>
<td>0.313** (2.01)</td>
<td>0.317** (2.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output synchronization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.011*** (3.10)</td>
<td></td>
</tr>
</tbody>
</table>

Country-pair FE: No, No, Yes, Yes, Yes, Yes
Time FE: Yes, Yes, Yes, Yes, Yes, Yes
N: 15,393, 15,393, 15,393, 15,393, 15,393, 15,393

Note: synchronization between country $i$ and $j$ at time $t$ defined as: $\psi_{i,j,t} = -|U_{i,t} - U_{j,t}|$, where $U$ denotes the WUI. Estimates are based on the following equation: $\psi_{i,j,t} = \alpha_{i,j} + \gamma_t + \beta_{i} TR_{i,j,t} + \beta_{j} FI_{i,j,t} + \delta O_{i,j,t} + \epsilon_{i,j,t}$ where $TR_{i,j}$ denotes trade linkages—defined as bilateral trade between country $i$ and $j$, normalized by the sum of total trade of country $i$ and $j$; $FI_{i,j}$ denotes financial linkages—defined as bilateral assets and liabilities between country $i$ and $j$, normalized by the sum of total assets and liabilities of country $i$ and $j$. $O_{i,j}$ denotes output synchronization—defined as minus the absolute value GDP growth difference between country $i$ and $j$, normalized by the sum of GDP growth of country $i$ and $j$. **,*** denote significance at 5 and 1 percent, respectively. Country-pair and time fixed effects included but not reported.

a dummy for common language and past or present colonial relationship included.
Approaches

- Effect of uncertainty shocks on output
  - quarterly data (smaller sample)
  - VAR approach
  - IV-SVAR using exogenous elections as instruments

- Heterogeneity across countries ➔ larger effects in countries with weaker institutions
  - annual data (entire sample)
  - looking both at output and investment
  - local projection
  - role of institutions

- Heterogeneity across sectors ➔ larger effects in sectors that are more financially constrained
  - annual data for 22 industries
  - looking both at output and investment
  - role of financial constraints
Ongoing work and next steps

- Extend time coverage back to 1952
- Trade uncertainty (new measure and analysis)
- Other categories (monetary, fiscal, political, external vs. domestic..)
Additional Slides
Note: VAR fit to quarterly data for a panel of 46 countries from 1996q1 to 2018q2. Impulse responses of GDP to a one-standard deviation increase in the WUI—equal to the change in average value in the index from 2014 to 2016—based on a Cholesky decomposition with the following order: the log of average stock return, the WUI and GDP growth. The specification includes four lags of all variables. Country and time fixed effects are included.
Effect of uncertainty on economic activity—quarterly

Note: VAR fit to quarterly data for a panel of 46 countries from 1996q1 to 2018q2. Impulse responses of GDP to a one-standard deviation increase in the WUI—equal to the change in average value in the index from 2014 to 2016—based on a Cholesky decomposition with the following order: the log of average stock return, the WUI and GDP growth. The specification includes four lags of all variables. Country and time fixed effects are included.
Note: VAR fit to quarterly data for a panel of 42 countries from 1996q1 to 2018q2. Impulse responses of GDP to a one-standard deviation increase in WUI—equal to the change in average value in the index from 2014 to 2016—using as instrument exogenous elections and based on a Cholesky decomposition with the following order: exogenous elections, the log of average stock return, the WUI and GDP growth. The specification includes four lags of all variables. Country and time fixed effects are included. SVAR-IV approach of Plagborg-Moller and Wolf (2019).

First stage: \( WUI_{it} = 0.183 + 0.098 \text{Exogenous} \)

\( t \)-statistics in parenthesis.
Effect of uncertainty on economic activity—annual

Note: Response estimated using the local projection method (Jorda 2005): $y_{i,t+k} - y_{i,t-1} = \alpha_i + \gamma_t + \beta WUI_{i,t} + \theta X_{i,t} + \epsilon_{i,t}$

where $y$ is the log of output (investment); $\alpha_i$ are country-fixed effects; $\gamma_t$ are time-fixed effects; $X$ is a set of controls including lags of the growth rate of output and of the WUI index.

Estimates based on annual data for a panel of 143 countries from 1996 to 2017. Solid line denoted the impulse responses of GDP to a one-standard deviation increase in the WUI—equal to the change in average value in the index from 2014 to 2016. Dotted lines denote 90 percent confidence bands.
Effect of uncertainty on investment—role of institutions

Note: Response estimated using the local projection method (Jorda 2005): \[ y_{it+k} - y_{it-1} = \alpha_i + \gamma_t + \beta^1 WUI_{it} + \beta^h (1 - D_i) WUI_{it} + \theta X_{it} + \epsilon_{it} \]

where \( y \) is the log of output (investment); \( \alpha_i \) are country-fixed effects; \( \gamma_t \) are time-fixed effects; \( X \) is a set of controls including lags of the growth rate of output and of the WUI index.

Estimates based on annual data for a panel of 143 countries from 1996 to 2017. Solid line denoted the impulse responses of GDP to a one-standard deviation increase in the WUI—equal to the change in average value in the index from 2014 to 2016. Dotted lines denote 90 percent confidence bands. Rue of law based on WDI.

Results robust for different measures of institutional quality, to different thresholds, controlling for the level of development, unsegmenting rule of law with European settle mortality rates.
Effect of uncertainty on investment—role of institutions

Note: Response estimated using the local projection method (Jorda 2005): $y_{it+k} - y_{it-1} = \alpha_i + \gamma_t + \beta^l D_i WUI_{it} + \beta^h (1 - D_i) WUI_{it} + \theta X_{it} + \varepsilon_{it}$

where $y$ is the log of output (investment); $\alpha_i$ are country-fixed effects; $\gamma_t$ are time-fixed effects; $X$ is a set of controls including lags of the growth rate of output and of the WUI index.

Estimates based on annual data for a panel of 143 countries from 1996 to 2017. Solid line denoted the impulse responses of GDP to a one-standard deviation increase in the WUI—equal to the change in average value in the index from 2014 to 2016. Dotted lines denote 90 percent confidence bands. Rule of law based on WDI.

Results robust for different measures of institutional quality, to different thresholds, controlling for the level of development, unsegmenting rule of law with European settle mortality rates.
Effect of uncertainty on economic activity—sectoral data and role of financial constraints

Note: Response estimated using the following specification: \( \Delta y_{jit} = \alpha_{ij} + \gamma_{it} + \delta_{jt} + \sum_{k=0}^{3} \beta_{k} WUI_{lt-k} EFD_j + \epsilon_{jit} \)

where \( y \) is the log of sectoral output; \( \alpha_{ij} \) are sector-country fixed effects; \( \gamma_{it} \) are country-time fixed effects; \( \delta_{jt} \) are sector-time fixed effects; \( EFD \) is the Rajan and Zingales's (1998) measure of the degree of dependence on external finance in each industry—measured as the median across all U.S. firms, in each industry, of the ratio of total capital expenditures minus the current cash flow to total capital expenditures. Estimates based on annual data for a panel of 22 industries, 56 countries from 1995 to 2017 (the size of the estimation sample is 25,618 observations).

Solid line denotes the differential output effect to a one-standard deviation increase in the WUI—equal to the change in average value in the index from 2014 to 2016—of an industry with high external financial dependence (at the 75th percentile distribution of the indicator) compared to an industry with low external financial dependence (at the 25th percentile distribution of the indicator). Dotted lines denote 90 percent confidence bands.
Time coverage

United States

- President Carter’s tax policy proposal
- Vietnam War
- recession of 1960
- Black Monday
- Credit crunch
- Gulf War II
- Fiscal cliff
- election of President Trump
- political gridlock
- Trade war
- recession of 1960
- 9/11
- 2001-2002
- 2003-2004
- 2005-2006
- 2007-2008
- 2009-2010
- 2011-2012
- 2013-2014
- 2015-2016
- 2017-2018

United States

- Q1-1952
- Q4-1953
- Q3-1955
- Q2-1957
- Q1-1959
- Q4-1960
- Q3-1962
- Q2-1964
- Q1-1966
- Q4-1967
- Q3-1969
- Q2-1971
- Q1-1973
- Q4-1974
- Q3-1976
- Q2-1978
- Q1-1980
- Q4-1981
- Q3-1983
- Q2-1985
- Q1-1987
- Q4-1988
- Q3-1990
- Q2-1992
- Q1-1994
- Q4-1995
- Q3-1997
- Q2-1999
- Q1-2001
- Q4-2002
- Q3-2004
- Q2-2006
- Q1-2008
- Q4-2009
- Q3-2011
- Q2-2013
- Q1-2015
- Q4-2016
- Q3-2018
Argentina

- Uncertainty related to mistrust between President Livingstone and his commanders-in-chief
- Uncertainty related to political turmoil between the armed forces and the Peronists
- Uncertainty related to the election of President Carlos Menem
- Deteriorating fiscal and financing conditions and rising political uncertainty

Brazil

- Uncertainty related to an Army coup by General Lott
- Political and economic uncertainty and the possible return of ex-President Jânio Quadros
- The resignation of Miss Zelia Cardoso de Mello, the formerly all-powerful economy minister and the phasing down of the price freeze
- Uncertainty related to privatization under President Itamar Franco
- Uncertainty related to favorable external environment
- Uncertainty related to upcoming elections
uncertainty related to the economy and politics

uncertainty related to the coup by General Phaidon Gizikis

uncertainty related to the outcome of the elections—Andreas Papandreou

uncertainty related to inconclusive elections

uncertainty related to the economy

economic and political uncertainty related to sovereign-debt sustainability and bank solvency and Grexit

uncertainty related to Spain's euro zone membership

uncertainty related to a referendum and unilateral declaration of independence in Catalonia

uncertainty related to the economy and politics

uncertainty related to General Francisco Franco's illness and violence from extremist groups

uncertainty related to upcoming elections

uncertainty related to the economy

uncertainty related to speculation about the political future of the prime minister, José Luis Rodríguez Zapatero

political uncertainty related to the recent elections

uncertainty related to the economy

uncertainty related to the economy and politics

uncertainty related to upcoming elections

uncertainty related to the economic and political uncertainty related to sovereign-debt sustainability and bank solvency and Grexit

uncertainty related to Spain's euro zone membership

uncertainty related to a referendum and unilateral declaration of independence in Catalonia

uncertainty related to the economy

uncertainty related to the economy and politics

uncertainty related to upcoming elections

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China

- General economic uncertainty
- Uncertainty related to the cultural revolution
- General economic and political uncertainty
- Uncertainty over how future leadership transitions will be handled
- General economic uncertainty
- Uncertainty related to the transition to a younger generation of political leaders

United Kingdom

- Sharp fall in stock exchange prices
- Opposition to join the EEC (European Economic Community)
- Uncertainty related to the 1964 general elections
- Impending elections and a potential referendum on the UK's membership of the EU
- Uncertainty about the outcome of Brexit negotiations
- Great Recession
- Implications of the Brexit referendum verdict.
Time coverage

World Uncertainty Index: (1952q1 to 2019Q3, simple average)

World Uncertainty Index: (1952Q1 to 2019Q3, GDP weighted average)
Note: The font in blue indicates the tariff measure taken, and the font in black indicates the narrative of the World Trade Uncertainty index. A higher number means higher trade uncertainty and vice versa. The source for the data on key dates in the US-China trade negotiations comes from Bown and Kolb (2019).
Monetary policy uncertainty

Correlation: 0.7
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