Measuring Economic Policy Uncertainty

Steven J. Davis
Based on Research with Scott Baker & Nick Bloom

National University of Singapore
7 April 2016
Broadly held view that uncertainty matters:

Olivier Blanchard (January 2009)
“Uncertainty is largely behind the dramatic collapse in demand. Given the uncertainty, why build a new plant, or introduce a new product now? Better to pause until the smoke clears.”

Christina Romer (April 2009)
“Volatility has been over five times as high over the past six months as it was in the first half of 2007. The resulting uncertainty has almost surely contributed to a decline in spending.”

Larry Summers (March 2009)
“…unresolved uncertainty can be a major inhibitor of investment. If energy prices will trend higher, you invest one way; if energy prices will be lower, you invest a different way. But if you don’t know what prices will do, often you do not invest at all.”

Scott Baker, Nick Bloom and Steve Davis
Why Policy-Related Uncertainty?

Recent and Ongoing Episodes

- **United States**: Debt ceiling fights, fiscal cliff, Obamacare, deepening political polarization, Trump vs. Sanders (or Clinton)?

- **Europe**: Serial sovereign debt & banking crises in the Eurozone, Brexit referendum, flood of migrants from the Middle East and North Africa

- **China**: Leadership transition circa 2012, stock market policy missteps

- **Russia**: Military and geopolitical conflicts, weak rule of law
Policy-Related Uncertainty Can Hamper Economic Performance By:

- Causing businesses to delay or forego investment and hiring when they are costly to reverse
- Raising the cost of debt and equity finance, thereby discouraging investment
- Causing households to behave more cautiously, cutting back on spending
- Leading risk-averse managers to behave more cautiously

Not an exhaustive list. Recent work considers other channels through which EPU hampers economic performance – e.g., by intensifying monopoly pricing distortions in DSGE models (Fernandez-Villaverde et al., 2015).
Today’s Talk

1. Quantify economic policy uncertainty (EPU) based on newspaper coverage.
2. Evaluate our approach and cross-check against other measures and methods.
3. Review some evidence on policy uncertainty and economic performance
4. Look at the relationship of immigration fears to policy uncertainty (if time allows)
5. Conclusions
What Do Our Measures Seek to Capture?

All of the following:

• Uncertainty about *who* will make economic policy decisions – e.g., who will win the next elections?

• Uncertainty about *what* economic policy actions decision makers will undertake, and *when*.

• Uncertainty about the economic *effects* of policy actions – past, present and future actions

• Economic uncertainty induced by policy inaction

• Economic uncertainty related to national security concerns and other policy matters that are not mainly economic in character
Our Economic Policy Uncertainty Indices rely on computer-automated newspaper searches

How it works for the United States:

• 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.

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

• Normalize 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. Newspaper-based EPU Index, 1985 to Sep. 2015**

Which policy categories most account for high U.S. EPU in 2008-2012? Newspaper articles point to concerns about fiscal and healthcare policies.

<table>
<thead>
<tr>
<th>Category</th>
<th>1985-2007</th>
<th>2008-2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxes</td>
<td>35.2</td>
<td>61.1</td>
<td>25.9</td>
</tr>
<tr>
<td>Health care</td>
<td>12.7</td>
<td>33.3</td>
<td>20.6</td>
</tr>
<tr>
<td>Regulation</td>
<td>14.9</td>
<td>28.4</td>
<td>13.6</td>
</tr>
<tr>
<td>Social Security</td>
<td>10.3</td>
<td>19.4</td>
<td>9.1</td>
</tr>
<tr>
<td>Government spending</td>
<td>15.0</td>
<td>23.9</td>
<td>8.9</td>
</tr>
<tr>
<td>Sovereign debt, currency crisis</td>
<td>1.4</td>
<td>2.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Monetary policy</td>
<td>29.0</td>
<td>27.6</td>
<td>-1.5</td>
</tr>
<tr>
<td>National security</td>
<td>25.3</td>
<td>19.9</td>
<td>-5.4</td>
</tr>
</tbody>
</table>

Table construction: First, look at EPU articles and count those that contain category-specific terms. Second, express the category counts as a percent of the average EPU article count from 1985 to 2012. We use Newsbank’s coverage of about 1,000 US newspapers for this exercise. See Table 1 in Baker, Bloom and Davis (2015) for a more detailed analysis.
Figure 3: Healthcare Policy Uncertainty Index, 1985 to 2014, Quarterly

Notes: The index reflects the frequency of newspaper articles about economic policy uncertainty and healthcare policy matters, as indicated by terms like “healthcare,” “hospital,” “health insurance,” and “Medicare.” Data are from Baker, Bloom and Davis (2015) and are available and updated monthly at www.PolicyUncertainty.com. Normalized to a mean of 100 from 1985 to 2009.
European Economic Policy Uncertainty Index

Source: [www.policyuncertainty.com](http://www.policyuncertainty.com). Based on 10 papers (El Pais, El Mundo, Corriere della Sera, La Repubblica, Le Monde, Le Figaro, the Financial Times, Times, Handelsblatt, FAZ.)
Notes: Index reflects scaled monthly counts of articles containing ‘uncertain’ or ‘uncertainty’ or ‘uncertainties’ or ‘uncertainties’, ‘economic’ or ‘economy’, and one or more of policy-relevant terms listed for India in Appendix A. The series is normalized to mean 100 from 2003 to 2010 and based on the following newspapers: The Economic Times, Times of India, Hindustan Times, The Hindu, Financial Express, Indian Express, and the Statesman.
Index of Economic Policy Uncertainty for Japan

Notes: Index reflects scaled monthly counts of articles in Yomiuri and Asahi containing Japanese-language terms for ‘uncertain’ or ‘uncertainty’, ‘economic’ or ‘economy’, and one or more selected policy terms. The series is normalized to mean 100 from 1985-2009 and runs from June 1988 to January 2015.
North Korean Economic Policy Uncertainty Index

Source: www.policyuncertainty.com. Data from 0 North Korean newspapers
EPU Index for South Korea, January 1995 to December 2014

Notes: Index reflects scaled monthly counts of articles in six South Korean newspapers containing ‘uncertain’ or ‘uncertainty’, ‘economic’ or ‘economy’ or ‘commerce’, and one or more of the policy terms specified for South Korea in Appendix A. The series is normalized to mean 100 from 1995 to 2014.
EPU Index for Russia, October 1992 to August 2014

- **First Chechen War**: Acting PM Gaidar resigns; Russian military exits Chechnya
- **Second Chechen War**: Russian financial crisis; Putin becomes PM; Orange Revolution in Ukraine
- **Constitutional Crisis**: Timoshenko resigns; Terror attack in Nalchik; Parliament dismissed In Ukraine
- **Ukraine Conflict**: Duma elections and protests against election fraud; Terror attacks in Nalchik & Stavropol
- **Kiev Euromaidan**: Putin election; Medvedev election; Lehman Brothers Failure; Taper Tantrum
- **Russian financial crisis**: Kizlyar hostage crisis; PM Chubais resigns

Source: [www.policyuncertainty.com](http://www.policyuncertainty.com). Data from Kommersant daily newspaper (1992-2014)
Notes: Index reflects scaled monthly counts of articles containing ‘China’ or ‘Chinese’, ‘uncertain’ or ‘uncertainty’, ‘economic’ or ‘economy’ and satisfying the ‘policy’ text filter specified for China in Appendix A. The series is normalized to mean 100 from 1985 to 2011 and based on the South China Morning Post, the leading English-language newspaper in Hong Kong.
Notes: Index reflects scaled monthly counts of articles in 6 major newspapers (Washington Post, Boston Globe, LA Times, NY Times, Wall Street Journal, and Chicago Tribune) that contain the same triple as in Figure 1, except the E term set includes “business”, “commerce” and “industry” and the P term set includes “tariffs” and “war”. Data normalized to 100 from 1900-2011.
Why has US policy uncertainty risen since 1960?

By Scott R. Baker, Nicholas Bloom, Brandice Canes-Wrone, Steven J. Davis, and Jonathan Rodden

We consider two classes of explanations for the rise in policy-related economic uncertainty in the United States since 1960. The first stresses growth in government spending, taxes, and regulation. A second stresses increased political polarization and its implications for the policy-making process and policy choices.

I. Rising Policy Uncertainty

There appears to be a strong upward drift in policy-related uncertainty after 1960. As evidence, Figure 1 plots a newspaper-based index of economic policy uncertainty (EPU) for the United States, showing a secular rise over the last
Evaluating Our Measurement Approach
Uncertainty and the Slow Recovery

A recession is a terrible time to make major changes in the economic rules of the game.

By GARY S. BECKER, STEVEN J. DAVIS AND KEVIN M. MURPHY

• We argued that policy-related uncertainty was at historically high levels, and that it was slowing the recovery from the Great Recession.
• Our evidence was impressionistic and indirect – Not a strong enough foundation for scientific progress
A) Proof-of-Concept: Comparing a newspaper-based index of equity market uncertainty to the VIX.

The newspaper-based index of *Equity Market Uncertainty* uses our E and U term sets but replaces the P set with "stock price", "equity price", and "stock market".

**Notes:** The news-based index of equity market uncertainty is based on the count of articles that reference 'economy' or 'economic', and 'uncertain' or 'uncertainty" and one of 'stock price', 'equity price', or 'stock market' in 10 major U.S. newspapers, scaled by the number of articles in each month and paper. The news-based index and the VIX are normalized to a mean of 100 over the period.
B) Large-Scale Human Audit Study

Teams of RAs read 12,000 randomly selected newspaper articles to code them as to “economic uncertainty”, “economic policy uncertainty” and more according to a 65-page audit guide.

Audit Methodology: Main Steps
1. Download all NY Times, LA Times, and SF Chronicle articles from 1985 to 2012 that pass our Economic Uncertainty Audit.
   - The number of articles per paper is 40 per year.
2. Draw 17 z values for each paper.
3. Assign 84 of the sampled articles for each paper to Kyle and 84 to Sophie. Call these subsamples Sub(Name, Paper).
4. Review the audit guide, and get ready to code the articles.
5. In summary, there are 12,000 articles in the audit.
6. Lastly, review and code the articles.

Economic Policy Uncertainty

August 30 Sampling Details, 2
3. Assign 84 of the sampled articles for each paper to Kyle and 84 to Sophie. Call these subsamples Sub(Name, Paper).

Auditing the Sampled Articles, 2
3. If yes to 2, then identify the policy category (checking all that apply):
   - Monetary policy
   - Fiscal policy
   - Taxes
   - Labor regulations
   - Legal policy
   - Competition policy
   - Government spending
   - Health care programs and regulations
   - National security and terrorism
   - Trade policy
   - Energy & environmental regulation, natural resources and commodities
   - Entitlement programs, social safety net, welfare programs
   - Financial regulation (including banking and equity markets)
   - Political conflict and leadership changes
   - Sovereign debt, exchange rate policy, foreign reserves
   - Other policy matters (specify)

4. Code other aspects of policy uncertainty treated in the article: direction of change, nature of policy uncertainty (is it about who, actions, or effects?), and whether it discusses policy concerns in the United States or foreign countries.

FAQ
4. Given that the outcome of government policy is always uncertain, at some level, does any mention of a new or proposed policy constitute EPU=1?
   - No. An article mentioning the policy itself, etc. does not constitute EPU=1.

True Positive 2
Our Love Affair With Malls Is on the Rocks
“..."There are days now when I make $10 and I think I had a good day," says Mark Glass, a 37-year-old who works in the mall. '...""I'm going to have to work for the next five years or so," says Glass..."

False Positive 5
Our Love Affair With Malls Is on the Rocks
“..."There are days now when I make $10 and I think I had a good day," says Mark Glass, a 37-year-old who works in the mall. '...""I'm going to have to work for the next five years or so," says Glass..."

False Negative 4
Our Love Affair With Malls Is on the Rocks
“..."There are days now when I make $10 and I think I had a good day," says Mark Glass, a 37-year-old who works in the mall. '...""I'm going to have to work for the next five years or so," says Glass..."
Audit Process Overview

1. The authors first read and discussed a few hundred randomly selected “EU” articles to develop a coding template, training process, and draft audit guide.

2. Pilot study of 2,000 EU articles by authors and RAs to improve training process, refine coding template, expand and improve audit guide, and refine sampling methods.

3. Main audit study of EU articles (basis for analysis):
   - Training and review process for all auditors
   - 65-page audit guide (available on the web)
   - Audit team meetings every week or two over 18 months to address questions, review “hard calls,” maintain esprit de corps, and monitor performance
   - Auditors read and coded 12,000+ articles
   - We randomized article selection, order of presentation to auditors, assignment of articles to multiple auditors
How We Use the Audit Study Results

1. Identify candidate “P” terms:
   – When auditor codes EPU=1, he or she also records policy terms that appear in article’s discussion of EPU.
   – Candidates: 15 frequently appearing P terms

2. Consider ~32,000 term-set permutations involving 4 or more candidate P terms. Choose the P term set that minimizes the sum of false positive and false negative error rates relative to the human EPU classifications.
   – This optimization yields our baseline P term set.
   – We do not use time-series variation to select P term set.
   – To our surprise, we were unable to develop simple compound text filters (e.g., {government AND tax}) that improve on our baseline term set.

3. Time-series comparisons of humans and computers (next 2 slides) and additional empirical results (following slide)
Economic Policy Uncertainty Index

Year


Notes: Index comparison from 1985 Q1 to 2012 Q1 based on 3,723 articles (4,388 audits) in the Chicago Tribune, Dallas Morning News, LA Times, Miami Herald, NY Times, San Francisco Chronicle, Washington Post and Wall Street Journal. Series are plotted quarterly to reduce sampling variability, with an average of 33 articles per quarter. Each series is normalized to 100 from 1985-2009. See text for additional discussion of the audit process and this comparison.
Figure C1: Human and Computer EPU Indices, 1900-2010, Annual

Notes: Index comparison from 1900 to 2010 based on 11,841 articles (15,156 audits) in the Chicago Tribune, Dallas Morning News, LA Times, Miami Herald, NY Times, San Francisco Chronicle, Washington Post and Wall Street Journal. Series plotted yearly to reduce sampling variability, with an average of 107 articles per year. Each series normalized to 100 from 1900 to 2010.
Other Selected Results from the Audit Study

• Only 5% of articles with $EPU^H = 1$ mainly discuss actual or prospective declines in policy uncertainty.
• 10% of $EPU^H = 1$ articles discuss uncertainty about who will make economic policy decisions, 68% discuss uncertainty about what policies will be undertaken or when, and 47% discuss uncertainty about the effects of past, present or future policy actions.
• The who share of $EPU^H = 1$ triples in presidential election years as compared to other years → the nature of policy uncertainty shifts substantially over the election cycle.
• 32% of $EPU^H = 1$ articles mention policy matters in other countries, often alongside domestic policy concerns.
Papers sorted into 5 most ‘Republican’ and 5 most ‘Democratic’ groups using the media slant measure from Gentzkow and Shapiro (2010).

C) Political Slant? Compare 5 most Republican and 5 most Democrat papers – they look very similar.
D) Policy Uncertainty Measures Based on Textual Analysis of the Fed’s Beige Books and Section 1A (Risk Factors) of Firms’ 10K Filings

Notes: The left scale shows frequency counts per Beige Book (normalized by word count) of “uncertainty” and references to policy uncertainty. The right scale reports the percentage of sentences in Section 1A (Risk Factors) of annual 10-K filings that contain one or more of the policy terms listed in Appendix C. The correlation between the Beige Book Normalized Policy Uncertainty Count and the EPU index is 0.54.
E) Market-Use Test

Market use suggests information value of our data:

I) Many policy organizations and financial institutions use our data, including Goldman Sachs, Citibank, JP Morgan, Wells Fargo, IMF, various central banks, and more. (see www.policyuncertainty.com).

II) Blackrock has its own in-house team that has picked up on our work and adopted methods similar to ours.

III) Bloomberg, FRED, Reuters and Haver stream our data for their business clients and other users.
Assessing the Effects of Economic Policy Uncertainty

- Country-level time-series evidence
- Firm-level statistical analysis
Country-Level Time-Series Evidence

• We fit standard time-series statistical models to data for 12 countries with EPU indices.

• EPU “shocks” foreshadow deteriorations in macroeconomic performance, as reflected by investment, employment and output measures.

• The effects are material, but moderate, in size.

• The right interpretation of these statistical results is unclear. Two possibilities:
  – Higher EPU causes the negative statistical effects
  – EPU shocks coincide with other negative developments that are not (fully) captured by the other variables in our statistical model, and the other developments cause the deterioration.
Firm-Level Regressions

• Micro data offer more scope to control for confounding factors and to identify causal effects.
• But, depending on the nature of the micro data, they may capture only a limited range of possible channels through which EPU affects performance.
• We use firm-level micro data to investigate the effects of EPU on firm-level stock-price volatility, investment rates and employment growth rates.
• Our approach exploits large differences across firms in exposure to policy factors (government spending and regulations). We investigate whether firms with greater exposure see larger responses to movements in our EPU index.
Exploiting differences across firms in share of revenues from sales to the federal government.


- Guided Missiles and Space Vehicles: 78%
- Health Services: 44%
- Ordnance and Accessories: 39%
- Search, Detection, Navigation,… Aeronautical Systems: 27%
- Engineering Services: 21%
- Aircrafts and Parts: 20%
- Ship and Boat Building and Repairs: 15%
- Books, Loose Leaf Binders, and Bookbinding: 10%
- Heavy Construction: 9%

Direct sales to federal government account for a small share of revenues in most other industries.
How Large Are the Estimated Effects of EPU on the Cross Section of Stock-Price Volatility?

Example: Overall U.S. EPU rose by 86 log points from 2006 to 2012, and Financial Regulation and Healthcare EPU indices rose by even larger amounts.

Estimated effects on option-implied firm-level stock price volatility in selected industries:

Ordnance: +4.6 log points
Heavy Construction: +0.6
Engineering Serv.: +3.3 points
Healthcare: +13.9
Aircraft, Parts: +3.3
Finance: +23.8

• Contrast to July-Aug. 2001 to Sep.-Oct 2001 (before and after 9-11) episode
Summary of Firm-Level Regression Results

- High EPU raises firm-level stock-price volatility in sectors with heavy reliance on government spending (e.g., healthcare, defense-related industries, infrastructure investments) and high exposure to regulation (e.g., healthcare, financial services).
- Rising EPU lowers firm-level investment rate and employment growth in sectors with heavy reliance on government spending and high exposure to regulation. (See Gulen and Ion in the Jan. 2016 RFS for more on investment rate effects.)
- These effects on firm-level stock-price volatility, investment rates, and employment growth rates are sizable in sectors with high exposure to policy.
Four Conclusions

1. Policy uncertainty fluctuates in response to major economic shocks; policy disputes, elections and other political factors; and other shocks (e.g., war and terrorist attacks). A mix of domestic and foreign disturbances.

2. The institutional setting and policy-making environment strongly influences whether unforeseen shocks and developments trigger high levels of policy uncertainty.

3. Econometric evidence indicates that:
   • Positive EPU innovations foreshadow lower investment, output and employment at the national level.
   • EPU raises firm-level stock-price volatility and reduces hiring & investment in sectors with high exposure to policy

4. Textual analysis of newspapers offers a powerful means of creating new economic data and testing hypotheses.
Our Data Are Online at www.PolicyUncertainty.com

- Monthly EPU indices for 13 countries, including all G10 economies, with more countries in the works. Regular updates in the first few days of each month.
- Historical EPU indices back to 1900 for the United States and United Kingdom
- Daily EPU index for the United States back to 1985, with daily updates
- 12 category-specific EPU indices back to 1985 for the United States
- Special U.S. tabulations for “government shutdown” and “debt ceiling”
- Daily newspaper-based index of equity market uncertainty back to 1985
- Migration-related Fear and Policy Uncertainty Indices for France, Germany, the U.K., and the U.S.
Immigration Fears and Policy Uncertainty
Constructing Migration-Related Indices

**Five term sets**

E, P and U, as before, plus:

F(ear): \{anxiety, panic, bomb, fear, crime, terror, worry, concern, violent\}


- To construct a Migration Fear Index, count articles that contain at least one term from each of M and F.
- To construct a Migration Policy Uncertainty Index, count articles that contain at least one term from each of M, E, P and U.
- Scale the counts and normalize in the same way as before.
- We have constructed Migration Fear and Policy Uncertainty Indices for France, Germany, the U.K. and the U.S.
Notes: The Migration Policy Uncertainty Index reflects scaled quarterly counts of articles in Le Monde that satisfy the M, E, P and U criteria specified in the text. Similarly, the Migration Fear Index reflects scaled quarterly counts that satisfy the M and F criteria. We obtain article counts on 30 November 2015 and normalize each index to 100 from 1995 to 2011.
Notes: The Migration Policy Uncertainty Index reflects scaled quarterly counts of articles in Frankfurter Allgemeine Zeitung and Handelsblatt that satisfy the M, E, P and U criteria. Similarly, the Migration Fear Index reflects scaled quarterly counts that satisfy the M and F criteria. We obtain article counts on 30 November 2015 and normalize each index to 100 from 1995 to 2011.
MigraIon Fear
  and Policy Uncertainty Indices, United Kingdom, 1995-2015

Notes: The Migration Policy Uncertainty Index reflects scaled quarterly counts of articles in the Financial Times and the Times of London that satisfy the M, E, P and U criteria. Similarly, the Migration Fear Index reflects scaled quarterly counts that satisfy the M and F criteria. We obtain article counts on 30 November 2015 and normalize each index to 100 from 1995 to 2011.
Migration Fear and Policy Uncertainty Indices, United States, 1995-2015

Notes: The Migration Policy Uncertainty Index reflects scaled quarterly counts of articles in US newspapers indexed by the Access World News Newsbank database that satisfy the M, E, P and U criteria specified in the text. Similarly, the Migration Fear Index reflects scaled quarterly counts that satisfy the M and F criteria. We obtain article counts on 30 November 2015 and normalize each index to 100 from 1995 to 2011.
What Do The Migration Indices Tell Us?

• European countries show unprecedented levels of migration-related worries in recent months.

• The United States shows a much more modest elevation of migration-related fears in late 2015, despite much attention to immigration and border control issues among U.S. presidential candidates.

• Since 2005, migration-related fears have trended upward strongly in the United Kingdom (alongside rising levels of actual migration).

• Migration related fears rose in France around 2005, while migration-related fears in Germany do not show persistent upward movements until 2014.
What Do The Migration Indices Tell Us?

- The data strongly suggest that migration-related fears can spillover into policy uncertainty.

- The “spillover” effect illustrates a broader pattern that we see in our measures of overall economic policy uncertainty for a dozen countries:
  - Large unforeseen shocks can present policy makers with extraordinary challenges.
  - Questions about how policy makers will respond and what will be the consequences then become an important source of economic uncertainty.
What Do The Migration Indices Tell Us?

• The Schengen zone arrangements do not seem well-equipped to handle Europe’s huge recent immigration flows, contributing to the high levels of migration-related fears and policy uncertainty.

• This experience and serial Eurozone crises in recent years illustrate how the institutional setting and policy-making environment can influence the extent to which negative shocks and developments lead to bad outcomes, difficult policy challenges, and high levels of policy uncertainty.
Sources for this Presentation


These papers and more available at [http://www.policyuncertainty.com/research.html](http://www.policyuncertainty.com/research.html).
Future Work: working on firm-level surveys

Projecting ahead over the next twelve months, please provide the approximate percentage change in your firm's SALES LEVELS for:

- The LOWEST CASE change in my firm’s sales levels would be: **-9**
- The LOW CASE change in my firm’s sales levels would be: **-3**
- The MEDIUM CASE change in my firm’s sales levels would be: **3**
- The HIGH CASE change in my firm’s sales levels would be: **9**
- The HIGHEST CASE change in my firm’s sales levels would be: **15**

Numbers in red are the average response from the pilot on 300 firms.
Can also ask about probabilities

Please assign a percentage likelihood to these SALES LEVEL changes you selected above (values should sum to 100%)

- **10%**: The approximate likelihood of realizing the LOWEST CASE change
- **18%**: The approximate likelihood of realizing the LOW CASE change
- **40%**: The approximate likelihood of realizing the MEDIUM CASE change
- **23%**: The approximate likelihood of realizing the HIGH CASE change
- **9%**: The approximate likelihood of realizing the HIGHEST CASE change

Numbers in red are the average response from the pilot on 300 firms
Additional Slides – Not for Prepared Remarks
Figure 5: Federal Tax Code Expirations Index, 1991-2013

Undiscounted projected 10-year revenue impact of scheduled tax code expirations:
• Before 2003 < $250 billion
• 2009-2012: $3-5 trillion

2013: Huge drop due to “Fiscal Cliff” resolution

Notes: Based on Congressional Budget Office data on projected revenue effects of federal tax code provisions set to expire in the current calendar year and next ten years. For a given year, the index value is calculated as the discounted sum of projected revenue effects associated with expiring tax code provisions, using a discount factor of $0.5^T$ applied to future revenue effects for $T=0,1,...,10$ years. Index normalized to a mean of 100 before 2010. This chart is reproduced from earlier drafts of Baker, Bloom and Davis (2015).
Figure 1: *Code of Federal Regulations* Page Count, 1949-2014

Source: Figure 14 in Crews (2015) for data from 2001 to 2014, spliced to data for earlier years from Dawson and Seater (2013), who consider a somewhat narrower set of regulation “titles”.

175,000 Pages = 130 King James Bibles!
Notes: Index reflects scaled monthly counts of articles containing ‘uncertain’ or ‘uncertainty’, ‘economic’ or ‘economy’, and one or more policy-relevant terms: ‘tax’, ‘policy’, ‘regulation’, ‘spending’, ‘deficit’, ‘budget’, or ‘central bank’. The series is normalized to mean 100 from 1997 to 2009 and based on the following newspapers: Frankfurter Allgemeine Zeitung and Handelsblatt.
Notes: Index reflects scaled monthly counts of articles containing ‘uncertain’ or ‘uncertainty’, ‘economic’ or ‘economy’, and one or more policy-relevant terms: ‘tax’, ‘policy’, ‘regulation’, ‘spending’, ‘deficit’, ‘budget’, or ‘central bank’. The series is normalized to mean 100 from 1997 to 2009 and based on the following newspapers: La Stampa and Corriere Della Sera.
Figure A10: EPU Index for the United Kingdom, January 2001 to January 2015

Figure 6: U.S. EPU Compared to 30-Day VIX, January 1990 to July 2015

Corr(VIX, EPU Index) = 0.58

Notes: The figure shows the U.S. EPU Index from Figure 1 and the monthly average of daily values for the 30-day VIX.
UK government share of GDP is roughly flat since the 1950s (unlike the US, where it has roughly doubled)

Chart 1.1: Total public sector spending and receipts

Source: OBR
## Beige Book also highlights fiscal policy concerns

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Economic Uncertainty</td>
<td>11</td>
<td>8.8</td>
<td>7.7</td>
<td>13.5</td>
<td>5.2</td>
<td>10.2</td>
<td>15.8</td>
<td>5.5</td>
</tr>
<tr>
<td>Economic Policy Uncertainty</td>
<td>5.5</td>
<td>6.3</td>
<td>1.2</td>
<td>4.8</td>
<td>2.8</td>
<td>0.8</td>
<td>6.8</td>
<td>1.7</td>
</tr>
<tr>
<td>All Fiscal Matters</td>
<td>1</td>
<td>5.5</td>
<td>1.5</td>
<td>0</td>
<td>0</td>
<td>0.4</td>
<td>3.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Taxes Only</td>
<td>0</td>
<td>3.3</td>
<td>0.2</td>
<td>0</td>
<td>0</td>
<td>0.3</td>
<td>1.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Spending Only</td>
<td>0.5</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0.2</td>
<td>1.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Monetary Policy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Health Care</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.2</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>National Security and War</td>
<td>5.3</td>
<td>0.3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Financial Regulation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.2</td>
<td>1.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Sovereign debt, currency crisis</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.8</td>
<td>0.1</td>
</tr>
<tr>
<td>U.S. Elections and Leadership Changes</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.2</td>
<td>2.2</td>
<td>0</td>
<td>0.9</td>
<td>0.2</td>
</tr>
<tr>
<td>Other Specified Policy Matters</td>
<td>0</td>
<td>0.5</td>
<td>0.7</td>
<td>0</td>
<td>0.2</td>
<td>0</td>
<td>0.5</td>
<td>0.2</td>
</tr>
<tr>
<td>Politics, Unspecified</td>
<td>0.5</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0.7</td>
<td>0</td>
<td>1.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Sum of Policy &amp; Politics Categories</td>
<td>6.8</td>
<td>9.3</td>
<td>2.2</td>
<td>5.2</td>
<td>3.0</td>
<td>0.8</td>
<td>10.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

The Beige Book also highlights fiscal policy concerns.
Figure C5: What triggers large daily stock market moves? 1900-2012

Correlation of number of policy-triggered jumps per year with EPU index is 0.78

Based on human readings of next-day news articles
About large S&P Index moves in the New York Times
And the Wall Street Journal. Jump threshold: +/- 2.5%

Reproduced from “What Triggers Large Stock Market Jumps?” by Scott Baker, Nick Bloom & Steven Davis
More Detail About the Estimated Effects of Economic Policy Uncertainty

• Firm-level panel regressions
• Country-level time-series evidence
Measuring Firm-Level Policy Exposure Intensity

Main Approach: First, compute revenue share of government purchases at SIC3 level from 2000-2013. Second, compute firm-level exposure as revenue-weighted mean of its industry exposures using Compustat line of business data. Time-averaged measures, constant at the firm level.

• Similar results when computing firm-level exposure directly, letting firm-level exposure vary by year, using IO matrix.

Two Alternative Approaches:
1. Measure exposure by slope coefficient in regression of firm’s daily stock returns on daily EPU index from 1985-1995, which pre-dates the regression sample period.

2. Quantify policy risk exposure using textual analysis of 10-K filings. Specifically, compute each firm’s 2006-2013 average share of sentences in Section 1A (Risk Factors) that reference policy matters.
Firm-level panel regressions for option-implied 30-day stock-price volatility, basic specification

\[ Y_{it} = F_i + P_t + \alpha \text{Exp}_i (G/Y)_t + \beta \text{Exp}_i \text{EPU}_t + \varepsilon_{i,t} \]

- **Firm fixed effects**
- **Period fixed effects**

We weight observations by firm-level sales in all regressions.

Stock-price volatility at firm-quarter level, average of daily values

Firm policy exposure × government purchases share of GDP (another 1\textsuperscript{st} moment firm-level control variable)

Firm policy exposure × EPU Index (2\textsuperscript{nd} moment interaction effect of interest)

\( i = \text{firm}, \ t = \text{quarter}, \ 1996-2012 \) sample period, clustering by \( i \) when estimating standard errors.

Scott Baker, Nick Bloom and Steve Davis
Table 2: Firm-Level Effects of Policy Uncertainty on Option-Implied Stock Price Volatility

<table>
<thead>
<tr>
<th>Dep Var: Log(30-day implied vol)</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log(EPU)</td>
<td>0.432***</td>
<td>-0.044***</td>
<td>-0.752***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.013)</td>
<td>(0.027)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(EPU)×Intensity</td>
<td>0.215**</td>
<td>0.228**</td>
<td>0.545***</td>
<td>0.082</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.069)</td>
<td>(0.100)</td>
<td>(0.202)</td>
<td>(0.117)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(VIX)</td>
<td></td>
<td>0.734***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.016)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(VIX)×Intensity</td>
<td></td>
<td>-0.020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.117)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(EU)</td>
<td></td>
<td></td>
<td>1.080***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.027)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(EU)×Intensity</td>
<td></td>
<td></td>
<td>-0.301**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.177)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal Purchases/GDP</td>
<td>-19.30***</td>
<td>-7.75***</td>
<td>-17.40***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.50)</td>
<td>(1.49)</td>
<td>(1.49)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Federal Purchases/GDP)×Intensity</td>
<td>-29.45*</td>
<td>-29.70**</td>
<td>-29.93*</td>
<td>-31.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(12.72)</td>
<td>(12.36)</td>
<td>(12.66)</td>
<td>(13.24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defense EPU*Defense Firm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.048***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.012)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthcare EPU*Health Firm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.071*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.043)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.144***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.030)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPU*Finance Firm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm and Time Effects</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Notes: The sample contains 136,742 observations on 5,624 firms from 1996 to 2012. The dependent variable is the 30-day implied volatility.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Column 2: Basic specification
Column 4: Horse race between EPU*Exposure and VIX*Exposure
Column 6: Horse race between EPU*Exposure and EU*Exposure
Column 7: Includes category-specific EPU indices
# Robustness Checks on Results for Firm-Level Stock-Price Volatility

<table>
<thead>
<tr>
<th>Specification</th>
<th>(1) Realized Volatility</th>
<th>(2) 182-day Implied Volatility</th>
<th>(3) Add Purchase Forecast</th>
<th>(4) Add 12 qtrs Future Purchases</th>
<th>(5) Firm-level Intensity</th>
<th>(6) Belo et al. (2013)</th>
<th>(7) Beta Intensity</th>
<th>(8) 10-K Risk Measure</th>
<th>(9) $500m+ Sales Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log(EPU)×Intensity</td>
<td>0.346*** (0.089)</td>
<td>0.178*** (0.073)</td>
<td>0.175*** (0.070)</td>
<td>0.258*** (0.086)</td>
<td>0.192*** (0.045)</td>
<td>0.456*** (0.101)</td>
<td>0.283** (0.118)</td>
<td>0.378* (0.217)</td>
<td>0.237*** (0.071)</td>
</tr>
<tr>
<td>(Federal Purchases/GDP)×Intensity</td>
<td>-23.72 (14.71)</td>
<td>-27.47*** (11.77)</td>
<td>-58.28*** (15.35)</td>
<td>-7.05 (16.74)</td>
<td>-14.20 (10.03)</td>
<td>-13.60 (27.64)</td>
<td>6.157 (14.97)</td>
<td>27.16 (64.17)</td>
<td>-31.03 (12.40)</td>
</tr>
<tr>
<td>(Forecasted Federal Purchases/GDP)×Intensity</td>
<td>32.61*** (6.27)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm and Time Effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>136,742</td>
<td>136,742</td>
<td>136,742</td>
<td>73,822</td>
<td>136,742</td>
<td>134,544</td>
<td>133,465</td>
<td>112,123</td>
<td>42,785</td>
</tr>
<tr>
<td>Number of Firms</td>
<td>5,624</td>
<td>5,624</td>
<td>5,624</td>
<td>3,189</td>
<td>5,624</td>
<td>5,537</td>
<td>5,489</td>
<td>3,817</td>
<td>1,070</td>
</tr>
</tbody>
</table>

Notes: The sample period is 1996 to 2012. The dependent variable is the 30-day implied volatility for the firm, averaged over all days in the quarter, except that column (1) uses the realized daily volatility over the quarter, and column (2) uses the average 182-day implied volatility. See the notes to Table 2 for additional variable definitions. Standard errors based on clustering at the firm level.

- **Columns 1 and 2:** Use alternative stock-price volatility measures
- **Columns 3 and 4:** Add controls for future government purchases (interacted)
- **Columns 5 and 6:** Use variants on main firm-level exposure measure
- **Columns 7 and 8:** Use alternative firm-level exposure measures
- **Column 9:** Restrict attention to larger firms
Quantifying EPU effects on firm-level stock-price volatility for firms w/ heavy exposure to government purchases (e.g., health, defense & construction)

Consider EPU increase from 2005/6 to 2011/12 (84 log points) for a firm with government policy exposure intensity of 0.25.

- Using Column (2) in Table 2, the estimated effect on firm-level stock-price volatility is (84)(.25)(.215) = 4.5 log points. More precisely, the effect is 4.5 log points more than the baseline for a firm with zero exposure to govt. purchases.
- Bigger effects when using category-specific EPU indices.

Summarizing: We find statistically significant evidence of modest (differential) effects of EPU on firm-level stock-price volatility across a wide range of alternative specifications and using a variety of firm-level exposure measures. EPU greatly outperforms VIX and EU in these respects.
Similar approach to firm-level panel regressions for investment rates ($I/K$) and employment growth rates

**Next Slide:** Sample period runs from 1985 to 2012. All specs include a full set of firm and time effects. $I/K$ is the investment rate defined as $\frac{\text{CapEx}_t}{(\text{Net Plant, Property and Equipment})_{t-1}}$. $\Delta\text{Emp}$ is the employment growth rate measured as $(\text{emp}_t - \text{emp}_{t-1}) / (0.5 \times \text{emp}_t + 0.5 \times \text{emp}_{t-1})$, and $\Delta\text{Rev}$ is the corresponding revenue growth rate. $\Delta(\text{Federal Purchases}/\text{GDP}) \times \text{Intensity}$ is the change in (Federal Purchases/GDP) from NIPA tables in the next quarter in quarterly specifications and in the next year in annual specifications, multiplied by firm-level policy exposure intensity variable. $\Delta(\text{Forecast Federal Purchases}/\text{GDP}) \times \text{Intensity}$ instead uses the mean forecasted change in (Federal Purchases/GDP), drawing on NIPA data for current values and forecast data for future values. For presentation purposes, we scale the point estimates and standard errors by 100 for the variables involving category-specific EPU terms. Standard errors based on clustering at the firm level.
# Firm-Level Panel Regressions for (I/K) and Employment Growth Rates

**Table 4: Cross-Firm Effects of Policy Uncertainty on Investment Rates and Employment Growth Rates**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log(EPU)×Intensity</td>
<td>-0.032***</td>
<td>-0.032***</td>
<td>-0.024**</td>
<td>-0.031***</td>
<td>-0.213**</td>
<td>-0.227**</td>
<td>-0.220**</td>
<td>-0.207**</td>
<td>-0.128</td>
</tr>
<tr>
<td>(0.010)</td>
<td>(0.010)</td>
<td>(0.011)</td>
<td>(0.010)</td>
<td>(0.084)</td>
<td>(0.089)</td>
<td>(0.118)</td>
<td>(0.084)</td>
<td>(0.096)</td>
<td></td>
</tr>
<tr>
<td>Δ(Federal Purchases/GDP)×Intensity</td>
<td>8.20***</td>
<td>8.04***</td>
<td>12.12***</td>
<td>8.23***</td>
<td>10.79</td>
<td>15.60***</td>
<td>3.19</td>
<td>11.58</td>
<td>20.39**</td>
</tr>
<tr>
<td>(2.86)</td>
<td>(2.86)</td>
<td>(3.18)</td>
<td>(2.87)</td>
<td>(7.41)</td>
<td>(8.04)</td>
<td>(12.56)</td>
<td>(7.58)</td>
<td>(9.43)</td>
<td></td>
</tr>
<tr>
<td>Δ(Forecasted Federal Purchases/GDP)×Intensity</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
</tr>
<tr>
<td>(0.828)</td>
<td>(0.828)</td>
<td>(0.828)</td>
<td>(0.828)</td>
<td>(0.828)</td>
<td>(0.828)</td>
<td>(0.828)</td>
<td>(0.828)</td>
<td>(0.828)</td>
<td>(0.828)</td>
</tr>
<tr>
<td>Defense EPU × Defense Firm</td>
<td>0.094</td>
<td>0.094</td>
<td>0.094</td>
<td>0.094</td>
<td>0.094</td>
<td>0.094</td>
<td>0.094</td>
<td>0.094</td>
<td>0.094</td>
</tr>
<tr>
<td>(0.314)</td>
<td>(0.314)</td>
<td>(0.314)</td>
<td>(0.314)</td>
<td>(0.314)</td>
<td>(0.314)</td>
<td>(0.314)</td>
<td>(0.314)</td>
<td>(0.314)</td>
<td>(0.314)</td>
</tr>
<tr>
<td>Healthcare EPU × Health Firm</td>
<td>-0.422*</td>
<td>-0.422*</td>
<td>-0.422*</td>
<td>-0.422*</td>
<td>-0.422*</td>
<td>-0.422*</td>
<td>-0.422*</td>
<td>-0.422*</td>
<td>-0.422*</td>
</tr>
<tr>
<td>(0.231)</td>
<td>(0.231)</td>
<td>(0.231)</td>
<td>(0.231)</td>
<td>(0.231)</td>
<td>(0.231)</td>
<td>(0.231)</td>
<td>(0.231)</td>
<td>(0.231)</td>
<td>(0.231)</td>
</tr>
<tr>
<td>Financial Regulation EPU × Finance Firm</td>
<td>-0.270***</td>
<td>-0.270***</td>
<td>-0.270***</td>
<td>-0.270***</td>
<td>-0.270***</td>
<td>-0.270***</td>
<td>-0.270***</td>
<td>-0.270***</td>
<td>-0.270***</td>
</tr>
<tr>
<td>(0.076)</td>
<td>(0.076)</td>
<td>(0.076)</td>
<td>(0.076)</td>
<td>(0.076)</td>
<td>(0.076)</td>
<td>(0.076)</td>
<td>(0.076)</td>
<td>(0.076)</td>
<td>(0.076)</td>
</tr>
</tbody>
</table>

**Full set of firm and time effects in all columns**

Columns 1 and 5: Basic specs for (I/K) and employment growth, respectively

Columns 2 and 6: Adding controls for future government purchases (interacted)

Columns 3 and 7: Using average (G/Y) during next 12 quarters (interacted)

Columns 4 and 8: Adding category-specific EPU measures

Column (9): Using revenue growth rate as dependent variable and basic spec
These estimation results imply sizable investment rate and large employment growth effects in sectors with heavy exposure to government spending (e.g., healthcare, finance, defense & construction)

Consider EPU increase from 2005/6 to 2011/12 (84 log points) for firm with government policy exposure intensity of 0.25.

- The estimated quarterly investment rate effect implied by Column (2) is $(84)(.25)(-0.032) = -0.67$ percentage points. By way of comparison, the average firm-level investment rate is 6.6 percentage points.

- Similarly, the estimated annual employment growth rate effect implied by Column (5) is $(84)(.25)(-0.213) = -4.5$ percentage points.
Summary of Firm-Level Regression Results

• High EPU raises firm-level stock-price volatility in sectors with heavy reliance on government spending (e.g., healthcare, defense-related industries, infrastructure investments) and high exposure to regulation (e.g., healthcare, financial services).

• High EPU lowers firm-level investment rates and employment growth rates in sectors with heavy reliance on government spending.

• These effects on firm-level stock-price volatility, investment rates, and employment growth rates are sizable in sectors with high exposure to policy.
Figure 8: Industrial Production and Employment Responses to EPU Shock, VAR Fit to Monthly U.S. Data from January 1985 to December 2012

Notes: VAR-estimated impulse response functions for industrial production and employment to an EPU innovation equal to the increase in the EPU index from its 2005-2006 to its 2011-2012 average value, with 90 percent confidence bands. Identification based on three lags and a Cholesky decomposition with the following ordering: EPU index, log(S&P 500 index), federal reserve funds rate, log employment, log industrial production.
Notes: The baseline case involves the same sample period, VAR specification and identification as in Figure 8. The other cases depart from the baseline as indicated. We place EU and VIX after EPU in the ordering. For the “1920-1984” response function, we use monthly data from 1920 to 1984 on log industrial production and EPU in a bivariate VAR with EPU ordered first.
Figure C6: GDP and Investment Responses to EPU Shock, VAR Fit to Quarterly U.S. Data from Q1 1985 to Q4 2012

Notes: VAR-estimated impulse response functions for GDP and Gross Fixed investment to an EPU innovation equal to the increase in the EPU index from its 2005-2006 to its 2011-2012 average value, with 90 percent confidence bands. Identification based on three lags and a Cholesky decomposition with the following ordering: EPU index, log(S&P 500 index), federal reserve funds rate, log gross investment, log gross domestic product.)
Figure C7: Adding the Michigan Consumer Sentiment Index to VARs Fit to Monthly U.S. Data from January 1985 to December 2012

Notes: VAR-estimated impulse response functions for industrial production to an EPU innovation equal to the increase in the EPU index from its 2005-2006 to its 2011-2012 average value. Identification based on three lags and a Cholesky decomposition. In the baseline, the VAR has the following ordering: EPU index, log(S&P 500 index), federal reserve funds rate, log employment, log industrial production. In the “Michigan First” specification the Michigan consumer sentiment index is added first, and in the “Michigan Second” it is added after the EPU index.

Scott Baker, Nick Bloom and Steve Davis
Figure 10: Responses to an EPU Shock in a Twelve-Country Panel VAR

Notes: Panel-VAR estimated impulse response functions for industrial production and unemployment to an EPU innovation equal to the increase in the average US EPU value from 2005-2006 to 2011-2012, with 90% confidence bands. Identification based on three lags and a Cholesky decomposition with the following ordering: EPU index, log(stock market index), unemployment rate, and log industrial production. We use own-country data and a full set of country fixed-effects in the panel VAR. Country-level data are weighted by the square root of the number of newspapers used in the EPU index. Fit to monthly data for Canada, China, France, Germany, India, Italy, Japan, Korea, Russia, Spain, UK and the US from January 1985 to December 2012, where available.
Figure C8: Robustness of Twelve-Country Panel VAR Response Functions

Notes: The baseline case involves the same sample period, countries, VAR specification and identification as in Figure 10. The other cases depart from the baseline as indicated. We place realized stock volatility after EPU in the ordering.
Agriculture Secretary Says Wartime Budget Leaves $171 Billion Farm Bill in Doubt

WASHINGTON, Sept. 26 — Agriculture Secretary Ann M. Veneman said today that the Bush administration was uncertain whether there was enough money to finance the $171 billion House farm bill, raising the possibility that farm subsidies might be the first casualties of a budget battle this year.

"The budget is uncertain," Ms. Veneman said at a hearing of the Senate Agriculture Committee. "I can't tell you where the budget is going to go with regard to anything."

She made clear that, regardless of budget factors, the administration did not intend to support continued rising subsidies for farmers, which it said distorted the farm economy. Today, she promised farmers that the administration would not leave them without a safety net.

The ranking senators on the committee were less circumspect in their criticism of the House farm bill, which is scheduled for a full vote next week.

Senator Richard G. Lugar of Indiana, the senior Republican on the committee, said it was irresponsible to even consider such a bill, which he said spent too much money on big grain and cotton farmers, undermined the American trade position and spent too much money in a time of war.

"It is inconceivable that the farm bill is going to be on the floor next week in the middle of a war," Mr. Lugar said, and he ridiculed the argument that $20 billion a year in grain and
False Positive 1 → Computer mistake

New-Home Sales Jumped 8.6% in January

The Government reported today that sales of new homes had risen 8.6 percent in January, but private analysts reacted with caution, suggesting that several factors might have skewed the figures.

In a second report, the Conference Board said that its index of leading indicators, designed to predict turns in the economy, climbed three-tenths of 1 percent in January, its biggest advance since May.

If the report on home sales is accurate, it would imply a renewed boom in housing -- a marked contrast to the prediction of Alan Greenspan, the chairman of the Federal Reserve, who told Congress last week that home building this year was unlikely to repeat its buoyant 1996 performance.

But private analysts, most of whom had expected a modest decline, were skeptical of the figures, released jointly by the Commerce and Housing and Urban Development Departments.

"We think it's probably too good to be true," said David F. Seiders, chief economist for the National Association of Home Builders. Everett M. Ehrlich, Under Secretary of Commerce for Economic Affairs, defended the agency's view, acknowledging that special factors had played a role.

Mr. Ehrlich said he was uncertain whether the upward bias would prove a one-time phenomenon or would show a permanently higher level of sales.

The long-term result would depend on whether the new process was merely capturing data faster or was picking up data that had previously been missed.

Compounding the uncertainty is the fact that the home sales figures always have a huge margin of error, plus or minus 11 percentage points. This means that the actual result for January, now reported at an annual rate of 870,000, may have ranged anywhere from 20 percent higher than that to 20 percent lower.

Should be EPU = 0, because the article does not mention uncertainty about policy, but the computer would code EPU=1.
False Negative 1 → Computer mistake

The dollar was mixed in relation to other currencies in quiet trading yesterday, rising against the Japanese yen and weakening against the West German mark and British pound.

Gold prices were also mixed. The Republic National Bank in New York quoted bullion at $448 an ounce at 4 P.M., up $1.75 from Thursday's price.

Yesterday's currency trading was extremely light. Most American financial markets had been closed Friday for the Fourth of July holiday.

The dollar strengthened early yesterday in Japan and Europe but lost momentum later in the United States when it neared the top of its recent trading range, traders said.

The currency has been holding in a narrow range since last month, when the United States and other major industrial nations renewed their agreement to stabilize currency rates and coordinate their economies.

Traders sold the dollar yesterday when it rose to the upper end of the range because of uncertainty over when the nations' central banks would act to stem its rise, said Joe Cally, a trader for Prudential-Bache Securities Inc. in New York.

Should be EPU = 1 because the article mentions uncertainty over the exchange rate policy among central banks (computer codes as EPU = 0, because it never mentions any of the terms in the “policy” part of our search filter)