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The power of print: Uncertainty shocks, markets, and the economy

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ABSTRACT

There has been, in recent years, a renewed interest in and a growing recognition of the role played by uncertainty shocks in driving fluctuations in the economy and in asset markets. We create new text-based indicators of both general economic and policy specific uncertainty from New York Times and use them first, to chart changes in the level of uncertainty in the US for the period 1985–2007, second, to determine the role of policy in these swings, and, third to assess their impact on the economy, equity markets, and business cycles. Overall, our results indicate that uncertainty shocks – both general and policy related – depress the level of economic activity, significantly increase stock market volatility, and decrease market returns.

1 . Introduction

The Great Recession has led to a resurgence of interest in the effects of uncertainty shocks on the economy and the stock market. Empirical attempts to answer the questions, 'What happens to economic activity following an uncertainty shock?' and 'How important are these shocks in explaining business cycles?' have, for the most part, relied on interest rate spreads, stock market volatility, and disagreement among professional forecasters to measure changes in uncertainty.[1] In a pair of articles, Alexopoulos and Cohen (2008, 2009) proposed a new general economic uncertainty (*GEU*) measure based on counts of economic uncertainty articles in the New York Times. This approach has since been embraced and expanded in a variety of ways by a number of economists—most notably by Baker, Bloom, and Davis (2013), (here in referred to as BBD), whose economic policy uncertainty (EPU) index is primarily derived from a newspaper-based metric. In this paper, we present an expanded and refined version of the news-based uncertainty measures and use them, first, to identify fluctuations in the levels of general economic and policy related uncertainty in the US for the period 1985–2007,[2] second, to determine the role played by these measures of uncertainty in driving business cycles, and, third, to assess their impact on the economy and the stock market. Overall, our results indicate that uncertainty shocks – both general and policy related – depress the level of economic activity, significantly increase stock market volatility and decrease market returns.

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[1] See for example, Bernanke (1983), Romer (1990), Bachmann, Elstner, and Sims (2013), and Bloom (2009).

[2] The exclusion of the Great Recession years allows us to investigate the role of uncertainty shocks in explaining typical business cycles. The end date, on the other hand, was dictated by the lack of copyright permission to perform the analysis on NYT articles after 2007.

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Our findings contribute to two strands of literature. The first strand focuses on the economic effects of uncertainty and stems from Bernanke's (1983) seminal article on uncertainty and investment in which he argued that uncertainty shocks were likely to cause investors to postpone their capital expenditures. Our results are, on the whole, consistent with this argument and with the general predictions of theoretical models presented in Bloom (2009), Bloom, Floetotto, Jaimovich, Saporta-Eksten, and Terry (2012) and Fajgelbaum, Schaal, and Taschereau-Dumouchel (2014) — namely that uncertainty shocks can cause sharp economic downturns. Moreover, our results complement the related empirical findings in Bloom (2009), Bachmann et al. (2013) and Jurado, Ludvison, and Ng (2013), even though these studies make use of different measures of uncertainty. The second, more recent strand, instead, deals with the effects of policy uncertainty. Here, our findings are consistent with those reported in both theoretical papers such as those of Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez (2011) and Pastor and Veronesi (2012) and in the empirical work of BBD (2013), Brogaard and Detzel (2012) and Julio and Yook (2012), where it is shown that a jump in economic policy uncertainty negatively impacts economic activity and causes stock market volatility to rise.

The creation of the enhanced news-based measures of uncertainty presented in this paper was motivated by three considerations. First, as confirmed by the behavior of Wall Street firms, there is important information that can be extracted from the media to help inform and understand trading decisions.[3] Second, the paper of Fajgelbaum et al. (2014) suggests that traditional measures of uncertainty, such as those based on volatility or ex-ante forecast error, may be inaccurate if uncertainty is endogenous. Finally, as demonstrated in Alexopoulos and Cohen (2008, 2009), uncertainty shocks, identified through changes in the number of New York Times' articles that contained the keywords (economic, economy or economies) AND (uncertain, uncertainties or uncertainty) seem to be important drivers of fluctuations in investment, employment, productivity and overall business activity.

While promising, reliance on such a limited number of keywords can raise questions about the sensitivity of the findings to the choice of language, in particular did they bias the results and if so, how? To address these questions, we first refined and expanded our original indicators of general economic uncertainty through a detailed textual analysis of all articles in the archives of the New York Times, and second, we created a corresponding set of economic policy uncertainty indices to assess the importance of this subgroup of shocks. Access to the complete text of all articles enabled us to work with a much larger set of uncertainty terms, and an extensive range of economic, financial, political, and business language to ensure that we have captured all articles of interest. Moreover, we are able to detect differences in the indices' composition (i.e., what fraction of articles refer to military issues, politics, elections, fiscal or legislation policy, monetary policy and foreign events), and clarify the sources of uncertainty through an examination of language in the vicinity of the terms and phrases associated with uncertainty.

We proceed as follows in the paper. In the second section, we discuss the creation and the properties of our new indicators and compare them to the VXO (the uncertainty measure used by Bloom (2009) and many others) and to BBD's blended *EPU* indicator. We find, in general, that jumps in uncertainty as measured by our newly created indicators are closely related to identifiable sources of unease about the economy. In the third, we use the indicators in a series of VARs to evaluate the macroeconomic impact of general and policy-related uncertainty shocks. Overall, we find evidence that both types have negative effects on output, investment, employment, and productivity. While the estimated magnitude of the impact varies with the indicator and the variables included in the regressions, they are consistently significant. For example, it is estimated that a major shock such as that associated with 9/11 would decrease output by 0.5–2.3%, employment by 0.4–1.1%, investment by 1.8–5.4% and productivity by approximately 1%. In the fourth section, we focus sharply on the effect of general and policy related uncertainty on stock market returns and stock market volatility. In keeping with the finance literature, we present results from a series of GARCH and E-GARCH models. We find the following: first, increased uncertainty decreases returns on the S&P 500; second, the introduction of uncertainty indicators to the models pushes up estimated volatility; third the standard ARCH and GARCH effects often lose significance with the introduction of the uncertainty indicator into the model. In the fifth and final section, we conclude with suggestions for future research.

2. The indicators

The motivation to develop news-based indicators of uncertainty stems from the inherent shortcomings associated with traditional measures.[4] For example, while stock price volatility may reflect fluctuations in uncertainty, it may also be a response to changes in leverage, tolerance for risk, or even sentiment. Indicators based on cross-sectional dispersion in productivity, profits and sales may fluctuate over the business cycle because of cyclical features of a firm's business and may, therefore, have nothing to do with uncertainty. Similarly, differences among forecasters may reflect nothing more than differences in opinion about the future, perfectly consistent with a rational expectations model and totally unrelated to uncertainty.[5] Text-based uncertainty indicators, on the other hand, have a number of attractive features. They are consistent over time and place and offer a broad coverage in terms of potential sources of uncertainty. Moreover, because a textual analysis provides a clear indication of the source of the uncertainty, its use permits us to identify different types of uncertainty and potentially different impacts. As explained in the Introduction, the enhanced indicators adopted in this paper, while motivated by the same considerations, represent a significant improvement in the scope and reliability of the first generation indicators.

The intuition behind news-based indicators is compelling. Newspaper publishers, to attract and maintain their readership (and to make profits), have an incentive to report on issues of wide spread interest in a timely manner. Since readers are interested in events

[3] See e.g., the newspaper article by Sarfraz Manzoor published 23 July, 2013 in the Telegraph available at http://www.telegraph.co.uk/finance/10188335/Quants-the-maths-geniuses-running-Wall-Street.html, discussing how Wall Street is utilizing textual analysis.

[4] See Jurado et al. (2013) for a more complete overview of the issues linked to the various traditional indicators and the work by Fajgelbaum et al. (2014).

[5] See e.g., Diether, Malloy, and Scherbina (2002) and Mankiw, Reis, and Wolfers (2003).