

Special features

A Assessing the decoupling of economic policy uncertainty and financial conditions

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This special feature analyses the recent decoupling between measures of financial conditions and economic policy uncertainty. In 2016, several risky asset prices surged and financial market volatility hovered at low levels while measures of economic policy uncertainty increased sharply, the latter partly triggered by the outcomes of the UK referendum on EU membership and the US presidential election. This special feature attempts to explain these diverging trends. It starts out by reviewing the existing academic literature on uncertainty and its implications for financial conditions. In the empirical part that follows, it provides model-based estimates of the drivers underlying the benign financial conditions prevailing in UK and US financial markets. The results suggest that the adverse impact of economic policy uncertainty on financial conditions in the United States was more than offset by a positive demand shock. In the case of the United Kingdom, however, it was the resolute accommodative monetary policy actions by the Bank of England that supported financial conditions after the referendum. Turning to the euro area, policy uncertainty increased in several countries in the first months of 2017. Looking ahead, further shocks stemming from the political sphere may, in the absence of offsetting factors, tighten domestic financial conditions, increase risk premia and potentially raise debt sustainability concerns.

Introduction

Two political events triggered an increase in economic policy uncertainty in 2016: the outcome of the UK referendum on EU membership (“Brexit”) and the election of a new US President. In both countries, uncertainty about future economic policy substantially increased after the respective event. In the United Kingdom, uncertainties about the nature of economic ties and political relations between the United Kingdom and the European Union to be determined by the outcome of the Article 50 negotiations have emerged.¹⁰⁷ In the United States, uncertainty prevails about future trade, political and strategic relations with other countries, the future of financial regulation, and the fiscal and monetary policy stance. The empirical literature on the economic and financial implications of economic policy uncertainty would predict that sudden increases in the latter

¹⁰⁷ Many observers have emphasised the sharp increase in economic policy uncertainty after the referendum. See, for instance, “Uncertainty about Uncertainty”, speech given by Kristin Forbes, External Monetary Policy Committee Member, Bank of England, at the J.P. Morgan Cazenove “Best of British” Conference, London, 2016.

coincide with rising levels of financial assets' risk premia coupled with lower economic activity.

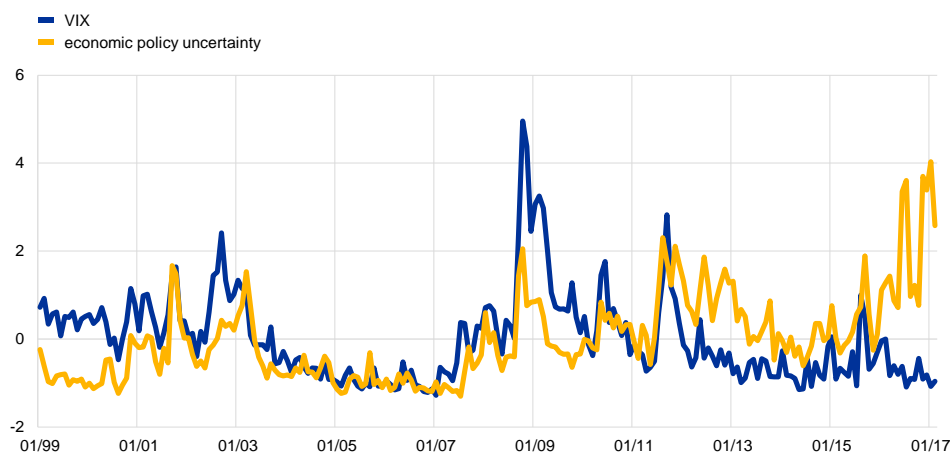
In spite of the sharp increase in economic policy uncertainty, investor risk appetite has improved. Despite the increase in economic policy uncertainty recorded in 2016, both US and UK equity price indices have recently reached record highs (see Section 2 of this issue of the FSR), corporate credit spreads have narrowed and asset price-based measures of financial market uncertainty have remained at very low levels. This divergence can be illustrated by two popular uncertainty measures: a news-based measure of global economic policy uncertainty (the global EPU index) and the Chicago Board Options Exchange Volatility Index (VIX), which gauges expectations about future volatility in US equity markets. Historically, the two metrics have been highly correlated (see [Chart A.1](#)). In 2016, however, the VIX remained at low levels, while the global EPU index increased sharply in the months after the UK referendum and the US election and has since remained high.¹⁰⁸

Chart A.1

Financial and economic policy uncertainty decoupled in 2016 and early 2017

Global economic policy uncertainty index and VIX

(Jan. 1999 – Feb. 2017; standardised index values)



Sources: Thomson Reuters Datastream and policyuncertainty.com.

Note: The chart shows the two series in standardised terms (i.e. with a mean of zero and a standard deviation of one).

This special feature aims to explain the decoupling of economic policy uncertainty and financial conditions.

First, it presents some theoretical considerations and previous empirical work on various uncertainty concepts and their impact on financial markets, financial stability and the wider economy. Second, it presents model-based results that can provide ex post explanations for the benign developments in the UK and US financial markets over recent months.

¹⁰⁸ The analysis presented in this special feature considers monthly data up until February 2017.

Uncertainty and financial conditions

Uncertainty is an elusive concept with many definitions and measures.

Uncertainty can be defined as a situation in which economic agents' are conscious of their limited knowledge about present facts and possible future outcomes. High degrees of uncertainty could adversely affect economic and financial developments, as agents might cancel or postpone investment decisions until the high level of uncertainty has waned.¹⁰⁹ The concept of uncertainty can relate to various macroeconomic and financial market outcomes, such as growth, inflation, asset prices, economic policy and financial regulation. Therefore, numerous different measures of uncertainty have been developed to quantify the degree of the respective uncertainty in the economy. Uncertainty measures can be derived both from surveys and from time series of the underlying fundamentals. Surveys can be used to infer the degree of disagreement among economic forecasters. In particular, the dispersion of expectations about the macroeconomic or market outlook across forecasters serves as a proxy for the average subjective uncertainty faced by individual forecasters. Alternatively, and applied to macro data, the respective surveys of professional forecasters (published by the ECB for the euro area and the Federal Reserve Bank of Philadelphia for the United States) provide probability distributions around the central projection of each individual forecaster. Complementing survey-based measures, forecast errors derived from the historical relationship between the economic variable of interest and the underlying fundamentals can also be used to gauge uncertainty.¹¹⁰ Finally, option-implied measures of volatility, such as the VIX, gauge the uncertainty around future asset prices.

The concept of economic policy uncertainty has gained particular importance in recent years. The concept of economic policy uncertainty is somewhat different from the more standard uncertainty concepts presented above, as it is more difficult to quantify. Economic policy uncertainty is defined as the agents' inability to foresee outcomes for fiscal, regulatory, monetary and trade policies. A popular metric of economic policy uncertainty is based on the number of newspaper articles containing the words "uncertainty" or "uncertain" and "economics" or "economy" and policy words, such as "regulation" or "trade".¹¹¹ High levels of economic policy uncertainty were found to have an adverse impact on economic activity; if the future of economic policy is particularly uncertain, investors may postpone their investment decisions until uncertainties about regulation or fiscal or monetary policies dissipate.¹¹² This

¹⁰⁹ For a detailed discussion of the various definitions of uncertainty, see the article entitled "The impact of uncertainty on activity in the euro area", *Economic Bulletin*, Issue 8, ECB, 2016.

¹¹⁰ Two prominent papers deriving uncertainty from forecasting errors are Jurado, K., Ludvigson, S. and Ng, S., "Measuring Uncertainty", *American Economic Review*, Vol. 105(3), 2015, pp. 1177-1216; and Scotti, C., "Surprise and uncertainty indexes: Real-time aggregation of real-activity macro-surprises", *Journal of Monetary Economics*, Vol. 82, 2016, pp. 1-19.

¹¹¹ See Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *Quarterly Journal of Economics*, Vol. 131(4), 2016.

¹¹² Several studies have found that economic policy uncertainty contributed to the steep downturn in the 2008-09 global financial crisis and the slow recovery afterwards. See, for example, Baker et al. (2016), op. cit., and Bordo, M. D., Duca, J. V. and Koch, C., "Economic policy uncertainty and the credit channel: Aggregate and bank level U.S. evidence over several decades", *Journal of Financial Stability*, Vol. 26, 2016, pp. 90-106.

special feature takes a different viewpoint insofar as its main interest lies in the implications of economic policy uncertainty for financial conditions.

Financial conditions measure the ease of access to funding and the price of taking and insuring against risk. Financial conditions are defined as the ease with which corporate and sovereign borrowers can access funding. Measures of financial conditions are typically derived from financial asset prices, such as risk-free and risky bond yields, including term premia and corporate credit spreads, equity valuations and option-implied measures of financial market uncertainty, such as implied equity volatility.¹¹³ From the investors' perspective, financial conditions can be interpreted as their level of risk appetite, as these measures gauge the price that investors require as compensation for bearing risk and for providing insurance against risk.¹¹⁴ As loose financial conditions can spur excessive credit growth, composite indicators of financial conditions are found to be leading indicators of financial crises and wider macroeconomic conditions.¹¹⁵

Shocks to uncertainty and shocks to financial conditions are strongly correlated. While several empirical studies find that different types of uncertainty shocks have significant adverse effects on investment, employment and output, theoretical models indicate that the effects may be smaller.¹¹⁶ More recently, several studies have shown that financial frictions are an important amplifier of uncertainty shocks. In particular, shocks to uncertainty only have significant adverse effects on GDP growth and investment when accompanied by a tightening in financial conditions, as reflected, for instance, in a tightening of credit spreads.¹¹⁷ It remains difficult to disentangle the two shocks, as measures of macroeconomic uncertainty, economic policy uncertainty and, in particular, financial market uncertainty exhibit strong negative correlations with standard measures of financial conditions (see **Table A.1**).¹¹⁸

Available studies find or impose a negative impact of uncertainty shocks on financial conditions. While the main interest of the studies lies in quantifying the

¹¹³ For an overview of financial variables included in a standard composite index of financial conditions, see Brave, S. and Butters, R., "Diagnosing the Financial System: Financial Conditions and Financial Stress", *International Journal of Central Banking*, Vol. 8(2), 2012, pp.191-239.

¹¹⁴ See, for instance, Popescu, A. and Smets, F., "Uncertainty, Risk-taking, and the Business Cycle in Germany", *CESifo Economic Studies*, Vol. 56(4), 2010, pp. 596-626.

¹¹⁵ See Brave and Butters (2012), op. cit.; Brave, S. and Butters, R., "Monitoring financial stability: a financial conditions index approach", *Economic Perspectives*, Vol. 35(1), Federal Reserve Bank of Chicago, 2011, pp. 22-43; and Rey, H., "Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence", NBER Working Paper No 21162, 2015.

¹¹⁶ See Basu, S. and Bundick, B., "Uncertainty Shocks in a Model of Effective Demand", NBER Working Paper No 18420 (revised version), 2017; and Bonciani, D. and van Roye, B., "Uncertainty shocks, banking frictions and economic activity", *Journal of Economic Dynamics and Control*, Vol. 73, 2016, pp. 200-219.

¹¹⁷ See Gilchrist, S., Sim, J. and Zakrajšek, E., "Uncertainty, Financial Frictions, and Investment Dynamics", *Finance and Economics Discussion Series*, No 2014-69, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, 2014; Rossi, B. and Sekhposyan, T., "Understanding the Sources of Macroeconomic Uncertainty", Barcelona GSE Working Paper No 920, Barcelona Graduate School of Economics, 2016; and Furlanetto, F., Ravazzolo, F. and Sarferaz, S., "Identification of financial factors in economic fluctuations", Working Paper No 9/2014, Norges Bank, 2014.

¹¹⁸ See also Stock, J. and Watson, M., "Disentangling the Channels of the 2007-2009 Recession", *Brookings Papers on Economic Activity*, Spring 2012, pp. 81-135; and Caldara, D., Fuentes-Albero, C., Gilchrist, S. and Zakrajšek, E., "The macroeconomic impact of financial and uncertainty shocks", *European Economic Review*, Vol. 88, 2016, pp. 185-207.

impact of different types of uncertainty shocks and/or financial conditions shocks on economic activity, they share the finding that macroeconomic or economic policy uncertainty shocks increase financial market risk premia as measured by credit spreads, equity valuations and implied volatility.¹¹⁹ In addition, uncertainty may lead to a reduction in credit supply as lenders reduce their capacity to bear additional risk. Against this background, financial conditions tighten as lenders become more selective and restrictive in the provision of loans.¹²⁰ Finally, the impact of uncertainty shocks on risk-free interest rates is more ambiguous. While shocks to financial market uncertainty may lead to a concomitant rise in the term premium, yields on risk-free bonds might also decline if flight-to-quality effects dominate.¹²¹

Table A.1

Measures of uncertainty are negatively correlated with measures of financial conditions

Correlation table of different indicators of uncertainty and financial conditions in the United States

(correlation coefficients based on monthly data from Jan. 2003 to Feb. 2017)

Financial conditions	Uncertainty measures		
	Economic policy uncertainty	Macroeconomic uncertainty	Implied equity volatility
Equity market P/E ratio	-0.61	-0.72	-0.70
Corporate credit spreads	-0.50	-0.67	-0.81
Term premium	-0.14	-0.63	-0.47
Implied equity volatility	-0.53	-0.67	

Sources: Haver Analytics, Bloomberg, Thomson Reuters Datastream and ECB calculations.

Notes: Uncertainty measures: economic policy uncertainty is the news-based sub-index from Baker et al. (2016); macroeconomic uncertainty is the GDP forecast dispersion among participants in the Consensus Economics panel of forecasters; implied equity volatility is the VIX. Financial conditions measures are calculated in such a way that a rise (decline) in the measure reflects a loosening (tightening) of financial conditions; the equity market price/earnings (P/E) ratio is derived from the Datastream US Total Market Index and cyclically adjusted earnings. Corporate credit spreads (in negative terms) are the unweighted average of A and BBB rated corporate bond yields over Treasury yields at a maturity of seven to ten years; the term premium (in negative terms) is the New York Fed estimate based on ten-year Treasury yields.

Event studies: the UK referendum and the US election

This section presents the findings of two case studies providing ex post explanations of the developments in the UK and US financial markets throughout 2016 and in the first months of 2017.

Economic policy uncertainty increased sharply around the UK referendum on EU membership and the US presidential election. Both in the United Kingdom and in the United States, the index of economic policy uncertainty (EPU index) rose substantially in June when the UK electorate voted in favour of leaving the European

¹¹⁹ See Caldara et al. (2016), op. cit.; Popescu and Smets, op. cit.; Furlanetto et al. (2014), op. cit.; Gilchrist et al. (2014), op. cit.; and Bijsterbosch, M. and Guérin, P., "Characterizing very high uncertainty episodes", *Economics Letters*, Vol. 121(2), 2013, pp. 239-243.

¹²⁰ For microeconomic evidence on this channel, see Alessandri, P. and Bottero, M., "Bank lending in uncertain times", BCAM Working Paper No 1703, Birkbeck Centre for Applied Macroeconomics, February 2017. For empirical evidence on the impact of economic policy uncertainty on the bank lending channel, see Bordo et al. (2016), op. cit.

¹²¹ See Mallick, S. K., Mohanty, M. S. and Zampolli, F., "Market volatility, monetary policy and the term premium", BIS Working Paper No 606, 2017; and Gilchrist et al. (2014), op. cit.

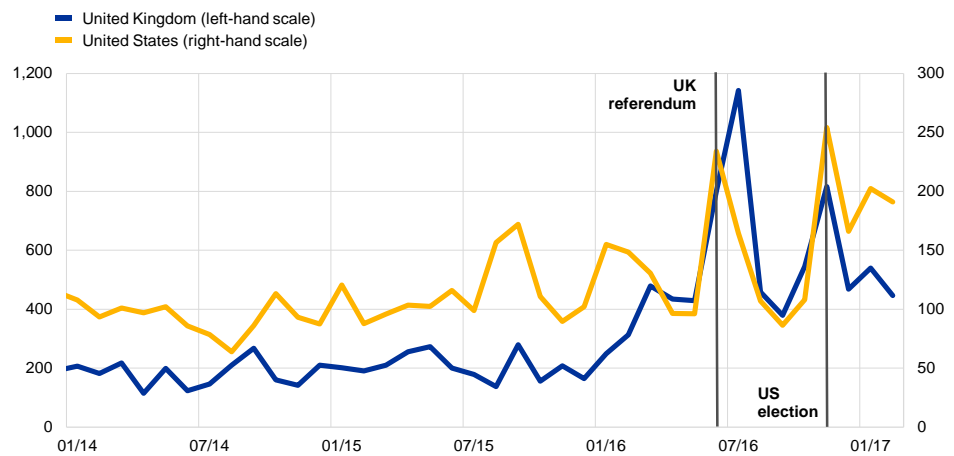
Union (see [Chart A.2](#)).¹²² In November, the EPU indices spiked again following the unexpected outcome of the presidential election in the United States. Economic policy uncertainty also remained elevated after the US election, reflecting uncertainties about the incoming administration's stance on various economic policies, including fiscal, trade and financial regulation policies.

Chart A.2

Economic policy uncertainty peaked around the UK referendum on EU membership and the US presidential election

UK and US economic policy uncertainty indices

(Jan. 2014 – Feb. 2017; news-based sub-index)



Source: Policyuncertainty.com.

Note: The EPU indices are derived as explained in Baker et al. (2016).

Developments in US and UK financial conditions before and after the respective political event are explained by a structural econometric model.

A structural Bayesian vector auto-regressive (S-BVAR) model is deployed to study the various economic and financial forces that have governed developments in financial conditions in recent periods. Financial conditions are approximated by three alternative metrics: the spread between corporate bond yields and government bond yields, equity market valuations as measured by cyclically adjusted price/earnings ratios (CAPE), and the implied volatility of the equity market. In this model, financial conditions interact endogenously with the country's economic policy uncertainty index as well as key macroeconomic variables. Real economic activity is captured by the unweighted average of the country's Purchasing Managers' Index (PMI) and consumer confidence index; monetary policy is represented by the shadow short rate, derived by the Reserve Bank of New Zealand; expectations about consumer price inflation are gauged by the median forecast of the Consensus Economics survey. The dynamics in financial conditions can be attributed to five distinct types of shocks, identified by means of sign restriction: shocks to economic policy uncertainty, shocks to aggregate demand and supply, shocks to monetary policy and idiosyncratic shocks to financial conditions.¹²³

¹²² See also Forbes, K. (2016), op. cit.

¹²³ See notes below Charts A.3 and A.4 for further details of the shock identification.

Chart A.3

Accommodative monetary policy shock averted tightening of UK financial conditions after the EU referendum

Historical shock decomposition of UK financial conditions

(Dec. 2015 – Feb. 2017; cumulative changes since Dec. 2015, percentage points)

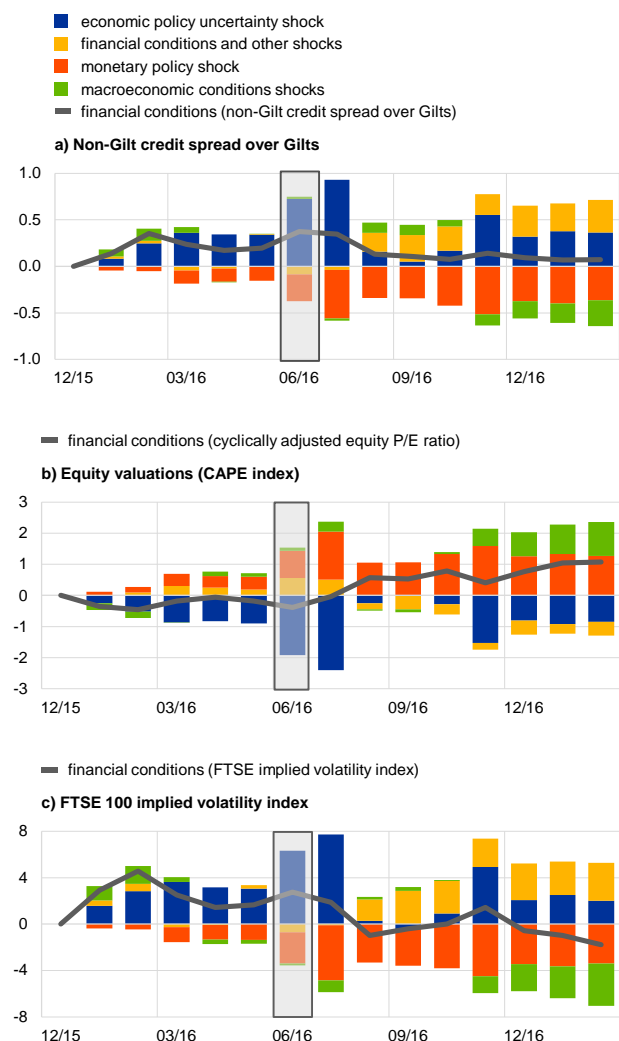
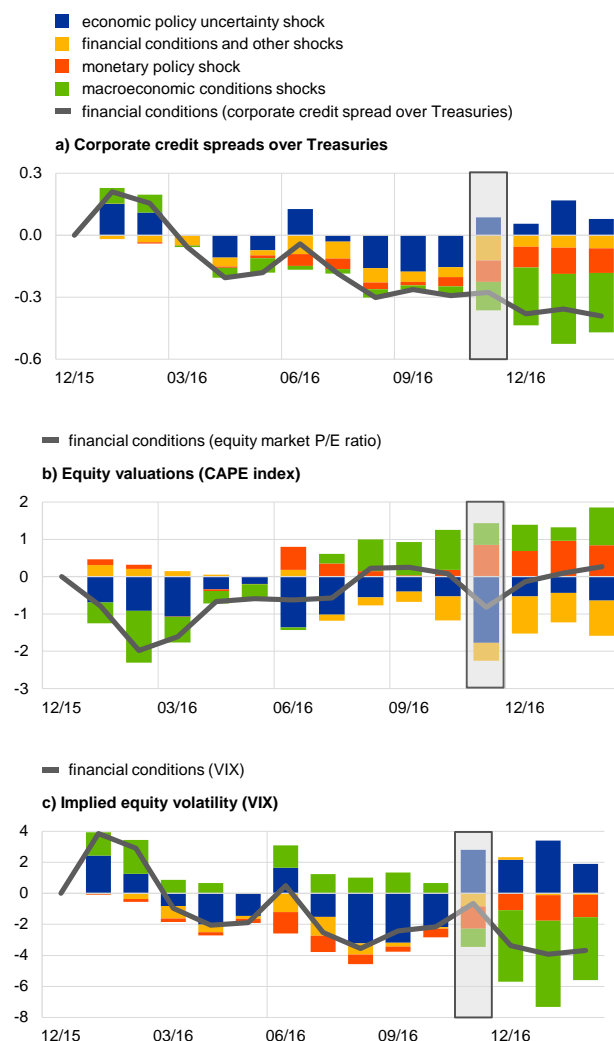


Chart A.4

Positive macro outlook eased US financial conditions, outweighing adverse economic policy uncertainty shock

Historical shock decomposition of US financial conditions

(Dec. 2015 – Feb. 2017; cumulative changes since Dec. 2015, percentage points)



Sources: Haver Analytics, Consensus Economics and ECB calculations.

Notes: Shaded areas represent the respective political events (Chart A.3: UK referendum, Chart A.4: US presidential election). Structural shocks are identified by means of sign and zero restrictions similar to those in Arias, E., Rubio-Ramirez, J. and Waggoner, D., "Inference Based on SVARs Identified with Sign and Zero Restrictions: Theory and Applications", International Finance Discussion Paper No 1100, Board of Governors of the Federal Reserve System, April 2014. Macroeconomic conditions shocks include both demand and supply shocks. A demand shock has positive effects on the real business cycle indicator (PMI/consumer confidence index), on inflation expectations as well as on the shadow monetary policy rate, and a positive effect on financial conditions (i.e. a rise in equity price valuations, a decline in equity volatility or a decline in the credit spread). A supply shock increases inflation expectations and the shadow monetary policy rate and has a negative impact on the real business cycle indicator. The economic policy uncertainty shock is characterised by an increase in the EPU index, a coincident tightening of financial conditions and a decline in the real business cycle indicator. A monetary policy shock implies an increase in the shadow rate and a tightening of financial conditions and a decline of both inflation expectations and the real business cycle indicator. The shock labelled "financial conditions and other shocks" is fully unrestricted and thereby includes idiosyncratic shocks to financial conditions. All restrictions refer to the coincident impact of the respective shocks. Estimates are derived using the BEAR toolbox (see Dieppe, A., Legrand, R. and van Roye, B., "The BEAR toolbox", Working Paper Series, No 1934, ECB, July 2016).

US and UK financial conditions eased as benign US macroeconomic developments and accommodative UK monetary policy outweighed the shocks to economic policy uncertainty.

The model results suggest that economic policy uncertainty had a notable tightening effect on US and UK financial conditions, in particular around the respective political events (see the blue bars in **Charts A.3** and **A.4**). However, financial conditions have remained benign or have even

improved since the beginning of 2016 as credit spreads remained low (see **Charts A.3a** and **A.4a**), equity valuations increased (see **Charts A.3b** and **A.4b**) and implied equity market volatility declined (see **Charts A.3c** and **A.4c**). The reason for muted movements in financial conditions was the countervailing impact of other shocks: in the United Kingdom, the strong response and communication by the Bank of England in terms of both conventional and unconventional monetary policy measures helped offset the negative impact stemming from higher policy uncertainty (see the red bars in **Chart A.4**). Similarly, improving US macroeconomic conditions, reflected by increasing levels of consumer confidence, more than compensated for the adverse effects of the post-election surge in economic policy uncertainty on US financial conditions (see the green bars in **Chart A.4**).

In the United Kingdom, the Bank of England responded strongly to the outcome of the referendum, averting a tightening in financial conditions. The adverse impact of heightened economic policy uncertainty on UK financial conditions after the EU referendum was compensated for by a comprehensive monetary policy response from the Bank of England, including both conventional and unconventional monetary policy measures and a clear commitment to further ease financial conditions if necessary.¹²⁴ The announcements of non-conventional measures in particular led to a strong decline in government bond yields and a rapid normalisation of corporate bond spreads, reflecting the announcement of central bank purchases in both markets. Consistent with the notion of a monetary policy easing shock, the package also supported domestic equity prices, while contributing to a depreciation of the pound sterling. In addition, UK business cycle indicators, such as PMIs, recorded increases in spite of the increasing economic policy uncertainty, adding to the benign financial market developments.

The rally in US risky asset prices reflected the strong situation of the US business cycle, reinforced by expectations about business and financial sector-friendly policies from the new administration. The model results suggest that, all else being equal, the surge in US economic policy uncertainty since November would have had a tightening impact on US financial conditions (see **Chart A.4**). This effect was, however, outweighed by a positive demand shock, reflected in a monetary policy rate hike, an increase in inflation expectations and, in particular, a continuous improvement in US economic surprises and real business cycle indicators – a trend that had already started several months before the US election (see **Chart A.5**). Moreover, the improvement in US business cycle indicators has accelerated since the election, which is consistent with the interpretation that expectations about economic policies (including increased infrastructure and defence spending, cuts in the corporate tax rate, and deregulation efforts in the

¹²⁴ This finding is in line with Forbes, K. (2016), op. cit., as well as the Bank of England survey of credit conditions, which showed that, in spite of the EU referendum, credit availability for households and firms remained stable in the third quarter of 2016; see “Credit Conditions Survey 2016 Q3”, Bank of England, October 2016.

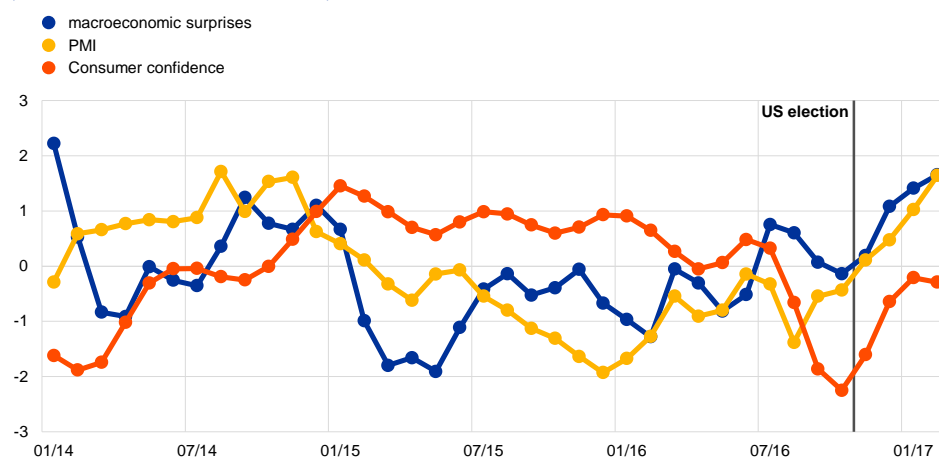
financial sector and the energy sector) were generally perceived as growth friendly.¹²⁵

Chart A.5

US business cycle improving before and after the US election

US business cycle indicators and macroeconomic surprises

(Jan. 2014 – Feb. 2017; standardised values)



Sources: Citigroup, Institute for Supply Management and Organisation for Economic Co-operation and Development.

Concluding remarks

The findings of this special feature have important implications for financial stability in the euro area. This special feature has presented empirical findings suggesting that policy uncertainty can have a significant negative effect on financial conditions. The main lesson to be learned from a euro area financial stability perspective is that similarly large economic policy uncertainty shocks could, in the absence of offsetting shocks, seriously tighten domestic financial conditions and raise risk premia. Such a shock could, for instance, occur through an election outcome that is associated with a further delay in necessary structural reforms and/or a euro-sceptic political agenda in a euro area country. It might even be consistent with rising concerns about public or private sector debt sustainability, with potentially serious spillovers to the euro area as a whole. Thus, the findings of this special feature directly relate to one of the four key risks to euro area financial stability identified in this issue of the FSR (Risk 3).

¹²⁵ Relative equity market valuations since the US election have reflected the degree to which different economic sectors could benefit from the announced policies, with equity prices of the financial, energy and defence sectors outperforming those of other sectors. To the extent that the rise in real business cycle indicators reflects expectations about policies of the new administration, the source of the demand shock is the same as the source of the economic policy uncertainty shock. In this particular case, the economic policy uncertainty caused by the US election induced stronger increases in upside risks than downside risks to macroeconomic conditions, as captured by the real business cycle indicators.