II.3. Risk and uncertainty in euro area sovereign debt markets and their impact on economic activity

Introduction

Risk and uncertainty are two important concepts in economics and finance. Risk is understood to be measurable, while uncertainty is not. ([57]) Finance and economics have traditionally emphasised the role of quantifiable risk. For example, in modern portfolio theory risk is calculated using statistical probability of asset returns. Another example is borrower default risk, which is estimated by credit score calculations including quantitative elements. The word uncertainty, on the other hand, is often used to describe situations where risks are difficult to quantify, for instance because the chances that they occur are extremely slim. The financial crisis has refocused attention on so-called 'tail risks', which relate to events with little historical record of occurrence and unknown (but potentially large) impact. Tail risks are, therefore, to a large extent immeasurable. When the presence of incalculable uncertainty is acknowledged, investors start hoarding liquidity for self-insurance and drive up risk premia. ([58])

Both calculable risk and uncertainty are present in risk premium determination and thus affect economic activity. For example, during the pre-crisis years lower risk premia contributed to keeping long-term interest rates down and supported housing markets and consumer spending. Conversely, risk premia have surged in some countries since the onset of the crisis, with a negative impact on the economy.

The purpose of this section is to shed some light on the drivers of the changes in risk premia since the crisis. It first reviews a number of indicators of measurable risk and immeasurable uncertainty. It then quantifies the relationship between euro area sovereign bond spreads and their determinants, trying to identify the respective roles of calculable risk and uncertainty. Last, the section investigates the impact of falling sovereign risk premia on the real economy, including spillover effects into the corporate bond market.

Various measures of risk

The risk premium is the extra compensation for holding an asset which carries anticipated and measurable asset-specific and economy-specific risk but also non-measurable uncertainty. Risk premia are well reflected in the spreads between various risky and risk-free asset returns. Spreads can give information about the magnitude of the underlying risk and its possible macroeconomic impact. For example, the Euribor-OIS spread is a proxy of counterparty risk on the wholesale banking markets, ([59]) while the spread between government bonds and the swap rate represents the bonds' default risk.

Non-spread measures of risk are also widely used. The health of the financial system can be measured by bank borrowing costs, and by capital and profitability ratios. In the non-financial corporate sector, risk indicators are linked to corporate profitability and leverage. Stock market volatility reflects risk in economy-wide outcomes.

Derivative markets are a distinct source of risk indicators, having recently become especially popular in measuring risk on sovereign debt markets. Spreads in credit default swaps (CDS) are similar to an insurance premium, offering protection against bond default by the issuer. The more risky the underlying bond, the higher the CDS spread, as bond investors become more likely to purchase default insurance.

Indicators to gauge investors' appetite for accepting risks also exist. A global measure of risk aversion can be tracked looking at the VIX index, which is used to predict the likelihood of large swings in equity prices solely based on investors' risk attitude. ([60])

Gauging the presence of immeasurable macroeconomic uncertainty is (by definition) considerably more difficult. Ex-ante forecast disagreement and ex-post forecast errors can provide an aggregate measure of macroeconomic

([57]) There is a body of literature on the difference between the two concepts; see Knight, F. (1921): Risk, uncertainty and profit, Boston: Houghton Mifflin, on the concept of Knightian uncertainty, and Ellsberg, D. (1961): Risk, ambiguity, and the savage axioms, *The Quarterly Journal of Economics* Vol. 75, No 4, on its application in finance.

([58]) Risks arising from financial crises are difficult to insure because often it is impossible to calculate the likelihood of a crisis. Moreover, the consequences of a crisis are frequently modified by those affected. Hence it is difficult to determine whether the crisis is the cause or the consequence.

([59]) OIS stands for overnight indexed swap.

([60]) The VIX index is a forward-looking measure of near-term volatility conveyed by the S&P 500 stock index option prices. Since it is derived from market prices of traded options, it signals market expectations of future volatility and changes in risk preference.

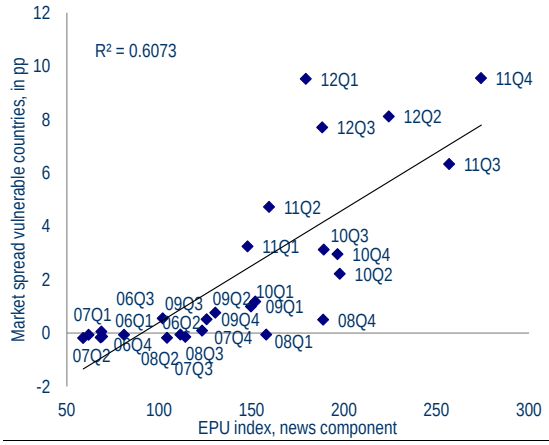
uncertainty. ([61]) Surprise movements in either measure are often associated with significant changes in output and employment. In recent years, a number of risk indicators linked to policy surprises and economic and political news have also been proposed. Graph II.3.1 shows that an increase in uncertainty, as captured by the higher values of the EPU index' news component, is associated with higher sovereign bond spreads. ([62])

Estimating risk and uncertainty in the euro area sovereign bond markets

Econometric analysis of sovereign spread determinants can be used to better understand the large rise in sovereign borrowing costs observed in several euro area Member States since 2010. The econometric analysis presented in Box II.3.1 shows that recent changes in risk premia cannot entirely be explained by calculable measures of risk and that immeasurable uncertainty plays an increasingly important role in determining risk premia. ([63])

Most of the available empirical studies find a statistically significant relationship between sovereign bond yield spreads and country-specific fundamentals, such as the debt-to-GDP ratio, government deficit and growth outlook. ([64]) However, research covering the period after the crisis shows that the actual increase in sovereign spreads in some euro area countries cannot be fully explained by models that contain only country-specific measurable variables. This remains largely true even if changes in liquidity conditions, investor risk attitudes, the size and leverage of the national banking system and contagion effects among euro area Member States are controlled for. ([65])

Graph II.3.1: **News component of the European EPU index versus sovereign spreads of the vulnerable euro area countries (2006Q1-2012Q3) (1)**



(1) The news component of the Economic Policy Uncertainty Index is on the horizontal axis, the weighted average of 10-year sovereign bond spreads in the vulnerable countries is on the vertical axis. GR, IT, ES, IE and PT are the vulnerable euro area Member States.
Source: DG ECFIN.

This conclusion is supported by the econometric analysis presented in Box II.3.1, which reveals that investors' risk behaviours have changed since the beginning of the crisis. More specifically, the econometric analysis shows that since the crisis the role of public debt in determining spreads (i.e. its estimated coefficient) has increased. Furthermore, changes in the fiscal balance and bond market liquidity have had a statistically meaningful impact on sovereign bond spreads only since the start of the crisis and not earlier.

In addition, the negative feedback loop between the performance of the countries' banking sectors and their sovereign risk premia became evident during the crisis as investors started to require a higher premium to cater for the risk that governments may have to step in to support domestic banks under stress. As a proxy for the health of the banking sector, the analysis includes a measure for lending to euro area credit institutions by the Eurosystem. The econometric

([61]) The utilisation of dispersion indexes of expectations as proxies for uncertainty has a long tradition in the literature, mainly in the context of inflation expectations; see for instance Bachman R., S. Elstner and E. Sims (2010): Uncertainty and economic activity: Evidence from business survey data, NBER Working paper 16143; Bomberger, W. (1996): Disagreement as a Measure of Uncertainty, *Journal of Money, Credit and Banking*, Vol. 28, No 3.

([62]) The Economic Policy Uncertainty (EPU) Index consists of two components: one quantifies newspaper coverage on economic policy uncertainty, while the other evaluates disagreement among economic forecasters. A European version of the index exists. See Baker, S., N. Bloom and S. Davis, (2012): Measuring economic policy uncertainty, Stanford University, mimeo.

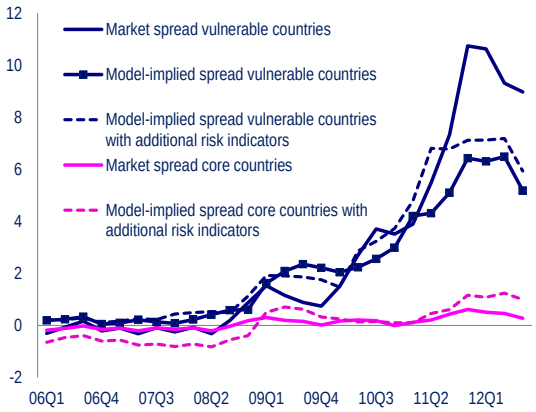
([63]) Coefficients are similar to those in Barrios S., P. Iversen, M. Lewandowska and R. Setzer (2009): Determinants of intra-euro area government bond spreads during the financial crisis, European Economy, No 388.

([64]) For an evaluation of sovereign bond yield determinants, see Poghosyan, T., (2012): Long-run and short-run determinants of sovereign bond yields in advanced economies, IMF Working Paper, No 12/271.

([65]) See Favero, C., A. Missale (2011): Sovereign spreads in the euro area: Which prospects for a Eurobond? CEPR Discussion Paper, No 8637; Gerlach, S., A. Schulz and G. Wolff (2010): Banking and sovereign risk in the Eurozone, CEPR Discussion Paper, No 7833; and Beirne, J and F. Fratzscher (2012): The Pricing of Sovereign Risk and Contagion during the European Sovereign Debt Crisis, ECB Working Paper.

results show that higher bank dependence on central bank lending is associated with higher home-country bond spreads.

Graph II.3.2: **Market spreads versus model-based spreads in the vulnerable and core euro area Member States (in pp, 2006Q1-2012Q3) (1)**



(1) Model-based spreads are fitted values from a panel regression of sovereign spreads on public debt, GDP growth and current account balance. The additional risk indicators are debt dynamics, liquidity, systemic risk, the crisis regime and post-crisis official lending to banks.
Source: DG ECFIN.

Nevertheless, even if changes in the role of certain sovereign spread determinants are introduced into the model, a significant part of the recent surge in sovereign spreads in some Member States remains unexplained. This suggests that movements in sovereign bond spreads are not only affected by country-specific macroeconomic developments but also by non-measurable risk factors, in particular in relation to economic policy and EMU.

More precisely, the spreads predicted by the model track actual market spreads before the crisis very closely. However, a gap between actual and predicted spreads is evident as from 2010 and has become especially large and persistent since the beginning of 2011 (Graph II.3.2). The movements differ in direction and magnitude among Member States. In vulnerable countries, such as Italy, Portugal and Spain, market spreads exceed their respective model-based spreads. Movement in the opposite direction can be observed in Member States, such as France, Germany and the Netherlands, where the flight to safety by bond investors pushed yields below levels suggested by the model.

Assessing the role of non-measureable risk

A closer look at the sovereign spread regression residuals in those Member States which have been under intense market pressure reveals that they are moving together. This suggests that investors are pricing a common risk factor, perhaps related to a potential redenomination of public debt or to economic governance uncertainty in parts of the euro area. To try to reduce this gap, two additional indicators are included in the estimation.

The first additional indicator is related to spread co-movement across euro area Member States. The common variability of sovereign bond spreads (a common euro area risk factor) is extracted out of country-specific sovereign bond spreads (via a principal component analysis) and added to the model as an explanatory variable. The indicator is significant, confirming the hypothesis of a commonality present in the euro area sovereign bond markets. ([66])

The second additional indicator is the news component of the Economic Policy Uncertainty Index, which tracks the coverage of economic and political uncertainty in euro area newspapers that is not country-specific. This indicator is also statistically significant, validating the hypothesis that euro area-wide policy uncertainty affects sovereign bond risk premia.

The introduction of the common euro area risk factor or the common policy uncertainty news index decreases the unexplained part of the sovereign bond risk premia but does not completely eliminate it. This result is in line with recent literature, suggesting a decoupling of observed spreads from information that can be derived from macroeconomic fundamentals and the emergence of an immeasurable component of the risk premia, i.e. uncertainty, which is only partially controlled here with the introduction of the common euro area risk factor or the policy uncertainty news index.

Macroeconomic impact

Whereas the econometric analysis points to a significant role for uncertainty in explaining the remaining difference between market spreads and model-based spreads, the rest of this section assesses the impact of this uncertainty on economic activity. DG ECFIN's dynamic stochastic general equilibrium (DSGE) model

([66]) Similar conclusion has been reached, for instance, by Di Cesare, A., G. Grande, M. Manna and M. Taboga (2012): Recent estimates of sovereign risk premia for euro area countries, Banca d'Italia Occasional Paper No 128.

Box II.3.1: **Risk and uncertainty behind rising sovereign bond spreads in the euro area: panel estimations**

Data

The risk determinants driving the dynamics of euro area sovereign bonds are assessed via a panel regression model of 10-year sovereign bond spreads. The model contains quarterly data for eleven euro area Member States: Austria, Belgium, Finland, France, Germany, Greece Ireland, Italy, the Netherlands, Portugal and Spain, between 1999Q1 and 2012Q3. The dependent variable is the sovereign bond spread, defined relative to the corresponding interest rate swap. Variables used to represent investors' assessments of country-specific sovereign credit risk are: government debt stock, change in the fiscal balance (both as a share of GDP), the current account balance and real GDP growth rate. The squared debt-to-GDP ratio is used to reflect non-linearities in the relationship between sovereign spreads and public debt-to-GDP ratio. In order to estimate the role of liquidity risk the bond-specific bid-ask spreads of the corresponding maturities are used as regressors. The VIX index is used to reflect changes in overall investor confidence in global financial markets. Lending to banks by the Eurosystem is included to capture the impact of financial system support on spreads. A time dummy for the financial crisis between 2008Q3 and the end of the sample is inserted, in interaction with the intercept and some of the explanatory variables in order to indicate a regime switch in risk determination. The first principal component of the eleven yield spreads is used to represent the common euro area risk factor. Alternatively, the news component of the European Policy Uncertainty index is included in order to estimate the share of sovereign risk premia that is common to all Member States and is at least partially based on non-fundamentals. The news component is a composite of articles that contain keywords published in ten large European newspapers and is not country-specific. Therefore the impact of the idiosyncratic country uncertainty remains in the estimated error.

Methodology and results

The panel regressions quantify the degree of divergence of market-observed bond spreads from the value justified by macroeconomic fundamentals and common variability. The approach follows Barrios et al (2009) and Di Cesare et al (2012). Various specifications of the model result in the optimal representation:

$$spread_{i,t} = \alpha + \lambda_1 debt_{i,t} + \lambda_2 debt * crisis_{i,t} + \lambda_3 debtsq * crisis_{i,t} + \lambda_4 gdp_{i,t} + \lambda_5 deficit * crisis_{i,t} + \lambda_6 bidask * crisis_{i,t} + \lambda_7 banklend_{i,t} + \lambda_8 news_{i,t} + \lambda_9 crisisdum_{i,t} + \varepsilon_{i,t}$$

where sub-indexes i=1,…,N and t=1,…,T stand for country and time. The equation is estimated by a panel estimator with fixed-effects and robust standard errors.

The obtained coefficients are similar to the ones in Barrios et al (2009) whose sample ends in mid-2009. The introduction of the crisis interaction dummy improves the fit and demonstrates the change in the significance of public debt, fiscal balance and liquidity on the sovereign debt market since the beginning of the crisis. Specifically, from the crisis onwards, debt has a growing impact on spreads as it becomes bigger in relation to GDP. The change in the fiscal balance and the bond market liquidity has an impact on spreads only from the start of the crisis.

Two alternative approaches are used to address the common risk factor in the spreads. Based on the methodology in Di Cesare et al. (2012) and IMF (2012) the first principal component of the spread is included as an independent variable in one of the regression specifications. It accounts for around 60% of common spread variability and captures co-movement that might stem from within the set of countries or from a common outside factor. In an alternative regression specification, the news component of the European Policy Uncertainty index is used to reflect common changes in both fundamentals and uncertainty as reported in newspaper articles. Both of these measures improve the fit, capturing at least part of the increase in the importance of immeasurable uncertainty. Neither of these measures, however, can precisely calculate how much of the increase in sovereign bond risk premia is due to an increase in incalculable uncertainty.

The regression results are given in the following table.

(Continued on the next page)

Box (continued)

	Model with economic fundamentals only	Model with debt dynamics	Model with liquidity and systemic risk	Model with crisis regime	Model with crisis regime and common euro area factor	Model with crisis regime and news index
	(1)	(2)	(3)	(4)	(5)	(6)
Debt	0.089***	-0.137***	-0.041*	0.014*	0.007	0.013*
	(4.44)	(-3.34)	(-1.74)	(1.78)	(0.62)	(1.43)
Debt*Crisis				-0.089***	-0.077***	-0.083***
				(-10.04)	(-6.44)	(-9.52)
Debt²		0.002***	0.001***			
		(5.18)	(3.16)			
Debt²*Crisis				0.0007***	0.0006***	0.0006***
				(14.14)	(5.92)	-11.15
ΔFiscal*Crisis				-0.024***	-0.022***	-0.023***
				(-3.55)	(-3.26)	(-3.31)
Current acct balance	0.052*	0.068				
	(1.54)	(1.18)				
ΔGDP	-0.199***	-0.14***	-0.125**	-0.133***	-0.116**	-0.120**
	(-1.91)	(-2.86)	(-2.63)	(-2.70)	(-2.33)	(-2.53)
Bid-ask spread			0.110***			
			(8.03)			
Bid-ask spread*Crisis				0.103***	0.097***	0.101***
				(11.75)	(8.5)	(10.63)
VIX			0.08*			
			(1.65)			
Post-crisis official lending to banks				0.215***	0.169***	0.195***
				(4.61)	(4.93)	(4.83)
Common euro area factor					0.219***	
					(2.82)	
News index						0.473**
						(1.84)
Crisis dummy				1.311**	1.18**	1.190*
				(2.47)	(2.3)	(2.37)
Const	-5.555	2.047	0.031	-0.786	-0.14	-0.88
	(-4.33)	(1.37)	(0.971)	(-1.24)	(-0.16)	(-1.44)
R^2	0.22	0.34	0.65	0.77	0.80	0.79
No obs	604	604	604	604	604	604

References

Baker, S., N. Bloom and S. Davis, (2012): Measuring economic policy uncertainty, Stanford University, mimeo

Barrios S., P. Iversen, M. Lewandowska and R. Setzer (2009): Determinants of intra-euro area government bond spreads during the financial crisis, European Economy, No 388

Di Cesare, A., G. Grande, M. Manna and M. Taboga (2012): Recent estimates of sovereign risk premia for euro area countries, Banca d'Italia Occasional Paper No 128

International Monetary Fund, 2012 Spillover Report, Background paper 4: Commonalities, mispricing, and spillovers: euro area sovereign risk

QUEST is employed to quantify the effects on economic activity of a decrease in risk premia that could follow a decrease of uncertainty related to the functioning of EMU and the ongoing adjustment processes in some Member States (Box II.3.2).

The fall in uncertainty is modelled as a decrease in risk premia equal to the weighted average of the differences between market-based spreads and estimated spreads in vulnerable Member States. The differences are obtained from the fourth regression in the table of Box II.3.1, where sovereign risk premia are modelled as a function of fundamental variables, market liquidity, systemic risk and a country's potential support for banks and where shifts in coefficients during the crisis are accounted for. The resulting size of the risk premia shock is 177 basis points.

The direct macroeconomic effects of changes in sovereign risk premia are quite small in the model. A higher risk premium on sovereign debt only affects new and rolled-over debt, and thus the average interest rate that governments pay is only increased incrementally. Therefore, the model predicts relatively small changes to public spending and no material impact on general economic activity.

Box II.3.2: **The macroeconomic impact of falling sovereign bond spreads in the euro area**

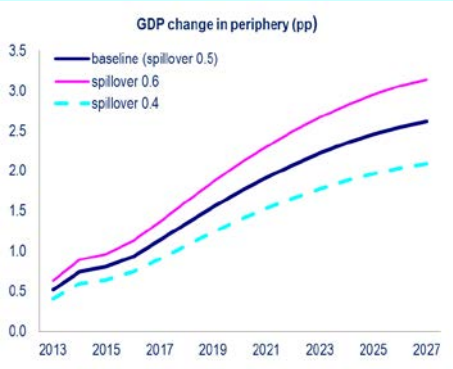
The macroeconomic impact of falling sovereign bond spreads is found using QUEST, a dynamic stochastic general equilibrium (DSGE) model developed by the European Commission which incorporates various real, nominal and financial frictions. First, it is acknowledged that lower sovereign borrowing costs are likely to spill over to financing costs in the private sector. The spillover effect is calculated by comparing the evolution of sovereign and corporate CDS for euro area non-financial companies. Both series are found to display substantial comovement, particularly in countries that face fiscal strain. A median spillover coefficient of 0.6 is obtained by running a number of regressions of corporate CDS spreads on sovereign CDS spreads, controlling for changes in sector-specific risks.

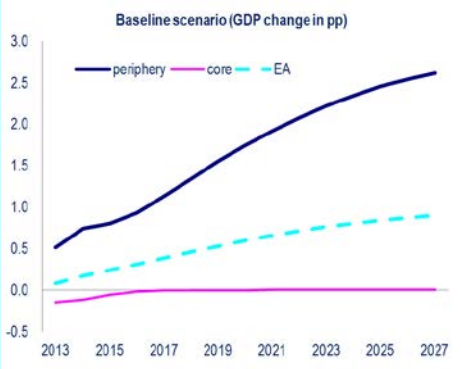
The analysis was carried out for all euro area companies having with liquid CDS quotes. However, given the relatively short sample with observations only covering the period since the crisis intensified in 2010, a spillover coefficient of 0.6 may well be overvalued. Moreover, spillovers from sovereign to private debt markets might be reinforced in a positive spiral when governments are made to pay more because a negative growth outlook is caused by tighter private-sector credit conditions. A spillover coefficient of 0.5 has therefore been chosen as the baseline scenario.

Simulations of the QUEST model give the macroeconomic impact of decreasing sovereign risk premia. In this analysis a three-region variant of the model divides the euro area into core and vulnerable countries and includes the rest of the world. ([1]) The model introduces a number of risk premia on various assets that may reflect generalised risk perceptions, such as the risk perceptions of a country (sovereign risk) and sectoral risk premia (e.g. a risk premium on housing or corporate investment). A scenario in which sovereign bond spreads that are temporarily above their fundamental-based value revert to the fundamentals can then be modelled as a fall in the sovereign risk premium. These are then likely to spill over into the corporate sector as decreasing sectoral risk premia.

In all the scenarios considered in this box it is assumed that the sovereign risk premia in the periphery are reduced permanently by 1.77 percentage points (the weighted average of the differences between market and model-based yields for vulnerable countries in the euro area in 2012Q3). In the baseline scenario this reduction is accompanied by a 0.5 spillover coefficient to risk premia in the housing, traded goods and services (non-traded goods) sectors. As a sensitivity analysis, higher (0.6) and lower (0.4) spillover factors are also considered. The higher factor is closer to the estimate obtained from regressing sovereign on corporate CDS spreads.

As can be seen in the graph below, a risk premium reduction in the baseline scenario (a spillover coefficient of 0.5) leads to an immediate increase of 0.5 percentage points (pp) in the periphery's output. Output continues to rise over the next years, reaching a 2.5 pp increase after 15 years. However, the size of the effect is highly sensitive to the spillover coefficient. For a stronger spillover of 0.6, the output may increase by more than 0.6 pp following the shock and is almost 3 pp higher than a constant-spread scenario after 15 years. Smaller spillovers from the government to corporate sector borrowing costs lead to smaller output effects. The impact of eliminating the spillover entirely is only 10 % of the impact when a spillover is included.





While a reduction in spreads in the periphery has positive output effects for the more vulnerable euro area Member States, it is initially accompanied by a marginal output loss in the euro area core countries. This could happen as falling financing costs in the periphery create an investment opportunity for the rest of the world, including the core

([1]) For the purposes of the empirical analysis in this section, euro area Member States are divided into two groups: core countries (Austria, Belgium, Finland, France, Germany, the Netherlands) and more vulnerable countries: (Greece, Ireland, Italy, Portugal and Spain).

(Continued on the next page)

Box (continued)

euro area countries. Hence, there could be an increased capital outflow from the core to the periphery, with temporary negative GDP effects in the former. Nevertheless, the overall effect for the euro area as a whole remains positive, with a simulated output gain within the euro area as a whole reaching between 0.5 and 1 pp.

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Roeger, W., and Jan in't Veld (2010): Fiscal stimulus and exit strategies in the EU: a model-based analysis, European Economy, No 426

However, there are several ways through which drops in uncertainty and sovereign risk premia may have more sizeable macroeconomic effects if they spill over to risk premia in the private sector. Since uncertainty increases the value of waiting for new information (higher physical adjustment frictions), firms respond to a drop in uncertainty by resuming investment. ([67]) Financial frictions also play a role. Gilchrist et al. (2009) argue that decreases in firm risk, for example, after the fall in uncertainty, would lead to a drop in the cost of capital, which in turn would release previously postponed investment activity and hiring decisions. ([68]) Finally, a fall in uncertainty may also affect households by supporting spending on durable goods and housing.

In the baseline scenario presented in Box II.3.2, the reduction in the sovereign risk premium is allowed to spill over to the corporate sector, as reflected in decreasing corporate risk premia. ([69]) A 50% spillover to risk premia in the housing market and the markets for traded goods and services is assumed. This is roughly in line with regressions of corporate CDS spreads on sovereign CDS spreads which point to a spillover effect from the sovereign to the corporate sector of about 60%.

The results imply that a reduction in uncertainty does indeed have prolonged positive effects on economic activity and that it triggers a persistent rise in aggregate employment and consumption. In order to grasp the intuition behind the real impact sensitivity, it is crucial to notice that a reduction in risk premia in the corporate sector implies a decrease in the cost of capital for firms. In effect, corporate investment increases. This has a twofold effect on the aggregate output. Higher demand for goods and services increases output directly. Moreover, the build-up of corporate capital raises the production capacity of the economy.

These findings are in line with the existing literature, showing that a negative shock to sovereign spreads affects economic activity positively. They suggest that, in order to bring sovereign spreads down, policies aimed at improving government macroeconomic fundamentals through fiscal consolidation need to be complemented with policies to reduce the general level of uncertainty.

Concluding remarks

This section has analysed recent developments in sovereign bond risk premia in the euro area in the light of a distinction between risk, which can be calculated, and uncertainty, which cannot. Even if macroeconomic fundamentals linked to the perceived riskiness of sovereign issuers continue to explain an important part of government bond risk premia, the analysis reveals that investors'

([67]) See Bernanke, B. (1983): Irreversibility, Uncertainty and Cyclical Investment, *Quarterly Journal of Economics*, Vol. 98; Bloom, N. (2009): The Impact of Uncertainty Shocks, *Econometrica*, Vol. 77; Bachmann, R., S. Elstner and E. Sims (2011): Uncertainty and Economic Activity: Evidence from Business Survey Data, NBER Working Paper No 16143; and Dixit, A. and R. Pindyck (1994): Investment Under Uncertainty, Princeton University Press. .

([68]) Gilchrist, S., V. Yankov and E. Zakrajsek (2009): Credit Market Shocks and Economic Fluctuations: Evidence from Corporate Bond and Stock Markets, *Journal of Monetary Economics*, Vol. 56, No 4.

([69]) Many studies examine the dynamics of sovereign debt crises and the channels of transmission from sovereigns to firm's costs of financing, showing that episodes of intense fiscal and sovereign debt pressure are associated with a significant widening of corporate bond spreads; see Dailami, M. (2012): Looking beyond the Euro Area Sovereign Bond Crisis, World Bank Economic Premise, No 76; Gilchrist, S., V. Yankov and E. Zakrajsek (2009): Credit Market Shocks and Economic Fluctuations: Evidence from Corporate Bond and Stock Markets, Journal of Monetary Economics, Vol. 56, No 4; and Pastor, L., P. Veronesi (2012): Uncertainty about Government Policy and Stock Prices, *Journal of Finance*, No 67, Vol. 4.

risk behaviours have changed during the crisis. For example, investors now behave more cautiously with regard to certain macroeconomic fundamentals and they are more aware of implicit liabilities related to banks. Moreover, the results indicate that a significant part of the recent surge in sovereign spreads in some Member States cannot be fully justified by measurable risk factors. The unexplained part turns out to be related to common euro area risk factors and to a rise in policy-related uncertainty.

Over the last two years, the elevated level of economic policy uncertainty has had a negative impact on sovereign risk premia in some Member States. A reversal of this trend could have a significant positive effect on economic growth in the countries concerned. Ongoing efforts to create a deep and genuine EMU will be instrumental in this respect. A consistent implementation of structural reforms and fiscal plans by euro area Member States will also help to eliminate uncertainty regarding economic policies.