Box 1

DOWNSIDE RISKS TO REAL ACTIVITY IN THE UNITED STATES: THE ROLE OF DISAGREEMENT IN EXPECTATIONS IN DETERMINING MACROECONOMIC VULNERABILITY

One critique of the build-up phase prior to the onset of the recession in 2008-09 was that "groupthink" amongst macroeconomic forecasters prevailed, whereby a lack of heterogeneity in beliefs led to myopia about the potential for such an event. This reflects a general phenomenon whereby an economy can become more vulnerable if people largely agree about the future course of the economy, and can become more resilient if they hold differing beliefs.[1] One explanation for this phenomenon is that the acquisition of insurance coincides largely with beliefs about economic developments. If expectations are very homogenous, this can lead to higher aggregate risk because of overly homogenous insurance schemes. On the one hand, the risks of a severe downturn may be underplayed and sow the seeds for unhedged losses. On the other hand, risks of recession may be overplayed, thereby leading to overly precautionary behaviour contributing to self-fulfilling outcomes. In either setting, when risk aversion is more homogenous, aggregate losses may be amplified. This box examines financial stability risks from disagreement in macroeconomic expectations, on the basis of a model using a disagreement metric for measuring and assessing financial stability.

Comparing aggregate consumer disagreement[2] with GDP growth for the United States shows that for the last three decades, the NBER dated recessions have been preceded by a continual rise in agreement throughout the expansion periods (see Chart A). During intermediate contraction phases, more disagreement built up. Local peaks in agreement tended to occur prior to the beginning of all five recession periods dated in the sample.

This anecdotal evidence can be substantiated with estimates from an econometric model that allows for regime switches between the three states of expansion, medium growth and recession,

1 Empirical support for the hypothesis is presented in C. Badarinza and M. Buchmann, "Macroeconomic vulnerability and disagreement in expectations", *ECB Working Paper Series*, No 1407, December 2011. In addition to the analysis with a focus on US GDP, the paper draws very similar conclusions regarding the role of regime switches in financial market volatility.

2 Disagreement is proxied by an ordinal dispersion measure computed based on shares of answers to question 17 of the Michigan Survey of Consumers. Details can be found in Badarinza and Buchmann, *op. cit*.

in conjunction with a mechanism for *probabilities* of regime switches to depend on the agreement level. Based on that model, the mean GDP growth rates have been estimated to equal 4.6% for expansion, 2.5% for medium growth, and -0.7% for recession.

Table A Disagreement level implied transition probabilities for the medium positive growth regime

(percentages)

Quantile (disagreement)	Med (t-1) - Exp (t)	Med (t-1) - Med (t)	Med (t-1) - Rec (t)	*Sum*
1 (0.11)	0.5	18.1	81.3	*100*
50 (0.49)	13.7	83.0	3.3	*100*
99 (0.86)	45.2	54.8	0.0	*100*
53.4 (0.49 = Q2 2011 level)	13.9	83.0	3.1	*100*

Sources: Federal Reserve Bank of St. Louis database, Michigan Survey of Consumers and ECB calculations.

The model results suggest that more disagreement renders the US economy less vulnerable, as recessions become less likely and medium positive growth becomes more sustainable. Moving from minimum to maximum disagreement levels increases the probability of switching from the medium positive growth regime to strong growth from 1% to 45%, increases the probability of medium growth prevailing from 18% to 55%, and decreases that of falling into recession from 81% to virtually nil (see Table A).

Model-based macroeconomic projections yield some illustrative insights into the importance of a given level of disagreement (they should not be considered official ECB projections).[3] A ten-quarter-ahead projection, with the agreement level first fixed at its end-sample value,

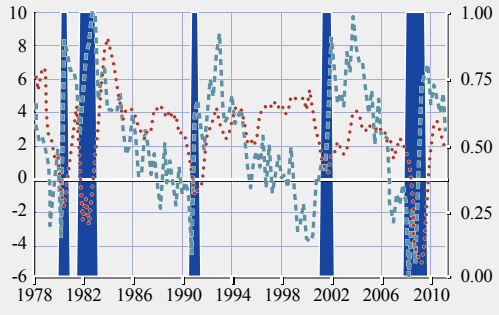
3 In interpreting the projections presented in this box, the stylised nature of the underlying model should be borne in mind. In particular, no further judgement is involved. The projections should not be considered official ECB projections, since they are merely meant to illustrate the role of disagreement in shaping the outlook for real activity.

Chart A Real GDP and disagreement in the United States

(Q1 1978 – Q2 2011)

y-axis: GDP growth (percentage change per annum) (left-hand scale)
y-axis: index (right-hand scale)

NBER recessions
real GDP growth (left-hand scale)
disagreement (right-hand scale)



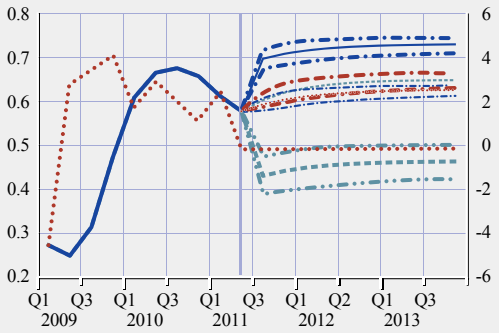
Sources: Federal Reserve Bank of St. Louis database, Michigan Survey of Consumers and ECB calculations.

Chart B US GDP growth projections conditional on different regime assumptions

(Q1 2009 – Q4 2013)

y-axis: disagreement (left-hand scale)
y-axis: GDP growth (percentage change per annum) (right-hand scale)

actual GDP growth
disagreement, including assumption (left-hand scale)
forecast conditional on recession regime
forecast conditional on strong positive growth regime
forecast conditional on medium growth regime
mean forecast



Sources: Federal Reserve Bank of St. Louis database, Michigan Survey of Consumers and ECB calculations.
Note: Dashed lines are 95% forecast error bounds.

Table B Projected GDP growth paths

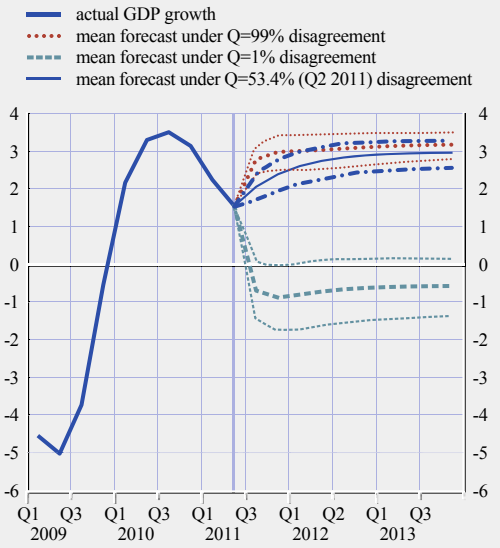
(percentages)

	Regime-conditional forecasts			Mean
	Exp	Med	Rec	forecast
2011	3.0 (2.7,3.2)	1.9 (1.8,2.1)	0.3 (-0.2,0.7)	2.1 (1.9,2.2)
2012	4.4 (3.9,4.8)	2.3 (2.0,2.6)	-0.9 (-1.8,-0.1)	2.8 (2.3,3.1)
2013	4.6 (4.1,4.9)	2.5 (2.2,2.7)	-0.8 (-1.6,0.0)	2.9 (2.5,3.3)

Sources: Federal Reserve Bank of St. Louis database, Michigan Survey of Consumers and ECB calculations.
Note: 95% forecast error bounds are shown in brackets.

Chart C US GDP growth forecasts conditional on different disagreement assumptions

(Q1 2009 – Q4 2013; percentage change per annum)



Sources: Federal Reserve Bank of St. Louis database, Michigan Survey of Consumers and ECB calculations.
Note: Dashed lines are 95% forecast error bounds.

was generated. For the second quarter of 2011, the inferred probabilities of remaining in expansion, medium growth or recession equalled 1.7%, 97.7% and 0.6% respectively. The one-step-ahead predicted switching probabilities from the second quarter of 2011 standpoint equal 15%, 81% and 4% for moving into expansion, medium growth or recession. Conditional on the assumption of the probability of falling into recession materialising, the resulting prediction is an annual 0.3% growth for 2011 and a drop of -0.9% for 2012 (see Table B); thereafter, the recession path quickly converges to its long-run mean of -0.7%. The overall mean projection suggests a 2.1% annual rate for 2011, 2.8% growth for 2012, and 2.9% (close to the conditional long-run mean) throughout 2013 (see Chart B).

To further illustrate the role of agreement in determining macroeconomic outcomes, two additional paths were derived, while assuming a shock hit the agreement level at the start of the horizon. The shock sizes equal +0.38 and -0.37, implying counterfactual agreement index levels of 0.86 and 0.11. The gap between the mean forecast and the paths under hypothetical low agreement is not pronounced, with a 0.3 percentage point gap along the horizon, whereas the counterfactual high agreement results in a -3.4 percentage point gap along the horizon (see Chart C).

Based on the mean projection and the uncertainty as to the future disagreement level, the model implies that risk for macroeconomic activity in the United States currently appears to be on the downside. More generally, the model results suggest that disagreement has the ability to impact transition probabilities and thereby shape the resulting growth projections. For the assessment of risks to financial stability, the analysis implies that attention should indeed be devoted to economy-wide disagreement levels and their implied transition probabilities.