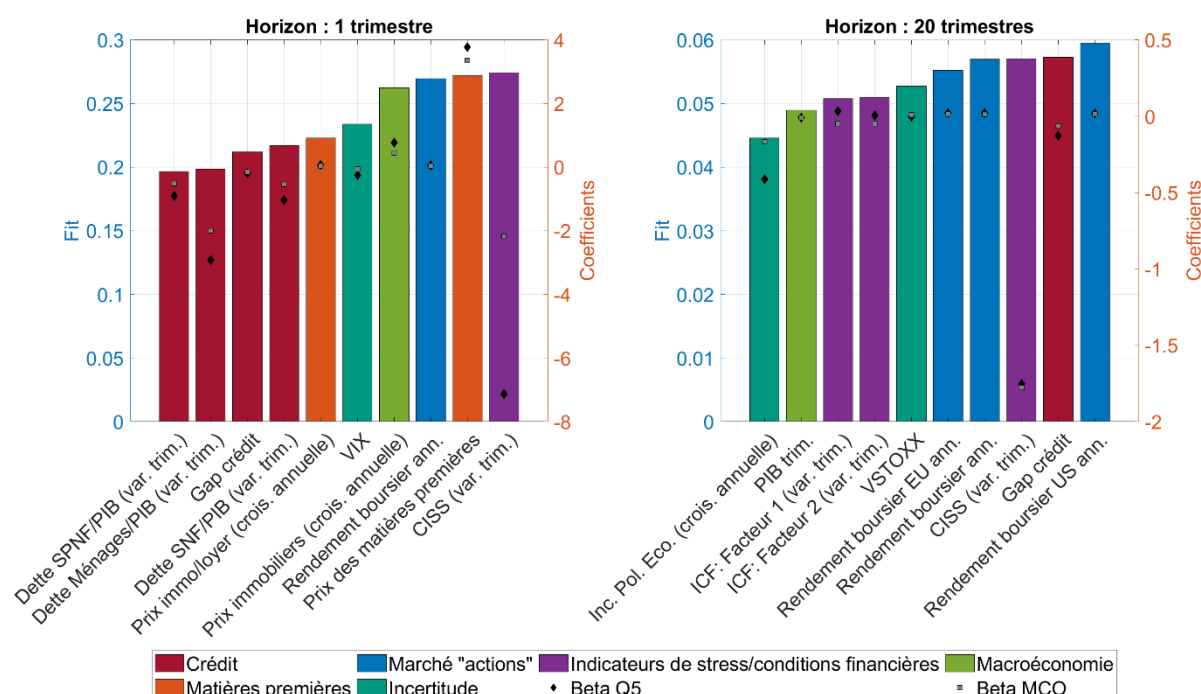


How can we anticipate extreme risks to growth in France?

By Valère Fourel, David Gauthier and Lisa Kerdelhué

In France, extreme downside risks to growth stem primarily from non-financial private sector debt levels and market uncertainty in the short term, then economic uncertainty and geopolitical risks in the longer term. This finding, derived from the “Growth-at-Risk” approach, holds true whether the indicators are considered individually or combined.

Chart 1: Predictive power of each indicator regarding extreme downside risks to French growth



Sources: Banque de France, INSEE, OECD; authors' calculations.

Notes: Predictive power of each indicator considered in isolation regarding downside risks (quantile at 5%); the lower the “Fit”, the better the predictive power. CISS and FCI, and methodology: see text.

Measuring extreme risks to growth – that is, the probability that the most negative outliers at the lower tail of the future GDP growth distribution may materialise – is not a new idea: as early as 2008, [Cecchetti \(2008\)](#) considered the macroeconomic risks generated by rapidly rising asset prices, studying their effect on the lower end of the distribution of future growth rather than on its average value alone. This idea was systematically formalised by [Adrian et al.\(2019\)](#), who linked macrofinancial conditions to the entire distribution of future growth using quantile regressions, thereby giving rise to the approach now known as “Growth-at-Risk”. This approach has notably been applied by the ECB for the euro area ([Figueres and Jarocinski, 2020](#); [Lang et al.2023](#)), and by the IMF for France ([Country Report No. 19/322](#)). Growth-at-Risk is helpful in monitoring systemic risks, making it possible to identify, for each time horizon, the macroeconomic and

financial variables that best predict the risks of a sharp slowdown in activity. It does not replace traditional forecasts of average growth but rather complements them with an assessment of the most adverse scenarios and the ability to look beyond one-off or average projections.

The adopted approach

Around thirty macroeconomic and financial variables are examined to identify those that best account for the downside risks to French growth. These risks are defined as the 5th conditional percentile of the GDP growth distribution over the horizon under consideration (one quarter or five years) – that is, the scenarios in which growth ranks among the lowest 5% observed in the sample since 1993 (which in France include the recessions linked to the crisis in the European Exchange Rate Mechanism in 1993, the financial crisis of 2007, and the Covid crisis in 2020). They are estimated using quantile regressions, which allow for the characterisation of the most adverse growth scenarios rather than the average trend. The variables considered cover the credit and debt of households and firms, macroeconomic activity, financial markets and interest rates, economic uncertainty ([Baker et al.2016](#)), geopolitical risks ([Caldara and Iacoviello, 2022](#)), commodity and house prices, and also indicators of financial stress (the ECB's Composite Indicator of Systemic Stress – CISS) or financial conditions (Financial Conditions Index – FCI; [Lombardi et al., 2025](#)). Contemporary GDP growth is also included for its usefulness in predicting future growth.

The Growth-at-Risk approach complements the information provided by composite stress or financial condition indices by directly assessing their ability to anticipate downside risks to growth.

Private debt and market uncertainties weigh on extreme risks in the short term; economic uncertainty and financial conditions take effect in the longer-term

The role of each variable is first analysed individually by using its contemporary value to anticipate downside risks to future growth. The results for each variable are then compared in terms of their ability to predict a marked slowdown in activity. Predictive capacity (Fit) is measured by the prediction error, based on the lowest 5% of outcomes, for each indicator considered in isolation: the lower the value, the better the adjustment (Chart 1). Chart 1 also presents the estimated elasticities between the average annual future growth rate and each of the explanatory variables, obtained both through quantile regression at the 5th percentile ("Beta Q5") and through linear regression estimated using ordinary least squares ("Beta OLS"). Thus, a 1 percentage point increase in the NFC debt-to-GDP ratio is associated with a fall of about 1 percentage point in the 5th percentile of GDP growth, one quarter ahead. Here, the proximity in the elasticities between the two types of estimates shows that the relationships between the predictive variables and annual growth are similar, whether predicting economic activity in general or during periods of sharp economic contraction more specifically.

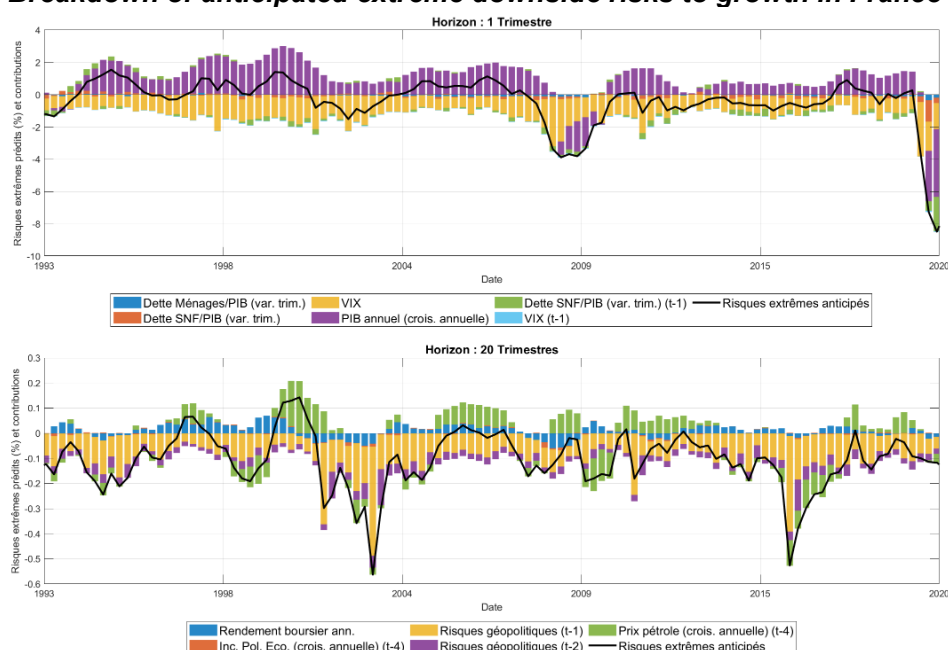
The results reveal a clear difference depending on the projection horizon. In the short term – over a one-quarter horizon – indicators relating to the credit and debt of households and firms, and measures of market uncertainty (the VIX index) best predict downside risks when considered in isolation. This finding is consistent with the role of debt as a channel of macrofinancial vulnerability, which is well documented in the literature. By contrast, in the longer term – a horizon of around five years – indicators of economic uncertainty and composite indices of financial conditions, constructed from a broad range of financial variables such as interest rates, credit spreads, share prices, volatility and exchange rates, become the most informative. This shift reflects the fact that credit tensions have a rapid effect on activity, via bank lending channels and financing constraints on households and firms, while uncertainty and financing condition shocks exert more gradual pressure on investment decisions and the medium-term growth path. (The different predictive capacities of the variables mentioned are confirmed by an analysis of the confidence intervals of their goodness-of-fit measures.)

Combining the indicators reveals the role of geopolitical risks in the long term

Analysing each indicator individually has its limitations: this approach ignores the links that exist between the variables and may lead to the importance of indicators conveying similar information being overestimated. Therefore, the analysis can be complemented by simultaneously considering all the indicators previously analysed in isolation, and by taking into account not only their contemporary values but also their values observed up to four quarters previously. For each time horizon, a penalised quantile regression (LASSO) enables the automatic selection of the most informative variables for predicting downside risks (Chart 2).

This multivariate approach confirms the findings obtained in the short term: indicators of market uncertainty, past economic conditions and, to a lesser extent, debt levels remain the main determinants of downside risks to growth in France. However, in the longer term, downside risks are mainly attributable to economic uncertainty and geopolitical risks. Although geopolitical risks did not feature as determinants in the univariate analysis over a five-year horizon, their significance becomes apparent once the interactions between the different indicators are taken into account, which suggests that they provide information that complements the information provided by the other macrofinancial variables.

Chart 2: Breakdown of anticipated extreme downside risks to growth in France



Sources: Banque de France, INSEE and OECD. Notes: Contributions of the indicators (contemporary values and four-quarter lagged values) to the extreme downside risks (q. 5%) to French growth, LASSO selection, over one-quarter and twenty-quarter horizons.

What are the implications for the monitoring of risks?

These results can notably inform the deliberations of the competent authorities responsible for macroprudential policy, whose decisions are based on a much broader range of considerations than the results of one statistical model alone. In the short term, quarterly changes in the debt aggregates of households and firms, as well as market uncertainty, appear to be particularly informative as signals for detecting a deterioration in growth outlooks. Over a longer time horizon,

indicators of economic uncertainty and geopolitical risks take on greater relevance in a context where trade tensions and geopolitical fragmentation play an increasingly significant role in the analysis of macrofinancial risks. These findings therefore warrant a differentiated approach to assessing risks depending on the time horizon in question.

The findings also confirm the central role of private debt variables in assessing macrofinancial vulnerabilities, particularly in the short term, consistent with their importance among the indicators used to calibrate the countercyclical capital buffer (CCyB). The Growth-at-Risk approach thus complements the composite indicators of stress and financial conditions and the financial cycle, and the early warning systems already used in macroprudential supervision.