Box 3.2

COST-BENEFIT ANALYSIS OF MACROPRUDENTIAL POLICY

Most empirical studies analysing the impact of macroprudential policy on the economy identify positive effects, such as a decline in the probability of systemic crises occurring or a moderation of the growth of credit and of house prices when these expand at an unsustainable rate. However, a negative impact on GDP growth in the short term is generally identified. This is attributed to the fact that the moderating effect on the financial variables also smooths out the pace of economic growth. Nonetheless, it could be considered that the decrease in systemic financial risk should also be reflected in a lower risk of very low economic growth or of very severe recessions in the future.

To try to analyse the balance between short-term costs and medium and long-term benefits, a study has been developed at the Banco de España for the European Union as a whole which estimates the effects of macroprudential policy on future economic growth.[1] Based on this methodology it is possible to assess the impact of a series of macroprudential measures on different percentiles of the future distribution of real GDP growth at different horizons. In particular, this exercise permits differentiating the impact on a baseline scenario of economic growth (50th percentile) from the impact on a scenario of very low growth or recession occurring with a probability of 5% (5th percentile).

The results evidence differentiated effects both on the different percentiles of the distribution and on the different horizons. The main result is that even though the impact of activating or tightening macroprudential measures normally affects GDP growth negatively under a baseline scenario, the impact on the left tail of the distribution (recession scenarios) is positive. In other words, the activation of macroprudential instruments curbs growth under normal circumstances, but substantially moderates the decline in GDP under adverse scenarios.

Additionally, the impact of macroprudential tools depends on the phase of the financial cycle and the direction of these policies. On the one hand, macroprudential policy tightening during the cycle's expansionary phases has positive effects on possible future adverse scenarios. These effects are normally observed with some delay. On the other, the deactivation or loosening of macroprudential tools during episodes of financial crisis has benefits across the GDP growth distribution and they materialise rapidly.

Nevertheless, the scale of these benefits and how fast they materialise depend on the type of instrument implemented. In the case of measures which change institutions' capital requirements, their tightening during the upswing in the financial cycle would lead to increases of up to 1 pp in future economic growth rates under adverse scenarios occurring with a probability of 5%. This means that an increase in the capital requirements (e.g. through a countercyclical capital buffer (CCyB)) would reduce the economic impact resulting from materialisation of the vulnerabilities identified. However, these benefits materialise with some delay. In particular, the maximum benefit arising from a capital measure is seen three years after it is implemented (see Charts 1 and 2). Also, the effects of releasing capital measures such as the CCyB during periods of financial crisis would be positive across all the GDP growth distribution, but would particularly result in improving the more negative scenarios. Additionally, the positive effects of such a capital release would be immediate. This exercise confirms that the benefits of increasing the CCyB during the upswing and its subsequent release in periods of crisis would clearly be higher than the cost of its build-up in periods of expansion.

As regards the introduction of limits to credit standards, their tightening during the upswing in the cycle also has positive effects on the more negative scenarios of economic growth. This positive impact exceeds the estimated negative impact on the median of the distribution (see Charts 3 and 4). Unlike capital tools, in the case of limits to credit conditions, benefits can be observed almost immediately after they are implemented and their effects are longer-lasting. Also, the benefits of deactivating or easing these limits during periods of financial crisis are more limited. This last result may suggest that, in practice, institutions tend to tighten credit conditions under these circumstances. Easing the limits established by the macroprudential authority would have a limited capacity to change this dynamic and, accordingly, applying these types of measures is more significant during expansionary phases.

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1 Quantile regression models with fixed effects, where the dependent variable is the future growth of real GDP at time horizons of between 1 and 16 quarters, are used for these estimates. The explanatory variables are the annualised growth rate of the credit-to-GDP ratio in the last two years, the annualised growth rate of house prices in the last two years, the current account balance to GDP, a financial stress index, the coincident growth of GDP, a variable identifying periods of financial crisis, as well as indices of the use of different types of macroprudential measures, and their interaction during periods of crisis. The sample for the estimates is composed of a panel with quarterly information on 28 EU countries from 1970 to 2018. For further details, see Galán J. E. (2020). The benefits are at the tail: uncovering the impact of macroprudential policy on growth-at-risk. Working Paper 2007. Banco de España.

Chart 1
IMPACT OF ACTIVATING THE CCyB ON THE 5TH AND 50TH PERCENTILES OF THE GDP GROWTH DISTRIBUTION AT HORIZONS BETWEEN 1 AND 16 QUARTERS (a)

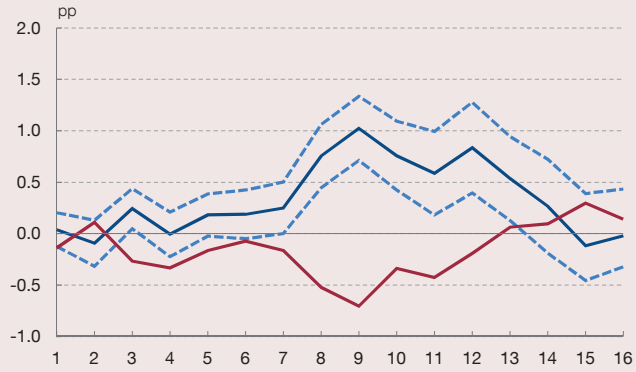


Chart 2
IMPACT OF RELEASING THE CCyB ON THE 5TH AND 50TH PERCENTILES OF THE GDP GROWTH DISTRIBUTION AT HORIZONS BETWEEN 1 AND 16 QUARTERS (a)

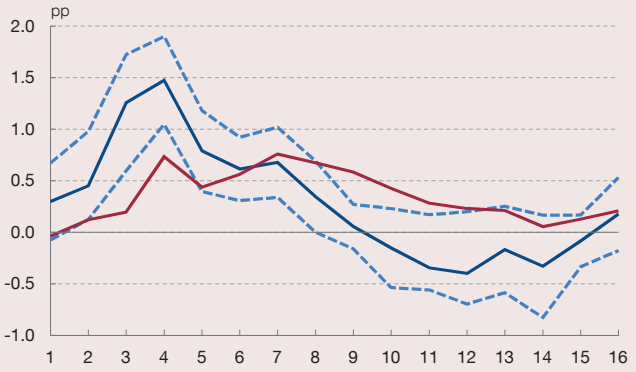
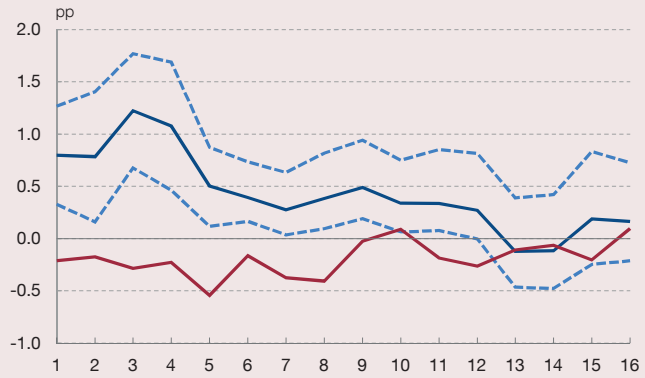
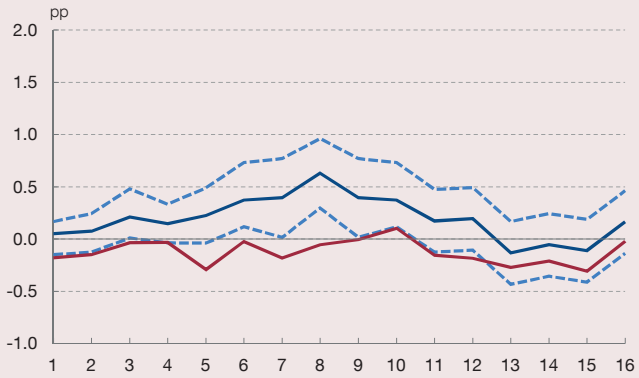


Chart 3
IMPACT OF LENDING CONDITIONS ON THE 5TH AND 50TH PERCENTILES OF THE GDP GROWTH DISTRIBUTION AT HORIZONS BETWEEN 1 AND 16 QUARTERS (a)

3.1 TIGHTENING OF LIMITS TO LENDING CONDITIONS IN EXPANSIONARY PERIODS



3.2 EASING OF LIMITS TO LENDING CONDITIONS IN PERIODS OF FINANCIAL CRISIS



SOURCES: Banco de España estimates using ECB and BIS data.

a The solid blue and red lines represent the estimated impact in percentage points on the 5th and 50th percentiles, respectively, of the conditional distribution of GDP growth. The dotted blue lines represent the 95% confidence bands, obtained through the use of bootstrapping. The analysis is conducted for a sample of 28 EU countries. The periods of crisis are those identified by the national authorities as significant systemic events from a macroprudential viewpoint and published on the ECB/ESRB EU crises database (for further details, see Lo Duca, M., Koban, A., Basten, M., Bengtsson, E., Klaus, B. and Kusmierczyk, P. (2017). *A new database for financial crises in European countries. ECB/ESRB EU crises database*. ESRB Occasional Paper Series 13, July). Expansionary or normal periods are those outside a crisis. Capital measures (provisioning and capital requirements, including buffers) are captured by means of a cumulative index which distinguishes between activation or tightening and release or easing of measures (for further details, see Galán J.E. (2020). *The benefits are at the tail: uncovering the impact of macroprudential policy on growth-at-risk*. Working Paper 2007. Banco de España).