

## 2 Financial cycles and the macroeconomy

**This box discusses the relationship between financial cycles, the macroeconomy and potential output.** The financial cycle can be thought of as economic fluctuations that are amplified by – or stem directly from – the financial system. It typically manifests itself as a co-movement between credit aggregates and asset prices with a possible impact on real economic developments as well. While cyclical fluctuations in real economic variables do not always correspond to financial cycles, when they do, the resulting business cycles can be much more pronounced, with troughs often accompanied by financial crises. There is a growing body of literature which claims that, in such cases, the estimation of potential output can benefit from including information about the financial cycle.<sup>6</sup> Without such information, potential output may be overestimated in the boom period and underestimated during the bust phase.

**Economic theory points to a potential role for the financial system over the business cycle.** Financial factors have been regarded as a possible driving force behind business cycle fluctuations since at least the time of the Great Depression.<sup>7</sup> More recent general equilibrium approaches also emphasise the role of financial frictions in output fluctuations.<sup>8</sup> According to these approaches, the financial system can both act as an amplifier of shocks and be the source of shocks that trigger business cycle fluctuations in the first place. The balance sheets of households, firms and banks can give rise to various pro-cyclical mechanisms (such as the financial accelerator). For example, demand shocks can be amplified through corresponding changes in the value of collateral (such as residential or commercial property) and the real value of nominally fixed debt. These theoretical considerations suggest that credit and asset price-driven cyclical fluctuations can be expected to yield higher peaks and lower troughs than normal business cycles, possibly with more prolonged periods of boom and bust.

**There is growing empirical evidence for a role of the financial system in business cycle fluctuations.** While not all business cycle fluctuations are driven by the financial system, or go hand-in-hand with financial booms and busts, there is evidence that the most severe fluctuations are typically associated with the build-up and unravelling of financial imbalances.<sup>9</sup> A comprehensive macrofinancial historical database covering 17 advanced economies over the last 150 years suggests that

<sup>6</sup> Borio, C., Disyatat, P. and Juselius, M., "Rethinking potential output: Embedding information about the financial cycle", *BIS Working Papers*, No 404, Bank for International Settlements (BIS), 2013; Borio, C., Disyatat, P. and Juselius, M., "A parsimonious approach to incorporating economic information in measures of potential output", *BIS Working Papers*, No 442, BIS, 2014.

<sup>7</sup> Fisher, I., "The Debt-Deflation Theory of Great Depressions", *Econometrica*, Vol. 1(4), 1933, pp. 337-57.

<sup>8</sup> See, for example, Kiyotaki, N. and Moore, J., "Credit cycles", *Journal of Political Economy*, Vol. 105, 1997, pp. 211-248; Gertler, M. and Karadi, P., "A Model of Unconventional Monetary Policy", *Journal of Monetary Economics*, Vol. 58(1), 2011, pp. 17-34; Bernanke, B.S., Gertler, M. and Gilchrist, S., "The financial accelerator in a quantitative business cycle framework", in Taylor, J. and Woodford, M. (eds.), *Handbook of Macroeconomics*, Vol. 1, Part C, 1999, pp. 1341-1393; Iacoviello, M., "House Prices, Borrowing Constraints, and Monetary Policy in the Business Cycle", *The American Economic Review*, Vol. 95(3), 2005, pp. 739-764.

<sup>9</sup> See, for example, Rogoff, K., "Debt supercycle, not secular stagnation", VoxEU.org, Centre for Economic Policy Research, 2015.

financial and business cycles tend to co-move and be in the same phase significantly more often than not.<sup>10</sup> It is also found that the correlation of output, consumption and investment growth with credit growth has strengthened substantially over recent decades, in parallel with an unprecedented increase in mortgage lending. There is also evidence that credit and asset price variables are relatively important in explaining real economic fluctuations at the global level.<sup>11</sup> These findings suggest that economic expansions associated with strong credit growth are driven more by cyclical (as opposed to structural) factors than are other upturns.

#### **The path of potential output may be overestimated in credit-driven booms.**

Standard tools for potential output estimation which do not take into account the role of the financial system in business cycle fluctuations may provide an overly optimistic assessment of the supply side of the economy during financial booms. This is particularly true when nominal variables give weaker signals about the overheating of the economy, such as when inflation expectations are well anchored. While the availability of financing and low risk aversion in the expansion phase of the business cycle can boost underlying productivity growth by enabling more innovation, credit-driven expansion can also give rise to capital misallocation. Such episodes often entail significant increases in residential property investment, owing to the ability to collateralise this asset type via mortgage borrowing, with capital being concentrated disproportionately in relatively low-productivity projects and activities (such as housing and property development).<sup>12</sup> Moreover, since residential property is included in typical measures of the capital stock, production function-based methodologies which use these data have a tendency to overestimate the productive capacity of the economy.<sup>13</sup> As an illustration, the chart below shows potential output measures for the euro area, calculated using three different methodologies, including one that assumes a link between the financial cycle and real economic fluctuations. The latter method yields a lower path for the level of potential output in the pre-crisis boom years and a higher path in the post-2008 period than the methods that are not informed by financial variables. However, all three methods imply a slowdown in potential output growth after 2008.

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<sup>10</sup> Jorda, O., Schularick, M. and Taylor, A.M., "Macrofinancial History and the New Business Cycle Facts", *NBER Macroeconomics Annual*, Vol. 31, National Bureau of Economic Research, 2016.

<sup>11</sup> Dées, S., "Credit, asset prices and business cycles at the global level", *Working Paper Series*, No 1895, ECB, April, 2016.

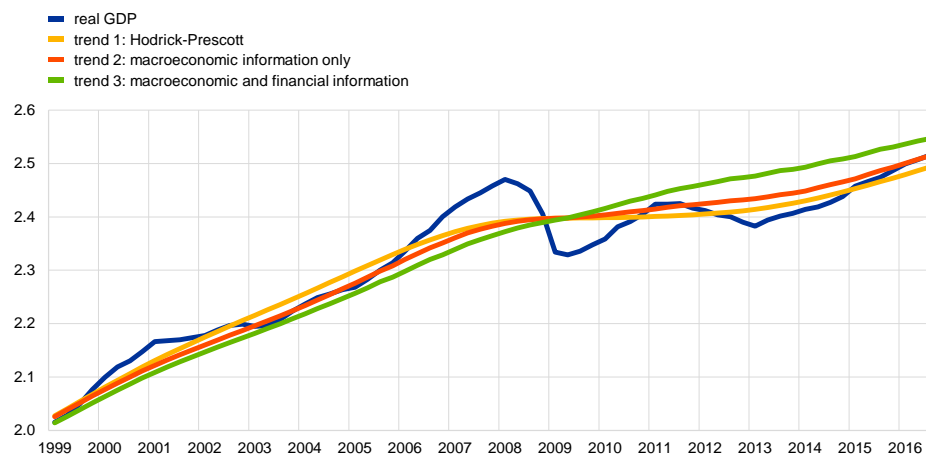
<sup>12</sup> However, capital misallocation is not necessarily confined to real estate type assets. For more detail, see Cecchetti, S.G. and Kharroubi, E., "Why does financial sector growth crowd out real economic growth?", *BIS Working Papers*, No 490, BIS, 2015.

<sup>13</sup> The overestimation of potential output can lead to overly optimistic assessments of the fiscal policy stance and debt sustainability of countries experiencing financial cycle driven booms which may limit fiscal space and thus add to the drag on output in the event of a financial crisis. See Borio, C., Lombardi, M. and Zampolli, F., "Fiscal sustainability and the financial cycle", *BIS Working Papers*, No 552, BIS, 2016.

## Chart

### Real GDP and different measures of potential output in the euro area

(EUR trillions; quarterly data)



Sources: Eurostat and ECB staff calculations.<sup>14</sup>

Notes: Trend 1 refers to a measure derived using the two-sided Hodrick-Prescott filter with the standard smoothing parameter for quarterly data (1600). Trend 2 refers to an estimate derived from a small unobserved components model that decomposes real GDP into trend and cyclical components with the help of reduced-form macroeconomic relationships such as Okun's law and a Phillips curve. Trend 3 refers to the same model augmented with a financial cycle component which is estimated as a common latent factor driving fluctuations in a number of financial variables, such as real credit growth to households and non-financial corporations, real growth rate of M3 and real growth rate of residential property prices. As potential output is an unobservable variable, all methods carry a high degree of uncertainty.

**Severe downturns following credit-driven booms can have a negative impact on potential output.** While economic downturns, such as the recent Great Recession, can arguably give rise to cleansing effects with a beneficial impact on future productivity growth, the reallocation of resources towards more productive uses may be hindered by supply constraints in the financial system. In particular, high non-performing loan (NPL) ratios, coupled with inadequate insolvency and bank resolution, can tie up capital in low-productivity firms and make acquisitions and the entry or expansion of innovative and potentially highly productive firms less likely to happen.<sup>15</sup> Nominally fixed debt that has been accumulated in the boom period, coupled with collateral that has lost value during the bust, can limit the options for otherwise healthy firms to obtain external financing for productive investment projects – particularly when the lower bound on nominal interest rates is binding. The ensuing long process of repairing private sector balance sheets can further weaken domestic demand and lead to persistently high unemployment rates. With long periods of high unemployment, there is a greater chance of labour market hysteresis effects, particularly in rigid, overregulated labour markets. The reallocation process itself may introduce a temporary dip in potential output if, for example, the acquisition of resources that were locked in low-productivity activities is hampered by high barriers to entry.

<sup>14</sup> For a similar approach, see Melolinna, M. and Tóth, M., "Output gaps, inflation and financial cycles in the United Kingdom", *Staff Working Paper*, No 585, Bank of England, 2016.

<sup>15</sup> See Adalet McGowen, M., Andrews, D. and Millot, V., "The Walking Dead? Zombie Firms and Productivity Performance in OECD Countries", *Economics Department Working Papers*, No 1372, OECD, 2016.

**The negative supply-side effects of financial bust episodes are not necessarily persistent and depend on the policy context.** While credit constraints and other financial imperfections may well put a significant drag on economic growth during a recovery period, their impact on resource allocation might be expected to diminish over time. Therefore estimates of potential output that do not take these possible features into account may yield an overly pessimistic view of the supply-side potential during recoveries from financial crises. Therefore, at present, both the cyclical recovery and supply-side capacity of the economy could benefit from adequate insolvency and resolution policies and an effective workout of NPLs, particularly in the context of accommodative monetary policy.