Boxes

1 Investment dynamics in advanced economies since the financial crisis

This box aims to shed some light from a cross-country perspective on the shocks affecting investment in advanced economies since the financial crisis.

It is often argued that one of the key factors holding back the global economic recovery in the current economic cycle has been the subdued pace of investment activity, particularly in advanced economies. This has been attributed to impaired financial markets, public sector budget constraints, heightened policy uncertainty and weak economic prospects. At the same time the lack of dynamism in the business sector appears more accentuated than in previous recoveries, which, together with the sharper decline in investment expenditure in the aftermath of the Great Recession, has led to significant investment gaps, i.e. persistently negative deviations from long-term averages.

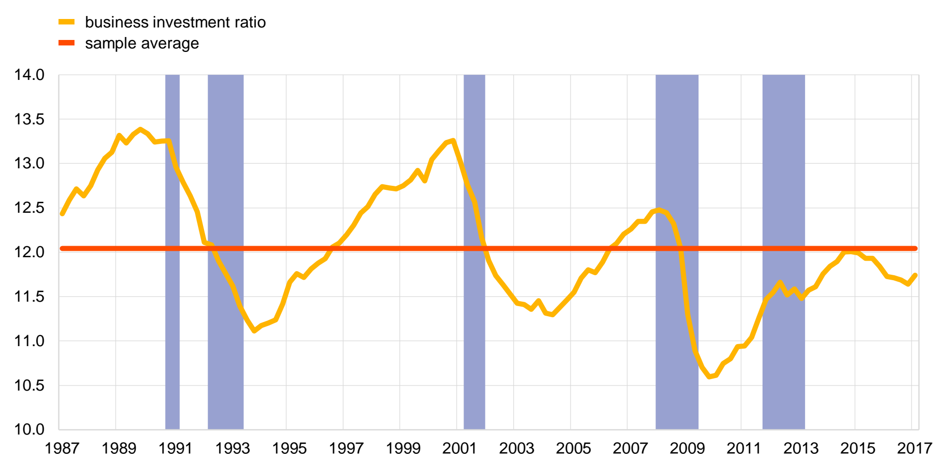
The usual pattern in business investment of reaching a trough soon after a recession and returning relatively quickly to pre-recession levels did not materialise to the same extent after the Great Recession.[8] While this pattern was visible in business cycles in the 1990s and early 2000s, it has not been seen in the current cycle: the initial rebound in investment after the trough in the first quarter of 2009 was interrupted by a second recession in the euro area amid the sovereign debt crisis. This pause in the recovery can be observed in Chart A, which depicts the ratio of investment to GDP in advanced economies. This ratio started to decline from a relatively low level (12.5%) compared with past cycles and fell to close to 10.5% in 2009. At this level, business investment initiated a sustained and quick recovery that was halted by the euro area sovereign debt crisis. The ratio of investment then recorded a renewed decline between the second half of 2015 and the end of 2016. This was mainly caused by commodity producers, such as Canada, Australia and to a lesser extent the United States, reducing their investment, in part because of the sharp fall in commodity prices (particularly oil) to very low levels. Only very recently, at the beginning of 2017, did a rebound in investment emerge. Overall, however, the ratio of business investment to GDP in advanced economies was still below its long-term average in the first quarter of 2017.

[8] The concept of investment adopted here is business investment (private non-residential) and includes private sector investment in structures, equipment (information, industrial and transportation) and intellectual property rights. The concept may vary marginally across countries.

Chart A

Investment-to-GDP ratio in advanced economies

(percentage; quarterly data)



Source: ECB staff calculations based on data from Haver Analytics.
Notes: The sample of advanced economies includes: Australia, Canada, the euro area, Japan, New Zealand, Sweden, Switzerland, the United Kingdom and the United States. The aggregate is a weighted average of business investment ratios across countries, using GDP-purchasing power parity time-varying weights. Shaded areas refer to a combined indicator for the periods of recession in the euro area (Centre for Economic Policy Research) and the United States (National Bureau for Economic Research). The latest observation is for the first quarter of 2017.

Four factors have commonly been considered as potential drivers of investment at a macroeconomic level, namely demand expectations, financial conditions, uncertainty and supply shocks.[9] Since the financial crisis these factors have been central to the debate on investment, from both a theoretical and an empirical perspective. Tight financial conditions and negative demand shocks are seen as detrimental to business investment.[10] In particular, weakening economic prospects globally are expected to lead to a decline in the returns on investment, thereby dampening the formation of new capital and delaying the replacement of old capital. Uncertainty shocks may also have persistently negative effects on business investment.[11] Finally, unexpected negative supply shocks, such as the fall in labour productivity across countries, could diminish future profit expectations and lead to a decline in investment activity.

The patterns of investment following the various shocks considered are empirically confirmed by impulse response functions. Based on the model used, the main findings are that uncertainty shocks have a persistently hump-shaped negative effect on the business investment-to-GDP ratio;[12] deteriorating expected demand and increasing financial constraints lower investment spending; and higher

[9] A Bayesian panel vector autoregressive model is used, allowing for cross-country heterogeneity, and estimated for Canada, Japan, the United Kingdom and the United States. Variables include uncertainty, measured by the dispersion of growth expectations among professional forecasters; financial conditions, financial condition indices based on short-term and long-term interest rates, and equity prices; expected growth; and price developments. Structural shock identification is achieved by means of zero, sign and magnitude restrictions.

[10] As uncertainty and financial variables are highly correlated, relative magnitude restrictions are used to identify structurally meaningful shocks.

[11] For a more in-depth analysis of the effects on business investment in relation to the United States, see Bloom, N., "The impact of uncertainty shocks", *Econometrica*, Vol. 77, 2009.

[12] This empirical finding is in line with available single country estimates and economic theory.

productivity continuously raises business investment. Across countries, demand factors have been the most important driver of investment, accounting for more than half of the variance in the United States, the United Kingdom and Japan, whereas in Canada it was only about 40% (after 16 quarters). The second most relevant determinant is supply factors (in the United States and the United Kingdom), uncertainty (Canada) and financial factors (Japan).

During the Great Recession adverse demand factors were clearly the main driver of the downturn in business investment in the sample of countries analysed; however, in the post-crisis period, developments across countries have been more heterogeneous (see Chart B).[13] By 2012 US investment ratios had returned to their trend, and fluctuated around that level thereafter. The model indicates that receding negative demand, declining uncertainty and favourable financial conditions contributed to the recovery. In 2015, however, investment weakened again, partly owing to the fall in oil prices and its strong impact on investment in the US shale oil industry. In Japan, the recovery was mainly driven by more positive financial conditions, linked to monetary easing, and less negative demand expectations. In Canada, on the other hand, the investment ratio recovered quickly after the Great Recession and moved above trend levels until the second half of 2014. The model suggests that business investment was buoyed by positive demand prospects, low uncertainty and accommodative financial conditions, supported by strong commodity price developments. The fall in commodity prices in 2015 led to a sharp fall in business investment, which was later accentuated by a rise in uncertainty and tighter financial conditions. By contrast, the investment ratio in the United Kingdom mostly remained below its long-term levels. The model suggests that both negative demand and supply shocks more than offset the somewhat favourable financial conditions and the support provided by an environment of low uncertainty. More recently, in the second half of 2016, increased uncertainty following the outcome of the United Kingdom's referendum on membership of the European Union brought the investment ratio down. At the start of 2017 investment ratios were around trend levels in the United States and the United Kingdom, and above trend in Japan, while in Canada the investment gap was negative.

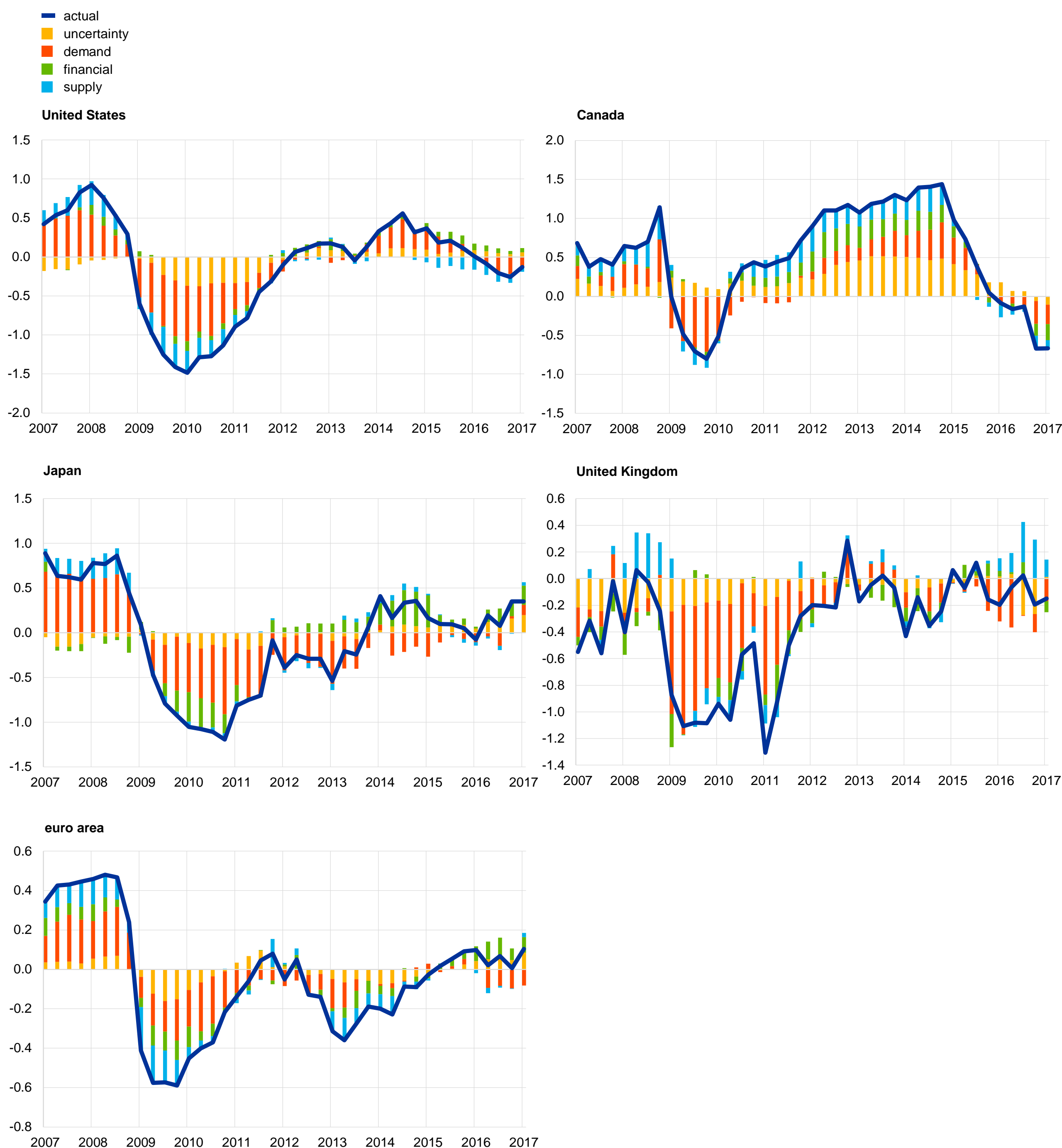
Extending the analysis to the euro area confirms the role of demand factors as the main driver of the downturn in business investment following the financial crisis. However, in contrast to other advanced economies, the recovery in the investment ratio came to a halt when the sovereign debt crisis intensified. This led to renewed negative and persistent demand shocks, together with negative economic uncertainty and financial shocks until early 2015. By early 2017, the euro area investment ratio was slightly above trend levels, pushed by favourable financial conditions and subdued uncertainty.

[13] Results are robust to different measures of uncertainty (economic policy uncertainty), demand and financial factors (including survey measures and activity indicators) and price measures (producer prices).

Chart B

Historical decomposition of investment-to-GDP ratio

(percentage and contributions; deviation from trend; quarterly data)



Source: ECB staff calculations.
Note: The latest observation is for the first quarter of 2017.

Looking forward, the overall improvement in business confidence recorded in the past few months, together with a more positive global outlook, should support the recovery of business investment in advanced economies. In addition, indicators measuring uncertainty, such as the dispersion of growth

expectations among professional forecasters, have been declining since the start of 2017. Moreover, the stabilisation of commodity prices should lead to a resumption of investment by commodity producers.