ALLIANZ RESEARCH

INVESTMENT IS BACK: HARDER, BETTER, FASTER, STRONGER?

22 April 2021

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EXECUTIVE SUMMARY

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In the short run, a demand catch-up and the reduction in spare capacities will drive a business investment recovery… With the progressive easing of sanitary restrictions, normalizing capacity utilization levels will push up business investment by +18.4% in the UK, +5.4% in France, +4.0% in the US and +2.5% in Germany. Country-level model elasticities show that business investment in Italy and the UK have the largest sensitivity to increasing aggregate demand and hence the highest potential for a fast catch-up in H2 2021. The key condition will be continued low interest rates: our model shows that loan-supply conditions are a significant determinant of investment growth in all countries, although the relation is weaker in Germany as companies enjoy higher profitability rates and thus self-financing capacity. Most of the rebound in business investment is expected to continue to be in software and IT equipment, where offensive investment strategies should pave the way for a new M&A cycle.

…But it could take up to four years to return to long-term growth trends. Our multi-country time series panel data model shows that in the medium-term, the business investment recovery will be mainly driven by aggregate demand and productivity, the evolution of fiscal pressure on corporates, public investment dynamics and bank financing availability. In our baseline scenario we find that the US will register the highest investment growth at the horizon of 2024 (on average over 7%), followed by the UK (7.1%), France (5.1%) and Germany (5%). But watch out for a potential corporate deleveraging cycle that could jeopardize our baseline forecasts. Credit conditions during the recovery phase may be tighter and excessive levels of corporate debt could limit companies' ability to borrow once state-support schemes are phased out. In France, if companies embark on a deleveraging process as soon as H2 2022 to reach pre-Covid-19 bank-credit-to-value-added ratios by 2024, in the absence of further extensions to state-guaranteed loan reimbursements or debt forgiveness, the drag on business investment could reach EUR6bn (-2pp cumulative). In the US, faster deleveraging as of 2022 triggered by a corporate credit event and accentuated by mismanaged monetary policy tapering could also put a brake on investment growth. Returning to the pre-Covid-19 NFC credit-to-GDP ratio is expected to reduce business investment by USD170bn between 2023-2024 (-1.1pp).

As an alternative scenario, policymakers can catalyze the new investment cycle through strong crowd-in effects from public investment and supportive tax policies. First, by investing in new technologies, governments can ignite positive spillovers to the private sector that would lift potential growth and productivity. In France, a doubling of public investment spending (EUR20bn additional public investment) in 2021 would boost business investment by EUR0.5bn (+0.4pp of additional business investment growth). In Germany, the same amount of additional public investment would boost business investment by EUR0.8bn (+0.3pp) while in the UK the impact would be stronger (GBP0.6bn or +0.5pp). In the US, USD1trn in additional public investment could boost business investment by USD141bn (+1pp) in 2021, USD98bn (+0.7pp) in 2022 and USD65bn (+0.5pp) in 2023. **Second, easing fiscal pressures for corporates could also significantly support business investment** in France, where the sensitivity of business investment to tax levels is higher, **while in the US and the UK the new fiscal orientation could become a headwind.**

In the long run, sustained economic growth and unspent excess savings will be key. Our panel estimates show that the pace of economic growth and the financial asset accumulation of households are the key determinants for long-term investment. We find that a 1% increase in economic activity leads to a +1.25% increase in business investment in the long term. And 1% of additional households' savings leads to the +0.4% of additional business investment. In France, an additional EUR100bn increase in households' financial assets would increase business investment by +2.5% (EUR3.7bn), while in Germany it would boost business investment by +2% (EUR8bn).

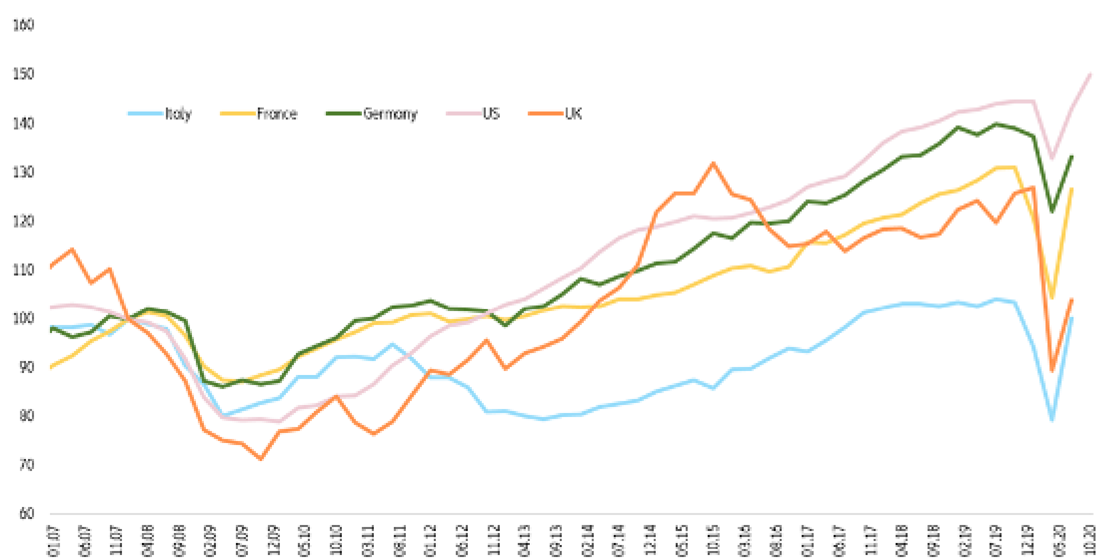
NORMALIZING EXCESS CAPACITY WILL CATALYZE BUSINESS INVESTMENT IN THE SHORT RUN

Business investment in advanced economies took a great hit from the Covid-19 economic downturn. The Covid-19 outbreak put an end to the robust expansion of corporate investment over the past decade. Despite massive financial support from public authorities, sanitary restrictions and economic uncertainty took a toll on corporate investment, which fell dramatically in Italy (-11.7%), the UK (-13.3%) and France (-8.7%) in 2020. The decline was relatively moderate in Germany (-5.7%) and the US (-4.4%), certainly as a result of less stringent sanitary restrictions (Figure 1).

In the short run, a normalization of excess capacity, thanks to the success of the vaccine rollout, will catalyze the investment recovery. Our econometric analysis shows that aggregate demand and favorable loan-supply conditions will drive the investment catch-up in the US, Germany, France, Italy and the UK. Demand conditions, as reflected in capacity utilization, matter significantly for investment decisions throughout the business cycle. When countries begin to lift sanitary restrictions as of summer 2021, and confidence finally returns, we expect a phase of "revenge consumption". Historically high excess savings will support the strong rebound of demand in most advanced economies that preserved households' incomes with generous state-support schemes.

Country-level model elasticities show that business investment in Italy and the UK have the largest sensitivity to increasing aggregate demand (i.e. decrease in the one-quarter lagged excess capacity). Moreover, following an unprecedented rise in perceived spare capacity in 2020, especially in countries that put in place strict lockdowns and curfews, we still observe significant spare capacity in Q1 2021 (compared to 2019 average) in the UK (-10%) and in France (-6.7%). As a result, we project a fast catch-up of business investment in the UK (+18.4%) and in France (+5.4%), with capacity utilization returning to 2019 levels (Table 1). In contrast, the normalization of excess capacity will have a moderate impact (due to smaller slack and lower investment elasticities) on business investment in Germany (2.5%) and the US (4%).

Figure 1: Non-financial corporates' Total Investment Index (2008 Q1=100)



Sources: Eurostat, BEA, Euler Hermes, Allianz Research

1. We obtained country-level elasticities by estimating country-level OLS regressions where the quarter on quarter change of non-residential (business) investment is explained by capacity utilization and loan-supply conditions. Capacity utilization appeared with a positive and significant coefficient (at the 1% confidence level) in all regressions.

Table 1: Expected investment recovery due to cyclical recovery of demand (current prices)

	Germany	France	Italy	UK	US
Capacity utilization gap to normal 2021	-4.1%	-6.7%	-4.6%	-10.0%	-3.9%
Average capacity utilization 2019	85%	85%	77%	81%	78%
Business investment to demand elasticity	0.006	0.008	0.012	0.017	0.010
Business investment growth from demand normalization					
%	2.5%	5.4%	5.7%	18.4%	4.0%
bn EUR, GBP, USD	1.5	2.4	1.1	1.9	444.6

Sources: : various, Euler Hermes, Allianz Research

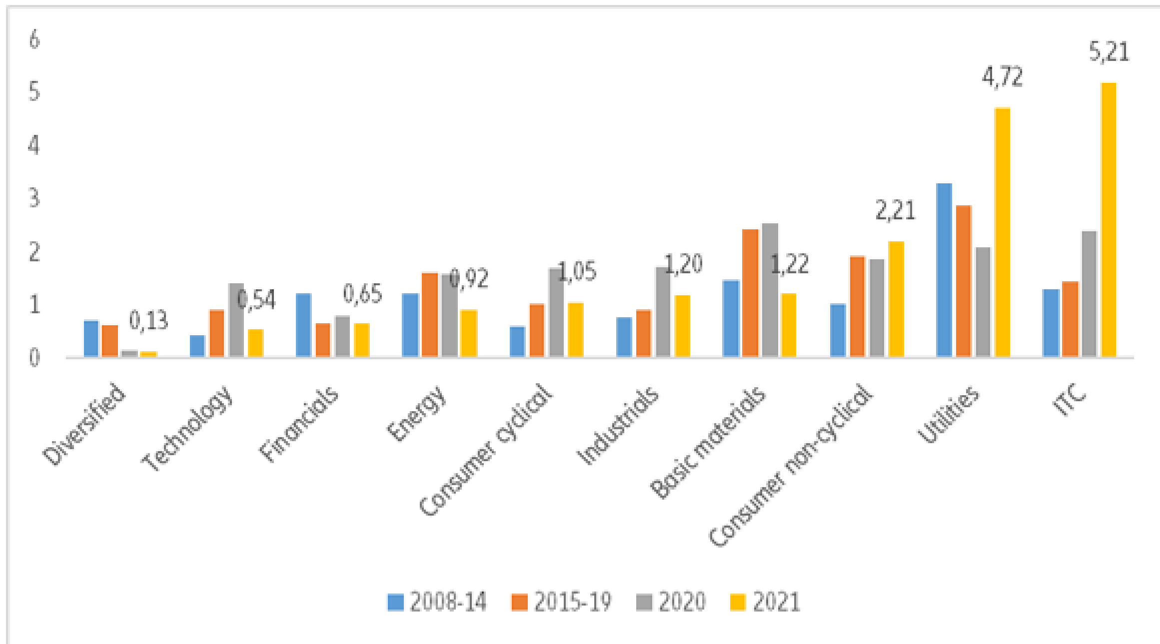
Yet, a possible tightening of the loan supply (and financial) conditions poses a risk to the investment recovery in 2021. Our country-level regressions show that in addition to capacity utilization, loan-supply conditions are also a significant determinant of investment growth in all countries, although the relation is weaker in Germany[2]. After the Covid-19 outbreak, loan-supply conditions significantly eased compared to their long-term average in the US (+34pts) and the UK (+4pts), though they substantially tightened in Italy (-6pts). Yet, in late 2021, a possible tightening of loan-supply conditions (due to the normalization of monetary policy, inflationary pressures or the deteriorating loan portfolio of banks) could be a headwind for the new investment cycle.

We expect a faster recovery in intellectual property investment and ICT equipment compared to industrial equipment and R&D. Looking at sectors, experience from past downturns shows that ICT equipment and intellectual property investment tend to be more resilient compared to other types of equipment investment. To illustrate, between Q22007 and Q22009 investment in ICT equipment declined moderately in the US (-2.6%) compared to the sharp drop in investment in transport (-10.5%) and industrial equipment (-3.4%). During the Covid-19 pandemic, digital technologies have played an unprecedented role in keeping economies functioning by enabling remote working and automating processes. Keeping in mind the need for faster digital transformation (even for SMEs), we expect a continued rebound in the software and IT equipment sub-components of investment in 2021 and 2022.

In addition to "defensive" investment (i.e. increasing productivity capacity to catch up with demand), ITC companies may also engage in offensive investment strategies to acquire new skills and digital capabilities at lower cost. Interestingly, the urge for rapid digital transformation and the quest for better quality and higher efficiency of production have already boosted M&A in the ICT sector in 2021 (Figure 2). On the other hand, in view of companies' high leverage and fragile financial situations, the transportation and other equipment sector could see a large share of investment projects postponed in the short-run even though excess capacity reduces. In the aftermath of the pandemic, we expect only a moderate rebound in R&D investment in the short-run, which could be a matter of concern regarding the recovery of potential growth.

2. We tested various variables to quantify loan supply or demand for bank credit in Germany. In contrast to other countries, in Germany the associated coefficients with this variable are either close to zero or do not appear significantly different from zero.

Figure 2: Average size of M&A deals by sector (USDbn, moving 4Q sum)



Sources: Bloomberg, Euler Hermes, Allianz Research

DEMAND, PRODUCTIVITY, FISCAL POLICY, PUBLIC INVESTMENT AND BANK LOANS WILL DRIVE INVESTMENT IN THE MEDIUM RUN

Baseline forecast: a return to pre-crisis investment growth only in 2024

Our multi-country model framework shows that in advanced economies business investment[3] will recover to its pre-Covid growth dynamics only by 2024. In the medium term, the new investment cycle will be driven by aggregate demand and productivity, fiscal pressure on corporates, public investment and bank loans to corporates. We estimate a time-series panel data model for advanced economies (US, France, Germany, UK) to investigate the long-term drivers of investment and its adjustment dynamics.[4] In this way, we gain insights on how a Covid-like shock on investment would be absorbed over time. Interestingly, we find strong inertia in the investment recovery dynamics, suggesting that it could take up to four years to absorb a Covid-like economic shock and return to long-run dynamics of business investment. This is in line with what happened after the Great Financial Crisis in 2007-2009, when it took to corporate investment more than four years (17 quarters) to return to the pre-crisis peak in the US and even longer in European countries (due to the sovereign debt crisis). History is likely to repeat itself this time around, with the US expected to have an earlier investment recovery compared to European countries. US investment will catch up rapidly to pre-Covid-19 levels as of end 2021 and is set to grow above its 2010-2019 average (+5%) over the medium term. On the other hand, in France, Germany and the UK, pre-Covid-19 business investment levels will be reached only as of 2022. And the return to the pre-crisis investment growth trajectory may only happen after 2024.

Table 2: Baseline forecast of business investment growth (current LCU)

Business investment y/y change	France	Germany	US	UK
2020	-3.6%	-5.1%	-2.9%	-13.9%
2021	6.1%	6.3%	9.8%	11.8%
2022	5.2%	5.7%	8.4%	8.9%
2023	4.3%	3.6%	7.2%	3.3%
2024	4.5%	4.4%	4.3%	4.5%

Source: Euler Hermes, Allianz Research

3. We exclude dwellings from business investment in our quantitative analysis (see Appendix for further details on investment data). We consider that the Covid-19 crisis could introduce some long-term economic shifts due to wide adoption of work-from-home practices and the growing use of e-commerce that reduces need for retail space. Therefore, investment in commercial structures may experience a particularly weak and late recovery compared to the GFC.

4. The error correction parameter (-0.08) suggests that it takes eights quarters to absorb half of a shock on business investment.

We obtain the investment growth forecasts (Table 2) at the horizon of 2024 relying on the baseline assumptions described as follows:

For France, we forecast a strong rebound of investment by +6.1% in 2021 and +5.2% 2022, driven by the cyclical recovery of demand and favorable taxation and financing conditions. In our baseline scenario, we consider that herd immunity will be reached by summer 2021 (thanks to faster vaccination), enabling production capacity and productivity to return to their pre-crisis levels as of Q42021. Regarding loan growth, the loan-to-value-added ratio of French NFCs rapidly increased from 153% to 170% in 2020, thanks to the generous state-guaranteed loan scheme (EUR130bn take-up in 2020). We expect loan-growth dynamics to return to their pre-crisis path (0.05% q/q increase) as of the second half of 2021 with the gradual phasing out of state support and the increase in value added. On the other hand, corporate tax rates are expected to remain stable until end 2022 (fiscal pressure to value added ratio stable at 72.3%) and then increase moderately after the Presidential elections. As for public investment, the current French stimulus plan will only moderately boost it by EUR20bn in 2021 and 2022. We expect the countercyclical public policies to normalize, with a progressive decline in public investment as of 2023.

Turning to Germany, we forecast business investment to rebound by +6.3% in 2021 and +5.7% in 2022, driven by strong internal and external demand as of the second half of 2021. In our baseline scenario, like in France, we expect sanitary restrictions to be progressively lifted as of the second half of 2021. In addition, growing global demand for German exports (from the US and China) is set to generate a quick return to normal in productive capacities as of end 2021. We expect fiscal pressure on German companies to already moderate slightly in 2021 (from 68% to 67% in 2021 and to 66% in 2022), on the back of a neutral fiscal stance until the elections and sustained value added growth. The size of the German stimulus remains moderate (EUR10bn increase in public investment in 2021 and 2022), incurring a limited crowd-in effect for business investment.

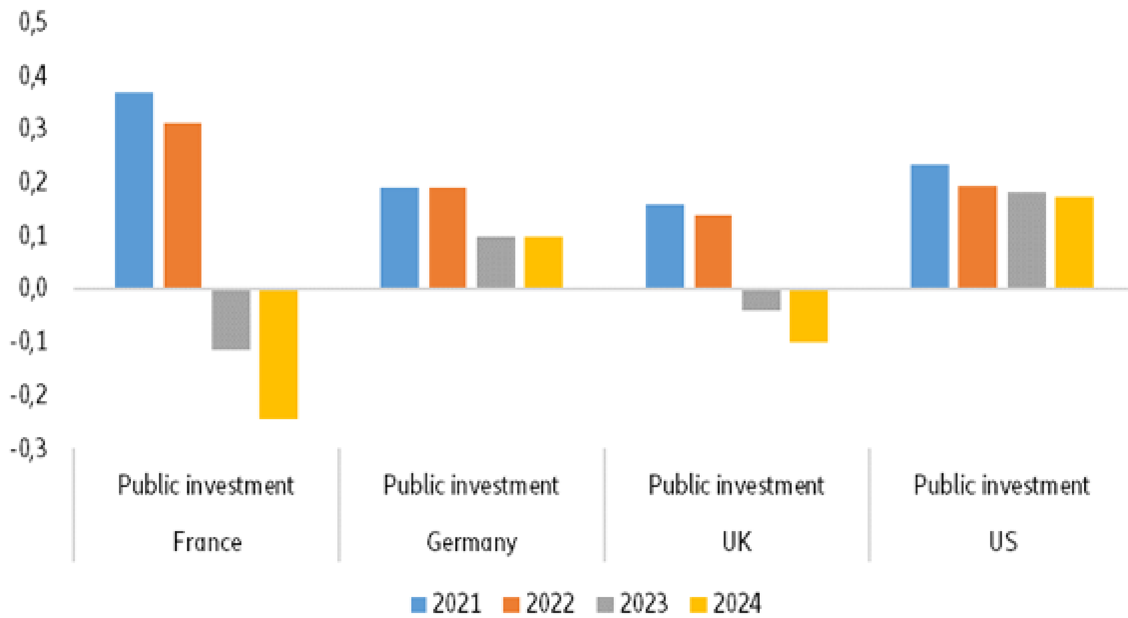
In the UK, we project business investment to grow by +11.8% in 2021 and +8.9% in 2022. Our baseline scenario considers that productivity and capacity utilization will return to pre-crisis levels as of Q3 2021, earlier than in France and Germany, thanks to a faster vaccination campaign. Regarding loan growth, state-guaranteed loans will continue to be granted until end-2021 (new recovery loan scheme announced within the 2021 budget). Therefore, the NFC loan-to-GDP ratio is set to reach 85% in end-2021 (up from 80% in end 2020) and stabilize at these levels afterwards. Following the implementation of the 2021 budget, corporate tax rates are expected to rise from 19% to 25%, bringing the total taxation-to-value added ratio to 72% at end-2024 (up from 69% in 2020). Regarding government investment, after a +3% increase in 2021 (GBP4bn), we foresee an acceleration of +7% (GBP6bn) in 2022 to prepare the ground for the next general elections. The growth of public investment is set to normalize as of 2023 as business investment will take off.

In the US, we foresee non-residential private investment to rebound strongly by +9.8% in 2021 and +8.4% in 2022. In our baseline scenario, we expect the cyclical recovery to gain momentum as of summer 2021 with the easing of sanitary restrictions and the cyclical recovery of demand. Public investment growth will be a key driver of aggregate demand, hence the investment recovery , over the horizon of 2024 under Biden's USD2.4trn stimulus plan and USD2.3trn 'Build Back Better' infrastructure plan[5]. We expect public investment to grow by +10% year on year, translating into a USD3.5bn and USD3.8trn year-on-year increase in 2021 and 2022, respectively. On the fiscal front, in line with the latest announcements, we expect fiscal pressure on non-financial corporations to increase by +6pp at the horizon of 2024, from 55% to 60%. Regarding loan growth, after peaking at 82% in H22022, we foresee the corporate loan-to-GDP ratio declining and stabilizing at 80% in 2024.

The decomposition of our baseline forecast shows that in advanced economies, public investment stimulus and fiscal policies affect the investment recovery in diverging ways. Following the outbreak of the Covid-19 crisis, the dramatic decline in business investment in 2020 was overall driven by productivity losses (due to lockdowns and other sanitary restrictions) as well as higher fiscal pressure coming from a significant value added declines. Yet, public investment and fiscal policies are likely to shape the investment recovery in different directions going forward. In the US and Germany, business investment will be significantly supported by sustained fiscal stimulus in the medium term. On the other hand, we foresee only moderate public investment growth in France and the UK (given the need for fiscal consolidation), hence a limited crowd-in effect on business investment. On the flipside, increased fiscal pressure to finance the gigantic stimulus and infrastructure plans in the US will prevent a stronger expansion of business investment. In the UK and, to a lesser extent, in France, expected corporate tax hikes after the elections in 2022 will also moderate the pace of business investment growth.

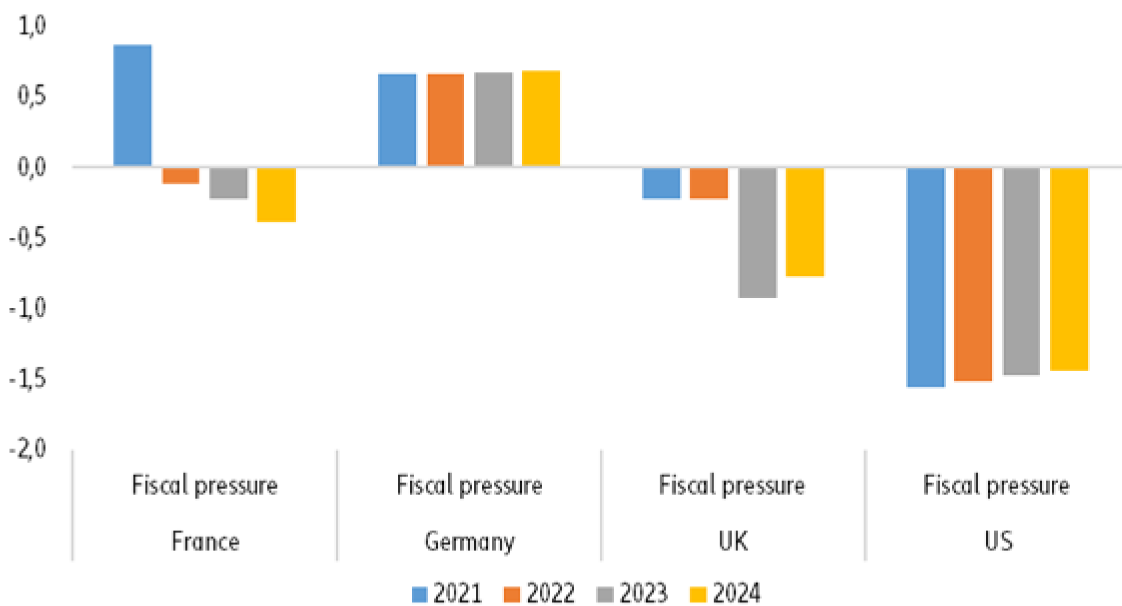
5. For a detailed analysis of the US infrastructure plan please see our recent publication "Joe Biden's infrastructure plan: defying gravity"

Figure 3: Contribution of public investment to baseline y/y investment growth forecasts (pp)



Sources: Eurostat, Euler Hemes, Allianz Research Note: Observations until Q3 2020, forecast for the reminder of the horizon.

Figure 4: Non-resident holding of total public debt (%)



Sources: Eurostat, Euler Hemes, Allianz Research Note: Observations until Q3 2020, forecast for the reminder of the horizon.

Three key ingredients to either speed up or delay the investment recovery

Running simulations under alternative scenarios, we find that changes in policy orientations regarding public stimulus and fiscal policy, as well as the evolution of financing conditions, constitute key risks (upside or downside) to our baseline forecast for investment growth.

- **Credit tightening or rapid corporate deleveraging could significantly delay the horizon of the investment recovery in France, the UK and the US. Credit conditions during the recovery may be tighter and excessive levels of corporate debt could also limit companies' ability to borrow once state-support schemes are phased out.** If French companies embark on a deleveraging process as soon as H22022 to reach the pre-Covid-19 bank-credit-to-value-added ratios by 2024, **the cumulative negative impact in France could reach EUR9bn (-5.2pp cumulative) by end 2024.** In the US, faster deleveraging as of 2022 triggered by a corporate credit event and accentuated by mismanaged monetary policy tapering could also put a brake on investment growth. Returning to the pre-Covid-19 NFC credit-to-GDP ratio is expected to reduce business investment by USD170bn between 2023-2024 (-1.1pp).

- **Scaling up government investment could spark strong crowd-in effects for business investment in Europe and speed up the recovery**

Policymakers can do a lot to speed up the investment recovery as a virtuous cycle could emerge from the unprecedented government impulse. Within the framework of post-Covid-19 stimulus plans, significant public investment has been allocated to areas where the private sector would not necessarily invest (heath care, green transition, onshoring of strategic industries, active labor training). The US will spend double its infrastructure needs (i.e. USD2trn). However, within its 2021-23 Recovery Plan, Europe allocates 1.7% of GDP for infrastructure spending, less than one third compared to the estimated gap. Reinvesting in extra production capacity (to reduce dependence on foreign sources) or in creating more robust supply chains is likely to boost investment growth in manufacturing structures and industrial equipment. In parallel to the efforts on re-shoring strategic sectors, governments have also put digital investment (which are proved to generate greater-than-average returns for the economy) at the core of their post-Covid-19 recovery strategies. In this area, public investment can play a pioneering role in promoting "smart economies[6]" and technological interdependencies.

By investing in new technologies, governments can ignite positive spillovers to the private sector and lift potential growth and productivity. To lay the foundations of the smart economy, public investment should go hand-in-hand with private investment in technology-intensive sectors through public-private partnerships. The IMF finds that crowding-in is stronger for private investment in industries that are critical for the resolution of the health crisis (for example communications and transport) or for the recovery (for example construction and manufacturing).

Our simulations also confirm the significant crowd-in effect of public investment: In France, a doubling of public investment spending (EUR20bn additional public investment) in 2021 would boost business investment by EUR0.5bn in 2021 (+0.3pp additional business investment growth). In Germany, the same amount of additional public investment would boost business investment by EUR0.8bn (+0.2pp), while in the UK the impact would be stronger (GBP0.6bn or +0.4pp). Turning to the US, a USD1trn additional public investment (to top up the already announced massive stimulus) could boost business investment by USD141bn (+1pp) in 2021, USD98bn (+0.7pp) in 2022 and USD65bn (+0.5pp) in 2023 compared to our baseline investment growth forecast.

- **Further easing of fiscal pressure could significantly boost business investment in France while additional tax hikes may delay the projected investment recovery in the US**

6. A "smart economy" contains a large group of new technologies such as artificial intelligence, machine learning, edge and quantum computing, blockchain, big data analytics, autonomous and assisted vehicles and 5G telecommunications.

Table 3: Corporate deleveraging simulations on business investment growth

DELEVERAGING SCENARIO	*Impact on investment (LCU bn change)*	*Impact as investment pp. change compared to our baseline forecast in paranthesis*
France: Credit to GDP decreases progressively to return to its pre-Covid levels by end-2024 (decrease from 178% in H2 2021 to 155% in Q4 2024)	2022 -1.8 2023 -3.1 2024 -4.2	-1.1 (5.2%) -1.8 (4.3%) -2.3 (4.5%)
UK: Credit to GDP ratio declines as of 2022 it returns to its pre-Covid levels by end 2023 (from the peak of 85% in Q1 2022 to 74% in Q4 2023)	2022 -0.8 2023 -2.3 2024 -3.0	-0.5 (8.9%) -1.4 (3.3%) -1.7 (4.5 %)
US: Credit to GDP ratio declines as of H2 2022 (to 75% from 82% end 2021) to return to its pre-Covid levels by end-2024	2023 -50.0 2024 -121.1	-0.3 (7.2%) -0.8 (4.3%)

Sources: Euler Hermes, Allianz Research

Table 4: Public investment simulations on business investment growth

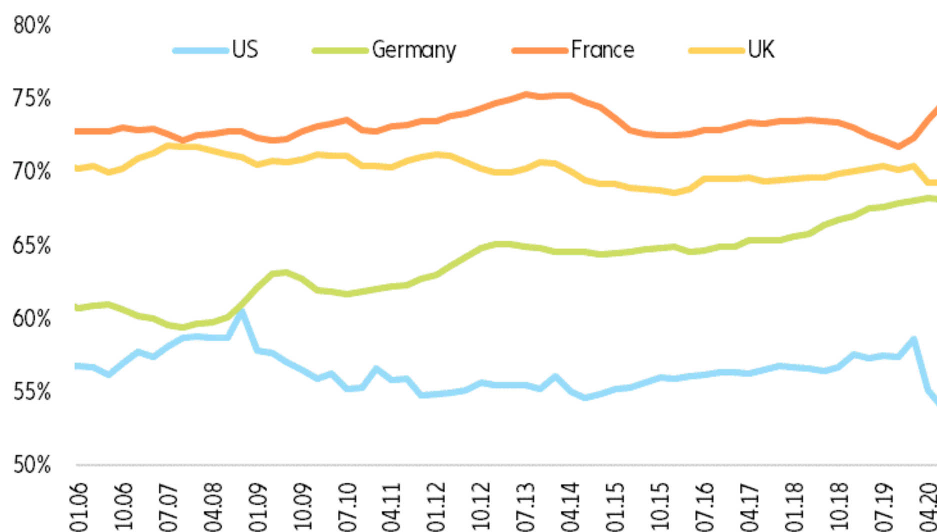
PUBLIC INVESTMENT SCENARIO	*Impact on investment (LCU bn change)*	*Impact as pp. investment change compared to our baseline forecast in paranthesis*
France: Public investment increases from EUR94bn to EUR114bn in 2021 (doubling of stimulus plan)	2021 0.5	+ 0.3 (6.1%)
Germany: Public investment increases by EUR20bn in 2021 (to EUR111bn from EUR91bn)	2021 0.8	+ 0.2 (6.3%)
UK: Public investment increases by GBP20bn from GBP74bn to GBP94bn in 2021	2021 0.6	+ 0.4 (11.8%)
US: USD 1 trillion more public investment between 2021-2023	2021 141.0 2022 98.8 2023 65.4	+1.1 (9.8%) +0.7 (8.4%) +0.5 (7.2%)

Sources: Euler Hermes, Allianz Research

In our quantitative analysis above, we find that the business investment recovery is highly sensitive to fiscal pressure on businesses. High fiscal pressure (at around 72% of the value added) appears to disadvantage business investment in France (Figure 5), while fiscal pressure is much lighter in the US (at around 55%). Therefore, in an alternative scenario, we envisage that further corporate tax cuts ahead of the 2022 presidential election could speed up the recovery of investment in France. The -EUR10bn production tax cut in France in 2021 and 2022 (within the framework of the stimulus plan) is a step in the right direction as it will bring at around +0.7pp of relief to business margins. However, fiscal support to businesses ought to continue further to support companies in building margins to finance productive investment. **We calculate that a -4pp temporary easing of fiscal pressure in France in 2021 and 2022 – to converge towards Germany – would increase business investment by EUR4.9bn** (+3.1pp) in 2021 and EUR3.8bn (+2.3pp) in 2022.

On the other hand, in the US, we test an alternative scenario with additional tax increases that could slow down the expected business investment. The Biden administration may implement progressive corporate tax hikes to finance additional public stimulus that could be approved by the end of this year. We calculate that a progressive increase of +3pp in fiscal pressure in the US would decrease business investment by a cumulative amount of USD0.5trn (-4pp) by 2024.

Figure 5: Fiscal pressure over NFC value added ratio



Sources: Eurostat, EBA, Euler Hermes, Allianz Research

Table 5: Fiscal pressure simulations on business investment growth

FISCAL SCENARIO	*Impact on invest-ment (LCU bn change)*	*Impact as investment pp. change compared to our baseline forecast in paran-thesis*
France: Fiscal pressure is cut temporarily by -4pp to align with Germany (from 72% in end 2020 to 68% in 2022Q4)	2021 4.9 2022 3.8	+3.1 (6.1%) +2.3 (5.2%)
Germany: Fiscal pressure increases progressively by +3pp between 2023 and 2024 (to 69% of VA) due to the implementation of carbon tax and other tax hikes	2023 -5.8 2024 -11.9	-1.2 (6.3%) -2.5 (5.7%)
UK: Fiscal pressure increases progressively, +3pp (from 72% to 75% in Q4 2024) by 2024 to align with the EU levels	2022 -2.1 2021 -2.7 2023 -2.0	-1.3 (11.8%) -1.7 (8.9%) -1.2 (3.3 %)
US: Fiscal pressure increases progressively, +3pp by 2024 to reach 63% (instead of 60% in the baseline)	2021 -47.7 2022 -118.7 2023 -179.6 2024 -200.9	-0.4 (9.8%) -0.9 (8.4%) -1.3 (7.2%) -1.3 (4.3%)

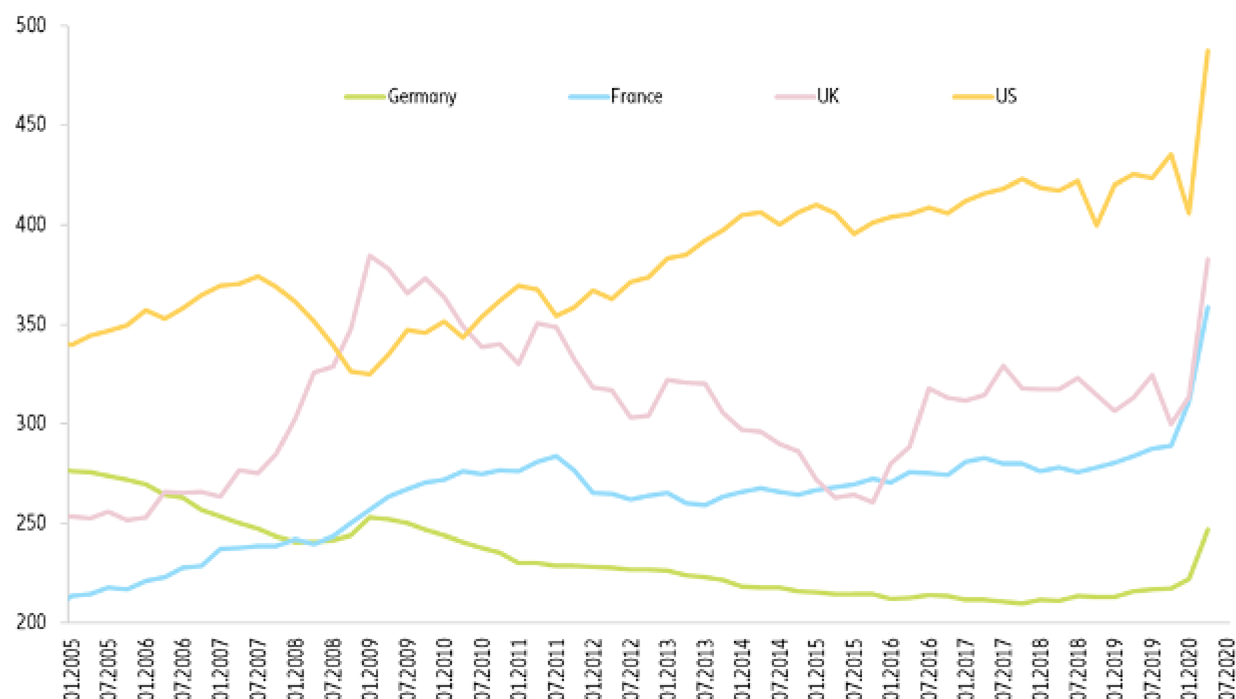
Sources: Euler Hermes, Allianz Research

SUSTAINED ECONOMIC GROWTH AND EXCESS SAVINGS WILL DRIVE INVESTMENT IN THE LONG RUN

Our panel estimates show that the pace of economic growth and the financial asset accumulation of households are the key determinants for long-term investment in the US, Germany, France and the UK. We find that a 1% increase in economic activity (potential growth) leads to a +1.25% increase in business investment in the long run. This confirms the established standard accelerator effects from aggregate demand to investment. We find that households' excess savings are also an important long-term driver of investment, reflecting the equilibrium of saving and investment.

According to our analysis, a **1% increase of households' financial assets could lead to a +0.4% increase in business investment.** Interestingly, the coefficient 0.4 shows the share (40%) of financial assets allocated to productive investment, the rest of excess savings being implicitly allocated to the financing of housing, public debt financing and holdings of net foreign assets. We find that in France an additional EUR100bn increase in household financial assets could increase investment by +2.5% (EUR3.7bn) and by +2% (EUR8bn) in Germany. In Germany, household financial assets are structurally low compared to other advanced economies (Figure 6), indicating greater room for boosting German business through further savings.

Figure 6: Household financial assets to GDP (%)



Sources: various, Euler Hermes, Allianz Research

Appendix: Methodology for the determinants of investment calculations

Data sources

Non-construction investment values, calculated from Eurostat national accounts data, are used as a proxy for business investment in this report. Total investment values are available from the quarterly national accounts, released by Eurostat, for the Eurozone and its member countries, where total investment is also available broken down by main asset classes at a quarterly frequency. Adjusting total investment for construction (i.e. dwellings and non-residential investment), the resulting non-construction investment covers (i) machinery, equipment (transport investment, information and communication technology (ICT) equipment, other machinery and equipment) and weapons systems, (ii) intellectual property products and (iii) agricultural products. For the US, non-residential private investment series are available from the Bureau of Economic Analysis and include machine tools, ICT, transport equipment, other equipment and Intellectual property products (e.g. software purchases, R&D).

Estimation Methodology - Panel Model

We estimate the panel model below for the US, Germany, France and the UK over quarterly data for the period Q21999 to Q12020. In the long-term equation, investment is explained by GDP and the financial-assets-of-households-to-GDP ratio. In the short-term model, the change in investment is explained by capacity utilization, productivity, fiscal pressure, credit growth, public investment and a GFC dummy. All variables appear with a statistically significant coefficient (mostly at the 5% confidence interval) with the expected sign. We use the robust cluster-robust covariance estimator to correct for heteroscedasticity. Further information is available from the authors upon request.

Model parameters are as below.

Long term : Invt t = $\alpha + 1.25$ GDP t + 0.375 financial assets of HHs -t + ε

Short term : ΔInvt t + β -0.08 (error correction term t-1) + 0.002 Cap Utz + 0.46 Δ Pty t + 0.21 Δ NFC new credit t-1 -0.53 Δ Fiscal pressure t + crisis dummies + 0.02 Δ Public investment + ε

:

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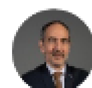
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