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THE PERFORMANCE OF INVESTMENT IN CAPITAL GOODS DURING THE PANDEMIC AND THE ROLE OF ITS SECTORAL COMPOSITION

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ABSTRACT

The COVID-19 crisis has had a very uneven impact on the different productive sectors of the economy, with those requiring less personal contact or that are less labour-intensive, such as industry, being the least affected. This appears to have been a determining factor behind the buoyancy observed in investment in capital goods during the current crisis, as the sectors representing a higher relative share of investment are those that, broadly speaking, have been more resilient. The drive towards digitalisation and e-commerce has also helped cushion the fall in this aggregate in the current crisis, as they require investing in the relevant equipment. Furthermore, unlike in previous recessions, the relatively favourable financing conditions have helped prevent this factor from being an additional constraint in tackling planned investment projects. Lastly, general government has also played a key role in sustaining investment in capital goods during this crisis, given the effort required in terms of digitalisation in order to continue providing services in a setting marked by mobility restrictions and the need to acquire equipment to deal with the health emergency.

Keywords: investment, capital goods, economic cycles.

JEL classification: E22, E32, E62, H54.

THE PERFORMANCE OF INVESTMENT IN CAPITAL GOODS DURING THE PANDEMIC AND THE ROLE OF ITS SECTORAL COMPOSITION

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Introduction

Investment in capital goods plunged at the start of the pandemic crisis, dropping quarter-on-quarter by 5.5% and 29.5% in the first two quarters of 2020. However, this aggregate, which is a reasonable proxy for business investment,¹ rebounded strongly in 2020 Q3 (by 42.9%) and grew in four of the following five quarters. In cumulative terms, capital goods investment increased by 6.6% between the outbreak of the crisis and end-2021, in contrast to the 3.8% decline in GDP (see Chart 1.1). This performance is somewhat unique as compared with the dynamics commonly observed in the past, as this investment component has traditionally been characterised by strong procyclicality and by posting sharper changes than GDP.²

Various reasons lie behind this relatively unusual behaviour of capital goods investment in the present cycle. First, firms may have interpreted the pandemic-associated shock as being predominantly transitory and, as a result, opted to maintain many of the investment projects that were needed to meet their demand expectations in the medium and long term.

Second, unlike in previous crises, access to finance and financing conditions have barely been affected. This may have helped non-financial corporations to carry out the investment projects they had approved before the pandemic, or even to undertake new ones.

Investment in capital goods has also likely been boosted by firms' need to adapt to the new circumstances in the wake of the pandemic. Firms initially had to adapt in order to continue their economic activity amid the restrictions imposed by the health authorities and, subsequently, to meet the changes which appear to have emerged in demand and which, specifically, seem to have called for greater digitalisation. This boost appears to have occurred across a wide range of sectors of activity, albeit to differing degrees, and to have fostered not only investment in capital goods but also

¹ In 2019, investment in capital goods accounted for 46% of business investment, while investment in "other construction" and investment in "intellectual property products" represented 29.4% and 22.5%, respectively.

² This phenomenon, which refers not only to investment in capital goods but also to non-residential investment in general, is usually called the "accelerator effect".

Chart 1 IN CONTRAST TO GDP. INVESTMENT IN CAPITAL GOODS ALREADY EXCEEDS PRE-PANDEMIC LEVELSPREPANDEMIA

The increase in investment in capital goods stands in contrast to the sharp fall in this component during the 2008 financial crisis, despite a similar decline in GDP. This pushed up the business investment rate (the ratio of this variable to the economy's GVA) between 2019 Q4 and 2021 Q4. In terms of capital goods investment components, investment in machinery and other equipment is particularly noteworthy, having already exceeded its pre-pandemic level in 2020 Q3.



SOURCE: INE and Banco de España.

a The peaks prior to the onset of each crisis are considered as defined by the Dating Committee of the Spanish Economic Association.
b The standard deviation of the quarter-on-quarter growth rates of each component relative to the standard deviation of GDP growth rates is calculated for each period.

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investment in intangible assets, which at end-2021 stood 6.9% above its prepandemic level.

Similarly, from the perspective of the institutional sectors of the economy, general government has likely helped cushion the fall-off in capital goods investment in the

context of the COVID-19 crisis to a greater extent than in previous crises. In 2020, government investment grew by 10.1% in nominal terms (however, there is no information enabling a distinction to be drawn between the contributions of capital goods and public construction to this increase).³ In any event, two factors suggest that government investment in capital goods must have played a key role since the onset of the pandemic. First, to continue providing services amid the mobility restrictions imposed on account of the health crisis, general government has had to take steps towards digitalisation and the implementation of teleworking. Second, the pandemic has also necessitated further investment in public health. There is an additional argument, applicable not just to capital goods but to government investment as a whole, which is that, on this occasion, the countercyclical fiscal policy measures have not been subject to financing difficulties.

Lastly, studying the crisis by activity may help explain the relative resilience of business investment in capital goods. Indeed, one of the main characteristics of this crisis has been its highly uneven impact from a sectoral standpoint. The lockdown and social distancing measures imposed to curb the spread of the pandemic have meant that those activities entailing a greater degree of social interaction have been hit the hardest.⁴ This may explain the relatively favourable performance of investment during the crisis, as these productive sectors are characterised by their share of capital goods expenditure being much smaller than their weight in the economy. By contrast, in other recessions the sharpest falls in investment in aggregate terms were not caused by these sectors – which have a low elasticity to the cycle⁵ and a modest business investment rate (defined as the ratio between investment and value added) – but by other sectors that tend to have a stronger cyclical reaction and greater investment activity.

Thus, for example, activity in the accommodation and food service activities sector fell 50% in 2020, before rebounding, albeit only slightly, in 2021.⁶ However, while this has severely affected capital goods investment in the accommodation and food service activities sector, its aggregate impact appears to have been modest, as both this sector's share of capital goods investment as a percentage of the total and its business investment rate are very low: 2.5% and 2.7%, respectively, in 2019 (the latest available figures).⁷

³ Within government investment, the capital goods component currently accounts for approximately one-third of the total.

⁴ See, for example, Banco de España (2021).

⁵ See Álvarez, Gadea and Gómez-Loscos (2021).

⁶ For 2020, Annual National Accounts data are available on the gross value added (GVA) of accommodation and food service activities. However, the Annual National Accounts for 2021 are not yet available, and therefore the sector's GVA has to be approximated drawing on the Quarterly National Accounts (QNA). Data on the wholesale and retail trade, accommodation and food service activities and transport sectors (sectors G-I in NACE) are grouped in the QNA. In order to isolate the GVA of accommodation and food service activities, it has been proxied using the developments observed in the number of hours worked in the sector according to the Spanish Labour Force Survey (together with the GVA for the overall G-I component in 2021).

⁷ In any event, these figures represent a lower bound for the impact, as the lesser activity of this sector has indirectly had additional adverse effects on investment in capital goods via interplay with other sectors.

Conversely, those activities that, like industry, are more capital-intensive and are usually more procyclical (and which have therefore seen sharp declines in other crises) have posted, in relative terms, less intensive falls on this occasion. This is significant, as industry accounts for around one-third of total investment in capital goods, and its resilience in the recent period may have helped soften the adverse developments in this aggregate. The remainder of this article sets out to analyse how the breakdown of the decline in activity contributes to explaining the resilience of capital goods investment during the COVID-19 crisis.

The relationship between the performance of capital goods investment during the pandemic and its sectoral structure

Developments in investment in capital goods during the COVID-19 crisis have been unique compared with those commonly observed in this demand component. Between the onset of the crisis and 2021 Q4, investment in capital goods rose by 6.6% in cumulative terms, in contrast to the 3.8% drop in economic output (see Chart 1.1).

This stands in contrast to the performance observed during the global financial crisis when, eight quarters after the beginning of the recession, investment in capital goods had posted a far sharper cumulative decline than GDP. Moreover, the volatility of this aggregate vis-à-vis that of the total economy has been much smaller than over a broad historical period and in other times of crisis (see Chart 1.2). These developments have also been reflected in the ratio of capital goods investment to GDP. Since December 2019, this ratio has risen by 0.4 pp whereas, in the comparable period of the cycle that began in 2008, it fell by around 1.8 pp (see Chart 1.3).

As mentioned in the introduction, the COVID-19 crisis has had a very uneven impact on the different sectors of activity, with more capital-intensive sectors being far less affected. Consequently, a disaggregated analysis by sector may help to better understand how capital goods investment has performed since the onset of the crisis.

From the standpoint of its product structure, investment in capital goods comprises two components: investment in "ICT equipment, other machinery and equipment and weapons systems" (hereinafter "investment in machinery and other equipment") and investment in "transport equipment". The developments in these two components have not been uniform during this crisis, with growth only being observed in investment in machinery and other equipment (see Chart 1.4). Indeed, this component had already exceeded its pre-pandemic level in 2020 Q3. Conversely, investment in transport equipment has recovered less robustly. In fact, it fell sharply in the first three quarters of 2021 before rebounding slightly at year end, and it stands around 30% below its pre-crisis level. Nevertheless, this demand component has performed

more favourably than after the onset of the 2008 crisis, when it held, on average, 40% below its pre-crisis level for five years.

The fact that investment in machinery and other equipment has followed a more favourable relative trajectory than investment in transport equipment is not independent of the differing course of the sectors representing a greater share of investment. On one hand, activity in industry – the leading sector in investment in machinery and other equipment, accounting for 44% of the total in 2019 (see Chart 2.1)⁸ – was not hit as hard in the COVID-19 crisis as in the global financial crisis. On the other, the transportation and storage sector – which has the highest relative share of investment in transport equipment, accounting for 34% of the total in 2019 (see Chart 2.2)⁹ – was severely affected by the restrictions imposed during the pandemic and, as a result, posted a steeper fall in activity than during the 2008 crisis.

In any event, given that the information available on investment disaggregated by sector refers to the last year before the pandemic, only an approximate analysis can be made of the sectoral contributions to the performance of investment in the various capital goods products.

Investment in machinery and other equipment

This subsection analyses to what extent industrial activity and trade activity may have contributed to the relatively favourable performance of investment in machinery and other equipment in this crisis. The industrial sectors not only represent over 40% of investment in such products, as has been previously mentioned, but they also have the highest business investment rate of all sectors in relation to these products (see Chart 2.3).¹⁰ Consequently, the GVA of the industrial sectors (particularly, manufacturing) is a key determinant of the degree of buoyancy in investment in such products.

Eight quarters after the start of the pandemic, the decline in the GVA of the industrial sectors has been modest and less than half that observed after the onset of the global financial crisis (see Chart 2.4). The comparison is even more striking in terms of performance relative to the economy as a whole. In this crisis, the cumulative GVA

⁸ Industry encompasses groups B-E of NACE Rev. 2. Within this aggregate, "manufacturing" (group C) and "electricity, gas, steam and air conditioning supply" (group D) accounted for 26.4% and 17.1%, respectively, of investment in "machinery and other equipment" in 2019. The other two significant sectors in this investment component were public administration, which encompasses groups P, Q and R of NACE Rev. 2 (14% of the total) and trade (10%). Trade refers to "wholesale and retail trade; repair of motor vehicles and motorcycles" (group G of NACE Rev. 2).

⁹ The other two significant sectors in this investment component in 2019 were administrative and support service activities (26%) and trade (16%).

¹⁰ As mentioned previously, the business investment rate is defined as the ratio between this variable and sectoral GVA.

Chart 2

THE SECTORAL STRUCTURE OF INVESTMENT IN CAPITAL GOODS HAS CONTRIBUTED TO THE INCREASE IN THIS AGGREGATE, GIVEN THE RESILIENCE OF INDUSTRY IN THIS CRISIS

The greater resilience of investment in machinery and other equipment compared with investment in transport equipment is also explained by the better relative performance of industry compared with services in this crisis, given the relative importance of the different sectors in both investment components. Specifically, the mining and quarrying, energy and manufacturing sectors are highly intensive in machinery and other equipment, and their GVA has barely fallen, unlike in the accommodation and food service activities and recreation sectors.



3 BUSINESS INVESTMENT RATE FOR MACHINERY AND OTHER EQUIPMENT AS A PERCENTAGE OF EACH SECTOR'S GVA (2019)



4 CHANGE IN THE AGGREGATE VALUE AND SHARE OF INVESTMENT IN MACHINERY AND OTHER EQUIPMENT BY SECTOR (a) Cumulative change and share in 2019



SOURCES: INE and Banco de España.

NOTE: A: agriculture, forestry and fishing; BDE: mining and quarrying; electricity, gas, steam and air conditioning supply; water supply, sewerage, waste management and remediation activities; C: manufacturing; F: construction; G: wholesale and retail trade; repair of motor vehicles and motorcycles; H: transportation and storage; I: accommodation and food service activities; J: information and communication; KL: financial and insurance activities and real estate activities; M: professional, scientific and technical activities; N: administrative and support service activities; OPQ: public administration and defence; compulsory social security; education; human health and social work activities; RST: arts, entertainment and recreation.

a The size of the circles indicates the share of investment in machinery and other equipment accounted for by each sector. For sectors G, H and I, falls are approximated using the change between 2008 and 2009 and between 2019 and 2020, as no quarterly information is available.



Chart 3

IN INDUSTRY, DEMAND AND CAPACITY UTILISATION PLUMMETED AND EXPECTATIONS DETERIORATED SHARPLY AT THE ONSET OF THE CRISIS, BUT THE SUBSEQUENT RECOVERY WAS ALSO SWIFT

The lower relative fall in demand for industrial goods appears to have contributed to the rapid rebound in confidence in the sector, which has returned to pre-crisis levels after only five quarters, a much shorter period than in the previous recession. Moreover, utilisation of the sector's plant capacity has not fallen as sharply and, in many industrial sectors, this variable is even clearly higher than before the crisis. The recovery in expectations has only recently been slowed down slightly by the bottlenecks in the manufacturing sectors.



SOURCE: INE and European Commission.

- a The "lack of demand" indicator refers to factors limiting production in industry according to the responses to the European Commission's confidence surveys.
- b Each number refers to a specific sector of activity. In particular: 10: manufacture of food products; 11: manufacture of beverages; 12: manufacture of tobacco products; 13: manufacture of textiles; 14: manufacture of wearing apparel; 15: manufacture of leather and related products; 16: manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials; 17: manufacture of paper and paper products; 18: printing and reproduction of recorded media; 19: manufacture of coke and refined petroleum products; 20: manufacture of chemicals and chemical products; 21: manufacture of basic pharmaceutical products and pharmaceutical preparations; 22: manufacture of rubber and plastic products; 23: manufacture of other nonmetallic mineral products; 24: manufacture of basic metals; 25: manufacture of fabricated metal products, except machinery and equipment; 26: manufacture of computer, electronic and optical products; 27: manufacture of electrical equipment; 28: manufacture of machinery and equipment n.e.c.; 29: manufacture of motor vehicles, trailers and semi-trailers; 30: manufacture of other transport equipment; 31: manufacture of furniture; 32: other manufacturing; 33: repair and installation of machinery and equipment.

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fall to 2021 Q4 in industry was 0.6 pp lower than in the economy, whereas, in the previous crisis, the decline was 4.4 pp higher in an equivalent period of time.

An initial factor explaining these developments is the sustained demand for industrial sector goods. By way of illustration, according to the European Commission's confidence surveys, the percentage of businesses in this sector reporting a lack of demand as a factor limiting production has not increased since the crisis (see Chart 3.1). The sustained demand appears to have been helped by the recovery in international trade, following the initial shock. This recovery has been much swifter than in previous crises, although it has admittedly tended to slow with the recent disruptions in global value chains.¹¹ This positive overall performance would explain why plant capacity utilisation has barely diminished for the industrial sector as a

¹¹ See UNCTAD (2021).

whole, unlike after the onset of the 2008 crisis (see Chart 3.2). Moreover, capacity utilisation already exceeds pre-crisis levels in many industrial sectors. Lastly, it is worth noting that the uncertainties associated with the pandemic and its economic fallout do not appear to have significantly affected the industrial sectors, as industrial confidence (a key determinant of investment decisions) returned to pre-crisis levels after only five quarters (a much shorter period than in the previous recession) (see Chart 3.1).

One widespread process that has stimulated investment in machinery and other equipment in the economy as a whole has been the forced reorganisation by firms of their productive processes to adapt to the restrictions imposed by the authorities to contain the pandemic, which has accelerated the process of digitalisation that was already previously under way. This has resulted in high needs to invest not only in machinery and other equipment, but also in intangible assets.

A priori, it may be thought that this process affected industry to a lesser extent than other sectors, for example because manufacturing seems to lend itself less to teleworking. However, the results of the Banco de España Business Activity Survey (EBAE)¹² over the four quarters of 2021 show that the percentage of firms in industry reporting that introducing (or maintaining) teleworking has been one of the most widely used measures to maintain or boost their activity is similar to that in other sectors (see Chart 4.1). Likewise, the Business Confidence Indicator (BCI) of the National Statistics Institute (INE)¹³ shows that, during the first state of alert, teleworking was one of the most widely implemented arrangements in industry to continue operating (see Chart 4.2). Moreover, the industrial firms participating in the last four rounds of the EBAE reported, in similar proportions to non-financial corporations in other sectors, that they were planning to invest in new technologies and digitalisation or to work towards opening new markets or introducing new products in the short term as a way of dealing with the consequences of the crisis (see Chart 4.1). This inevitably involves acquiring new equipment.

During this crisis the performance of activity in trade has not differed significantly from that observed in services as a whole, where, unlike in industry, the decline in GVA in the first eight quarters after the start of the pandemic was far greater than in the first two years following the onset of the global financial crisis. Specifically, the GVA in wholesale and retail trade appears to have fallen around two and a half times more in the current episode (see Chart 2.4).¹⁴

¹² See Izquierdo (2021).

¹³ See INE (2021).

¹⁴ As mentioned above, the QNA group trade with accommodation and food service activities and transport. The performance of each of these sectors in 2021 has been proxied taking into account the results of the 2021 Q4 LFS relating to the number of hours worked in the sector and GVA developments for the overall G-I component in 2021. Based on this approximation, trade GVA is estimated to have fallen by 7.1% between 2019 Q4 and 2021 Q4, compared to 2.4% between 2008 Q2 and 2010 Q2.

Chart 4

THE PUSH TOWARDS DIGITALISATION APPEARS TO HAVE INCREASED CAPITAL GOODS INVESTMENT NEEDS

Both in the Banco de España Business Activity Survey (EBAE) and in the INE's Business Confidence Indicator (BCI) surveys, firms in various sectors reported that the adoption of teleworking and increasing digitalisation were the strategies most widely used since the beginning of the crisis to ensure the continuation of activity. These arrangements remained in place once the bulk of the restrictions had been lifted. Along the same lines, among the measures adopted in the short term, the most frequently mentioned are investment in new technologies and digitalisation and the opening of new markets or introduction of new products. The intention to develop new sales channels, in line with the sharp increase in e-commerce observed in the year following the outbreak of the crisis, is also noteworthy.



2 BCI: STRATEGIES EMPLOYED TO TRY TO MAINTAIN A CERTAIN LEVEL OF ACTIVITY DURING THE STATE OF ALERT (b) Percentages, multiple answers



3 CONTRIBUTION OF E-COMMERCE TO TURNOVER GROWTH 2021 Q2, y-o-y change in the 4-quarter cumulative amount, pp



SOURCES: Banco de España, CNMC and INE.

a EBAE. Results for 2021 Q1 and Q4.

b BCI. Módulo de Opinión sobre el Impacto de la COVID-19 (2020 H2 and 2021 H1).

In principle, one would expect these GVA developments to have had a strong impact on both investment in machinery and other equipment and investment in transport equipment, given the relative importance of both these components in trade. However, in addition to the sharp fall in activity, the sector has likely had to allocate a greater share of the funds it has generated to investment. In other words, it has probably had to increase its business investment rate owing to the shift in demand towards the e-commerce channel, amid the restrictions on mobility imposed at the start of the pandemic, which appears to have led to a slight change in consumer habits once these restrictions were lifted.

Indeed, according to data from the National Commission on Markets and Competition (CNMC), e-commerce turnover grew by 6.8% in 2021 Q2 in cumulative four-quarter terms, largely due to the increase in wholesale and retail trade through these channels. In particular, online purchases related to this activity increased by 27.7% in cumulative terms compared with 2020 Q2 and contributed 8.6 pp to the year-onyear increase in total e-commerce turnover (see Chart 4.3).¹⁵ This suggests that firms in these sectors have had to invest in machinery and other equipment and in transport equipment.¹⁶ This appears to be corroborated by the results of the BCI (see INE, 2021) according to which, after teleworking, e-commerce and home delivery were the two measures most widely implemented in trade to keep activity going during the state of alert in the early months of the crisis and have since been incorporated into consumers' habits (see Chart 4.2). Moreover, as in the case of industry, the responses obtained in the various rounds of the EBAE indicate that the actions most frequently undertaken to counter the economic consequences of the pandemic are investment in new technologies and digitalisation, the opening of new markets or introduction of new products, and the creation of new sales channels (see Chart 4.1). Thus, trade also seems to have contributed to the positive developments in investment in capital goods over this period.

Investment in transport equipment

As indicated above, investment in transport equipment was not as buoyant as in machinery and other equipment, although it performed better than might be expected based on its historical behaviour. Since the onset of the crisis, the business investment rate for this type of goods has fallen by 0.6 pp, while between 2008 Q2 and 2010 Q2 it fell by 1 pp. During the global financial crisis, the sharpest decline in the business investment rate was seen in the two sectors which contribute the most to this type of expenditure: the transportation and storage sector (-6.4 pp) and administrative and support service activities (-4.9 pp).¹⁷

The decline in the business investment rate in the current crisis was smaller than in the global financial crisis. This stands in contrast to the drop in GVA in the

¹⁵ This should be understood as a lower bound, since CNMC statistics only record online transactions paid by card, but not those where other payment methods were used (transfers, PayPal, Bizum, etc.).

¹⁶ In particular, it appears higher investment in transport equipment was needed to facilitate competitive "last mile" logistics (i.e. a distribution network for the distance between the last distribution point and the final consumer).

¹⁷ Since there is no quarterly information for investment in transportation and storage by sector, the changes in the business investment rate in the period indicated are approximated by the change observed between 2008 and 2009.

transportation and storage sectors, which was much more pronounced this time around, mainly because the mobility restrictions imposed at the onset of the pandemic had a particularly strong impact on passenger transport activities.¹⁸ This suggests that the fall in these sectors' investment in transport equipment may have been offset by a higher investment drive in others. As indicated in the previous subsection, one such candidate could be the trade sector, as a result of the increase in online sales and the ensuing need for transport equipment.

Additionally, administrative and support service activities, which include vehicle rental activities, is another sector which accounts for a large share of investment in transport equipment.¹⁹ One aspect denoting that the sector's investment in these products has fallen less than in the 2008 financial crisis is the smaller decline in leasing.²⁰ This better relative performance may be partly due to the sustained favourable financing conditions during this crisis, which is a highly relevant determinant of demand in this sector.

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¹⁸ Using the same approximation as for trade GVA, the GVA of the transportation and storage sectors is estimated to have fallen by 5.9% between 2019 Q4 and 2021 Q4, compared with only 1.5% between 2008 Q2 and 2010 Q2.

¹⁹ Renting and leasing of motor vehicles is group 77.1 of NACE Rev. 2.

²⁰ According to the Spanish Vehicle Leasing Association (Asociación Española de Renting de Vehículos, AER), private vehicle registrations related to leasing fell by 30.9% in 2020, while in 2009 they declined by 47% (see AER, 2021).

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