

THE POTENTIAL GROWTH
OF THE SPANISH ECONOMY
AFTER THE PANDEMIC

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Abstract

Despite the exogenous nature of the COVID-19 health crisis, its intensity and persistence could have a negative impact on long-term economic growth. This article offers a comprehensive discussion of the various channels through which this crisis could affect the potential growth of economies, as well as some scenarios for the Spanish economy over a medium-term horizon. Although the high degree of uncertainty in the current circumstances makes it advisable to interpret these estimates with caution, the results point to a potential growth rate for the Spanish economy very similar to that estimated before the pandemic, of around 1.3%. However, it should be noted that the economic policies adopted have been and will be critical in determining the long-term effects on the economy's growth capacity. In particular, European funds can be catalysts for a significant boost to both investment and productivity in the long term. Such a boost would result in higher potential growth of the Spanish economy, especially if accompanied by structural reforms that favour synergies between public and private investment, maximising their impact on productivity. According to the estimates presented in this article, the potential growth of the Spanish economy could be in the vicinity of 2% under a scenario in which a good selection of investment projects financed with European funds is accompanied by growth-enhancing structural reforms.

Keywords: potential growth, productivity, structural reforms, public investment, Spain.

JEL classification: E23, E22, O40, O47.

Resumen

A pesar del carácter exógeno de la crisis sanitaria debida al COVID-19, su intensidad y persistencia podrían provocar un impacto negativo sobre el crecimiento económico a largo plazo. Este artículo ofrece una discusión exhaustiva sobre los diversos canales a través de los cuales la crisis sanitaria podría afectar al crecimiento potencial de las economías, así como algunos escenarios para la economía española en un horizonte de medio plazo. Si bien el elevado grado de incertidumbre en las actuales circunstancias aconseja interpretar dichas estimaciones con cautela, los resultados apuntan a una tasa de crecimiento potencial para la economía española muy similar a la estimada antes de la pandemia, de en torno al 1,3%. Asimismo, cabe destacar que las medidas de política económica adoptadas han sido y serán fundamentales para determinar los efectos a largo plazo sobre la capacidad de crecimiento de la economía. En particular, los fondos europeos pueden ser catalizadores de un impulso significativo tanto en la inversión como en la productividad a largo plazo. Dicho impulso redundaría en un mayor crecimiento potencial, especialmente si se acompaña de reformas estructurales que favorezcan las sinergias entre la inversión pública y la inversión privada, y maximicen su impacto sobre la productividad. De acuerdo con las estimaciones presentadas en este artículo, el crecimiento potencial de la economía española, en un escenario en el que una selección adecuada de los proyectos de inversión financiados con los fondos europeos es acompañada por reformas estructurales favorecedoras del crecimiento económico, podría situarse en torno al 2 %.

Palabras clave: crecimiento potencial, productividad, reformas estructurales, inversión pública, España.

Códigos JEL: E23, E22, O40, O47.

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1 Introduction

The severe shock triggered by the pandemic has had an unprecedented economic impact, simultaneously affecting supply (firms' ability to produce goods and services) and demand (different economic agents' investment and spending decisions). In the near term, these effects are directly related to the containment measures approved to contend with the spread of the virus, such as the restrictions on movement and the suspension of non-essential activities. However, there is the possibility that the effects on economies' productive capacity will not immediately disappear once the health crisis is over. Thus, the depth of this crisis could leave some scarring on the Spanish economy's potential growth.

To put the COVID-19 crisis into context, it is important to underscore its essentially exogenous origin and that it is unrelated to prior economic imbalances. In principle, the evidence available on shocks not stemming from economic imbalances (such as pandemics, cyber attacks, wars and commodity-price shocks) suggests that, provided they are of moderate severity, they do not tend to have lasting effects on potential growth. Conversely, the adverse effects of crises that are more endogenous in nature, especially financial crises, tend to be associated with long-term damage to potential growth.¹ However, some analyses find that, even in the case of crises without a financial origin, the impact may be persistent if the shock is large in size.² Hence, although they were not the root cause of the COVID-19 crisis, its scale and persistence have themselves created economic imbalances that could ultimately have a lasting effect on potential output. This could give rise to potential hysteresis,³ meaning persistent or permanent effects of cyclical shocks on productive capacity.

These channels notably include hysteresis effects on the labour market, weaker productive investment – stemming, for example, from investment projects abandoned as a result of the crisis or postponed due to high uncertainty – and possible disruptions to business demographic trends. A sustained drop in demand during the period when pandemic containment measures are in force could turn the temporary rise in unemployment into a structural one, which would hinder the return to employment of the hardest-hit cohorts or cause some of these workers to abandon the labour force (see Blanchard and Summers (1986)). Similarly, a steep and temporary decline in demand may discourage investment, especially if it is accompanied by higher uncertainty (see Fernández-Cerezo et al. (2021)), while potentially leaving a high number of firms facing insolvency and limiting the flow of new competitors into the market, adversely affecting long-term growth (see Albert, Caggese and González (2020)). Conversely, we must mention that the COVID-19 crisis has considerably accelerated the digitalisation of economies (see Soto-Acosta (2020)) and the implementation of new employment practices, such as teleworking, which could offset some of the lost productivity in the long term (see

1 Martín-Fuentes and Moder (2020) find that the main source of the adverse effects of financial crises on potential growth stems from the persistent effects on the capital stock, whereas the impacts on labour input and total factor productivity (TFP), while also significant, are more transitory.

2 By way of example, Jordá, Singh and Taylor (2020) analyse 15 major pandemics since the Middle Ages, identifying in some cases severe lasting consequences.

3 See Cerra, Fatás and Saxena (2020) for an extensive review of this literature.

Barrero, Bloom and Davis (2021)). These are all different channels through which the effects of COVID-19 on potential growth may be felt, even once the pandemic is over.

In any event, the impact of many of the aforementioned factors remains uncertain, and elements such as the persistence of the health crisis and, in particular, the economic policies adopted to mitigate its effects will be essential to determining the long-term influence of the pandemic on potential growth. In this regard, it should be noted that the economic support and stimulus measures, such as the furlough schemes (ERTE by their Spanish initials), the reinforcement of unemployment benefits, the ICO funds, debt moratoria and European Central Bank (ECB) monetary policy, have clearly been designed with a view to minimising the scarring effects of the crisis. The European Union's support packages have also been designed with the same goals. First, the SURE⁴ instrument has provided the funding for temporary employment support schemes in the European Union Member States. Second, from a longer-term perspective, the Next Generation EU (NGEU) recovery package combines the funding of investment projects with the implementation of structural reforms. These European funds may significantly boost investment and long-term productivity, which would result in the Spanish economy having higher potential growth, especially if accompanied by structural reforms that foster synergies between public and private investment (see Albrizio and Geli (2021)).

All the above-mentioned arguments highlight the uncertainty surrounding the quantification of the possible impact of the pandemic on economies' potential growth. Leaving to one side the typical complexity inherent in estimating an unobservable factor such as potential GDP, the current setting adds other sources of uncertainty. In addition to the aforementioned hysteresis effects and the implementation of numerous Spanish and European public interventions, there is the as yet uncertain duration of the health crisis, with the emergence of new virus variants that may require fresh restrictions to be imposed. More recently, the global supply chain disruptions should also be noted, although their impact on activity is expected to be transitory.⁵

This notwithstanding, this paper presents an estimation of the Spanish economy's potential growth after the pandemic based on the production function methodology (see Cuadrado and Moral-Benito (2016)). This methodology enables us to break down the impact of the pandemic via its effects on the contribution of employment, capital and productivity to the economy's potential growth. In addition, given the importance of NGEU, the paper presents some scenarios that illustrate its possible impact on long-term growth under certain assumptions about its effectiveness and the scope of the structural reforms.

Based on the findings, in the medium term the potential growth rate would be in line with the pre-pandemic estimate (annual rate of around 1.3%), as no significant scarring

⁴ Support to mitigate Unemployment Risks in an Emergency, a temporary instrument with a €100 billion envelope. The European Investment Bank's €200 billion corporate credit guarantee scheme should also be mentioned.

⁵ See [Banco de España \(2021a\)](#).

effects on the main determinants of potential growth are identified. Likewise, the scenarios under which NGEU investment projects are efficiently selected and the accompanying structural reforms are appropriately designed point to sizeable increases in the Spanish economy's potential growth rate, to annual rates of close to 2%.

The remainder of this paper is structured as follows. Section 2 identifies the possible channels through which potential growth may be affected by the pandemic and the economic policies adopted to mitigate its effects. Section 3 describes the approach used to estimate potential output in the Spanish economy, shows the findings under the baseline scenario and, lastly, illustrates the NGEU funds' ability to boost long-term growth if they are used effectively. Finally, Section 4 provides some conclusions.

2 The channels through which the COVID-19 crisis may affect potential growth and the role of economic policy

2.1 The transmission channels of the COVID-19 shock

As mentioned in the introduction, the consequences of the pandemic for the Spanish economy's potential growth may materialise through different channels. This section summarises how the shock associated with COVID-19 and the measures adopted to contend with the pandemic may affect the potential components of employment, capital stock and TFP and, therefore, the economy's capacity to grow.

For each of the three components, both immediate and near-term effects and longer-term effects can generally be distinguished. The former are the direct consequence of the pandemic restrictions, which can be expected to disappear when the health situation returns to normal. However, the consequences of the crisis could leave scarring, due to factors such as a persistent increase in unemployment, changes in consumption patterns, an acceleration in the digitalisation of the economy, the deterioration of the productive system and the loss of relationships established between suppliers and employers. While the short-term effects are unequivocally negative, the long-term ones on the potential output level are less clear (see Bodnár et al. (2020)). In addition, the economic policy response must be borne in mind throughout this analysis. The measures adopted since the onset of the crisis have chiefly been geared towards mitigating the short and long-term adverse effects. Based on the outcomes to date, they could be deemed successful.

First, as regards the impact of the COVID-19 shock on TFP, different channels can be distinguished according to the time horizon considered. In the near term, the restrictions on movement and the lockdowns in different countries disrupted domestic and global supply and production chains and restricted the availability of labour. The inability of firms to respond to these changes in the short term entailed lower use of plant capacity and adversely affected TFP.⁶

Longer term, the adverse impact on TFP may persist insofar as a prolonged drop in demand may keep workers from their jobs, impairing their skills and potentially resulting in high-value-added worker-firm matches being severed (see Furman (2020)). Similarly, the loss of established customer-supplier networks could seriously undermine the economy's productive efficiency. Thus, the adverse effects on productivity could persist even when demand recovers. Conversely, in the long term productivity could benefit from the accelerated adoption of new technologies, the more intensive use of e-commerce and the introduction of new organisational methods, such as teleworking. Once the pandemic restrictions have forced both firms and households to incur the fixed

⁶ For example, several of the major automotive assembly plants in Spain halted production due to a lack of supplies. See [El País \(2020\)](#).

costs of adopting some of these changes, they can be expected to remain in place even when such restrictions are no longer in force. In addition, the COVID-19 shock could prompt firms to accelerate job automation (see Chernoff and Warman (2020)). These channels could therefore offset, at least partially, the long-term adverse effects mentioned above.

Although the above-mentioned channels refer to productivity changes within the companies themselves, it is equally important to consider the effects in terms of business demographics and reallocation of resources both among companies belonging to the same sector and across different productive sectors.

Despite the different support measures implemented, the severity of the crisis has led to a deterioration in many firms' financial position, putting them at risk of insolvency (see Blanco et al. (2020)). Should this situation persist over time, it could harm the productive system, which would damage the medium and long-term economic growth possibilities. Indeed, an inefficiently high level of business exit could lead to the disappearance of specific high-value worker-firm matches, the loss of customer-supplier relationships and the impairment of intangible assets during the liquidation process (see Di Mauro and Syverson (2020)).

However, the winding up of those low-productivity firms with lower growth potential would trigger a creative destruction process if resources were simultaneously reallocated to the most efficient firms. Such a process would result in higher aggregate productivity, as was the case during the financial crisis and the subsequent recovery (see Banco de España (2015)). The findings in Fernández-Cerezo et al. (2021) point in this direction: the crisis has had a greater impact on the activity of firms which were already less productive before the pandemic, which could result in productivity gains at aggregate level.⁷ In addition, there could be some reallocation from the sectors hardest hit by the crisis, such as hospitality and retail trade, to sectors with higher productivity levels. Should this arise, the inter- and intra-sectoral reallocation of resources would emulate the improvement in TFP in Spain after the Great Recession.⁸ Lastly, the COVID-19 shock may also affect business creation, due to the higher uncertainty and a possible deterioration in financial conditions, which could be particularly significant in the case of high-potential firms. This would adversely affect productivity in the long term (see Albert, Caggese and González (2020)).

Therefore, changes in the business entry and exit patterns as a result of the crisis may prompt both positive and negative effects on aggregate productivity. In addition, their impact on productivity may not be constant over time. While the benefits

⁷ See also Di Mauro and Syverson (2020) and Bloom et al. (2020).

⁸ After growth of virtually zero – or negative growth in some years – during the upswing prior to the crisis which began in 2008, TFP gradually recovered to modest growth (in the region of 0.7% in 2013), albeit closer to that observed in the 1990s. This improvement was underpinned by the recovery in intra-sectoral productivity, with inter-sectoral composition effects not playing a significant role. See Banco de España (2015).

of such reallocations could materialise in the medium or long term, the adjustment costs stemming from the deterioration of the productive system could entail a loss of efficiency in the short term.

Secondly, employment's contribution to potential growth would, at least a priori, be adversely affected by COVID-19 (see Bodnár et al. (2020)). Continuously high unemployment rates over a relatively protracted period could give rise to hysteresis effects in the labour market, which would push some workforce cohorts into long-term unemployment. Related to this argument, the deterioration of the employment outlook could also lead some workers to permanently abandon the labour market, thereby lowering the labour force participation rate. Among the groups most likely to suffer this effect would be low-skilled workers – who have been hit hardest by the COVID-19 crisis – and those closest to the retirement age (see Bodnár and Nerlich (2020)).

Another channel through which employment's contribution to growth could be diminished is via a persistent decline in geographic mobility. Specifically, if some of the restrictions on travel in force during the pandemic remain in place, international migration flows could decrease (see Bodnár et al. (2020)). This effect would be particularly important in ageing labour markets that depend on these workers to replace those who enter retirement. From a longer-term perspective, it is also important to consider the impact of the pandemic on the education of young people, i.e. on the human capital of future workers (see, for example, Azevedo et al. (2020) and Di Pietro et al. (2020)). In addition, the higher mortality and morbidity associated with the pandemic, whose magnitude remains as yet uncertain, would be another channel through which labour supply would fall.

Thirdly, there are several channels through which COVID-19 might impact the contribution of capital to potential growth, most of which would in principle be negative. The main adverse effects would result from lower investment in the installation of new capital and in a depreciation of the pre-existing capital stock. Firstly, a persistent drop in demand could have lasting effects on firms' incentives to innovate or invest in new capital (see Fornaro and Wolf (2020) and Benedetti-Fasil et al. (2020)). In addition, a sizeable increase in corporate debt could lower investment in productive capital, although the evidence for this argument is inconclusive (see Jordá, Singh and Taylor (2020)).

The impact on the pre-existing capital stock is less clear and is the result of several opposing forces. First, reduced use of capital during the pandemic could result in lower depreciation and an extension of its useful life. Conversely, the destruction of capital during business failures or the loss of some of its value when transferred from firms being liquidated to other companies – due to the presence of intangibles or highly specific assets – could have an adverse impact on existing capital (see Di Mauro and Syverson (2020)). Second, permanent changes in consumption patterns stemming from the pandemic could cause some of the capital of sectors such as retail trade, tourism and hospitality to become obsolete (see Hodbod et al. (2020)). The reallocation of such capital to other economic sectors would not be exempt from significant adjustment costs.

2.2 The role of economic policy

Although high levels of uncertainty surround the materialisation and strength of each of the channels, it should be noted that the swift response from the Spanish and EU economic policymakers, with forceful and targeted measures, appears to have helped largely mitigate the adverse effects of the pandemic and reinforce some of its positive channels. The measures adopted can be classified into two major groups. First, those geared towards supporting household incomes and preventing damage to the productive system, i.e. those aimed at minimising the scarring on employment and the capital stock. And, second, the longer-term measures, intended to foster sustained and sustainable economic growth, notably those included in NGEU.⁹

Turning to the first set of measures, mention should be made of the support provided to employment income via furlough schemes, together with accompanying measures such as the reinforcement of unemployment benefits – including those for the self-employed – and the reduction of employer social security contributions. In addition, numerous financial support and solvency measures were implemented for firms and the self-employed, such as credit facilities and ICO guarantees, capitalisation funds, debt moratoria and the temporary suspension of insolvency procedures. In the monetary policy arena, the ECB also responded forcefully to this crisis to improve household and corporate financing conditions, via two types of measures:¹⁰ the strengthening of the asset purchase programmes in order to improve corporate and general government financing conditions on securities markets; and the longer-term refinancing operations aimed at providing credit institutions with funds with which to lend at low interest rates to the agents hardest hit by the crisis, including specifically SMEs and the self-employed. Lastly, in the healthcare domain, the calibration of the containment measures in response to pandemic developments and the swift roll-out of vaccines have enabled a relatively quick return to pre-pandemic production patterns, with some important sectoral exceptions (e.g. hospitality).

Although it is still too soon to accurately quantify the economic effects of all these policies, a preliminary assessment suggests that they have had a positive impact on the variables that determine the productive capacity of the Spanish economy and, above all, that they have staved off the most adverse scenarios in terms of damage to the productive system and collapse of household incomes. Specifically, use of the temporary job retention schemes prevented the inefficient destruction of numerous employment relationships (see Fernández-Cerezo et al. (2021) and Guerrieri et al. (2020)), which avoided an increase in structural unemployment, as the necessary adjustment to employment was concentrated in the intensive (hours per employee) rather than in the extensive (jobs) margin.¹¹ Furthermore, investment and business insolvency figures seem to signal that, for now, there has not been

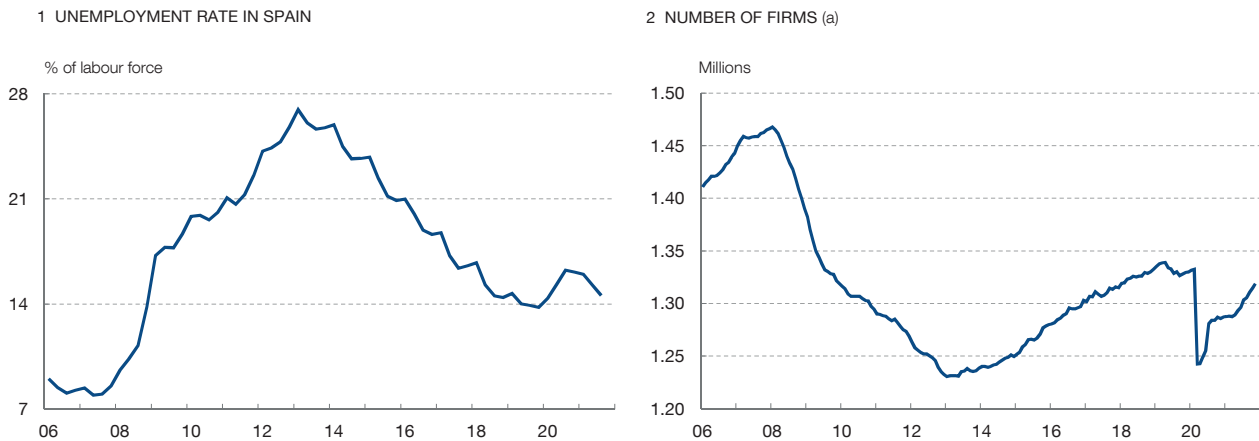
⁹ NGEU also contains measures to support demand in the short term. For a detailed description of the rationale behind it, see [Banco de España \(2020a\)](#).

¹⁰ See [ECB \(2020\)](#).

¹¹ Employment has also benefited from the financial support and business solvency policies, in addition to those underpinning demand – among which ECB monetary policy played a notable role –, which have mitigated the duration and severity of the demand shock.

Chart 1

UNEMPLOYMENT RATE AND NUMBER OF FIRMS IN SPAIN



SOURCES: INE, Tesorería General de la Seguridad Social and Ministerio de Trabajo y Economía Social.

a Balances of Contribution Account Codes and of firms registered with Social Security. Seasonally adjusted time series linked backwards from January 2013.

a significant adverse impact on the Spanish economy’s productive system and potential capital stock (see Eberly, Haskel and Mizen (2021)).

Indeed, Chart 1 shows the relatively limited magnitude and the essentially temporary nature of both the increase in the unemployment rate and the decrease in the number of firms registered with Social Security after the outbreak of the health crisis, particularly if compared with the financial and sovereign debt crises. Specifically, the 19 percentage point (pp) increase between the minimum and maximum unemployment rate during the financial crisis contrasts with the increase of just 2.5 pp during the current health crisis. In addition, while the unemployment rate will foreseeably have recovered its pre-pandemic level in just two years, in the case of the financial crisis the unemployment rate remained 9 pp above its pre-crisis level as many as ten years after it began. Furthermore, the number of active businesses fell by almost 250,000 during the financial crisis and only recovered by around 93,000 firms over the subsequent six years, whereas just some 13,500 fewer businesses than before the pandemic were active at November 2021. In sum, the success of the above-mentioned economic policy measures, together with the exogenous nature of the shock, has supported the Spanish economy’s productive capacity, thereby staving off the most adverse scenarios in terms of scarring on potential growth.

As for the role of economic policies in the future, NGEU is expected to be the main driver of potential growth. This programme combines funding for investment projects – mainly in the digital transformation and green transition arenas – with structural reforms that are consistent with the European Commission’s recommendations.

While insufficient details about the investment projects fundable through NGEU are known to accurately assess its medium and long-term impact, the empirical evidence available allows some important conclusions to be drawn. First, the multiplier of this type of investment is usually estimated to be above one after four years. This value can also double if the investment is in particularly efficient projects or during periods of low economic growth (see Abiad, Furceri and Topalova (2016)). Second, this multiplier effect largely depends on how much public and private investment complement one another (see Aschauer (1989)), i.e. how effective public capital is at generating positive externalities on private productivity.¹² Lastly, as documented in Albrizio and Geli (2021), labour and product market reforms can potentially increase the size of the public investment multiplier.¹³ Specifically, Albrizio and Geli (2021) find that those countries that combined structural reforms with infrastructure investment projects funded via the European Regional Development Fund recorded a larger increase in their long-term growth. In any event, the design of the reforms must contribute to improving the institutional environment, as the literature establishes that countries with higher institutional quality use installed capital more efficiently (see Avellán, Galindo and León-Díaz (2020)).

That said, NGEU's effectiveness will crucially hinge on the efficiency of the project selection process – poor project selection, implementation and monitoring may result in only a fraction of the public investment translating into private productivity growth, thereby limiting aggregate productivity gains – and on the capacity of the structural reforms to stimulate the labour market and foster productivity gains. These matters are discussed in the following section.

¹² It also depends on how it is funded (debt, taxes, transfers), on whether or not monetary policy is accommodative and on the degree of international coordination of this type of expansionary policy. All these dimensions would work in favour of the effectiveness of the public investments funded via NGEU during the period considered.

¹³ Cacciatore et al. (2021) show that the effects of a fiscal impulse on growth are greater in those economies with less stringent job protection legislation.

3 Different potential growth scenarios after the pandemic

3.1 The production function methodology

This paper's approach to estimating the Spanish economy's potential output is based on the production function methodology, used by the Banco de España in the context of the Eurosystem projection exercises. However, as it is an unobservable variable, estimating potential output is characterised by a high level of uncertainty. This is particularly the case in the present setting, in which the uncertainty underlying the macroeconomic scenario is compounded by that stemming from the health crisis and its effects. In any event, the main advantage of the production function approach vis-à-vis the more statistical alternatives is that it makes it possible to analyse the contribution of the sources of potential growth, although this requires a broad set of data and, particularly when making forecasts, a number of assumptions about future economic developments. The exercises discussed below are based on the data and medium-term macro forecasts from the latest Banco de España projection exercise.¹⁴

The production function methodology requires assessment of the potential values of the determinants of economic growth, i.e. employment (which in turn can be broken down into the unemployment rate, the working-age population, the labour force participation rate and hours worked per employee), capital and TFP (which is usually estimated as the share of output that is not due to changes in employment and capital). In order to analyse the potential levels of the production factors, we need to specify what we mean by "potential". In the case at hand, potential output is that which is compatible with price stability. Estimating the NAIRU (non-accelerating-inflation rate of unemployment, or structural rate of unemployment) is therefore essential. In particular, an unobserved components model is considered based on the specification in Galí (2011), which provides a microfoundation of the relationship between wage inflation and the unemployment rate (Phillips curve) within a New Keynesian model. As for the remaining components of employment, the potential values of the different variables are obtained using population projections for Spain from the National Statistics Institute (INE) in the case of the working-age population and Hodrick-Prescott filters in the case of the participation rate and hours worked per employee. Hodrick-Prescott filters are also used to calculate the potential values of capital and TFP.¹⁵ For more details on the methodology, see Cuadrado and Moral-Benito (2016).

3.2 Potential growth under the baseline scenario

Mechanically applying the production function methodology to the Banco de España's medium-term macroeconomic scenario results in a substantial decline in estimated potential

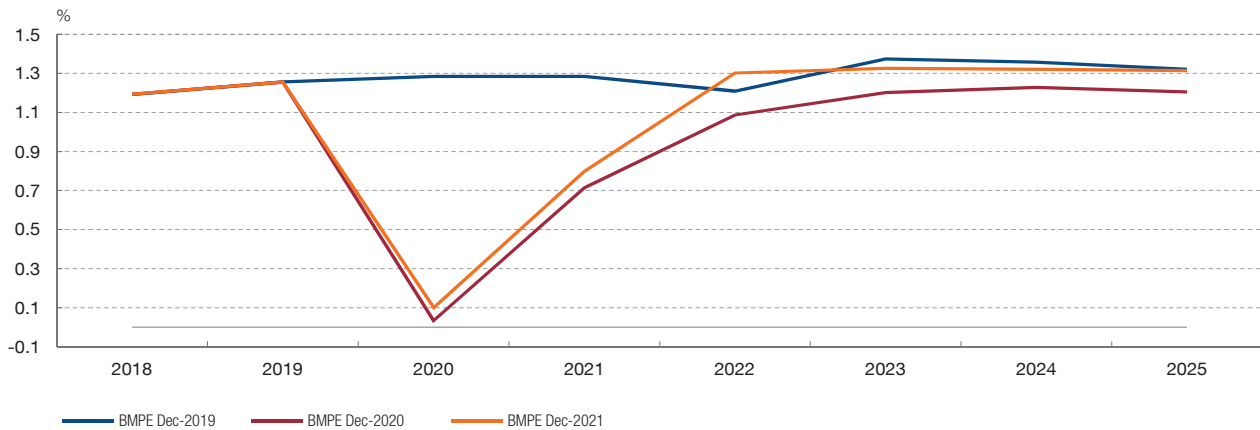
¹⁴ Banco de España (2021b).

¹⁵ It should be mentioned that, in order to estimate all the components of the production function, the medium-term projections are used as if they were part of the observation period. The uncertainty associated with these forecasts is therefore added to the usual uncertainty associated with estimating these unobservable variables.

Chart 2

GROWTH OF POTENTIAL GDP IN SPAIN

Production function methodology



SOURCE: Banco de España.

growth for 2020.¹⁶ Specifically, potential growth, which was slightly higher than 1% in the years prior to the COVID-19 crisis, would stand at around 0% in 2020. This significant reduction would be explained by the impact of the pandemic restrictions on the economy's productive capacity. Following this decline, potential growth gradually returned to rates in line with those estimated before the pandemic (see orange line in Chart 2). These changes in potential growth owe largely to the underlying macroeconomic scenario, which does not envisage persistent adverse effects, in light of the nature of the shock and the economic policies implemented so far, as discussed in the previous section.

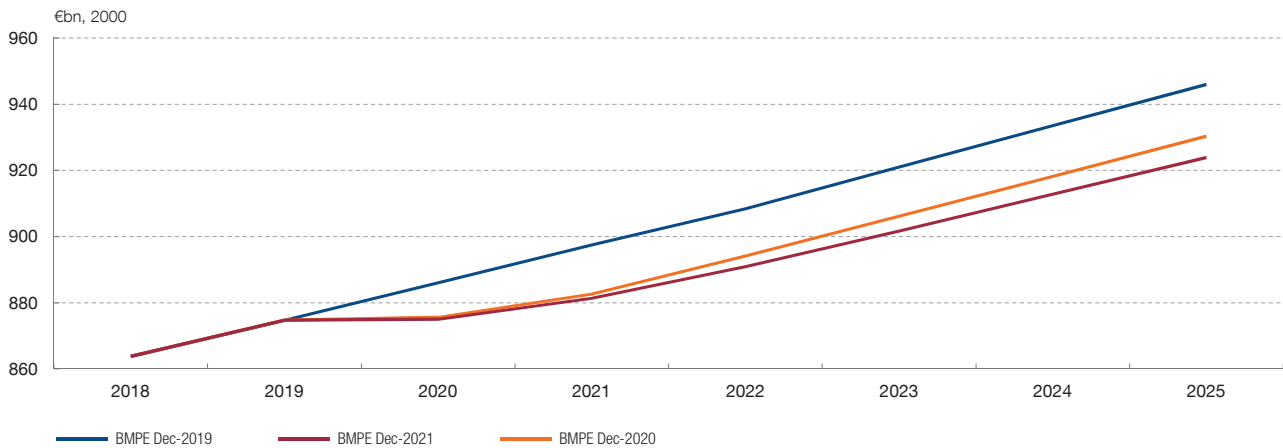
Chart 2 also shows potential growth estimates calculated at two previous points in time: at end-2019 (just before the shock triggered by COVID-19) and at end-2020.¹⁷ The comparison between the end-2019 projections (BMPE Dec-19) and the end-2020 projections (BMPE Dec-2020) illustrates the expected impact of the shock on potential growth under the end-2020 baseline scenario. Specifically, a significant impact on potential growth for 2020 and 2021 was expected at the time, along with a non-negligible adverse impact on potential growth from 2022 onwards (see red line vs blue line in Chart 2). Conversely, the latest estimate (orange line) incorporates several additional pieces of information which suggest that the impact on potential growth from 2022 onwards will be practically zero. This near-zero effect is mainly due to the fact that the seven full quarters of data currently available indicate a smaller-than-expected impact on potential growth stemming from possible hysteresis effects of the crisis. Thus, the potential growth path from 2022 onwards appears

¹⁶ Note that, given the nature of the shock, it is assumed that potential growth rates prior to 2019 are not affected by pandemic-related changes in the determinants of potential output. This assumption needs to be made explicit because the two-sided nature of the statistical filters used in the methodology entails a downward revision of potential growth in periods prior to 2019, which is unrealistic.

¹⁷ See [Banco de España \(2020b\)](#).

Chart 3

REAL POTENTIAL GDP IN SPAIN
Production function methodology



SOURCE: Banco de España.

to have been brought closer to that estimated before the pandemic and there appear to be no lasting effects on Spain's economic growth capacity.

In any event, none of the estimations presented point to a recovery in potential growth from 2022 onwards significantly above the pre-pandemic estimate which could offset the fall in growth in 2020 and 2021. The Spanish economy's potential output is therefore estimated to have lost close to 2% of GDP (see Chart 3).

By production function component, Chart 4 shows that the fall in potential growth in 2020 and 2021 would mainly be due to the adverse impact on the contribution of productivity and, to a lesser extent, of employment, while the contribution of capital appears to have been affected far less. Looking ahead, after 2022 none of the three components would be significantly affected compared with the pre-pandemic estimates (BMPE Dec-2019).

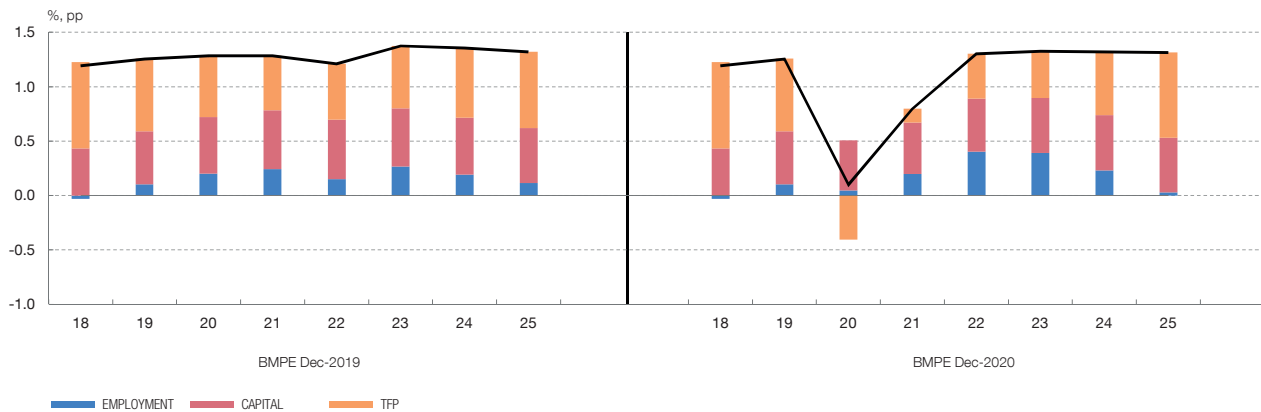
According to the current estimate (BMPE Dec-2021), employment made a slightly negative contribution to the economy's potential growth in 2020, which could have been very negative if not for the different economic policy measures, such as furlough schemes, that helped shore up the labour force participation rate¹⁸ and avoid an unprecedented rise in unemployment. This kept the NAIRU from rising, with the adjustment being concentrated in hours worked per employee, which fell significantly during the worst of the economic crisis, although they quickly returned to around pre-pandemic levels. Again, it should

¹⁸ The contribution of the working age population is based on the latest version of the INE population projections (September 2020). They notably envisage a contraction in the coming years as a result of a sharp reduction in the net inflow of immigrants in 2020, which would only recover very gradually thereafter. In any event, in the medium term this variable is highly influenced by population ageing, in a country where the dependency ratio for the over-65s is already above 30% and will approach 40% at the end of the decade.

Chart 4

CONTRIBUTIONS TO POTENTIAL GDP GROWTH IN SPAIN

Rate of change and percentage points



SOURCE: Banco de España.

be noted that the uncertainty associated with the impact of the pandemic on structural unemployment remains high and that these estimates reflect the expected impact based on the available projections for the unemployment rate and its historically observed relationship with inflation. Therefore, other potential effects arising from greater sectoral reallocation, increased digitalisation in some sectors (which crowds out, albeit partially, certain groups of less skilled workers) or the already visible changes in business demography are not being explicitly considered.¹⁹

As Chart 4 shows, the economy’s productive potential also appears to have been significantly undermined during the pandemic owing to a lower contribution of productivity in 2020 and 2021. The unique nature of the crisis led to a substantial reduction in the use of productive capacity, in terms of both employment and capital, neither of which could be fully utilised. This prompted a decline in TFP in 2020 and a substantial decline in its contribution during 2021. Over the medium term, the effects of the crisis on the contribution of productivity to growth will gradually fade, and levels in line with the pre-pandemic estimates will be regained at the end of the horizon. This recovery is attributable to the easing of the restrictions on economic activity, which would allow productive capacity (largely preserved thanks to the economic policy measures implemented during the crisis) to be fully utilised.

Lastly, the contribution of the capital stock would remain positive across all years, albeit slightly lower than before the crisis, particularly in 2020 and 2021; this reflects

¹⁹ The COVID-19 crisis weighed heavily on the creation of new enterprises, although the decline in business entry was temporary. Developments in subsequent months have not compensated for this initial decline. Some changes are also apparent, as business entry has concentrated in segments with low growth potential (see Albert et al. (2021)). Business exit did not increase significantly. The possible adverse effects of excessive business destruction on productivity were, therefore, limited. While a moderate rate of business exit is essential for the creative destruction process and, therefore, for productivity, a large shock entailing a major increase in such rates is detrimental to productivity growth (see Gonzalez, Moral-Benito and Soler (2021)).

a temporary adverse effect on investment. In this respect, the results of the Banco de España Business Activity Survey (EBAE) show that 38% of firms reduced already-planned investments as an adjustment measure in response to the onset of the crisis (see Fernández-Cerezo et al. (2021)). This percentage has gradually decreased in recent quarters as the economic situation improved, to stand at 17% at end-2021. Going forward this effect is expected to disappear. The underlying macroeconomic scenario envisages a notable recovery in investment in the coming years as the uncertainty stemming from the pandemic dispels, underpinned by European funds from the NGEU's Recovery and Resilience Facility. However, the impact of NGEU funds on investment decisions and, therefore, on the Spanish economy's aggregate productivity will fundamentally depend on their intended use and how they are combined with an appropriate set of economic policies. This issue is discussed in the next section.

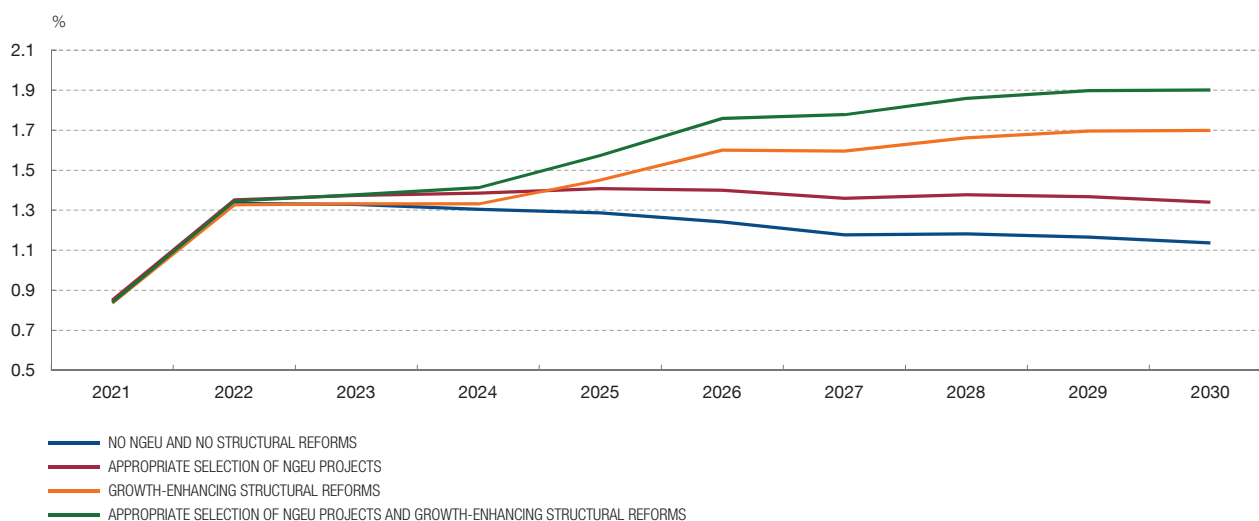
3.3 Long-term potential growth under the scenarios where NGEU is fully harnessed

As mentioned above, the NGEU programme has the right ingredients to help significantly boost the Spanish economy's potential growth. However, its effectiveness will crucially depend on the quality of the investment projects selected and how they complement the structural reforms implemented. In the case of Spain, insufficient details are known at present to accurately assess these two elements. This paper has therefore opted to develop a series of scenarios that attempt to illustrate the potential impact of different combinations of reforms and investment projects on Spain's growth capacity over the 2022-2030 horizon. Three scenarios are considered: (i) a scenario of appropriate project selection; (ii) a scenario of growth-enhancing structural reforms; and (iii) a scenario of appropriate project selection and growth-enhancing structural reforms.

The starting point for this exercise is a baseline scenario where potential output has been estimated without the effect of NGEU-related investment and structural reforms. Under this scenario, the Spanish economy's potential growth would stand at around 1.3%, similar to that estimated before the pandemic. In the long term, however, it would moderate somewhat, to stand at 1.1% at the end of the decade. This largely reflects the lower contribution of employment to potential growth, as a result of population ageing. Building on this baseline scenario, the first scenario analyses how the multiplier effect of NGEU investment can be increased if projects with a high degree of complementarity between public and private investment are selected, such that positive externalities on private productivity are generated. The elasticities between productivity and public investment estimated in the literature are used to gauge this additional effect. In particular, the seminal work by Aschauer (1989) estimated elasticities between productivity and public capital of 0.3-0.4 in the United States (i.e. for every 1% increase in the stock of public capital TFP would increase by between 0.3% and 0.4%). However, later papers estimated lower elasticities, resulting in a range of between 0.1 to 0.4 both for the United States and for other economies. For example, Duarte-Bom and Ligthart (2008) provide a meta-analysis of the literature and conclude that the average elasticity in the 76 studies considered is 0.19,

Chart 5

ESTIMATED POTENTIAL GROWTH



SOURCE: Banco de España.

with a standard deviation of 0.20.²⁰ This paper considers an elasticity of 0.1, at the lower end of the range in the literature. Thus, an estimated NGEU-induced increase of 13.5% in the stock of public capital would result in a 1.35 pp increase in TFP, spread over a ten-year horizon. This entails annual potential growth rates around 0.2 pp higher than in the scenario of no NGEU investment or reform (see red line in Chart 5).

The second scenario explores the impact on potential growth of structural reforms that may help reduce the structural rate of unemployment and boost productivity.²¹ To this end, the changes in the regulatory indicators of the Organisation for Economic Co-operation and Development (OECD), which measure the efficiency of product market regulation (PMR) and employment protection legislation (EPL), are used as a quantitative proxy for structural reform. Moreover, the elasticities estimated in Bassanini and Duval (2009) make it possible to infer how improvements in regulatory indicators (structural reforms) translate into reductions in the structural rate of unemployment and productivity growth increases. A counterfactual exercise is nevertheless proposed in which the Spanish economy's regulatory indicators are scaled down by 1 pp from their current levels to stand in line with what is considered best practice in OECD countries. According to the results of this exercise, reforms that reduce product and labour market rigidities by such amount would boost the potential growth rate by around 0.5 pp per year (see orange line in Chart 5).

²⁰ There is abundant literature focusing specifically on the Spanish economy, but its findings are generally consistent with the above-mentioned range of elasticities. See De la Fuente (2010) for a summary.

²¹ Approach based on Banco de España (2016).

In this respect, it should be noted that, according to the OECD methodology, a reduction in these indicators means more flexible product and labour markets.²² For example, the OECD quantified the reduction in this indicator stemming from the 2012 labour reform at precisely 1 pp. According to literature estimates, this reform had a positive impact on growth and employment in the Spanish economy (see Rünstler (2021)), although in terms of other labour conditions, such as average hours worked, in-work poverty and involuntary part-time employment, the effect appears to have been adverse (see Stepanyan and Salas (2020)). In any event, it is too early to quantify the specific impact that the broad set of structural reforms envisaged in the Recovery, Transformation and Resilience Plan (RTRP)²³ may have on the OECD's regulatory indicators over the coming years.

Lastly, the green line in Chart 5 reflects the scenario resulting from combining the two previous scenarios and illustrates the complementarity between project selection and structural reforms to maximise NGEU's potential macroeconomic impact, in line with the findings of Albrizio and Geli (2021). Specifically, the Spanish economy's potential growth rate would stand at around 1.9% towards the end of the decade, underpinned by higher productivity growth. In per capita terms, the potential growth rate would be around 1.7% per year, compared with 0.9% in the baseline scenario: a considerable difference. Indeed, at the baseline scenario growth rate it would take almost 80 years to double per capita income, while at 1.9% it would take about 41 years.

²² See <https://www.oecd.org/economy/reform/indicators-of-product-market-regulation> for more details on the product market regulation indicator and <https://www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm> for more details on the employment protection indicator.

²³ Despite its potential significance, the impact of the labour market reform negotiated between the Government and the social partners at end-2021 and approved by parliament in February 2022 has not yet been assessed, due to its recent approval and because some of its effects will enter into force in the coming months.

4 Conclusions

Although the origin of the COVID-19 crisis is eminently exogenous, its scale and potential persistence could have a considerable impact on potential growth through different channels: hysteresis effects on the labour market, weaker productive investment or disruptions to business demographic trends, to name a few. While estimates of the medium-term effects of the COVID-19 crisis on the economy's potential growth capacity are shrouded in very high uncertainty, the evidence presented in this paper suggests a relatively limited and temporary impact. In particular, the prompt and forceful economic policy response helped substantially mitigate the scarring effects of the crisis, ruling out the most adverse scenarios in terms of damage to the productive system and employment. All in all, once it returns to pre-crisis levels from 2022 onwards the Spanish economy's potential growth rate will stand in line with that estimated before the pandemic (around 1.3% per year).

Moreover, the pandemic has led to unprecedented progress in economies' digitalisation process, which could result in significant productivity gains that are not explicitly envisaged in the baseline scenario. In this respect, NGEU can play an important role as a catalyst for digitalisation and the green transition in improving citizen's well-being. Indeed, according to the findings in this paper, the Spanish economy's potential growth could experience a strong boost to around 2% per year. This would happen under a scenario of appropriate selection of NGEU projects coupled with structural reforms aimed at promoting synergies between public and private investment and the reallocation of resources among sectors and firms, something the structural transformation towards a digital and sustainable economy over the coming years will foreseeably require.

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