

**THE ROLE OF PUBLIC INVESTMENT ON A EUROPEAN SCALE IN THE ECONOMIC RECOVERY**

The economic situation arising from the pandemic and confinement measures demands a re-evaluation of economic policy priorities so that the European economies may recover as soon as possible. Against this background, in late May the European Commission (EC) proposed establishing a Recovery and Resilience Facility financed by European long-term debt. This Facility would distribute funds from the European budget via transfers and loans to the Member States. Its aim would be to support public investments and reforms that leverage the growth potential of European economies and help address the challenges that the EU faced prior to the pandemic, such as digitalisation and the fight against climate change.

Ramping up public investment in Europe would simultaneously help correct the declining trend observed in the public investment-to-GDP ratio in recent decades. The median figure for this ratio across a broad set of EU countries fell from 5% in 1960 to 2.7% in 2018 (see Chart 2), while the latest data indicate ratios of 3.2% in the United States, 3.8% in Japan and over 6% in China. Several factors are behind this trend.<sup>1</sup> First, the stock of public capital grew significantly over that period, meaning the investment needs of the more traditional areas (such as road and rail transport) may be lower at present. Second, the development of the

welfare state - against the backdrop of an ageing population - has seen welfare expenditure become an increasingly prominent component of government budgets, doubling its weight in GDP over the last four decades (see Chart 1). With the public sector facing budgetary constraints, the vigour of this expenditure item has impinged on the capacity to implement public investment projects.

The economic literature indicates that public finances with a more balanced mix of investment and current expenditure can ultimately yield benefits. In particular, the empirical evidence suggests that those economies where the public sector focuses investments on areas conducive to growth post stronger activity levels in the long term.<sup>2</sup> This, in turn, allows public sector budget constraints to be eased and contributes to the sustainable financing of other spending items, such as welfare expenditure.

Further, public investment often generates public goods that yield positive externalities for private sector activity. This is true, for example, of many investments that might benefit from the Recovery and Resilience Facility proposed by the EC - such as basic public research - and public sector investments geared to addressing

Chart 1  
WELFARE EXPENDITURE

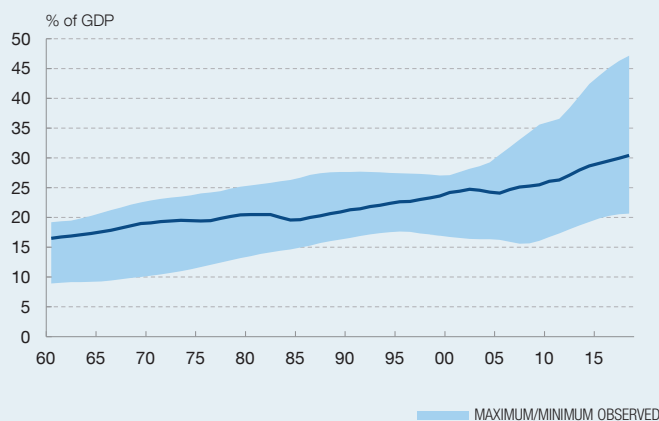
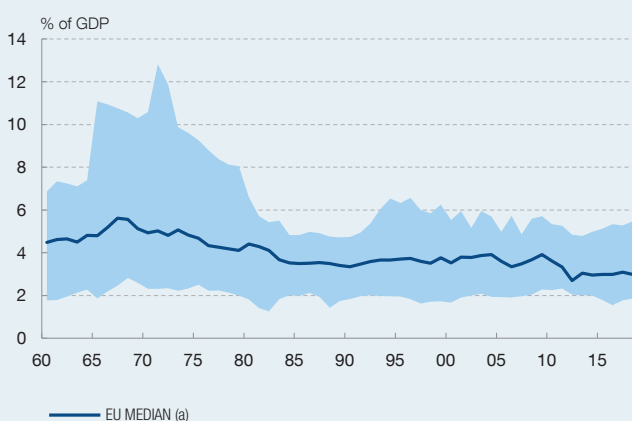


Chart 2  
PUBLIC INVESTMENT



**SOURCE:** Own calculations based on European Commission data.

**a** The EU median comprises the following countries: Austria, Belgium, Germany, Spain, Finland, France, Greece, Ireland, Italy, the Netherlands, Portugal, Denmark, United Kingdom, Sweden and Luxembourg.

1 M. Delgado Téllez, E. Gordo, I. Kataryniuk and J. J. Pérez (2020). "The decline in public investment: "social dominance" or too-rigid fiscal rules?", *Working Papers*, Banco de España, forthcoming.  
 2 J. Fournier, (2016). "The positive effect of public investment on potential growth", *Working Papers*, No 1347, OECD Economics Department; European Commission (2017). "Government investment in the EU: the role of institutional factors", *Report on Public Finances in EMU 2017*, 133-186.

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climate change.<sup>3</sup> In both cases, such public investment has a potentially sizeable multiplier effect on innovation capacity in the private sector<sup>4</sup> and the economy's long-term growth.<sup>5</sup> However, this effect is contingent upon efficiently designed public investment plans.<sup>6</sup>

A macroeconomic model calibrated for the euro area, distinguishing between Spain and the rest of the eurozone, helps to illustrate the channels through which public investment influences activity.<sup>7</sup> The model includes a high level of detail with respect to each region's fiscal authority, both on the income and expenditure sides. On the latter, it is worth noting that public investment, according to the model, enables the stock of public capital to increase, which enhances private capital and labour productivity.<sup>8</sup>

Table 1 shows the impact on the economy's output of a permanent increase of 1 pp of GDP in public investment in Spain.<sup>9</sup> In the short term, stronger public sector demand for investment goods would directly boost private output and employment. In the medium term, there would be private sector productivity gains as larger public investment outlays expand the stock of public capital, driving employment and output growth.

This impact essentially depends on four factors. First, the extent to which public capital can complement private capital and employment, i.e. how effectively public capital can yield positive externalities for private activity. The model captures this through the elasticity of private output with respect to public capital. The available empirical evidence indicates that a reasonable value for this parameter is around 0.02. In other words, a 1% increase

Table 1  
LONG-TERM EFFECTS OF A PERMANENT INCREASE IN PUBLIC INVESTMENT OF 1% OF GDP

Percentage difference with respect to the baseline scenario	Elasticity of private output with respect to public capital = 0.02			Elasticity of private output with respect to public capital = 0.03		
	Private investment	Private consumption	GDP	Private investment	Private consumption	GDP
Funded by taxation on salary income	0.4	-0.2	0.3	1.2	0.6	1.1
Funded by public debt	1.4	-0.3	1.4	1.8	0.3	1.9
EU-wide increase in investment	0.7	0.1	0.5	5.5	4.9	4.3

**SOURCE:** FiMod model, see Stähler and Thomas (2012).

- 3 A. Dechezleprete and D. Popp (2015). "Fiscal and Regulatory Instruments for Clean Technology Development in the European Union", *Working Paper Series*, No 5361, CESifo.
- 4 J. Gruber and S. Johnson (2019). *Jump-Starting America: How Breakthrough Science Can Revive Economic Growth and the American Dream*, New York: Public Affairs Publishers.
- 5 In endogenous growth models, the economy's long-term growth rate depends on the pace at which new technology is created or existing technology is improved, for which research and development are key (see P. Romer, (1990). "Endogenous Technological Change", *Journal of Political Economy*, 98(5), pp. S71-S102; G. M. Grossman and E. Helpman (1991). "Quality Ladders in the Theory of Growth", *Review of Economic Studies*, 58(1), pp. 43-61, and P. Aghion and P. Howitt (1996). "Research and Development in the Growth Process", *Journal of Economic Growth*, 1 (1), pp. 49-73). Further, the recent literature indicates that R+D+I influences an economy's adjustment pattern, generating persistent economic cycles (see D. Comin and M. Gertler (2006). "Medium-Term Business Cycles", *American Economic Review*, 96 (3): 523-551, and M. Correa-López and B. Blas (2018). "Faraway, So Close! Technology Diffusion and Firm Heterogeneity in the Medium Term Cycle of Advanced Economies", *Working Papers*, No 1835, Banco de España).
- 6 A. Abiad, A. Almansour, D. Furceri, C. Granados and P. Topalova (2014). "Is it time for an infrastructure push? The macroeconomic effects of public investment". *World Economic Outlook*, 75-114.
- 7 See N. Stähler and C. Thomas (2012). "FiMod — A DSGE model for fiscal policy simulation". *Economic Modelling*, Vol. 29, number 2, March 2012, 239-261.
- 8 In the model, the stability of public debt is ensured by lifting tax rates on salary income or reducing expenditure on non-distorting transfers when the public debt-to-GDP ratio exceeds 60%. The model parameters are calibrated based on a series of long-term ratios for the Spanish economy and the rest of the euro area.
- 9 This represents a 28% increase in public investment levels, rising from 3.5% of GDP to 4.5%. That figure is somewhat larger than the boost to investment in Spain prompted by full use of the transfers from the Recovery and Resilience Facility proposed by the European Commission during its lifetime (2021-2024).

in public capital would lift output by 0.02%.<sup>10</sup> The relevance of this parameter is apparent in the simulation shown in the first row of Table 1. For example, elasticity of 0.03%, i.e. 50% more than in the baseline scenario, would generate far greater synergies between private activity and public capital, with the activity growth prompted by public investment magnified fourfold as a result.

Second, how far public investment contributes to growth depends largely on how it is funded. Broadly speaking, funding investment projects with tax increases tends to generate stronger crowding-out effects on private investment in the short and medium term than if the same investment is funded with debt<sup>11</sup>, while the latter strategy would allow tax revenue to be modulated over a longer horizon. In particular, according to the model, using short-term personal income tax increases to fund the fiscal impulse would stifle private investment growth considerably more than using debt (see the first two rows of Table 1).

Third, how a fiscal stimulus affects GDP in Spain also depends on the extent to which the expansionary policy is coordinated internationally. In particular, a stimulus introduced only in Spain and funded by taxation would, in the short term, drive stronger public sector demand for investment goods and boost private output and employment. This might prompt domestic wage pressure and price increases, leading to a loss of competitiveness vis-à-vis other euro area members and impinging on activity growth. By contrast, there would be no such loss of competitiveness if a similar fiscal stimulus were

deployed across the euro area, resulting in more robust growth in activity, consumption and private investment in Spain. In parallel, rising public investment elsewhere in the euro area would boost local activity and, as a corollary, benefit Spanish exports and GDP. Thus, according to the model simulation, coordinated action across the above-mentioned channels could as much as double the domestic impact of an increase in public investment (see the third row of Table 1).

Lastly, the impact on GDP of public investment also depends on the responsiveness of monetary policy. Nominal interest rates not rising in response to moderate inflation increases, which is likely at present in the euro area, would magnify the effectiveness of increased public investment.<sup>12</sup> In this case, the price rises resulting from greater aggregate demand would not come in conjunction with higher nominal interest rates. Consequently, agents would anticipate lower real interest rates and therefore bring forward consumption and investment decisions, helping to spur even stronger activity growth. This, in turn, would limit the crowding-out effect on private investment and consumption that is often ascribed to higher public spending when an economy is operating with few idle resources.

In short, the above exercises show that for public investment to be optimally effective it must be geared to those sectors and processes that are most complementary to private activity. In addition, securing the initial funding for such investment by means of common debt issuance would yield financial cost savings for all Member States (see Section 5.5).

<sup>10</sup> See E. M. Leeper, T. B. Walker and S. C. S. Yang (2010). "Government Investment and Fiscal Stimulus", *Journal of Monetary Economics*, 57, 1000–1012.

<sup>11</sup> H. Ahmed and S. M. Miller (2000). "Crowding-out and crowding-in effects of the components of government expenditure", *Contemporary Economic Policy*, 18(1), 124–133.

<sup>12</sup> For a detailed description of this mechanism, see O. Arce, S. Hurtado and C. Thomas (2016). "Policy Spillovers and Synergies in a Monetary Union", *International Journal of Central Banking*, Vol. 12, No 3: 219–277.