Public investment and potential output: feedback and developments

1 Our 2024 *Discussion Paper No.5: Public investment and potential output* explored the link between public investment and potential output and outlined a proposed approach to capturing the effects of changes in public investment on the supply side of our economy forecasts.[1] It set out a series of questions on which we invited feedback. Since its publication, we received many responses for which we are very grateful. We applied our approach in assessing the Government's Autumn Budget 2024 policy package.

2 This note outlines the feedback we received, and whether and how we reflected it in our Autumn 2024 *Economic and fiscal outlook* (*EFO*). We welcome further thoughts and comments; email us at feedback@obr.uk.

The general equilibrium response of business investment

3 One suggestion we received was to explicitly incorporate the effects of higher business investment which public investment might crowd in, as increased public investment and a higher level of output potentially increase the returns to private investment.[2] For example, a new road means that there is greater connectivity in an area, which in turn means that businesses are better able to transport their goods to sale or can recruit across a wider geographic area. We noted in the discussion paper that this channel could be important but did not explicitly calibrate its effects.

4 We *did* explicitly incorporate this channel in our October 2024 forecast, where we noted that the Cobb Douglas form of production we had used implied that additional government investment is a complement to private sector investment, so in the long-run steady state, higher public investment has a positive impact on business investment of around 30p for every £1 increase in public investment. Specifically, we assumed that businesses have a level of foresight on how the additional public investment would affect overall economic output and so would respond such that their capital stock moves to its higher optimal level as a share of GDP after accounting for the additional public investment. This estimate is subject to considerable uncertainty, so we conducted some sensitivity analysis around the extent of this 'crowding in' in Box 3.3 of our October 2024 *EFO*.

[1] Suresh, N., R. Ghaw, R. Obeng-Osei, and T. Wickstead, *OBR Discussion paper No.5: Public investment and potential output*, August 2024.
[2] See Venables, T., *The impact of public investment on private investment: comment on 'Public investment and potential output'*, 2024, and National Institute of Economic and Social Research, *Public Investment and Potential Output,* 2024.

The responsiveness of output to public investment

5 There was some challenge to the appropriateness of our assumption of the responsiveness of potential output to public capital, or the elasticity of potential output to public investment. Feedback specifically noted that a lot of the academic literature that informed our assessment was based on US studies, which captured various types of investment that may not be as applicable in the UK context. Some respondents suggested that the implied responsiveness was too low, especially when compared to studies produced using 'fiscal multipliers'. In contrast, forthcoming work from the National Institute for Economic and Social Research estimates an elasticity between 0.05 and 0.1, suggesting our assumed value of 0.1 could be on the high side.

6 In our October 2024 forecast we opted to maintain the 0.1 assumption from our discussion paper, noting that it was consistent with a range of estimates from the literature. Our assumption of a 0.1 elasticity should be viewed as 'an average elasticity' for an 'average public investment'.

Assessing types of public investments

7 It was frequently noted that different types of investment have different economic effects. Professor Jonathan Haskell pointed out that research and development may have relatively high impacts on the economy per pound of public spending, and with its impact unlikely to decay over time at the same rates as other assets.[3] Others have pointed to particular investment classes as potentially having above-average beneficial economic effects, including those in local government assets, the green transition, public infrastructure, transport, and social housing.

8 In the October 2024 Budget, the Government announced a range of investment projects in 2025-26, with the near £15 billion increase from 2024-25 allocated across several areas across government, with an average increase of around £0.5 billion allocated to 30 departments or other spending lines. Beyond that year, details on aggregate capital plans have not yet been announced. In the absence of detail from the Government on how the additional capital investment would be spent, we assumed that higher overall public investment will achieve average returns.

9 We will hold this assumption under review in future events, although we believe it is likely to continue to prove a reasonable guide. The key challenge to adopting a more disaggregated approach is the lack of evidence to robustly assess the effects of different public investments on the economy. Moreover, governments can change their investment plans at any time after they have been announced. And given our resources, the OBR cannot undertake a full

[3] Haskel, J., et al., *The contribution of public and private R&D to UK productivity growth*, 2015, and Haskel, J., *Government R&D spending and potential output,* 2024.

bottom-up analysis of all types of investment, and so will need to apply judgement at a more aggregated level.[4]

Incorporating further general equilibrium effects, including via a 'catch-all' multipliers framework

10 Some have suggested that we do not capture the general equilibrium effects of higher public investment. The Institute for Public Policy Research noted that if we did, the overall GDP effects of the public investment announced at October 2024 would be 0.4 per cent age points higher than our central estimate of 0.14 per cent, as business investment is crowded in and as labour supply increases.[5] This is calculated using multipliers from Ramey 2020,[6] without further calibration of the transmission mechanisms. Likewise the New Economics Foundation, and others, have suggested that our implied investment multipliers are short term and too low, and have argued that higher multipliers which incorporate crowding in channels could change the fiscal policy stance, with their meta-analysis suggesting that the investment multiplier should be closer to 1.5 (as opposed to the demand multiplier of 1 for public investment in our current framework).[7] This interpretation suggests that, rather than having a separate demand- and supply-side response, we should just have higher multipliers. The New Economics Foundation concludes, "*there is reason to be concerned that the OBR's multiplier assumptions may be too low, unprecise and inflexible to economic context*".[8]

11 We understand that most empirical estimates of multipliers do not separate out the supply- and demand-side effects of fiscal policy. But, doing so is important to understanding the macroeconomic implications of different types of fiscal policy interventions. Fiscal policy measures that only affect the demand-side of the economy are unlikely to have durable effects on the macroeconomy. Whereas measures that affect the supply side are. On the supply side, we use a production function approach to assess public sector capital spending affects the supply potential of the economy. We use different (and quite separate) tools to assess the demand impacts of higher or lower government spending – whether it be capital spending or current spending. We do not apply these demand multipliers mechanically; they are implicitly state contingent.

12 We do consider further general equilibrium effects such as the source of financing, where, for example, additional capital spending financed by government borrowing could affect gilt yields.

[4] As set out in the discussion paper, the aggregated approach we use cannot replicate the granularity of results provided by detailed cost-benefit analysis of individual economic infrastructure projects. This type of analysis could be used could complement our top-down approach to better understand the effects of investment on the economy.
[5] IPPR, *Second round effects: Why the OBR is likely underestimating the growth effects of public investment*, October 2024.
[6] Ramey, V., *The Macroeconomic Consequences of Infrastructure Investment*, November 2020.
[7] See Box 2.2 in our December 2019 *Forecast evaluation report* and Box 2.1 in our November 2020 *Economic and fiscal outlook*.
[8] New Economics Foundation, *The OBR's fiscal powers need a rethink*, October 2024.

Types of capital stock used

13 Some have challenged us on our use of the gross capital stock in our framework, suggesting that consumption of capital (a concept used in the net capital stock calculation) is a better estimate of the rate of decay in capital services, and as such the net stock is a better measure.[9] In addition, many of the studies in our literature review use net stocks, suggesting that this may be a better approximation for capital services.

14 Moreover, if capital assets decay at a rate that is somewhere between retirements (scrappage), and depreciation (capital consumption), then arguably the gross stocks measure is too big, and any change in government investment will have a lower effect on baseline capital stocks and therefore potential output. As set out in our discussion paper, we judge that gross stocks better reflect changes in the volume of capital services than net stocks, and so we continue to use them in our modelling. We use a somewhat higher rate of decay (4 per cent) for our analysis than ONS data imply (2½ per cent) because we allow for some deterioration in efficiency prior to retirement that requires maintenance and repair.[10]

[9] See also Oulton, N., *Measuring capital services in the United Kingdom,* 2001, which showed how net stocks are used to construct the Volume Index of Capital services. We flagged in our discussion paper that estimates for capital services were experimental statistics which were only infrequently available, and only available for the market sector.
[10] See Section 3 in Suresh, N., R. Ghaw, R. Obeng-Osei, and T. Wickstead, *OBR Discussion paper No.5: Public investment and potential output*, August 2024.