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Irish Government Investment, Financing and the Public Capital Stock

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Abstract

Expenditure reductions played a key role in the Irish fiscal consolidation process over the period 2008 to 2013, with declines in public investment spending particularly notable. This appears to have had a marked impact on the public capital stock, which we estimate has grown only modestly in recent years. At a global level, concerns have been raised about the consequences of low public investment for long-term potential growth. With this in mind, plans to increase government capital spending in Ireland should lead to a significant increase in the public capital stock. An important consideration is how this investment is financed. Using the Central Bank's Dynamic General Equilibrium model, we show that adopting budget neutral investment spending can generate the long-term benefits of a higher public capital stock while at the same time limiting the risk of overheating dynamics and negative consequences for the public finances.

1 The authors are Senior Economists in the Irish Economic Analysis Division. The views expressed in this article are those of the authors only, and do not necessarily reflect the views of the Central Bank of Ireland. The authors would like to thank Mark Cassidy, Thomas Conefrey, John Flynn, Reamonn Lydon and Terry Quinn for comments and suggestions.

1. Introduction

Following very strong growth prior to the financial crisis, the Irish economy has experienced a prolonged period of subdued government investment spending. This reflects the important role that expenditure reductions played in bringing the public finances back to sustainable levels and, within that, the large role that investment spending played. Two-thirds of the Government's consolidation measures were expenditure related, while public investment spending recorded a peak to trough decline of 65 per cent between 2008 and 2013. Plans are now in place to increase government investment in the coming years, with medium term spending of 4 per cent of GNI* targeted.[2,3] This would represent a significant increase from the 2017 outturn of 2.7 per cent, Against this backdrop, we look at two aspects of higher investment spending: (i) the potential impact on the public capital stock; and (ii) the macroeconomic consequences of how investment is financed.

This Article proceeds as follows. Section 2 takes a closer look at developments in government investment spending, putting the recent evolution in the context of what happened prior to the financial crisis and examining wider euro area trends. Reductions in investment expenditure were a key component of adjustment in economies receiving financial support, with the decline experienced in Ireland similar to that in Spain, Greece and Portugal. We also consider the impact that these spending reductions have had on the public capital stock. Economic literature typically finds a positive relationship between public capital and economic output, and, at a global level, low government investment has led to concerns about longer term potential growth rates. While data issues complicate calculating the public capital stock, we use information on non-financial assets of government and net investment to produce an estimate. This highlights very modest increases in the stock of public capital in recent years.

Section 3 then takes a forward-looking approach. It first assesses the potential impact of the Government investment projections in the 2018 Stability Programme Update on the public capital stock. While this requires assumptions on depreciation, it appears that the level of public capital will increase by a sizable margin in the years ahead. The Section then uses the Central Bank's Dynamic General Equilibrium model to assess how the financing of government investment affects key macroeconomic variables. In particular, we look at the difference between investment that is fully debt financed relative to budget neutral financing. Both boost output in the longer term, consistent with the positive relationship between public capital and output growth generally identified in the literature. However, the impact on output growth and debt is notably different in the short term. This is particularly important in the current environment where the labour market seems close to full employment and highlights the balancing act that exists between strengthening the productive capacity of the economy, while not generating capacity constraints or increasing risks of overheating.

2. Public spending and the Capital Stock

2.1 Developments in Capital Expenditure since the Crisis

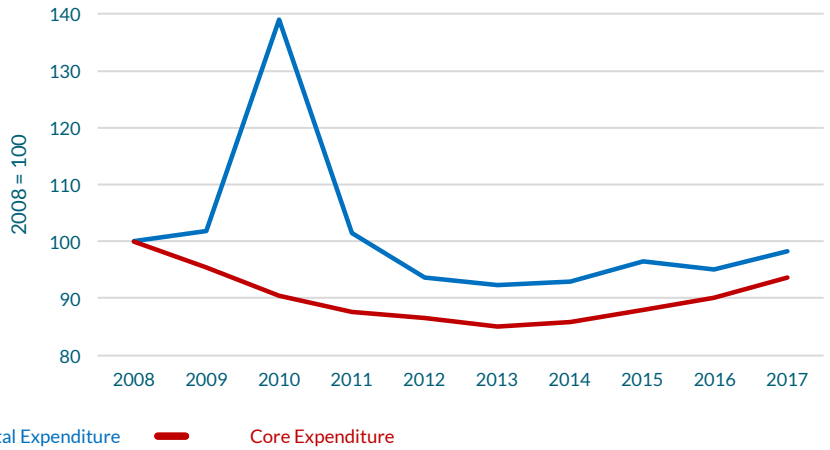
Expenditure reductions played a key role in the recent Irish fiscal consolidation process. Reflecting the Department of Finance's (2011) view that spending led adjustments would be more successful in reducing deficits and stabilising debt ratios, approximately two-thirds of the Government's adjustment measures came via reductions in government expenditure. This followed rapid growth in the years prior to the crisis; in nominal terms spending increased by 57 per cent in the five years to 2007, compared to an increase of 20 per cent for the euro area as a whole. Chart 1 outlines Irish Government spending from 2008 to 2017. Abstracting from the spike in government spending in

2 Note all calculations in this Article were done prior to the release of the 2017 National Income and Expense Accounts and the Government Income and Expenditure results to 2017.

3 GNI* refers to modified Gross National Income. This is an adjusted measure of the size of the economy designed to remove the impact of globalisation activities which artificially boost the level of GDP.

2010 related to banking related measures, there was a decline of 8 per cent in spending between 2008 and 2013, before it gradually picked up. Changes in total expenditure are not an ideal measure of spending adjustments, however, due to the impact of capital transfers to the financial sector and higher interest costs.[4] Accordingly the Chart also shows what we call 'core' government spending – excluding these two components. This provides a more accurate picture of the measures taken by successive governments in order to bring the public finances back to more sustainable levels. Relative to 2008, 'core' government spending reached a peak decline of 15 per cent in 2013 and the gradual nature of its subsequent recovery meant it was still 6 per cent below its pre-crisis peak in 2017, four years after the conclusion of the Economic Adjustment Programme.

Chart 1: Trends in Government Expenditure

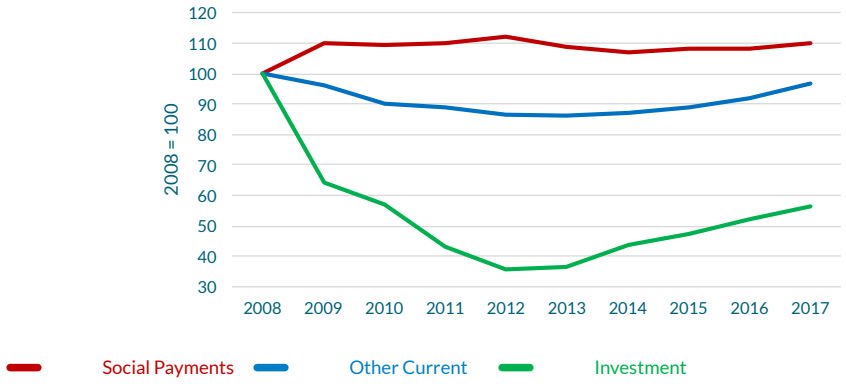


Source: Eurostat and authors' calculations.
Note: 'Core' expenditure refers to government spending less capital transfers to the financial sector and interest costs.

Chart 2 looks at components of core spending. It illustrates the increase in social payments that occurred over the period as unemployment increased sharply in the wake of the crisis. These payments were 12 per cent higher in 2012 as the unemployment rate averaged 15.5 per cent that year. Despite this, the drop in other areas of current spending was broadly the same as for core spending (Chart 1). This highlights the significant role that government investment spending played in reducing total expenditure with the former declining by two-thirds between 2008 and 2012. As a result, and despite its small relative weight in total expenditure (capital spending represented 13 per cent of core spending in 2008), it accounted for just over half of the nominal core spending reduction that took place between 2008 and 2013 (€6.2 billion out of a total reduction of €11.3 billion). Furthermore it was still just over half of its pre-crisis peak last year.

4 In 2010, for example, public spending increased sharply, despite the Government introducing more than €5 billion of spending reductions that year. This primarily reflected the €31 billion promissory note issued to provide capital support to Anglo Irish Bank and Irish Nationwide. Government interest costs also increased by €1.3 billion that year.

Chart 2: Trends in Expenditure Components



Source: CSO and authors' calculations.

Chart 3 shows government investment spending as a percentage of GNI* over a longer time frame. In common with broader government expenditure, this highlights the very strong increases recorded in investment spending prior to the crisis (reaching a peak of 6.1 per cent of GNI* in 2008). Spending growth was particularly marked in the period 2006 to 2008, increasing by 40 per cent in those two years alone. This spending was primarily driven by increases in transport investment and, to a lesser extent, housing and education.[5]

Government investment may have been expected to fall back once key capital projects had been delivered,[6] and reflecting the phase of the cycle. The close relationship between public investment spending and economic activity is well established. Looking at the cyclical behaviour of fiscal policy in OECD countries, Lane (2003) finds that investment is the most pro-cyclical component of public spending, with a particularly strong pro-cyclical relationship identified in Ireland. The subsequent decline in investment was very large; in 2013 investment spending had declined to levels not seen since the mid 1990s (2.5 per cent of GNI*) and the improvement since has been very gradual.[7] The Chart also outlines depreciation in the government sector. This allows us to highlight the sharp fall in net investment (investment less depreciation) that also occurred, both in an absolute sense and relative to pre-crisis levels. Annual net investment spending averaged just 0.6 per cent of GNI* in the 5-year period to 2017, compared to an average rate of 2.7 per cent in the years immediately prior to the crisis. Furthermore, the announced capital expenditure adjustments between 2008 and 2013 could also have understated the actual level of adjustment borne by capital in the event that certain projects were delayed or postponed.[8]

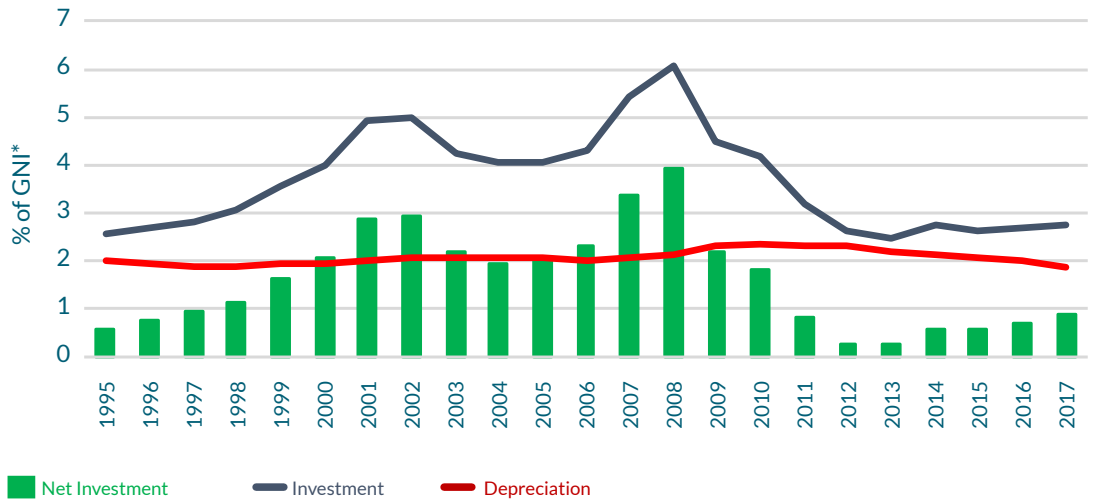
5 The Eurostat data on government expenditure by function – formally the Classification of the Functions of Government (COFOG) - can be used to take a detailed look at the structure of government expenditure across the euro area. Developed by the OECD it breaks expenditure down in to 10 'divisions', each of which is further subdivided in to around 6 groups. In relation to housing, around half of the increase in 'Housing and Community Amenities' in Ireland between 2006 and 2008 was due to housing development. This included house building (new builds by local authorities increased by around 1,000 over the period), home improvement grants and acquisition of land. The remainder reflected increased spending on community development and water supply investment.

6 For example, there were several very large transport related projects delivered in the 2000s including an upgrade and extension of the motorway network, the Luas light rail system and the Dublin Port tunnel.

7 In the euro area while levels of public investment spending are heterogeneous, the ECB (2016) noted that the average level of public investment (in the decade up to 2005) was 3 per cent of GDP. This ratio increased to 3.6 per cent in 2009 before falling back below 3 per cent during the financial crisis.

8 Bedogni and Scott (2017) and IFAC (2018) highlight sizeable gaps between capital expenditure outturns and investment plans over the past decade.

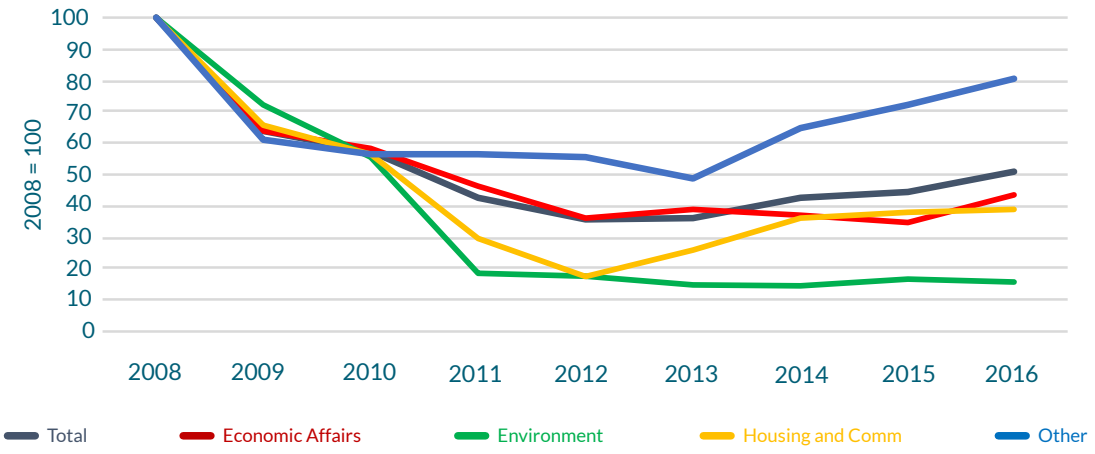
Chart 3: Government Investment and Depreciation



Source: Eurostat and authors' calculations.

Chart 4 shows how the composition of Irish investment spending changed during the consolidation phase and in subsequent years. The bulk of the investment adjustment – approximately 90 per cent – was borne by three broad areas - 'Economic Affairs', 'Housing and Community Amenities' and 'Environmental Protection'. Economic Affairs, which is dominated by transport related investments, accounted for 45 per cent of the overall decline in investment and was 55 per cent below its 2008 peak in 2016. The other two categories accounted for 30 and 15 per cent of the contraction respectively.[9]

Chart 4: Government Investment by Category



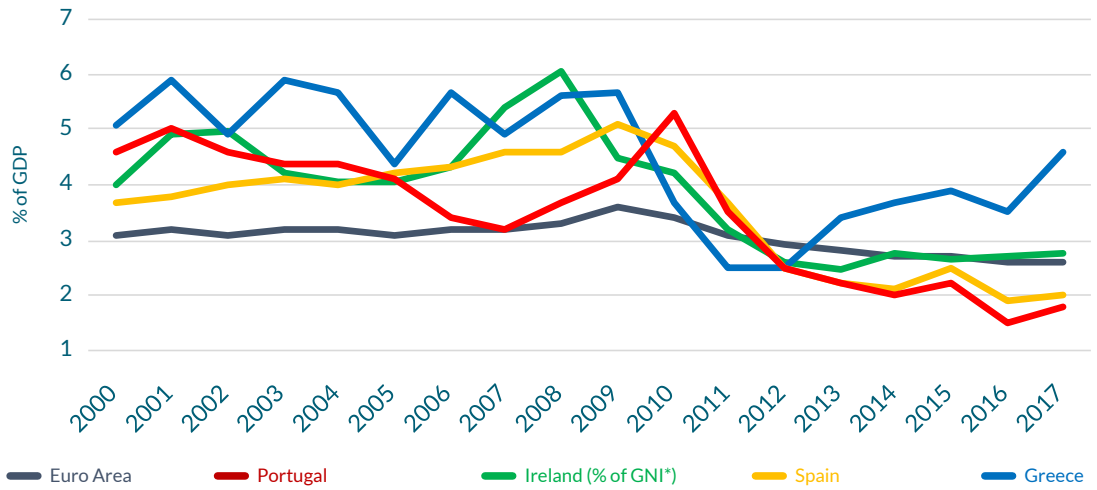
Source: Eurostat and authors' calculations

9 There appears to be a break in the Irish COFOG data in 2011, with some housing expenditure that had previously been placed in the Housing and Community Amenities Division moved to Social Protection. To ensure consistency we have kept all of this expenditure in the Housing and Community Amenities Division in Chart 4.

Reductions in investment spending were an important part of fiscal consolidation in each of the euro area countries that accessed financial assistance programmes following the financial crisis. Peak to trough declines in investment spending ranged from 37 per cent to 71 per cent in these six economies, but when Latvia – which was in a balance of payments programme – is excluded, that range narrows from 55 per cent (Cyprus) to 71 per cent (Portugal). As mentioned above the Irish peak to trough decline in investment spending was close to two-thirds, very similar to that in Greece and Spain. Most of these countries saw growth boosted by unsustainable macroeconomic imbalances prior to the financial crisis. Ireland, Greece, Spain and Portugal were, according to the European Commission's Macro Imbalance Procedure (MIP) scoreboard, the only euro area members that had at least five indicators breaching MIP thresholds in 2007, with these breaches broad based across internal and external indicators.[10]

This imbalanced growth supported sharp increases in total expenditure and the investment component in particular. As Chart 5 shows, investment spending was well above the euro area average in these four economies, but experienced a sharp decline around the turn of the decade. The fact that government investment was commonly used in consolidation programmes could partly reflect the strength of spending in preceding years. However, Bedogni and Scott (2017) have noted that a possible anti-investment bias may exist when reducing expenditure. Given the lack of an intertemporal dimension in metrics of fiscal performance, they point to a greater incentive to maintain current expenditure, reductions of which can be more politically sensitive. The Chart also shows that government investment spending in Ireland was broadly in line with the euro area average (as a percentage of GDP, or GNI* in the Irish case) in recent years.

Chart 5: Government Investment in the Euro Area



Source: Eurostat and authors' calculations.

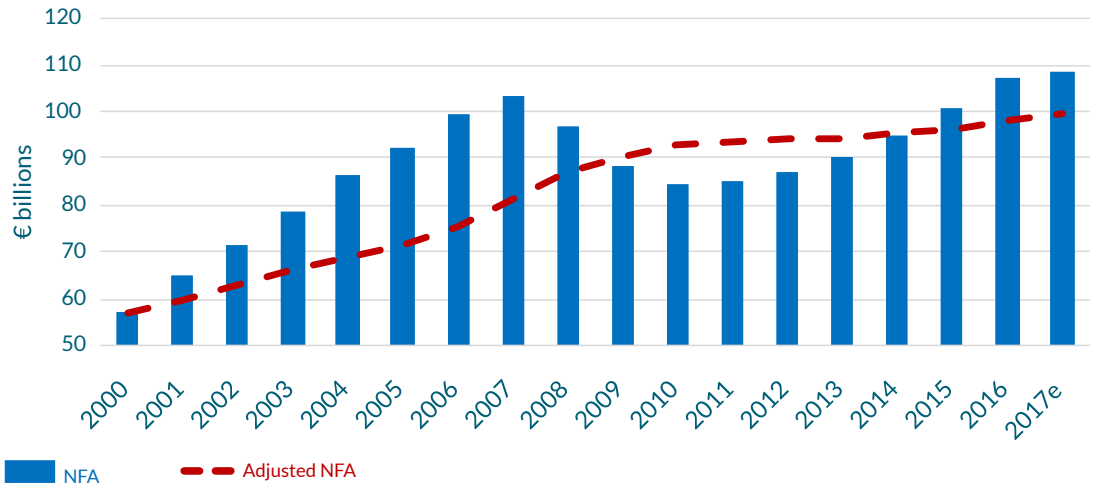
10 This is looking at threshold breaches ex post. The European Commission introduced the MIP procedure in 2011 as part of the 'six pack' reforms.

2.2 Impact on the Public Capital Stock

Government investment differs from government consumption spending because it contributes to the stock of public capital, which can have a longer lasting impact on the economy. While estimates of the effect of public capital on growth vary - and depend on factors such as the composition and efficiency of spending[11] - the literature typically finds a positive relationship between the two (e.g. see de Jong et al., (2017)). The effects of public investment spending tend to be stronger when the spending is more effective and productive. This highlights the need for rigorous assessment and appraisal of planned investment projects. In general, core infrastructure investments (e.g. roads, transport, telecommunications) have higher output effects (Bom and Lighart (2014)). In an Irish context, Fitz Gerald et al (2003) found that returns to investment in physical infrastructure, in particular roads, were high.

The marked reductions in investment spending across the EU following the financial crisis has raised concerns in relation to longer-term growth implications (see OECD (2015), ECB (2016) and European Commission (2017)). The IMF (2014) noted 'sharp continued cuts in public investment may need to be reversed to avoid a depletion of public capital stocks and potentially adverse effects on long term growth'. While data are available for economy wide capital stock levels, estimating the Government's share is problematic due to data related issues (see IMF (2014), ECB (2016) and Kennedy (2016)). In order to assess the impact that recent spending developments have had in Ireland, we use the CSO's 'Non-Financial Assets of General Government' (NFA) data series to produce an estimate of the Irish public capital stock. This is shown in Chart 6. The data includes a wide range of physical assets owned by government such as dwellings, buildings, stocks and equipment. In nominal terms, the stock of the Government's NFA is estimated to have declined sharply between 2007 and 2010 (by €19 billion), but subsequently recovered by €23 billion to reach an estimated €107 billion (57 per cent of GNI*) in 2016.[12]

Chart 6: Non-Financial Assets of Government



Source: Central Statistics Office, authors' calculations

11 For a discussion of efficiency in public investment in the Irish context, see IMF (2017).

12 For more details on the Government's balance sheet and its components, see Barnes and Smyth (2013). The NFA series does not include land.

One problem with using the NFA data is that annual movements reflect both the 'net acquisition of assets' (net investment) and 'other changes'. The latter includes changes in the valuations of existing assets, driven in turn by factors such as market sentiment and cyclical conditions. Such valuation changes have driven most of the movements in NFA in recent years, with just over one-third of the increase since 2010 reflecting net investment. They are also not particularly relevant when it comes to determining the impact that the public capital stock will have on future growth. Accordingly, we construct an alternative stock of NFA – 'adjusted NFA', also shown in Chart 6. We do this by taking the stock of NFA in 2000 at €56.9 billion as a base year and extrapolating this series forward based on the level of net government investment. This illustrative series highlights solid and sustained growth in the stock of assets to 2008 (average annual growth of 5.5 per cent from 2001 to 2008) followed by very modest subsequent increases (average growth of 1 per cent per annum in the 6 years to 2017).

3. Long-term Investment Plans and their Financing

3.1 The National Development Plan

As highlighted above, low levels of government investment spending have been a global phenomenon in recent years. In Ireland a new National Development Plan (NDP), announced in February 2018, commits to increase public capital investment to approximately 4 per cent of GNI* by 2025 – up from 2.7 per cent in 2017 – and to maintain it at that level thereafter.[13] This figure includes central government investment and other spending.[14] Adopting such a medium term target is a positive development, as it can limit surges in public investment during cyclical upswings. The Government's NDP, and more recently the SPU and Summer Economic Statement, provided more detail on spending plans over the medium- term. A sharp increase in the level of government investment is envisaged (by more than 50 per cent), from €5.5 billion in 2017 to €8.3 billion (3.7 per cent of GNI*) in 2021. The nominal level of expenditure can also be extrapolated out to 2027 based on spending commitments in the NDP; we estimate that this would see the annual level of general government investment rising to just over €11 billion (approximately 4 per cent of GNI*) by 2027.

In Chart 7, we show estimated changes in net investment out to 2021 based on government plans. These are calculated using the planned government investment spending figures outlined above and an assumption that government depreciation grows in line with its historical average. This suggests that net investment will be stronger in the coming years than was the case for much of the 2000s. The Chart also shows the impact that such levels of net investment would have on the public capital stock. We follow the methodology from Section 2.2 to estimate the path of adjusted NFA. Based on these estimates, the stock of public capital could increase by a sizeable amount, close to 16 per cent in the 4-year period to 2021, compared to an increase of just 5 per cent in the most immediate 4-year period. This significant acceleration in the growth rate would bring it close to the rates experienced in the early 2000s.

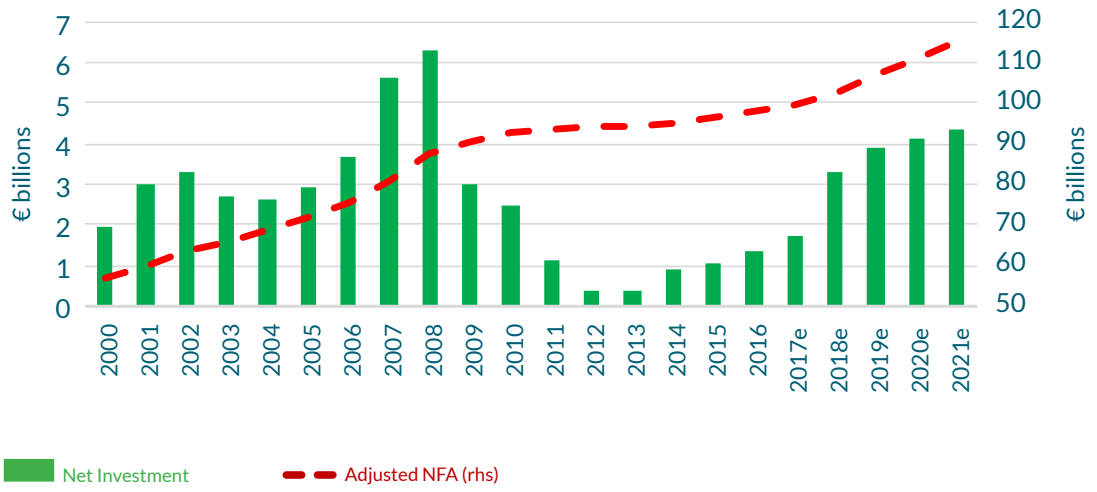
3.2 Modelling the financing of government investment spending

It is important to consider government expenditure decisions in the context in which they are happening. In the current Irish case a range of indicators suggest that the economy is close to capacity. This view received support from the Department of Finance, which provided a number of estimates of potential output in its recent SPU, with the balance pointing to a positive output gap over the period to 2021. The Irish Fiscal Advisory Council, meanwhile, in its most recent Fiscal Assessment

13 For more detailed information, see Department of Public Expenditure and Reform (2018).

14 Central government investment spending accounts for close to 90 per cent of general government investment and is the focus of this Article. Other spending includes spending by commercial semi-state bodies and other state owned enterprises - it is assumed fixed at €2.4 billion (or close to 1 per cent of GNI*) post 2021 in the NDP. Over the period to 2027, the overall investment programme amounts to €116 billion. This includes an Exchequer contribution of €91 billion and a non-Exchequer element of €25 billion (Department of Finance, 2018a and 2018b).

Chart 7: Net Investment and Non-Financial Assets of Government Going Forward



Source: Authors' calculations

Report (IFAC (2018)) that cautioned on overheating risks. In such an environment, the manner in which government spending is financed increases in significance, to ensure that it does not exacerbate capacity constraints. Irish economic developments in the mid 2000s provide a good example of the consequences of overheating; unsustainable price pressures – in goods and services, wage costs and property prices; loss of competitiveness and inefficient production decisions.

To illustrate the importance of financing decisions we use the Central Bank's Dynamic General Equilibrium model (discussed in more detail in Clancy et al. (2016)) to analyse the effects of an increase in government investment on economic output and public debt in the Irish economy. The central scenario in the model assumes that government investment spending increases in line with the SPU projections out to 2021, after which it returns to close to its long-run average. Whilst the model necessarily simplifies some real world behaviour, it provides useful insights into the channels through which public investment spending affects the wider economy. Here Ireland is modelled as a small open economy that is a member of a monetary union and trades with the rest of the union, the US and the rest of the world.

Chart 8 displays the results of simulations incorporating two scenarios:

(i) where expenditure is financed fully by issuing debt (dashed red line) and
(ii) where the increase in government spending is offset by an increase in income taxes, so that the operation is ex-ante budget neutral (full blue line).[15]

The increase in public investment and the impact that this has on the public capital stock are shown in panels (a) and (b). These are impulse response functions showing percentage deviations from initial values. Public investment spending is 10 per cent higher in year 1, and peaks at just over 13 per cent higher in years 2 to 4 before gradually returning to its long-run average. The public capital stock, in turn, peaks at around 5 per cent higher than would otherwise be the case. This investment leads to higher levels of output in the medium and long-term in both scenarios (panel (c)), consistent with the positive relationship between public capital and growth discussed above. Finally, in the case of debt-financed investment, the level of public debt increases before gradually returning to its long-run level (panel (d)).

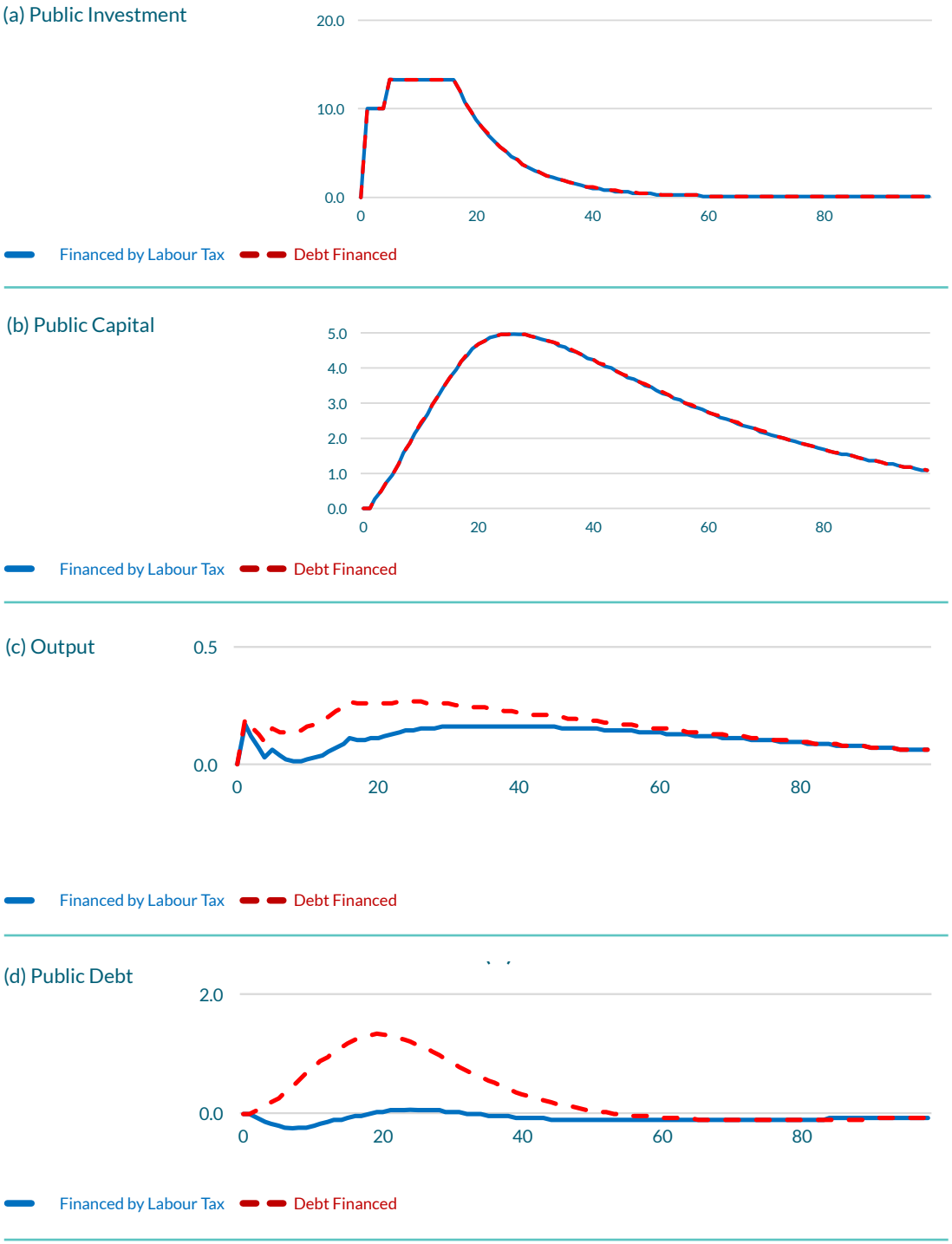
Crucially however, the magnitude of the output increase in the near term in the debt-financed case is significantly stronger than in the case of a budget neutral approach.[16] This is because higher taxes in the latter case restrain the growth in private demand (consumption and (private) investment) thereby partly offsetting higher government expenditure. In both scenarios the increase in public investment leads to higher employment in the short run. The strong increase in employment with debt financing would contribute to wage and price pressure in the economy and potentially erode its competitiveness. While these are stylised examples, they are important in that they highlight potential risks of overheating dynamics emerging, particularly for an economy close to full employment.

While the overall magnitude of the output increases in Chart 8 may not appear substantial, there are three important caveats to consider. First, these modelling scenarios are not designed to provide overly definitive estimates for the effects on output, but more to highlight the channels through which an economy operates and the role of investment and its financing. Second, a key assumption relates to the productivity of investment. The extent to which the investment spending contributes to the productivity of the private sector, thereby reducing its costs, depends on the specific type of investment undertaken. If government investment is in infrastructure, for example, the general view is that its impact is likely to be higher (Aschauer, 1989). The estimates on how productive government capital is vary across the literature (see Leeper et al, (2010), and Bom and Ligthart, (2014)). The simulations here assume that productivity of the new government investment is at a moderate level. Third, in this Article we have not made an allowance for any non-government sources of investment financing. The NDP envisages that close to 20 per cent of investment spending will be sourced outside of the Exchequer. Reflecting these latter two caveats, there are potential upsides to the output effects.

15 Labour taxes are used here for illustrative purposes, there are a wide range of taxes in operation within the economy.

16 While financing with labour taxes has the advantage that it does not increase debt and can to some extent offset some of the short-run stimulus, it is important to note that such taxes are distortionary and can have negative effects on the supply of labour, which can contribute to wage pressures during times of already high aggregate demand. Furthermore, as a result of wage increases, the tax base is somewhat higher ex-post. This contributes to an initial fall in the level of debt (panel (d)).

Chart 8: The effects of a Government Investment increase via Debt and Budget-neutral financing



Source: Authors' calculations

Note: All values are percent deviations from the initial value (which can be interpreted as the percent change from current values). The units on the horizontal axis are quarters.

4. Conclusions

This Article looked at two aspects of higher government investment spending: (i) the potential impact on the public capital stock and (ii) the significance of how investment is financed. In the case of the former, it appears that when valuation changes are excluded, the Irish economy has experienced very modest growth in its public capital stock since the crisis. Using changes in net investment as a proxy, we estimate that the public capital stock increased by just 1 per cent per annum in the 6 years to 2017. This is substantially slower than the pace recorded in the first half of the 2000s. Looking ahead, while assumptions must be made about the pace of depreciation, we estimate that the investment spending envisaged in current government plans will result in a significant increase in the stock of capital, by approximately 16 per cent between 2017 and 2021. This would bring it close to the average annual growth rates experienced in the early 2000s. The issue of investment financing, meanwhile, is particularly relevant in the current environment where the Irish economy appears to be approaching full employment. Using the Central Bank's Dynamic General Equilibrium model, we simulate two scenarios, one where the increase in government investment spending is fully financed by debt and one where it is budget neutral (financed from labour taxes). In both cases, the increase in investment leads to higher output in the longer term, consistent with the positive relationship between public capital and long-term growth found in the literature. The budget neutral scenario, however, avoids the build-up of public debt and reduces the short-run stimulus to the economy. This highlights one key challenge that exists in framing fiscal policy at a time of strong growth; the need to increase the public capital stock, which can be expected to improve the productive capacity of the economy, while limiting the risk of costly overheating dynamics emerging. A stepping up in public investment with an economy at (or close to) full employment conditions may require counter-vailing measures to be introduced.

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