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PUBLIC WEALTH FUNDS: SUPPORTING ECONOMIC RECOVERY AND SUSTAINABLE GROWTH

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Introduction

The economic collapse that has followed the COVID-19 pandemic has led governments and central banks to provide emergency funding to private firms in distress on a previously unimaginable scale.

The majority of interventions have taken the form of liquidity support via direct loans or loan guarantees. However, as the second wave of the virus spreads, there is increasing recognition that loading more debt on to troubled firms may not be a sustainable solution in the medium to long-term. Widespread defaults due to debt-induced insolvencies could lead not only to higher unemployment, but would also damage the financial system, the public finances and the wider economy.

In the UK the government has so far provided guarantees for banks to lend in excess of £53 billion to more than 1 million businesses. This has stimulated an explosion in commercial bank borrowing the likes of which has never been seen before (Figure 1).

Previous pandemics have, according to some studies, depressed growth for decades (Jordà, Singh and Taylor 2020). One explanation of this is that state-backed loans given out during the pandemic build a corporate debt mountain that stifles many companies' growth for years to come. Even before the pandemic, many companies in advanced and emerging economies had built up historically high levels of corporate debt. Although many highly leveraged firms may survive, the current situation makes them reluctant to make any additional investments.

Under such conditions, public sector equity investments or debt-for-equity swaps become an attractive option. By taking stakes in threatened, strategically important firms, governments can not only maintain jobs and provide a

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financial cushion to allow for firms to recover and invest, but also ensure the taxpayer earns some reward when the economy does emerge on the other side.

Too often in the past, at times of crisis risk has been socialised, but rewards privatised. The advantage of equity investment is that in some cases the state earns a return when an ailing firm gets back on its feet and is sold off; in other cases the state can make a longer term investment, hopefully attracting in other forms of 'patient finance' in firms that private investors are not yet prepared to invest in (Macfarlane and Mazzucato 2018).

In this sense a public wealth fund is a commitment device that can provide direction and confidence for investments in future industries at a time when there are huge pressures to do so, not least in order to shift to a more sustainable economy.

There is also recognition that public investment on a large scale is already needed to ensure that the recovery will support societal missions such as the transition to a zero-carbon economy, dealing with regional inequalities and housing affordability. Several European governments have already provided equity investments to selected companies during the COVID-19 period.

Yet how to govern public assets to generate value has received little attention compared to the vociferous debate over whether or not to nationalise or privatise (Detter and Fölster 2015). If poorly managed, public equity bailouts risk damaging growth prospects.

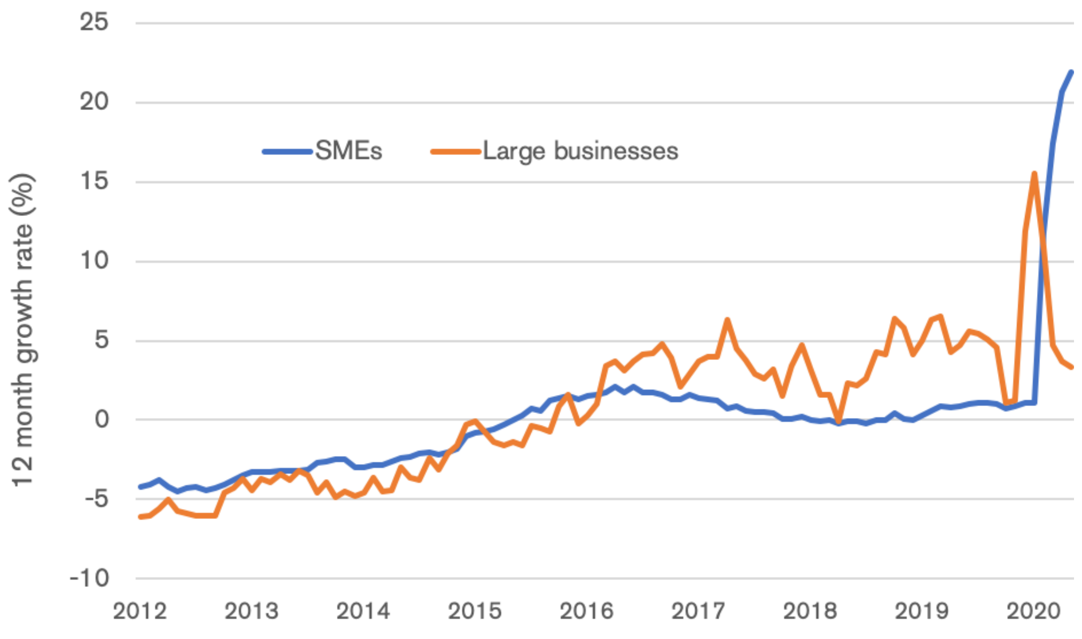
Reviewing the evidence on state-owned enterprises across many countries, we find that they can be run effectively providing that the government ownership is institutionalised according to the highest standards of corporate governance and structured as public wealth funds that combine arms-length independence from day-to-day politics with active and competent commercial governance.

Managing assets more professionally would also incentivise a wider rethink of public sector accounting, which is currently too focused on debt and short-term cash measures, and largely neglects public sector assets. A better approach for public sector accounting would be to focus on net worth (assets less liabilities) as the most comprehensive fiscal measure using accrual-based accounting. This takes into account both sides of the balance sheet and, when linked to the budget, would incentivise public sector investments.

Widespread government equity ownership in hundreds of thousands of small firms is neither desirable nor practically possible. But well-targeted state investments could help pull economies out of the recession and support longer term policy objectives at the same time.

The holy grail of public asset management is an institutional arrangement that both removes governance from a government's direct responsibilities, but at the same time encourages active commercial governance of public assets with the aim of generating value for the public and a dividend that can benefit society as a whole.

Figure 1: Monthly 12-month growth rate of bank lending to UK non-financial businesses 2012-2020



Source: BANK OF ENGLAND

Multiple public wealth funds for different objectives

To this end, institutional structures that are highly transparent, insulated from day-to-day politics, have clear and simple goals, and are able to specialise in their respective area of expertise are preferable. Public investments must be targeted to avoid crowding out other firms or investors, and instead must aim to crowd in those that otherwise might be reticent to invest. Paraphrasing Keynes, the important thing is 'not to do what others do a little better, but to do the things that are not done at all.'

A clear experience from both public and private investment funds is that specialised competence is paramount for success, both at board level and for CEOs and staff. Therefore, we advocate using a variety of specialised public wealth funds. This also allows more precise, relevant and simple goals and owner directives.

These principles can best be adhered to with public wealth funds that are wholly publicly owned, but separated into, at the national level, a national wealth fund in charge of mature assets and mission-driven venture capital funds focussed on innovation and climate transition, as well as, at the regional level, funds for growth; and urban wealth funds to support housing and urban renewal. In the report, we focus on how public wealth funds could be created and run in the context of the UK economy. However, the basic blueprint would apply to any high-income economy.

While these wealth funds would be operationally independent from a governance and balance sheet perspective and short-term political interference, key Ministries, in particular the Ministry of Finance and Industrial Policy would still have role to ensure their long-term objectives are aligned with wider government policy aims such as decarbonisation. Governments should be able to engage firms that they own through Public Wealth Funds in wider policy aims, missions or industrial strategy in respect to their long-term objective. But this should be done with transparent owner directives regarding their long-term objectives with the respective public wealth funds. Governments should make every effort to avoid as well as be seen to avoid communications through channels that remain undisclosed and lend themselves to opportunism. This approach offers the best opportunity to keep public wealth funds and the profits they realise in public hands for the long term.

Also, if government imposes costs for mission achievement on firms, it needs to recognise three issues: the firms may lose business to competitors, impeding mission achievement; it may be difficult to monitor whether losses are due to mission costs or inefficiency; and the public may lose confidence in loss-making, state-owned firms and eventually support privatisation. Dozens of state-owned enterprises have been privatised over the past decades due, in part, to a perception that the public sector is incapable of running businesses as efficiently as the private sector. Examples such as Singapore (Box 1) and Sweden show this does not have to be the case provided both governance and institutional structures are professional. However, to avoid these problems, we suggest that governments should, as a rule, compensate firms for mission costs in a transparent way and in an open tender if and when relevant.

Box 1: Temasek: Singapore's national wealth fund

Professional governance of public commercial assets has been a core component of Singapore's strategy to move the economy from economic backwater to one of the world's richest economies in one generation. In 1971, the newly independent state of Singapore delegated management of the asset side of its public sector balance sheet to public wealth funds. Its commercial assets thereby became the management responsibility of professionals inside these funds. In 1974 Temasek was set up as a national wealth fund to actively manage a portfolio of domestic operational assets.

Temasek consolidated all the commercial assets owned by the government, including existing holding companies and state-owned enterprises, as well as previous monopolies and utilities that had just recently been incorporated and while resided within their respective ministries, including some real estate. The independent holding company was used to separate the regulatory and policymaking functions of government from its role as a shareholder in commercial entities. Since its inception, total shareholder return, measured in Singapore dollars, has averaged 15 per cent per year (Temasek annual reports).

Many of Temasek's holdings are now world-leading companies within their sector, such as the telecom operator Singtel, the largest company by market capitalisation on the Singapore stock exchange; DBS Bank, the largest financial institution in Southeast Asia; and PSA International, one of the largest port operators in the world. Other well-known brands within Temasek include Singapore Airlines and ST Engineering, one of Asia's largest defence and engineering groups, as well as CapitaLand, one of Asia's largest real estate companies. Temasek's political insulation is reinforced by professional boards and a risk management system that puts responsibility and accountability solidly with the board of each holding.

Temasek, as well as those of its holdings, have independent non-executive directors recruited on merit. Almost half of both management and staff are non-Singaporeans. Transparency and clear objectives are also strengthened by Temasek having a credit rating.

The joint market value of GIC and Temasek significantly exceeds Singapore's public liabilities and is more than 1.7 times the annual GDP of the city state. As a result of this strong balance sheet, Singapore has consistently received the top credit rating — AAA — from the three main credit rating agencies. Both funds deliver a significant surplus to the government (Detter et al 2019).

Singapore's emphasis on efficient governance has shored up public support, while many countries that have neglected governance have instead seen waves of support for privatisation.

A national wealth fund

A national wealth fund in charge of mature assets would make equity capital injections to larger corporations when necessary, but could also act as a holding company for assets that governments already own, such as state-owned companies and real estate assets. National wealth funds should not be confused with so-called sovereign wealth funds, which manage reserve liquidity, typically investing in securities traded on major international mature markets.

The UK already has two advisory bodies on public assets: the Office of Government Property (OGP) and UK Government Investments (UKGI). The OGP, formerly the Government Property Unit, does not consolidate any real estate assets, but supports government and the wider public sector to manage their estate more efficiently and effectively. The UKGI does not consolidate any assets either, but advises on shareholding for 16 publicly-owned businesses and arm's length bodies. Both bodies could be instrumental in setting up a UK national wealth fund and other public wealth funds that actually own assets, have consolidated governance and professional management, and are charged with the development of a portfolio of assets.

The national wealth fund should only offer capital injections to firms that: 1) are considered essential in the sense that the government would incur high costs if they failed; 2) have considerable future potential, but cannot invest due to liquidity constraints or 3) are of strategic interest, for instance legacy industries that need to be wound down and where government oversight is determined the most appropriate means to do that while protecting jobs and ensuring societal goals. For example, in the UK oil and gas industry 30,000 jobs are at risk (Robertson 2020), but full profits cannot be extracted from these assets without breaking the UK's commitment to net-zero emissions by 2050.

In many cases the national wealth fund will inject equity capital when the original equity has been reduced to zero value, i.e. it will take over the company or invest on par with other investors and then optimise the entire capital structure, including debt, and recapitalise the company if needed. The national wealth fund will also act as active owner to develop and restructure the business, for example selling off non-core businesses or merging with other similar business to create economies of scale and a more sustainable business model.

Mission-oriented public wealth funds

Several mission-driven public wealth funds could also be set up separately. There are two reasons for separating these funds from the national wealth fund. One is that international experience suggests each type of fund needs quite specialised technical and financial expertise. Mixing these often works less well. That is why successful private venture capital firms are usually modest in size and specialise in different fields.

The other reason for separating funds is that they differ in terms of a value-maximising objective. While the national wealth fund should maximise commercial value and thereby support public finances, the mission-oriented funds support other policy goals that can justify investments that the market does not yet deem profitable. These funds would specialise in providing venture capital for growth and innovation, financing the transition to a zero-carbon economy and addressing regional inequalities in line with the government's wider industrial strategy. These funds would have a mandate to maximise public value rather than commercial value. This means that they could invest in projects that have significant 'market-creating potential', but are not yet feasible for private venture capital. As soon as possible, private investors should be crowded in.

We consider four types of mission-oriented public wealth funds: public venture capital funds' a public climate fund; regional development funds; and urban wealth funds.

Public venture capital funds

The Future Fund implemented in the UK in May of 2020 (British Business Bank 2020) can be seen as a step towards a public venture capital fund. However, as implemented so far it is primarily a package of loans for startups, although these will automatically convert into equity if they have not been paid off by the time of the next funding round or the end of the loan's lifetime. This risks leaving the Future Fund in a position similar to that of the 'bad bank' part of a bank bail-out and would mean having to deal with many failed firms.

Public venture capital funds would instead aim to promote economic growth and jobs. Preferably, they should actively seek out their own investment opportunities and be able to invest in projects that could pay off well, but which might have a negative expected market value. In fact, those are the kinds of projects that give the greatest additionality. A public venture fund has a mandate to maximise social or public value. This means that it can invest in projects that have significant 'market-creating potential', but are not yet feasible for private venture capital.

A public venture capital fund crucially needs technological and venture capital competence to be able to evaluate prospective investments and exercise constructive governance. Sometimes this means that public venture funds can be started by government agencies intending to promote innovation within their area of expertise, such as a public energy authority that has expertise enough to invest in innovative energy firms.

Public venture capital should be selective and not widely granted as growth capital. If possible, public venture capital funds should invest so as to crowd in private venture capital and its expertise, following the example of the Israeli Yozma or similar programmes. These offer a third of the required capital at most, with the remainder required to be provided by private investors. However, for firms with a significant market-creating potential, but negative market valuation, a greater government capital share or even 100 per cent government ownership may be necessary. In this case, private capital should be invited to join in later rounds.

A public climate fund

Investments in climate-friendly production or innovation can be unduly risky for private investors. They have to factor in that a future government may completely change policies, as climate policies are not normally time-consistent, meaning that future policymakers may lack incentives or a political agenda that would sustain current policies.

When the state becomes a shareholder through a sizable investment in — or recapitalisation of — an asset, the calculus changes. Then policymakers have to factor in that the state itself bears a sizeable share of the economic and political costs if climate policies change in a way that generates losses in the government-owned firm. This makes climate policies relatively more time-consistent and reduces risks even for private investors in other competing firms in the same sector.

A public climate fund should focus on investments with strong evidence of potentially large carbon-reducing effects. It should avoid investments that are likely to result in substitution effects; that is, apparent reductions in carbon emissions that are offset by market substitution. The fund should cooperate with other public agencies to offer blended finance; that is, adding research grants to the equity investment if the project is far from being ready for private venture capital.

Regional development funds

In economically disadvantaged communities, where a few small, hard-to-restart businesses are vital to community life, support may be warranted for both economic and social reasons. In the short term these regions may be harder hit by economic shocks. In the long term productivity in these regions may be lower than the wage rates that are negotiated at a national level or that are deemed politically acceptable.

Governments regularly spend considerable amounts on labour market policies — unemployment benefits, training, job subsidies — in disadvantaged regions. Based on the efficacy of these subsidies, economists often calculate shadow prices for creating jobs. These can also be used to evaluate public investments, because they give a rough idea of the trade-offs. Investments may be less profitable than in other regions, but they may still be worthwhile if they help the state save on other employment subsidies or unemployment benefits.

In disadvantaged regions it is often harder to find innovative ideas and the supply of regional entrepreneurs who will invest their own capital may be limited. Centralised credit-scoring techniques used by commercial banks and other investors will typically be influenced by statistical regional bias. As a result, loans to firms or startups from disadvantaged regions are more often rejected without serious consideration.

Thus, mid-size and smaller firms in disadvantaged regions may find it harder to get funding even when viable. A dilemma for a regional public wealth fund that finances local firms is, if forced to show a profit, it will be incentivised to invest in firms that are less risky. These are the same firms that local or other investors might have found attractive. The public investment fund will then risk outcompeting and crowding out the already frail local venture capital market. Therefore, a regional public wealth fund for venture capital investment should have a clear mandate to invest in risky firms that may have a future potential as well as a downside risk that will likely deter other investors. In order to take these risks, such a regional wealth fund should be allowed individual losses whilst on an aggregate level can create a profit, as is the strategy for private sector venture capital funds. Alternatively, it could run the entire fund at a loss that is commensurate to the shadow prices of the jobs created. These shadow prices could be determined by the ministry of finance and balanced in the spending review with contributions received from the national level.

Urban wealth funds

The COVID-19 economic crisis has put huge financial pressures not only firms, but also on commercial real estate owners, because firms have been unable to pay rents. This poses a risk to the banking system, and ultimately the state, but it also contains an opportunity for urban renewal and addressing deficits in housing supply and affordability.

Internationally, urban wealth funds have been effective funding vehicles, paying for infrastructure investments, including transport, education and health care, as well as housing, without the use of taxes. Professionally managed, public assets could add fiscal space and strengthen the balance sheet of public finances (Detter and Fölster 2018).

Urban wealth funds are also a means by which the public sector can ensure the rise in land values that comes from public investment in infrastructure, in particular transport, is efficiently captured for the public purse (Ryan-Collins et al 2017). For example, it has been estimated that the extension of the London Underground's Jubilee Line, which opened in 1999, increased local residential land values by £13 billion (Riley 2001).

One of the best-known examples is the Mass Transit Railway of Hongkong (MTR). MTR develops mixed real estate, including public housing, in order to fund subway construction. MTR's strategy has been to develop the land in connection with the build-out of railway infrastructure and thereby not only fund the subway and real estate without using taxes, but also contribute in a significant way to the public purse though the dividends of the company.

In Singapore, the Housing and Development Board, is credited with clearing slums in the 1960s and ensuring that today almost four-fifths of the population has been provided with public housing.

In South Korea, around half of all residential land development and almost all industrial land development is carried out by the Korean Land Corporation (KLC). The KLC's functions include developing and selling land for residential use, acquiring idle and vacant land for resale, and developing new towns (Kaganova 2011). This has helped ensure that land and housing has remained affordable in South Korea — between 1995 and 2013 the ratio of house prices to income declined from a base of 100 at the beginning of 1995 to 62.3 at the end of 2013, while the UK's shot up from 100 to 167.7 (Muellbauer 2014).

Local governments should be encouraged to consolidate the ownership of their substantial real estate assets into urban wealth funds. Other public owners within the same jurisdictions, including state authorities, would be encouraged to pool real estate within local urban wealth funds in order to further development of urban renewal and housing projects. They can also partner with private property owners with adjacent properties or required skills for the development. In some cases, it would also be relevant for urban wealth funds to take over real estate from distressed property owners if this would help to preserve a functioning real estate market. Such assets can be used to support renewal and regeneration projects, but urban wealth funds should avoid becoming the perpetual administrator of housing and other real estate that is not suitable for development.

Urban wealth funds should have a mandate to maximise the value of its portfolio in order to be able to crowd in private investors without distorting competition. However, urban wealth funds should also further long-term social aims, such as availability of housing and the creation of socioeconomically mixed communities. There are several ways of combining these goals. An urban wealth fund could have a mandate to maximise value via increasing the supply side of the housing equation. The local or national government could then directly pay for achievement on the demand side, such as paying for the running costs of the subsidised housing or the cost of schooling or higher education. The advantage of this method is that expenses for achievement of social aims are transparent and also available to other actors, for example pension funds that want to invest in urban renewal and housing, while providing an annuity income for their pension insurance policy holders.

Other, less direct, ways would be to let an urban wealth fund be a value maximising daughter company of a non-profit municipal housing agency. This is the path chosen in the German city of Munich, allowing a separation of urban renewal projects in cooperation with private developers on the one hand, and transfer of profits towards housing goals on the other. On top of that Munich has a municipal rent-subsidy scheme that is available to low-income earners regardless of who owns the real estate.

Costing and accounting for public wealth funds

We estimate that even in the most expensive conceivable version, the direct fiscal cost of investing in the above mentioned public wealth funds would be small, around 0.1 percentage points of GDP per year. Compared to other measures to restart the economy and the level of public debt to GDP, this is a small amount. Moreover, over time some of these investments would likely turn a profit. Historically, the yield on equity has been around 6 per cent, while the cost of servicing public debt for the initial investment is negligible or even negative at current interest rates. In a more favourable scenario, with a return on equity of 5 per cent, the state would earn about 0.07 percentage points of GDP per year or £160 billion.

Unfortunately, the incentives to encourage policymakers to take into account the full spectrum of public commercial assets are often missing. Basic tools such as accrual accounting, which takes in to account non-cash forms of value such as capital gains or depreciation, are fundamental building blocks to bring about greater transparency and disclosure. They can enable governments to pursue optimal decisions with respect to the management of public assets. Yet these tools are often overlooked, with the focus instead on narrow measures of deficit and debts which encourage privatisation or inefficient public-private partnerships.

The IMF has adopted accrual-based reporting in the Government Financial Statistics Manual 2014 (IMF 2014) and is encouraging countries to move to the cash basis of International Public Sector Accounting Standards (IPSAS) at a pace appropriate to their institutions and capacity. While many countries are following the IMF's lead by adopting accrual-based reporting and accounting, often they do not go far enough to reap the full benefits. Numerous countries have gone to great efforts to put in place better accounting systems, but then do not use the information those systems produce in their fiscal decision-making.

The political will required to manage public assets better — to provide full disclosure of these assets and to create the incentives to encourage policymakers to act on that — has generally been lacking, as the immediate gains are not obvious. In the current urgent circumstances, with so many lives and livelihoods at stake, the case for better stewardship of public assets could not be more pressing (Detter, Ball and Amin 2020).

If public assets were properly accounted for and professionally managed, they could potentially generate some 3 per cent of GDP in additional revenues to government budgets (IMF 2018). Putting the assets to their best use through better management could enable governments to generate additional cashflows while providing a productivity boost to economic growth, thereby offsetting the growing debt problem that many are facing. This additional yield can help fund public goods such as public housing, health care and infrastructure, or even R&D to mitigate the effects of climate change.

To read the full report 'Public Public Wealth Funds: Sustaining economic recovery and sustainable growth' please see: https://www.ucl.ac.uk/bartlett/public-purpose/publications/policy.

References

Detter, D. and Fölster, S. (2015). *The Public Wealth of Nations: How Management of Public Assets Can Boost or Bust Economic Growth.* London: Palgrave Macmillan.

Detter, D. and Fölster, S. (2018). Unlocking Public Wealth. IMF Finance & Development. Available at: https://www.imf.org/external/pubs/ft/fandd/2018/03/pdf/detter.pdf.

Detter, D., Walker, D., Gibson, L. and Amin-Salem, H. (2019). *Putting Public Assets to Work.* Citi Perspectives. Available at: https://www.citibank.com/icg/docs/1883952_Perspectives_2019_Putting_Public_Assets_to_Work.pdf.

Detter, D., Ball, I. and Amin-Salem, H. (2020). *How better management of public assets can boost the recovery.* IMF Public Financial Management Blog. Available at: https://blog-pfm.imf.org/pfmblog/2020/10/-how-better-management-of-public-assets-can-boost-the-recovery-.html#_ftn4.

British Business Bank (2020). Future Fund – Scheme Overview, available at: https://www.british-business-bank.co.uk/ourpartners/coronavirus-business-interruption-loan-schemes/future-fund/

IMF. (2014). Government Financial Statistics Manual 2014. Available at: https://www.imf.org/external/Pubs/FT/GFS/Manual/2014/gfsfinal.pdf.

IMF. (2018). Managing Public Wealth. Fiscal Monitor Report. Available at: https://www.imf.org/en/Publications/FM/Issues/2018/10/04/fiscal-monitor-october-2018.

Jordà, Ò., Singh, S. R. and Taylor, A. M. (2020). Longer-run economic consequences of pandemics. *Covid Economics: Vetted and Real-Time Papers*, 1: 1–15.

Kaganova, O. (2011). I*nternational Experiences on Government Land Development Companies: What Can Be Learned*? Urban Institute Centre on International Development and Governance, WP Paper No. 2011-01. Available at: https://www.urban.org/research/publication/international-experiences-government-land-development-companies-what-can-be-learned.

Macfarlane, L. and Mazzucato, M. (2018). *State investment banks and patient finance: An international comparison.* UCL Institute for Innovation and Public Purpose WP (IIPP WP 2018-01). Available at: https://www.ucl.ac.uk/bartlett/public-purpose/publications/2018/feb/state-investment-banks-and-patient-finance-international-comparison.

Muellbauer, J. (2014). *Six fiscal reforms for the UK's 'lost generation*'. VOX CEPR. Available at: http://www.voxeu.org/article/six-fiscal-reforms-uk-s-lost-generation.

National Audit Office. (2018). PFI and PF2: Report by the Comptroller and Auditor General, HM Treasury. Available at https://www.nao.org.uk/report/pfi-and-pf2/.

Riley, Don. (2001). *Taken for a Ride: Trains, Taxpayers and the Treasury.* Teddington: Centre for Land Policy Studies.

Robertson, H. (2020). *Demand collapse puts 30,000 UK oil and gas jobs at risk.* World Oil. Available at: https://www.worldoil.com/news/2020/4/28/demand-collapse-puts-30-000-uk-oil-and-gas-jobs-at-risk

Ryan-Collins, J., Lloyd, T. and Macfarlane, L. (2017). *Rethinking the Economics of Land and Housing*. London: New Economics Foundation.

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