NEW ECONOMICS FOUNDATION

GREEN CREDIT GUIDANCE

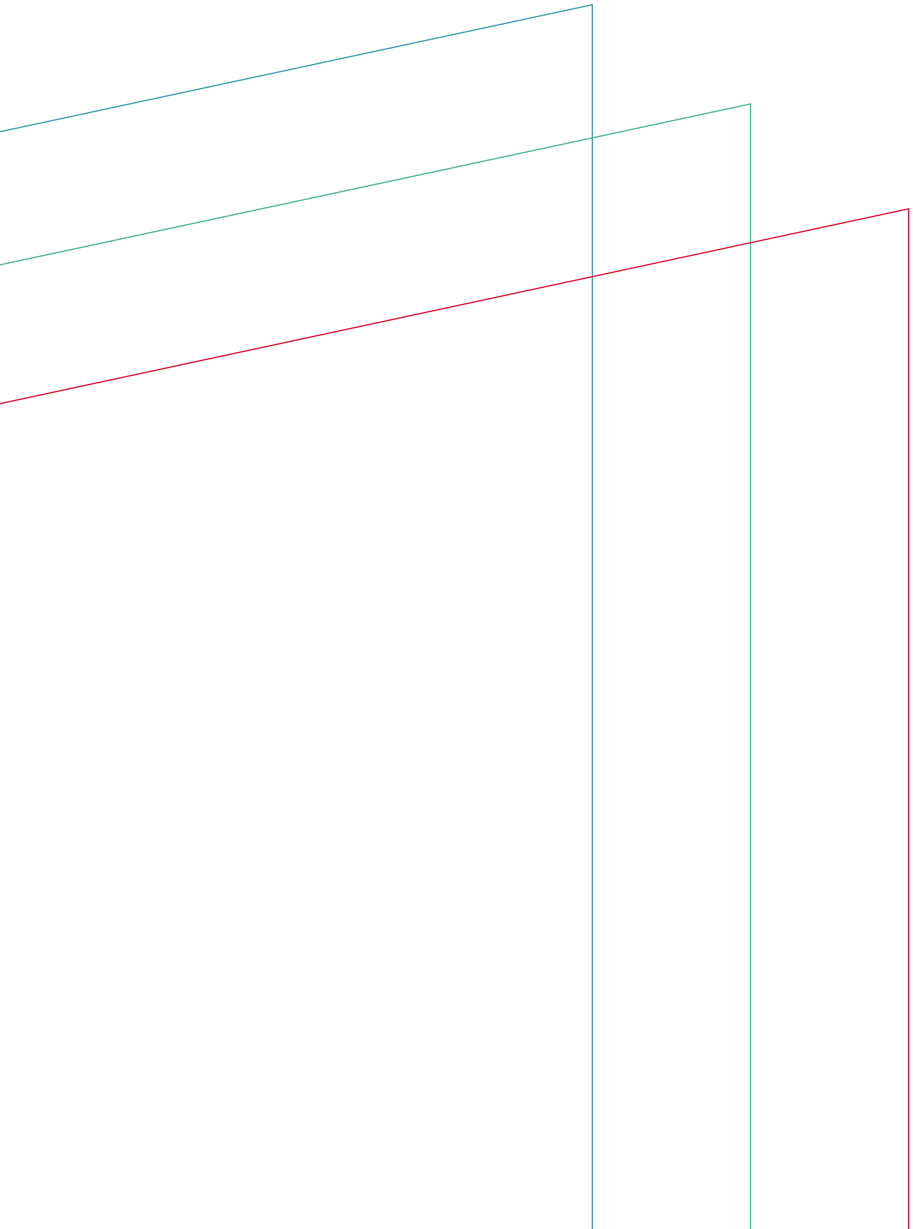
A GREEN TERM FUNDING SCHEME FOR A COOLER FUTURE

WRITTEN BY: LUKASZ KREBEL AND FRANK VAN LERVEN

"JAPAN IS DOING IT. CHINA IS DOING IT. WHY WOULDN'T WE HAVE AN OPEN MIND ABOUT IT?

...IF WE DON'T TRY THEN WE HAVE NO CHANCE OF SUCCEEDING. SO COUNT ON ME."

Christine Lagarde, the President of the European Central Bank, when asked about introducing a targeted green lending program at the Green Swan Conference (June 2022)[1]



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EXECUTIVE SUMMARY

The Bank of England's policy toolkit needs urgent updating in light of the climate and cost of living crises. There are multiple interest rates across the economy that may need to be targeted separately to achieve monetary and financial stability and wider ecological and democratically defined goals. With the bulk of macroeconomic demand management relying on a blunt single interest rate tool, green targeted credit policy interventions would enable the Bank to better realise its price and financial stability objectives and could help it better reflect the importance of environmental sustainability and the transition to net zero, as recently mandated by the UK government.

While important policy reforms were made after the 2008 Global Financial Crisis (GFC), these reforms did not address the banking sector's tendency to inappropriately allocate credit. With the bulk of financial flows flowing to assets in the property and finance sector, UK bank lending is not geared towards supporting the real economy and vital strategic investments. Only 2%–5% of bank lending post-GFC and pre-pandemic went to small and medium enterprises (SMEs),[2] which are responsible for 60% of UK private sector jobs, while 40% of gross domestic product (GDP) is derived from SMEs.[3] Changes to a single blunt interest rate tool alone may be a very inefficient way of influencing real activity and aggregate demand, making it difficult for the Bank to reach its price stability objective.

At the same time, the credit allocation of the banking and financial sector is fundamentally misaligned with a low carbon transition. The UK approach has focused on disclosures modelled on the Task Force on Climate-Related Financial Disclosures (TCFD) and has failed to meaningfully shift credit flows. The Bank's policy tools are currently not designed to help address the goals of the green transition or mitigate climate-related systemic sources of monetary and financial instability. The UK banking sector has pumped over £277bn ($364 bn) into fossil fuel projects since the Paris Agreement was signed in 2015,[i,4] and Barclays is Europe's dirtiest bank.[5] Meanwhile, Office for Budget Responsibility (OBR) estimates suggest private sector investment must exceed £30bn (2019 prices) of additional green investment over the next three years[6] – a 10% increase on current private sector levels of investment.[ii,7] To put the challenge of the green investment gap into context, UK private sector investment grew by roughly 0% in the three years leading up to the pandemic. The speed and scale of filling the private sector's green investment gap require transformational financial incentives from the Bank. Indeed, a failure to curb dirty financial flows and fill the green investment gap would exacerbate the materialisation of climate-related financial risks and result in sharp price adjustments. Taking action, therefore, falls squarely under the Bank's monetary and financial stability remit.

The Bank's main policy instruments may also need a reboot in light of the changing macroeconomic landscape. Spikes in energy costs, particularly fossil gas, and other supply-side bottlenecks are the major drivers of rising inflation. Simply increasing the main policy rate will do little to stave off external and supply-induced price rises. Instead, rate rises could dis-incentivise new green investments that have notoriously large upfront costs and thus face higher funding costs, when compared to fossil fuel alternatives with relatively low upfront costs.[8] In which case, rate rises could reinforce the UK's carbon lock-in and its dependence on volatile fossil fuels pricing. To reduce exposure to future price shocks driven by fossil fuels, as well as to mitigate climate-related transition risks, monetary policy could adjust to accelerate green investments, such as energy efficiency and renewable generation[9]. A targeted credit policy framework that keeps interest rates low for green investments, but allows a higher rate for other economic activities, would help introduce more appropriate price dynamics.

i Financing for fossil fuels by top five UK-based banks, 2016–2021. Authors' calculations based on Rainforest Alliance Network (2022).
ii Private sector investment in the UK (including private investment in dwellings) averaged about £300bn a year (current prices) over the past five years (ONS, 2022)

Indeed, the Bank would hardly be reinventing the wheel. Historically, targeted credit policy interventions by central banks were the norm, not the exception. Such policies played an important role in supporting economic and industrial policy during the 1945–1973 'golden age' in the West, and more recently in aiding the rapid development of East Asian countries. During the last decade, the Bank began temporarily targeting cheap credit to businesses and households across the UK in the form of the Term Funding Scheme (TFS). We propose that the Bank, with support from the Treasury, simply greens the TFS, makes it permanent, and scales it up. Most recently, the Bank of Japan and the People's Bank of China took a lead in greening their targeted credit policy measures in the form of refinancing operations providing cheap credit to banks to lend for sustainable investments. While fiscal policy must lead the way on the green transition and a more interventionist credit policy is hardly a green silver bullet, following the example of its Asian counterparts will help the Bank to reach its primary price and financial stability objectives, and ensure it does so in a way that reflects the importance of environmental sustainability and the transition to net zero.

RECOMMENDATIONS

1. Repurpose the Bank of England's existing Term Funding Scheme (TFS) to set up a permanent green TFS. The TFS offers cheap funding – at or close to the Bank rate – to banks for lending on specific conditions to households and firms. The Bank could build on this monetary innovation, and offer zero or negative real interest rates for green activities while keeping its main policy rate in positive territory. As an illustrative example, the Treasury and the Department for Business, Energy & Industrial Strategy (BEIS), representing the elected government, could advise the Bank to start by targeting energy efficiency retrofits, clean energy activities, electric vehicles, and charging stations; and lowering borrowing costs for households and SMEs. Once the UK Green Taxonomy is implemented, the green TFS could also be used to target a range of other green-defined activities.

2. The existing TFS should be decarbonised, starting with the most harmful sectors, to ensure the Bank is not implicitly subsidising banks to lend for fossil fuel and carbon-intensive activities. This means banks should not be allowed to put up dirty collateral for cheap funding, nor should banks lend for dirty activities. The Bank could build on the framework it developed for greening its Corporate Bond Purchase Programme for identifying polluting assets and applying science-based exclusions.

3. The TFS already comes with the condition that banks demonstrate they are expanding their lending to firms and households. The lower cost of funding for a green TFS would need to come with additional conditionality:

    a. Banks must evidence that they are expanding their lending for the desired sectors and activities. For example, for retrofitting loans, improvements in energy efficiency could be assessed using Energy Performance Certificate (EPC) ratings.

    b. Banks must show that they are passing on a minimum interest rate reduction to their customers (such as following the precedent of pre-determined interest rates under the coronavirus Bounce Back Loan Scheme).

4. Develop bank lending metrics and targets on progress in shifting the UK financial sector to be Paris aligned. While the Bank's financial stability and monetary policy remits have been updated to account for climate change, there are no metrics or targets to hold the Bank accountable for greening the financial system. The green TFS could be specifically calibrated towards reaching annual quantitative targets in green financial flows specifically to fill the green finance gap.

5. Extend the TFS to UK state-owned investment banks – the UK Infrastructure Bank and the British Business Bank. These banks could either: 1) on-lend credit to the UK alternative banking sector (ie credit unions, community development financial institutions (CDFIs), building societies) that currently may not have access to the TFS, and/or 2) lend directly to transition activities and small businesses.

To illustrate how a green TFS could look in practice, we present an example of how a green TFS could be used to target building retrofits while helping the Bank better achieve its monetary, financial stability, and secondary green mandates.

While waiting for the green taxonomy, financing improvements in building EPCs could be used as green criteria for bank lending. The Treasury or BEIS could advise the Bank to extend eligibility to other verifiably green investments, such as solar panels, domestic wind turbines, and heat pumps.

The interest rates for the TFS green credit lines to banks could be set at 0%, or in all cases below the Bank rate, to ensure lower costs of green credit. The refinancing rate could be made negative (echoing the European Central Bank (ECB)) on the condition that commercial lenders pass on a minimum pre-defined rate discount to retrofit borrowers – for example, by offering loans to households and businesses at 0% interest. To push interest rates on retrofitting loans towards zero, a combination of a negative interest rate charged under the green TFS to banks, and partial loan guarantees by the Treasury (similar to the pandemic schemes) could be used.

Compared to borrowing on a prevailing (as of February 2022) 6.14% rate on private unsecured loans, a household borrowing £10,000 for six years at a 0% interest rate would save £1,980 in total repayments. Additionally, targeting loans at 0% to borrowers would imply a negative real terms (after inflation) interest rate. Assuming that inflation follows the Bank's May 2022 forecast, a household borrowing £10,000 under a scheme beginning in 2023 would, over an illustrative six-year term, end up paying £730 less in real terms than the initial amount borrowed.

If the green TFS funds were offered at a negative rate, the Bank and the Treasury should agree on a new framework for managing the Bank's balance sheet, with a long-term view on utilising it to support society's goals while preserving monetary stability.

1. THE CASE FOR CREDIT POLICY INTERVENTIONS

A coronavirus recovery plan that builds back better and levels up must re-align our financial sector with democratically defined economic objectives and a socially just green transition.[10] With a financial sector that is clearly misaligned with a low carbon economy, we still, despite the 2008 global financial crisis (GFC), have not sufficiently addressed problems with the banking sector's ability to create and allocate credit.[11]

This failure is largely the result of central banks playing a more passive role in the 'New Consensus' approach to central banking that started in the 1980s.[12] Credit policy instruments, including credit ceilings, credit quotas, interest rate ceilings, and credit-directing policies, such as a minimum share of lending to the real economy, were believed to distort the efficient flow of capital, hamper investment levels, diminish productivity, and reduce economic growth.[13] Instead, the role of central banks was primarily reduced to using a single instrument, an overnight interest rate on the interbank lending market, to hit a single target: a low and stable rate of inflation.[14] Manipulating a single interest rate was believed to be neutral, as advocates argue it doesn't affect the relative prices of assets. It was also believed it would allow banks to create and allocate socially optimal levels of credit.[15]

The 2008 GFC was a clear illustration that the consensus view of macroeconomic demand management often does not lead to the efficient allocation of resources and socially optimal outcomes.[16] The impending environmental crisis, and the banking and finance sector being at odds with a socially just low carbon transition, is a further illustration of the inadequacy of the current macro framework.

In this report, we argue that the Bank of England's policy toolkit requires an urgent update. We contend that green targeted credit policy interventions would aid the Bank in realising its price and financial stability objectives and could help it better reflect the importance of environmental sustainability and the transition to net zero in its monetary policy operations, as recently mandated by the UK government. In the following section, we first make the case for credit policy interventions to support wider macroeconomic demand management. We then make the case for guiding credit flows to mitigate climate risks to monetary and financial stability, while fulfilling the Bank's new mandate of ensuring its monetary operations reflect the importance of environmental sustainability and the transition to net zero. Section 3 outlines options for setting up a green Term Funding Scheme (TFS). Section 4 outlines how a green TFS can go further, by extending it to public investment banks and linking it with loan guarantee schemes. Section 5 presents our illustrative proposal for a pilot scheme focusing on home retrofits.

1.1 MACROECONOMIC MANAGEMENT OF AGGREGATE DEMAND

1.1.1 Banks' credit creation powers impact real activity

As highlighted by Vitor Constancio, ex-vice president of the European Central Bank (ECB), the pre-GFC consensus view considered bank lending as simply a transfer of purchasing power from a saver to a borrower – with no additional spending power created in the process.[17] The Bank's 2014 seminal report recognised that banks do not simply take deposits from savers and lend them to willing borrowers.[18] Instead, banks create credit and deposit money (which appears to finance that credit), allowing the banking system to significantly augment the level of debt and financial contracts in an economy, beyond the level of pre-existing savings.

Professor Steve Keen,,[19] and a former chairman of the Financial Services Authority (FSA)[iii] Lord Adair Turner,[20] illustrate that through its capacity to create and destroy spending power, the banking sector considerably influences nominal aggregate demand and real activity, alongside asset prices

iii Renamed the Financial Conduct Authority (FCA) in 2013.

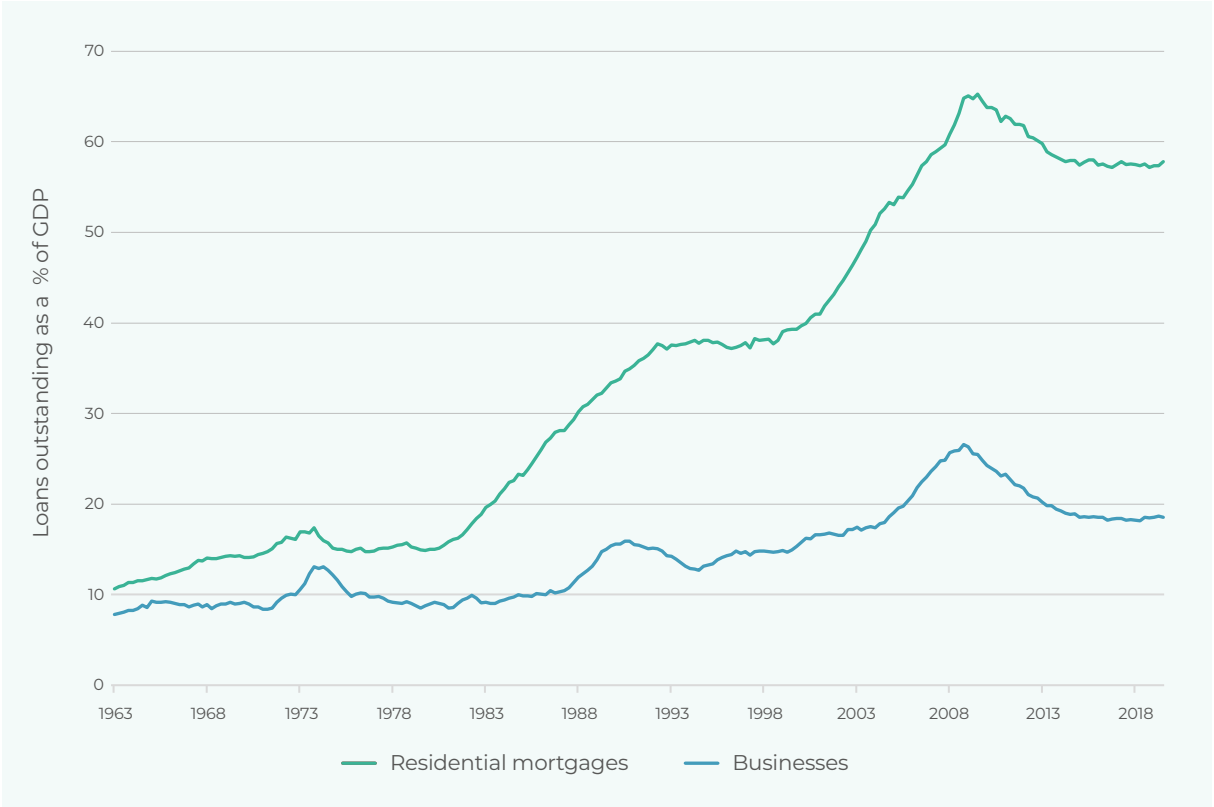
and private debt levels. At the aggregate level, therefore, bank lending decisions have the power to shape the long-term trajectory of the economy.[21] Nobel laureate in economics Professor Joseph E. Stiglitz makes the case that banks benefit from several implicit subsidies and guarantees from governments and, therefore, policymakers would be justified in implementing interventions that ensure bank credit allocation activities are more aligned with democratically defined objectives.[22]

1.1.2 Credit is what credit does

The banking sectors in high-income countries, like the UK, have moved away from their textbook role of lending for business investment, and now primarily lend for pre-existing assets in the property and financial sectors (Bezemer et al., 2021).[23] Figure 1 shows that from the 1960s to the 1980s, the difference in UK mortgage and business lending remained relatively stable, but since the 1980s, the disparity has grown significantly. Just before the coronavirus struck, a significant share of bank credit was directed towards pre-existing assets in property and real estate (55%) and the financial sector (26%) with very little lending (8.5%) to non-financial businesses. [24] Of the business loans that banks provide, only 2%–5% of the total volume was for small and medium enterprises (SMEs) that form the backbone of our economy: 99.9% of UK businesses are SMEs, 60% of private sector jobs come from SMEs, while 40% of gross domestic product (GDP) is derived from SMEs. Notably, lending to businesses significantly increased during the Covid pandemic (Figure 7, Section 1.2.3), driven by the government's dedicated credit guidance schemes such as the Coronavirus Business Interruption Loan Scheme (CBILS).

FIGURE 1: THE UK 'DEBT SHIFT' – AHEAD OF THE PANDEMIC, MORTGAGE LENDING HAS VASTLY OUTPACED LENDING TO BUSINESSES.

Secured lending to individuals and lending to non-financial businesses, as a proportion to GDP.



Sources: Bank of England database,[25] ONS,[26] and BIS[27]

Most pertinently, while lending to businesses boosts productivity growth, increases innovation, and raises incomes, mortgage lending or bank lending to other financial corporations for pre-existing assets typically does not generate new goods or services (or only relatively little). Credit creation to finance purchases of property and financial assets increases demand for these assets, but because these assets are pre-existing and supply in such markets reacts slowly to new demand, the main impact is to push up asset prices, requiring ever-higher levels of lending that further boosts asset prices – a 'doom loop' described by Ryan-Collins.[28]

1.1.3 Credit policy interventions – the historic norm, not the exception

Credit policy interventions are hardly new or unconventional policy instruments.[29] Former member of the Bank of England Monetary Policy Committee, Adam Posen, for example, notes:

> … you only need to look back at monetary history to see the obvious: central banks have engaged in extended periods of administrative guidance, of doing very active directed lending in particular sectors, and especially of engaging in market operations on financial assets other than government securities…[30]

Throughout the West's post-war golden age (1945–1971), central banks' credit guidance policies played a vital role in supporting post-war reconstruction and industrial strategy and curbing the excessive growth of finance.[31] Interventionist credit policies played a supportive role and were imperative to the rapid expansion in post-war Japan, the recent growth of China, the development of East Asian economic 'miracles', and the growth of other emerging economies.[32,33,34] Indeed, these policies allowed central banks to curb or stimulate inflation, without necessarily raising/lowering the policy rate.[35,36,37]

Many of these credit policies were implemented against a backdrop of highly regulated and relatively closed national financial systems.[38] In more open, financially deep, liberalised economies, arguments have been made that banks could circumvent certain credit policy interventions (such as ceilings and quotas).[39,40] Nevertheless, there are still several credit instruments that may prove successful in 1) stimulating credit flows – by providing credit to a particular sector at a discounted price, or preferential collateral requirements; and 2) curbing credit flows, such as capital requirements, liquidity ratios, and loan-to-value and loan-to-income limits.[41]

A particularly successful instrument has been the use of targeted refinancing operations (TROs), where central banks offer commercial banks cheap funding for lending to specific sectors of the economy.[42] In total, nine G20 central banks, covering eleven G20 countries, have implemented TROs since the 2007–2008 financial crisis.[43] While the empirical evidence suggests these tools have been used with success to achieve monetary policy objectives, they have been typically deployed on a non-permanent basis and have not been aligned with the goals of a green transition.[44] Most recently (and discussed later) the Bank of Japan[45] and the People's Bank of China[46] have begun to use them to help fill their respective green investment gaps, with the Bank of Korea[47] announcing similar plans.

1.1.4 Macroeconomic demand management and stabilization

Konczal and Mason suggest:

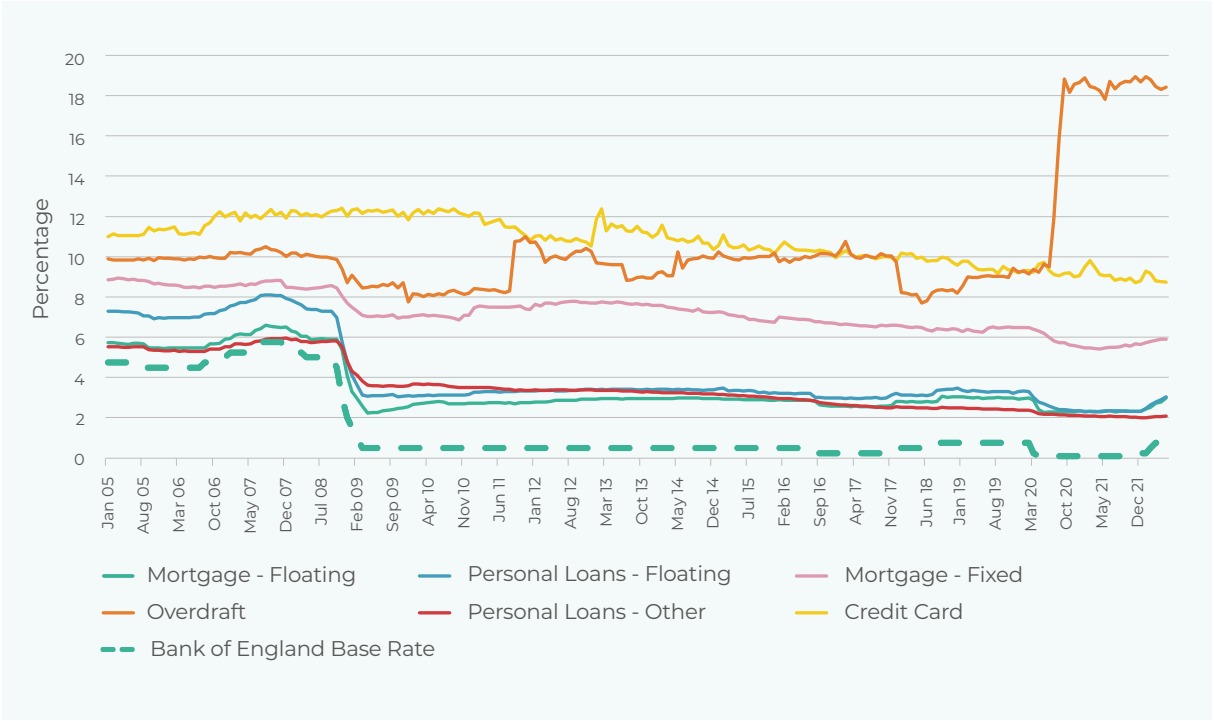
> Macroeconomic policy cannot be conducted on the basis of a single instrument and a single target…even if the central bank's objective is defined myopically as price stability, the overnight interest rate is an inadequate interest rate to achieve even that.[48]

Stiglitz[49] and Turner[50] argue that the conventional central bank interest rate tool is typically very indirect, unable to counteract the pro-cyclicality of bank lending, and leads to the economy being either over- or under-heated. In good times, there is too much supply of credit (prompting an excess of aggregate demand), and in bad times, there is too little (and what little is created goes predominantly towards financing the acquisition of pre-existing assets).[51]

Different sectors, and thereby different categories of credit, have different elasticities of response to changes in interest rates. Some sectors and bank lending activities may be more sensitive to rate rises or decreases and some less so. Accordingly, there is no single 'natural' rate of interest operating at one given point in time, and changes in the Bank's interest rate do not impact each sector neutrally.[52]

FIGURE 2: EFFECTIVE INTEREST RATES ON SELECTED LOAN PRODUCTS TO HOUSEHOLDS.

Monthly average of UK resident monetary financial institutions' (excl. Central Bank) sterling weighted average interest rate for different loan products to households.



Source: Bank of England database[53]

Figure 2 shows that the floating rate for mortgages fell by two-thirds (from roughly 6% to 2%) in response to changes in the Bank's base rate in 2009, while personal loans only fell by one-eighth (from 8% to 7%) and credit card rates don't seem to have initially responded to changes at all. Similarly, when the coronavirus pandemic hit in early 2020 and the base rate was reduced to 0.1%, interest rates on floating mortgages fell by one fifth, while average credit card rates barely reacted (falling from 9.3% in February to 9.1% by August 2020) and overdraft rates had in fact increased by over three fourths (from 9.1% in February to 17.9% in August).

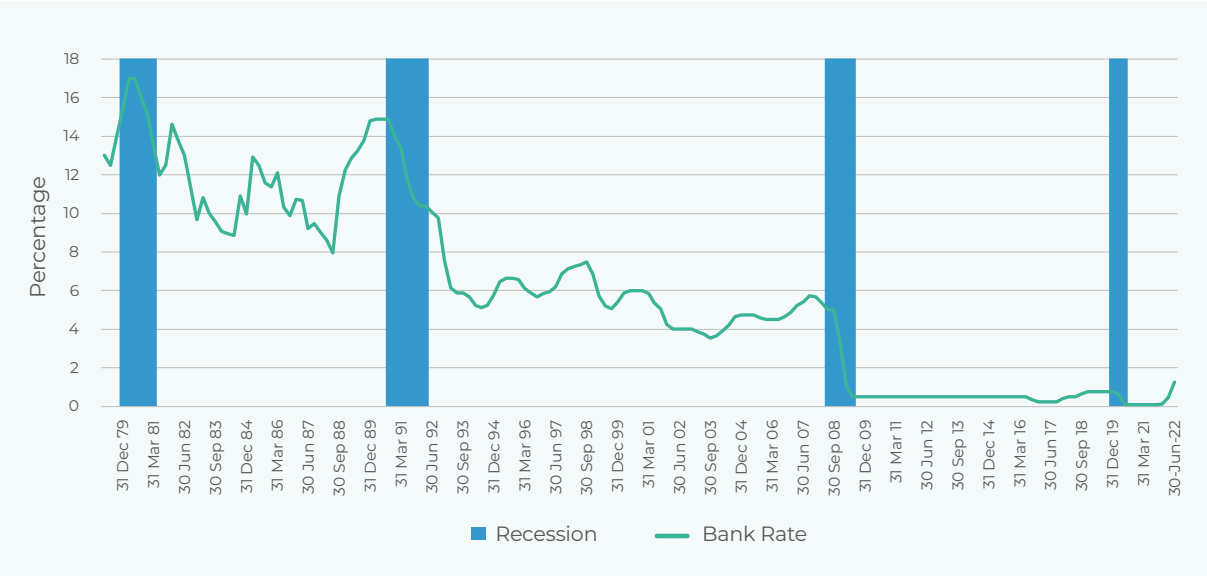
Given the vast majority of UK bank lending is for pre-existing assets in the property and financial sectors – and these sectors tend to be more sensitive to a reduction in interest rates – base rate changes alone may be a very inefficient means of influencing real activity and aggregate demand.[iv] This inefficiency partially explains the steady decline in the Bank's base rate (Figure 3) over the last 40 years (excluding recent rate rises in the aftermath of the coronavirus pandemic).

At the same time, with growing inflation the Bank could be forced to curb aggregate demand by raising interest rates further, which could have important impacts on both fiscal sustainability and financial stability, given current levels of public and private debt, and the sensitivity of mortgages and government yields to base rate increases. Credit policy tools could be deployed instead to target the sectors where aggregate demand in the real economy would need to be curbed without necessarily impacting the costs of mortgages, government borrowing, or essential green investments.

iv We recognise that lending for newly built properties does have a stimulating effect, and that property and financial sector lending can provide stimulus through channels, such as wealth effects (i.e. feeling wealthy due to higher asset prices may encourage more spending) and collateral effects (i.e. lower interest spending on mortgages frees up disposable income for consumption). Our point however, is that these channels are quite indirect, and come at the expense of higher asset prices and other negative side effects.

FIGURE 3: BASE RATES CONSISTENTLY FAILED TO RECOVER TO PRE-CRISIS LEVELS AFTER PREVIOUS RECESSIONS (IE EXCLUDING THE CORONAVIRUS PANDEMIC).

Average quarterly Bank of England base rate presented alongside periods of technical recessions, q1 1979 to q4 2021.



Source: Bank of England[54] and ONS[55]

1.2 MACROECONOMIC MANAGEMENT IN THE CONTEXT OF ENVIRONMENTAL BREAKDOWN

Climate change and environmental breakdown pose a "code red for humanity",[56] as noted in the 2021 reports by the Intergovernmental Panel on Climate Change (IPCC), with some negative impacts already irreversible, and risks "becoming increasingly complex and more difficult to manage".[57] As recently noted by researchers at the Bank for International Settlements (BIS), climate change and environmental breakdown are sources of both monetary and financial instability – warranting central bank intervention.[58] However, policy attention seems to be overwhelmingly focused on protecting the monetary and financial system from the risks posed by climate change,[59] with scant attention given to protecting the planet from the risks created by finance.[60] The Bank and the government should be commended for the various positive steps they have taken to green the financial system. However, current measures will be insufficient to shift the allocation of financial flows onto a sustainable footing in the time frame required. Credit policy interventions could support the transition to a low carbon economy and reduce environmentally related financial risks.

1.2.1 A finance-led, market-oriented approach will prove inadequate

We previously noted that thanks to the leadership of the Bank "finance is more engaged than ever before behind climate action",[61] but cautioned that there is a significant difference between 'engagement' and actually shifting capital allocation. The government's Advisory Group on Finance for the UK's Climate Change Committee (CCC) has taken a similar stance:

> These steps are all welcome in terms of direction. But the UK's financial system is still far from alignment with the net-zero goal… there is a clear case for a more comprehensive approach to harnessing finance for climate action.[62]

A significant problem with the Bank's current financial and monetary policy approach to environmental breakdown is that it still predominantly relies on a finance-led, market-oriented approach that inherently neglects the banking system's tendency to sub-optimally allocate credit.[63]

BOX 1: SUMMARY OF SHORTCOMINGS OF A 'DISCLOSURES ONLY APPROACH'

1) There is an over-reliance on the assumption that a primary obstacle to a net zero transition is the lack of sufficient information on climate risks.

2) The effectiveness of disclosures largely relies on the notion that climate-related financial risks are quantifiable – when they are in fact characterised by fundamental (Knightian) uncertainty.

3) With their micro-level approach to risk and the green transition, disclosures neglect the functioning of the financial system as a whole and its ability to endogenously create environmental imbalances and systemic risks.

4) A disclosure-only approach fails in terms of the speed required to combat the deepening climate crisis.

5) There is a lack of a meaningful link between disclosures and outcomes in the real economy.

6) While disclosures are assumed by the Treasury and the Bank to "drive investment in more sustainable projects and activities", they were not designed to provide the vital, patient, strategic finance needed to support jobs, businesses, and local communities.

Source: NEF and Positive Money[64]

The UK government's plans focus on mandatory Sustainability Disclosure Requirements (SDRs), which build on the framework of the Taskforce on Climate-Related Financial Disclosures (TCFD). The assumption is that information on estimated exposure to climate risks will lead markets to self-adjust.[65] Outside of the empirical evidence suggesting such measures will not be sufficient to trigger a step-change in investment and bank lending behaviour (Section 1.2.2), in van Lerven et al., we argue that a disclosure-led approach suffers from shortcomings outlined in Box 1.[66]

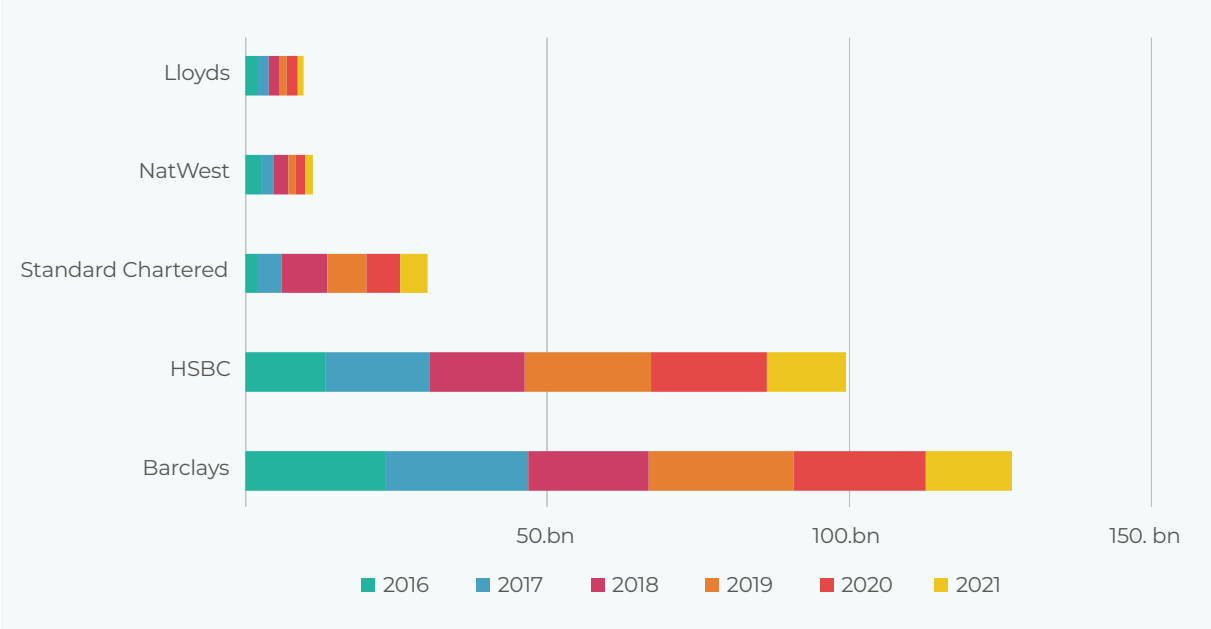
Scenario analysis and, in particular, stress tests are other important tools increasingly popular with central banks. Besides issues with the models themselves,[v,67,68] Chennet et al. highlight issues with scenarios for global emission pathways that do not take into account the numerous possible outcomes at regional and national levels that interact with a significant number of market actors and state agents.[69]

Beyond disclosures, scenario analysis, and stress tests, there is significant reliance on finance-led initiatives, such as the Glasgow Financial Alliance for Net Zero (GFANZ), chaired by Mark Carney, UN Special Envoy on Climate Action and Finance, who announced at the COP26 conference a commitment of $130tn to support the global transition to net zero.[70] However, the veracity of the figure has been questioned by experts highlighting it does not equate to amounts dedicated to green investment.[71] Furthermore, GFANZ signatories include the top 13 fossil fuel financing banks since the Paris Agreement, and 30 of its signatories provided $575bn to the fossil fuel industry in 2020 alone, which raises questions about how serious are their 'net zero' promises.[72] Such doubts were recently reinforced by comments by the HSBC's global head of responsible investments, Stuart Kirk, who, in a presentation that was internally approved according to the *Financial Times*, argued that "There's always some nut job telling me about the end of the world' and that 'investors need not worry about climate risk."[73]

v In addition, as noted by Campiglio et al. (2019), a financial sector is lacking from the conventional Integrated Assessment Models (IAMs).

FIGURE 4: SINCE SIGNING THE PARIS CLIMATE AGREEMENT, UK BANKS POURED OVER £287BN INTO THE DIRTIEST SECTORS.

Fossil fuel financing by the five largest UK-based banks between 2016 and 2021 (cumulative, £bn)



Source: Authors' calculation, based on RAN (2022).[74]

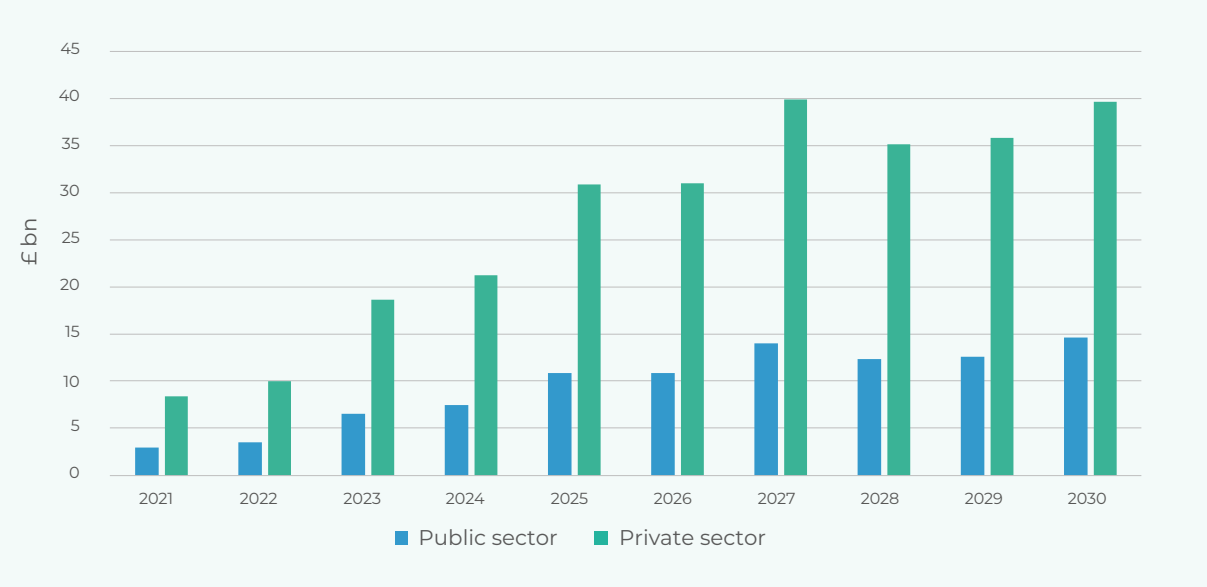
1.2.2 A misaligned financial system

Overall, the government and the Bank appear to prefer a soft market-oriented, finance-led approach. Crucially, thus far disclosures, scenario analyses, and stress testing have not triggered a substantive shift away from unsustainable financing towards greener alternatives.[75] UK-based lenders have provided over $364 bn of financing for fossil fuel projects since the Paris Agreement (Figure 4) with HSBC and Barclays – both the TCFD signatories – among the worst offenders.[76]

The continued financing of activities with a significant climate footprint will leave the UK financial system more exposed to climate-related financial risks. A recent report by the Central Banks and Supervisors Network for Greening the Financial System (NGFS), estimated that the economic costs of climate-related transition risks materialising could range"from US $1 trillion to $4 trillion when considering the energy sector alone, or up to US $20 trillion when looking at the economy more broadly".[77] Given the UK financial system is at the heart of the global financial system, a significant proportion of these costs could likely materialise in our domestic system.

FIGURE 5: PRIVATE FINANCE IS EXPECTED TO DO THE HEAVY LIFTING IN THE NET ZERO TRANSITION.

Share of private and public sector additional capital investment of delivering net zero, OBR (July 2021) central scenario under the CCC net zero balanced pathway.



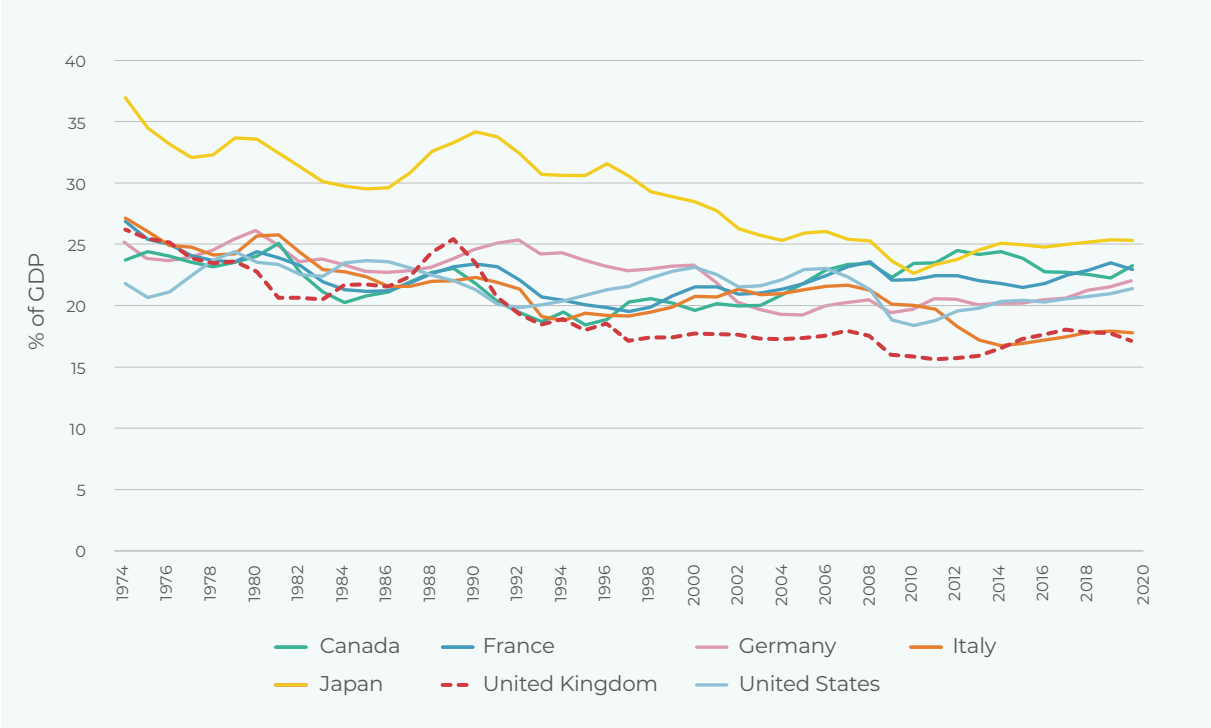
Source: Authors' calculation, based on OBR,[78] and CCC[79]

1.2.3 Green investment gap

Despite the lack of substantive progress in shifting financial flows and having a banking sector that is not geared towards delivering patient strategic finance,[80] the government is relying on private finance to deliver a substantial share of the additional investments required for net zero (the green investment gap).[81] The Office for Budget Responsibility (OBR)'s 'central share' scenario provides an indicative view of how the net costs of net zero investments might be distributed (Figure 5).[82] The Net Zero Strategy clarifies the government's position that most of the additional £50–£60bn investment required through the late 2020s and 2030s will need to come from the private sector.[83] Between 2022 and 2030, the private sector is expected to mobilise an additional £260bn. By 2025, annual private sector additional green investment needs to reach £30bn.[84] A failure to meet this green investment gap would not only have significant impacts on our ecosystems but would also exacerbate the materialisation of environmental-related financial risks and their associated consequences for the economy.

FIGURE 6. UK INVESTMENT LEVELS HAVE LAGGED BELOW G7 AND OECD LEVELS OVER RECENT DECADES.

Total gross fixed capital formation, G7 countries.



Source: World Bank and OECD data[vi,85,86]

Problematically, the UK investment levels as a proportion of GDP have been trending downwards since 1974 (Figure 6). With current private sector levels of investment at approximately £300bn a year (measured as gross fixed capital formation),[vii,87] a £30bn additional net investment by 2025 means private sector investment needs to grow by an extra 10% in the next three years. To put this challenge into context, based on ONS (2022) data our calculations suggest, in the three years following the 2016 referendum and before the pandemic struck, private business investment grew at an average of 0% year on year.[88] The OBR forecasts that real business investment will remain on a trajectory below its pre-pandemic trend through the forecast period to the mid-2020s.[89]

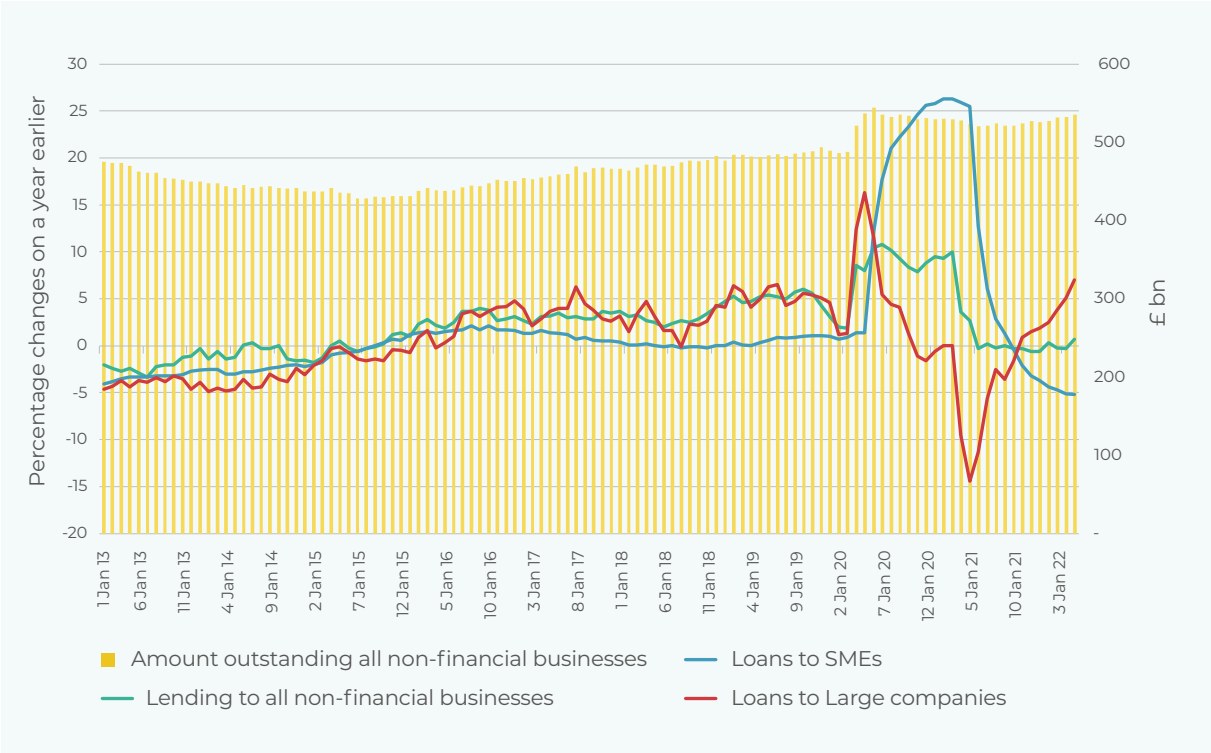
Another challenge in filling the green finance gap is that business balance sheets have still not recovered from the economic impact of the coronavirus pandemic and the associated shutdown in economic activity, with the largest increase in borrowing by SMEs (Figure 7).

The combination of low levels of bank lending to businesses, a long-standing weakness of productive investment, the forecast long-term decline in investment levels, and the significant debt by businesses taken on to deal with the pandemic, mean that financing new investment for the green transition will be exceptionally difficult without significant targeted support and incentives.

vi The chart is modelled after Chart 2.A in HM Treasury (2020).
vii Business investment and private sector capital investment in dwellings.

FIGURE 7: BANK LENDING TO BUSINESSES INCREASED AFTER THE ONSET OF THE PANDEMIC.

Monthly 12-month growth rate of monetary financial institutions' sterling and all foreign currency loans to businesses (in per cent) and monthly amounts outstanding of monetary financial institutions' sterling and all foreign currency loans to all non-financial businesses (in sterling millions) seasonally adjusted.



Source: Bank of England[90,91]

1.2.4 Managing aggregate demand for the low carbon transition

The deepening cost of living crisis, the energy crisis, and rising inflation have triggered considerable debate around the role of central banks in influencing price changes – and whether raising the overnight interest rate tool is the most effective way to deal with future price rises.[92]

In addition, the transition towards a low carbon economy and efforts to thwart wider environmental breakdown will have increasingly significant effects on supply and demand conditions and therefore wider prices.[93]

The governor of the Bank of England, Andrew Bailey, admitted that in its present shape"Monetary policy will not increase the supply of semiconductor chips, it will not increase the amount of wind… and nor will it produce more HGV drivers."[94] Indeed, a consistent increase in base rates to abate inflation will make investment more expensive – right at a time when businesses have taken on significant debt to deal with the coronavirus pandemic[95] and when we continue to face a significant green investment gap.[96] Meanwhile, the impact of price and interest rate rises and the resulting reduced demand for labour from employers could also have devastating impacts for households and the most vulnerable parts of society.[97]

Dealing with future potential price changes will most likely require a combination of fiscal, monetary, and wider regulatory policy. The current monetary policy toolkit is ill-suited to help deal with these dynamics, and more targeted credit policy instruments merit consideration.

2. GREENING THE BANK OF ENGLAND'S TERM FUNDING SCHEME

The Term Funding Scheme (TFS) is the Bank of England's tool to offer long-term liquidity to banks and building societies at a cheap rate, on the condition that they increase their lending to households and firms. Such low-cost funding is only supposed to be available to banks committed and able to demonstrate an expansion in lending for particular types of activities to households and businesses – and its latest iteration provides additional incentives for lending to small and medium enterprises (SMEs) (known as the TFSME).[98] The aim is to stimulate certain economic activities by making borrowing cheaper and ensuring the interest rate target is passed on to the real economy, which should encourage more investment and spending.[99]

The introduction of refinancing operations, such as the TFS, enabled central banks to implement two separate interest rates, as interest rates on refinancing operations can be set at a different rate from the central bank's main policy rate. In the current context of increasing inflation and pressure for higher interest rates, dual rates offer a way to both tighten the overall policy stance (ie by raising the main interest rate) and continue to support critical green investment (ie by offering a cheaper funding rate to banks lending for green activities).

The TFS is already designed to temporarily (during an emergency) support credit flows to specific sectors in the economy. In this respect, the Bank is already steering credit. Given the environmental emergency and the suboptimal allocation of bank credit in normal times, why not deploy the TFS with a green lens permanently?

2.1 SETTING UP A GREEN TFS: IMPLEMENTATION POSSIBILITIES

All recent UK targeted lending initiatives (the TFS and the previous Funding for Lending Scheme) were conducted temporarily and did not contain any green incentives or environmental screening criteria. This leaves the Bank behind the curve, with central banks in major Asian economies having introduced green schemes (Box 2).

There are several ways the Bank could design a green TFS to fit with its existing operations while enabling it to deliver on environmental aspects of its new remit (Table 1).

BOX 2: TARGETED GREEN LENDING PROGRAMMES GAINING TRACTION INTERNATIONALLY

In December 2021, the Bank of Japan launched an $18bn auction of discounted loans for lending towards green investments.[100] Similarly, the People's Bank of China launched its carbon emission reduction facility (CERF) in November,[101] offering to lend 60% of the loan principal banks made towards emission-cutting investments, primarily renewable energy, at a reduced one-year interest rate of 1.75%, which can be rolled over twice. The Bank of Korea also announced plans for introducing a targeted lending scheme aimed at SMEs in eco-friendly sectors.[102]

TABLE 1: OPTIONS FOR GREENING THE BANK OF ENGLAND'S TERM FUNDING SCHEME.

Name	Description
1. Negative screening	Screen out the dirtiest activities from support, beginning with coal and other most harmful fossil fuel projects (ie based on the Bank's framework for decarbonising its quantitative easing (QE) programme).[103]
2. Green tilting	Gradually shift the existing TFS framework and portfolio towards a greater share of greener loans (ie based on green taxonomy or individually selected green activities such as retrofits).
3. Negative screening + green tilting	A combination of 1 and 2, where eventually such an approach could align the TFS with plans for a green and a dirty (classifying harmful and unsustainable activities) taxonomy. This could also be implemented in a staged approach, starting with lowering interest rates for green lending when monetary policy is expansionary and then adding dirty penalising measures with policy tightening.
4. Risk-based TFS	Apply different refinancing rates depending on the net zero compatibleness of banks' overall lending profiles. This could be implemented using existing climate metrics,[104] such as changes in overall emissions or emissions intensity, and once available, forward-looking metrics, such as credible transition plans.[viii,105] It would incentivise banks to rebalance their overall lending profiles, supporting economy-wide decarbonisation. These could be structured as CAROs – Climate Risk-Adjusted Refinancing Operations.[106]
5. Taxonomy-based TFS	A new green TFS (aligning eligibility with the upcoming UK Green Taxonomy), pushing the interest rate for green investment further down and ensuring it is passed on to borrowers, be it households investing in green retrofits, or firms/SMEs investing in zero-carbon capital and technologies; and where collateral accepted for bank funding would be entirely green.
6. Taxonomy-based TFS + support SOFIs and GLGS	This would include a new green TFS, as described above (5), and would also include the Bank extending additional lines of credit to state-owned financial institutions (SOFIs) to pass on cheap lines of credit to alternative banks. It could also be combined with a new Green Loan Guarantee Scheme based on the recent Recovery Loan Scheme designed for post-pandemic support.

Source: Authors' own

The simplest option would be to offer the low-cost funding only to activities included in the forthcoming green taxonomy.[107] However, given the complexity and possible delays to such an endeavour, the Bank could start by ensuring that eligibility criteria exclude the dirtiest and most carbon-intensive sectors. Inspiration could be taken from Dafermos et al., who outline how such a framework could be applied to the Bank's Corporate QE programme.[108] The government must embed its upcoming green taxonomy in lending standards in a way that does not create onerous reporting responsibilities for small businesses, nor exclude them for their inability to fulfil data requirements. A balance will need to be struck, such that SMEs with potentially unsustainable business models (such as carbon-intensive production) can access cheap finance to invest in transitioning to clean technologies.

In the very near term, the Bank could create a separate green 'pilot' scheme targeted at energy efficiency and renewable investments, which could be implemented without delay using existing metrics. We outline an illustrative design of such a scheme in Section 4.

viii Best practice and guidance for such plans are currently being developed by the government-appointed Transition Plan Taskforce. The government committed at COP26 to begin making these plans mandatory for certain financial firms and listed companies from 2023.

For the TFS to be fully greened, the Bank would also need to decarbonise its collateral framework.[109] It would be inconsistent with the Bank's principles of sound monetary policy management if banks could put up dirty assets to gain access to cheaper funds for green lending.

2.2 SETTING UP A GREEN TFS: ACCOUNTABILITY MECHANISMS AND TRANSMISSION CHANNELS

The operation of the original TFS highlighted the need for strengthened monitoring to ensure the commercial banks do not abuse the scheme, as was the case with Metro Bank, which used £3.8bn of its TFS loans to invest in government bonds and mortgage-backed securities, rather than for eligible lending to firms and households.[110] To prevent the abuse of a green TFS and enhance its transmission channels to the real economy, robust accountability mechanisms need to be established:

i. Banks must provide evidence that they are expanding their lending for the desired sectors and activities.

ii. Banks must show that they are passing on a minimum interest rate reduction to their customers (such as following the precedent of pre-determined interest rates under the coronavirus Bounce Back Loan Scheme, where the interest rate was paid by the government for the first 12 months, and then set at 2.5% annually).[111]

To build confidence in the long-term consistency of policy (so overcoming one of the major barriers to greater green investment), the Bank should announce it will maintain the green TFS as a permanent operation on the way to reaching net zero, while retaining the scope to calibrate the parameters in the future.

2.3 SETTING UP A GREEN TFS: ESTABLISHING TARGETS FOR THE BANK

While the Bank's financial stability and monetary policy remits have been updated to account for climate change and the net zero transition,[112] to date there are no metrics or targets to hold the Bank accountable. This makes it impossible to evaluate the extent that our financial system is being decarbonised, and whether the Bank (alongside other government institutions) is successfully doing its job. This contrasts with the Bank's inflation target, where the Bank has a target for low and stable inflation of 2%, and it must write a letter to the Chancellor when this target has been missed by 1% in either direction.

While not a pre-requisite for implementing a green TFS, ideally the scheme should be linked to a quantitative target aimed at stimulating green financial flows. The Climate Change Committee (CCC) has already outlined how much additional investment is required on yearly basis,[113] and the Office for Budget Responsibility (OBR) modelled a scenario of what proportion would need to come from the private sector.[114] This could form a starting point for the desired level of green annual bank lending. This would still be a secondary target but could overlap with monetary policy and financial stability mandates. The Bank could then report on whether it was hitting that target to the Treasury Select Committee and/or in regular letters to the Chancellor.

Building on the multiple taskforces and working groups set up in recent years, the policy landscape would benefit from a permanent, formalised cross-institutional body to drive the transition with urgency. Accordingly, the government should set up a Green Finance Action Taskforce (GFAT)[115] that includes the Bank, HM Treasury, the Department for Business, Energy & Industrial Strategy (BEIS), as well as relevant regulatory bodies (eg the Pensions Regulator) and representatives from the Green Technical Advisory Group (GTAG) and the Transition Plan Taskforce.

Collectively, this body could work to develop specific targets for their respective institutions – such as targets for green private lending to be stimulated by the Bank. GFAT could then adapt and adjust these targets based on relative outcomes over time. The CCC could provide external monitoring, commenting on whether finance is aligned with the UK's carbon budget. Importantly, it should be GFAT – reflecting the democratic mandate from the participating government representatives – that advises the Bank on which sectors should be supported through targeted lending, rather than the Bank taking such decisions itself.

3. MAKING A GREEN TFS GO FURTHER

3.1 UTILISING PUBLIC FINANCE INSTITUTIONS

Problematically, the Bank's refinancing lines are not available to all financial institutions within the UK, including certain credit unions, community development financial institutions (CDFIs), building societies, and other financial providers, such as the PostBank. These other institutions are often better placed to provide credit to small and medium enterprises (SMEs) than high street banks.[116] One option would be to make the TFS directly available to these institutions. Given that they do not have direct access to credit facilities at the Bank, we propose using public intermediaries.

The UK has a well-developed public finance ecosystem, including the British Business Bank (BBB), UK Export Finance (UKEF), CDC Group, and the recently created UK Infrastructure Bank (UKIB).[117] The Bank (alongside the Treasury) could extend its green credit policy to channel lower borrowing costs for sustainable investments through UK public banks. These public intermediaries could pass on the green credit lines and cheap funding to the alternative banks for activities aligned with a socially just green transition.

The UKIB and the BBB could also be granted access to the green TFS, not just for on-lending to alternative banks, but to finance other types of green investments (ie purchasing equity stakes, corporate bonds, or direct loan provision).

The Treasury could further support the UKIB and the BBB with additional funding raised via green capital markets, building on the success of its hugely oversubscribed[ix,118] Green Gilt issuances, which raised £16.1bn in 2021.[119] The Treasury should also increase the maximum level[x] that the UKIB is allowed borrow via the Debt Management Office (DMO), by enabling additional Green Gilt issuances on behalf of the UKIB.[xi,120] The Treasury should ensure that the overall funding profile of the UKIB is balanced in a way that allows the bank to have the greater risk appetite necessary for investing in new technologies and correcting market failures.[121]

3.2 GREEN LOAN GUARANTEES

A green TFS could be combined with the provision of green loan guarantees, learning lessons from the government's pandemic loan guarantee schemes, which provided nearly £74bn of lending to SMEs at a time when a large part of the economy shut down.[122] Under the Coronavirus Business Interruption Loan Scheme (CBILS), the government guaranteed 80% of the finance to lenders for loans to firms with turnovers of up to £45m. The scheme provided loans up to £5m for between three and six years. Interest and fees for the first year were also covered. The Bounce Back Loan Scheme (BBLS) supported smaller loans of up to £50,000 to small and micro businesses adversely impacted by coronavirus. It offered a 100% government guarantee to lenders, and a fixed interest set by the government at 2.5% (after one year of no interest) on a standard 6-year term. Overall, with a crucial delivery role played by the BBB, CBILS approved £26.4bn in loans while BBLS approved £47.4bn of loans.[123]

ix Twelve times over for the second issuance.
x UKIB is allowed to borrow up to £1.5bn a year and £7bn in total via the UK Debt Management Office.
xi UKIB lending should already be aligned with the 'Eligible Green Expenditures' under the UK government's Green Financing Framework, and the framework itself could be tweaked if necessary to account for bespoke UKIB Green Gilts.

The government could repurpose the Recovery Loan Scheme (RLS) currently managed by the BBB[xii,124] into a permanent Green Loan Guarantee Scheme (GLGS) aimed at SMEs. The scheme could be backed by the Treasury, similarly to the pandemic lending schemes, with the Treasury taking responsibility for absorbing loan defaults. However, while the pandemic schemes had to be implemented in a matter of days, resulting in weak safeguards and vulnerability to fraud,[125] a green loan scheme could be developed with much stronger mechanisms to minimise misuse (including greenwashing).[126] The guarantees should be for less than 100% of the loan value, calibrated to incentivise cheap lending while ensuring the banks have 'skin in the game' and shared interest in preventing fraud and avoiding excessively risky loans.[xiii]

Lastly, a similar loan guarantee scheme could be extended to household loans for retrofits. Where such loans are 'unsecured' (ie not linked to mortgages), borrowers face substantially higher interest rates creating a major obstacle to energy efficiency investments.[xiv,127] Here the UKIB, which recently received a specific strategic direction from the Chancellor to support energy efficiency and home retrofits,[128] could, with the Treasury's support, deploy its capacity to extend loan guarantees, in addition to any direct lending. Combined with a green TFS, this could dramatically lower headline interest rates on unsecured loans to households and, via the BBB, to firms, so incentivising greater uptake of essential net zero investments by the private sector.

xii And which is due to expire on 30 June 2022.

xiii For borrowers, the scheme could have similar parameters to the RLS, ie a maximum £45m turnover per annum for eligibility and a maximum of £2m of finance per business, with the government guaranteeing 70% of the loan, with an additional eligibility screen that the loans must go towards green or transition-enabling investments.

xiv For average interest rate differentials between secured and unsecured lending see Bank of England. (2022). Effective interest rates.

4. PILOTING A GREEN TFS

In the absence of a UK green and dirty taxonomy, the Treasury and the Department for Business, Energy & Industrial Strategy (BEIS), representing the elected government, could advise the Bank to start by targeting energy efficiency retrofits, clean energy activities, electric vehicles, and charging stations. This would ensure low borrowing costs for households and small and medium enterprises (SMEs) for essential investments, while the overall policy stance shifts towards monetary tightening.

Next, we present a case study of supporting building retrofits, where the relevant standards and metrics to implement and monitor the scheme exist, and so enable rapid implementation.

4.1 WHY THE BANK OF ENGLAND SHOULD TARGET LOANS FOR RETROFITS

Improving UK buildings' energy efficiency is a crucial part of the net zero transition. Housing makes up 14% of the UK's carbon emissions, and lack of insulation means that £1 in £4 spent on heating is wasted, while 780,000 children live in homes with dampness.[129] The Climate Change Committee (CCC) noted that there has been little progress in upgrading the building stock, and while it welcomed the government's recent Heat and Buildings strategy, the CCC highlighted remaining policy gaps, including the need to "make it as easy and attractive as possible for homeowners to invest in home upgrades".[130]

The pace of retrofitting UK homes has been disappointing so far. Deep retrofits (which take a whole-building approach and deliver maximum emission reductions) are currently expensive and with payback periods (through savings in energy costs) too long for most firms' and households' investment horizons.[131] Further obstacles include a 'high-cost trap', where expectations of technology costs falling create a disincentive to be early adopters, and political barriers, such as inconsistent policy and lack of trust and long-term clarity about the decarbonisation of homes.[132]

By lowering the cost of green credit via a permanent scheme, the Bank could play a crucial role in facilitating retrofitting, alongside other necessary fiscal and regulatory measures by the government.

As the construction and retrofits sector is dominated by the self-employed and micro, and small businesses,[133] the scheme would boost employment and revenue opportunities for SMEs in particular.[134] The government estimated that delivering its Heat and Buildings strategy would support 175,000 green skilled jobs by 2030.[135] With all areas of the UK in need of substantial investment in retrofits, the scheme could contribute to both levelling up and net zero goals.[xv,136]

4.2 IDENTIFYING 'GREEN'

A prerequisite for implementing a targeted green scheme is the ability for lenders and the Bank to identify in a verifiable way what constitutes 'green' and would thus be eligible for preferential financing terms. The government is currently developing a UK Green Taxonomy. Before the taxonomy is ready, the Bank could initiate a pilot green TFS using existing metrics.

A pilot scheme targeted at lending for building retrofits could, for example, rely on Energy Performance Certificates (EPCs), which, while not perfect,[137] provide a ready way to certify eligible improvements. While not all UK buildings have an EPC rating, it is required for all new builds and whenever a building is sold or let. The CCC recommends that all UK buildings should be retrofitted to at least EPC rating C (with A being the most energy-efficient, and G the least) over the next 10–15 years,[138] with the government adopting the goal "for as many homes as possible to achieve EPC band C by 2035 where cost-effective, practical and affordable".[139]

Additionally, the government could advise the Bank to include lending for other sustainable and verifiable investments, such as solar panels, domestic wind turbines, and heat pumps. The EPC ratings (in the present form) are not designed

xv Both levelling up and net zero were emphasised in the Net Zero Strategy.

BOX 3: HUNGARY INCLUDES INTEREST RATE DIFFERENTIAL REQUIREMENT

In December 2019, the central bank of Hungary (MNB) announced a Green Capital Requirement Reduction Scheme, aimed at stimulating green retail lending in the domestic market. While different to a refinancing operation, the MNB's scheme nonetheless offers another example of central bank innovation in steering credit towards sustainable investments. Notably, the bank specified that to qualify, participating banks will need to provide at least a 0.3% interest rebate on the relevant transaction to their clients to stimulate customer demand. The scheme is targeted specifically at improving the energy efficiency of homes. The Bank outlines practical reporting requirements it expects the lenders to meet, consisting of (1) the energy performance of relevant properties, (2) the type of renovation measures to be undertaken, and (3) the level of interest reduction the participating banks will grant to lenders. The detailed policy document[140] (available in English) could serve as a blueprint for the Bank to emulate.

to explicitly recognise such improvements.[xvi,141] However, bespoke verification processes have been developed for previous government grant programmes, under the Domestic Renewable Heat Incentive,[142] with applications to the recently announced £450m Boiler Upgrade Scheme[143] for heat pump installations to be verified by Ofgem.[144] Importantly, lessons should be learnt from the failed Green Homes Grant, where the devised verification process proved overly complex, leading to 46% of installer applications and 52% of household ones being rejected.[145]

Commercial banks could then, in line with the CCC's recommendation,"first report on and then improve the average efficiency of their mortgage portfolios".[146]

4.3 PASSING ON LOWER INTEREST RATES TO BORROWERS

The Bank should specify in the green TFS conditions that commercial banks should pass on the cheaper borrowing cost to their borrowers, echoing the approach by the central bank of Hungary (Box 3) under its Green Capital Requirement Reduction Scheme. It should, however, allow commercial lenders to retain some profit to incentivise participation.

The lower rate for lenders on borrowing under a green TFS would be conditional on reaching lending targets, in a similar way to the current TFS. It would be subject first to hitting targets on additional lending towards specified green activities (in a pilot phase: housing retrofits), and second, to reporting, within a relevant timeline, the proportion of lending where retrofitting was certified as complete. The Bank could then set appropriate targets for individual scheme participants, based on their market profiles and existing lending, with the aim that individual targets will, over the years, add up to the UK financial system's aggregate green lending goal. If participating banks exceeded their targets, they should be able to refinance this extra lending at preferential rates at the next green TFS round, thus rewarding the most successful lenders.

What discount the Bank would need to provide to banks would depend both on its target for consumer rates, and the prevailing market costs of such lending. This varies substantially depending on whether a retrofit loan can be secured on a property (linked to a mortgage) or offered as a standalone unsecured loan. The average rate for new secured loans (primarily mortgages) was just 1.59% in February 2022, compared to 6.14% for other loans, a huge difference of 4.55 percentage points.[147]

4.4 ILLUSTRATIVE RETROFITTING LOAN

To stimulate demand and accelerate the uptake of retrofit measures where the cost is a major obstacle, the Bank could specifically target private unsecured retrofitting loans. The Bank should consult on,[xvii] and set a ceiling on the maximum amount of retrofitting allowance for an individual household, to avoid subsidising vast-scale works on expensive properties whose owners do not need financial support.

At present, the Bank lends out TFSME funds with a 4-year maturity, reflecting the envisioned temporary nature of the scheme. As we argue that a green TFS should be permanent during the

xvi EPCs were developed with a focus on estimated energy usage costs, rather than emission reductions.
xvii The Bank should consult with the CCC and BEIS (involving industry experts).

UK's path to net zero, the Bank should consider offering credit with a longer maturity, say, of six years, mirroring the government's pandemic loan schemes, or longer. We model loans with a 6-year duration, assuming the Bank would extend credit to commercial lenders with the same maturity.[xviii]

We illustrate three scenarios (a, b, and c) for final costs to households that the Bank could target under a green TFS beginning in 2023, plus a comparison baseline (d):

a) A loan to a consumer at a 2% rate (equivalent to the Bank's inflation target – assuming this target is met over the longer term, the rate would be effectively 0% in real terms).

b) A loan to a consumer at the Bank rate (projected to rise to about 2.33% on average over the period 2023–2025).[xix,148]

c) A loan to a consumer with 0% interest (an effective negative rate after inflation).

d) A loan to a consumer at 6.14% – the average interest rate for personal loans not secured by property.

Under scenario (a), a household borrowing £10,000 for six years would pay £620 in interest, but assuming inflation of around 2%, it would effectively pay no interest in real terms.[xx] With inflation expected to be above 2% over 2023, if a scheme was introduced in early 2023 offering 2% loans, borrowers would benefit from real-term savings, repaying £9,855 in total after adjusting for inflation.

Under scenario (b), the Bank would calibrate the lending rate of the green TFS sufficiently below the Bank rate, so that after accounting for their profit margins, commercial lenders would offer retrofitting loans at the Bank rate. As the Bank rate is normally the interest rate floor in the economy, these loans would be more competitively priced than any standard commercial product. A household borrowing £10,000 towards retrofitting in 2023 would end up paying £725 in interest in nominal terms, and £9,942 in total in real terms (after adjusting for inflation).[xxi] The real-term savings reflect the initial inflation rate in 2023 projected to be higher than the Bank rate – a situation that was also the case for most of the 2010s. If this trend persists over the longer term, loans offered to consumers at the Bank rate would also imply real-term negative interest.

Under scenario (c), the Bank would provide lenders with a negative interest rate under the green TFS such that households could borrow at a 0% nominal rate. A household borrowing £10,000 would then only pay that amount or only £9,271 over six years after adjusting for inflation.

A comparison of this option and the 'baseline' scenario of borrowers facing an average of 6.14% unsecured loan interest rates are shown in Figure 8. Compared to baseline total costs, our illustrative policy options for a £10,000 loan could save consumers, in nominal terms, (a) £1,359, (b) £1,255, or (c) £1,980 over the duration of their loan.[xxii]

xviii The loans are modelled on an amortised basis, with monthly repayments and monthly interest accrual. Repayments are modelled to consist of 72 equal payments. No early/ late repayments or deviation from this schedule are assumed.

xix An average for the Bank Rate derived from market projections for Q1 2023 and Q3 2025.

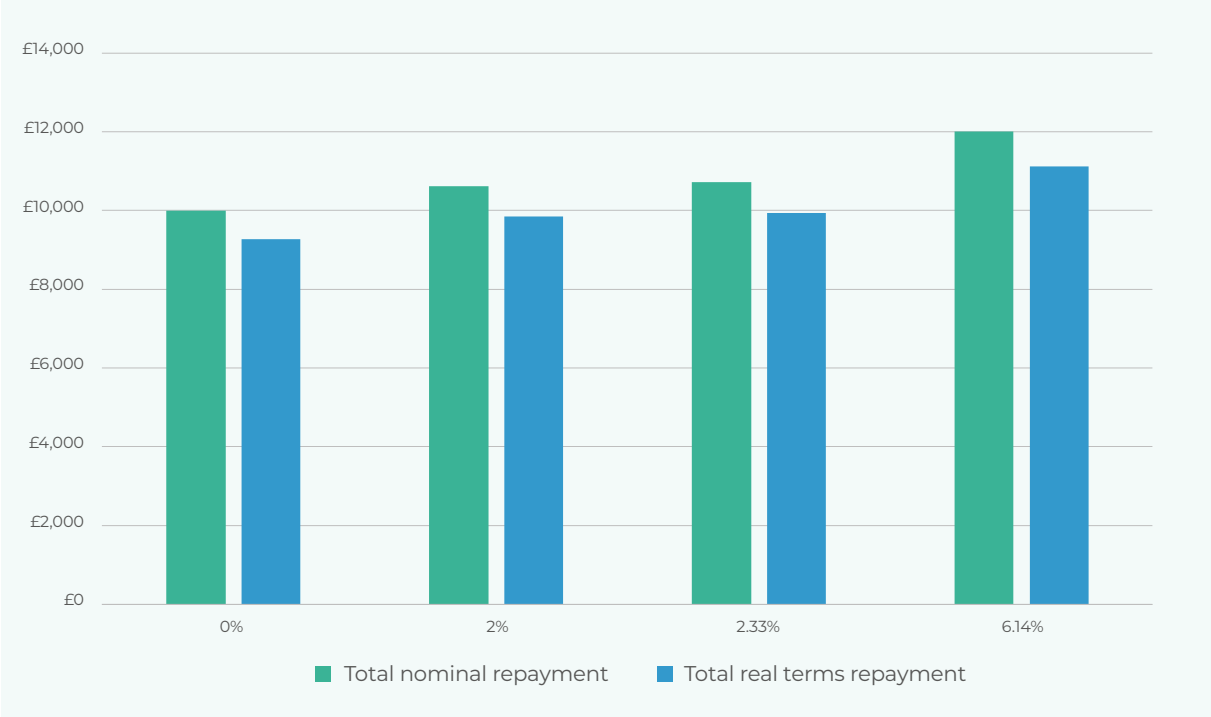
xx Modelling assumes 'amortised' repayment of the loan, that is a repayment of 72 equal payments (monthly over the 6-year duration of the loan), including interest and principal. Interest is calculated monthly on the outstanding amount, which is reduced each month in line with the repayment schedule. The share of interest in monthly repayments gradually decreases as with the principal being repaid. Interest is charged on a monthly decreasing amount. Real-term values use the Bank of England (May 2022) forecast CPI inflation rates from 2023 onwards, applied at Q4 level to each year's nominal repayment. The scheme is assumed to begin in 2023, so the real-term values are represented in 2023 pounds.

xxi The calculation assumes the rate of interest of 2.33% throughout the six-year loan duration (the average market expected bank rate over 2023–25). Alternatively, the Bank could structure the scheme as a variable rate reflecting changes in its policy rate. The MPC May 2022 inflation forecast is used until available, thereafter inflation is assumed to be 2%.

xxii These estimates are based on the latest forecasts, but are sensitive to future paths of inflation and interest rates.

FIGURE 8. AN ILLUSTRATIVE EXAMPLE OF HOUSEHOLD TOTAL REPAYMENT COSTS.

Total repayments, in nominal and real terms (2023 prices), for three variants of a green TFS and a baseline scenario. Loans taken in 2023 for a six-year duration.



Source: Authors' calculation, based on Bank of England forecasts[xxiii,149]

4.5 MACROECONOMIC DIMENSIONS

If a green TFS lending was to finance all of the required additional capital investment by the private sector (56% of the total in the Office for Budget Responsibility (OBR) central scenario) in residential buildings, it would imply an annual amount lent out by the Bank (and further lent on by the scheme participants) going from approximately £1.8bn in 2023 to around £8.4bn by 2028.[xxiv,150,151] Extending the scheme to non-residential buildings would imply supporting £3.5bn additional investment in 2023, increasing to £10.8bn by 2028.[152,153]

Given that the current rates on secured loans are below the inflation rate, scenario (a)– ie consumer rates at 2% – could plausibly be delivered by a combination of a green TFS lending to banks at 0%, and government guarantees to 'secure' this lending from banks' risk perspective. Assuming these loans are repaid by commercial lenders to the Bank in full upon reaching the proposed six-year maturity, the green TFS for residential retrofits, beginning in 2023, could reach a cumulative amount outstanding of £37.3bn (2019 prices) by 2030. While a sizeable amount, this would be just about one-fifth of the peak net drawings under the current TFSME (£192.3bn as of 23 March 2022).[xxv,154] Extending the green TFS to all sectors to finance *all additional private investment* required by net zero would result in cumulative drawings reaching £212bn by 2030.[xxvi] This suggests that the Bank could largely plug the green finance gap with a dedicated scheme of a similar size to the current TFSME.

xxiii See inflation and market-derived interest rate forecasts in Bank of England.

xxiv Authors' calculations, based on the OBR central scenario for the private sector share in additional capital investment in buildings retrofits, and the CCC modelling.

xxv Annual lending under a green TFS for residential retrofits, at less than £9bn a year during 2030s, would also be significantly less than net drawings by the banks from the current TFSME (£68.3bn in net drawings in 2020 and £124.7bn in 2021).

xxvi This assumes that the private share (OBR central scenario of 74% across all sectors) of all additional capital investment between 2023 and 2030 identified by the CCC is financed with the green TFS loans. This further assumes that loans would remain outstanding for six years and would be repaid by lenders to the Bank of England upon maturity at full nominal value, assuming 0% interest rate charged under a green TFS. The cumulative value of the scheme assumes up to six years of lending (once the scheme was in operation for six years), with annual amounts of new lending matching the private share of additional capital investment as modelled by the CCC and the OBR.

Alternatively, offering a green TFS at negative rates would be an economic subsidy from the Bank to households and businesses, with commercial lenders required to pass on the interest rate reduction. Banks should be allowed to retain a small proportion of the rate reduction as profit but should be primarily incentivised to participate by the ability to cheaply fund the *expansion* of their sustainable loan portfolios. The European Central Bank (ECB) has already implemented a targeted lending programme at a negative rate, and researchers at the Bank of France estimated that for the TLTRO III (€2190bn outstanding in November 2021), the cost, at the -0.5% rate offered, could come to €11bn a year.[155] This is, primarily a subsidy for banks, as the ECB did not impose any conditions on passing on the interest rate discount to end borrowers.[xxvii]

While a negative interest rate would imply 'losses' to the Bank under the green TFS lending, it should be put in context. On the one hand, a large, sustained green TFS offering loans to banks at negative interest rates (which may be necessary to meaningfully shift credit) could, short of the Bank increasing its revenues elsewhere, lead it to entering 'negative equity', where the value of its assets falls below the value of its liabilities, meaning that the Bank's net worth would be below zero. To remain *technically* 'solvent', the Bank could need an additional capital injection from the Treasury (or the Treasury indemnifying it against losses resulting from policy, as is already the case for the Asset Purchase Facility).

Central banks, however, are unlike commercial banks and negative equity does not prevent them from meeting their domestically denominated obligations. A Bank of England research paper observed that a currency-issuing central bank "will always be able to meet its liabilities in that currency".[156] A recent International Monetary Fund (IMF) research paper noted that concerns about central banks' solvency and equity position "can be addressed through a careful assessment of a central bank's loss-absorbing capacity and, if need be, tiered reserve remuneration policies".[157] Central banks of reserve-currency-issuing economies with strong institutions are found to have large non-inflationary loss absorption capacity (NILAC), reflecting, in addition to their capital, reserves and revaluation accounts (such as unrealised gains on gold and foreign exchange), the currency in circulation, and their discounted future seigniorage gains.[158]

As noted in the Bank's staff blog, central banks such as those in Chile, the Czech Republic, and Mexico operated effectively in recent years despite negative capital.[159] A less-well-known example, highlighted by the IMF, is the German Bundesbank which "effectively operated with negative central bank equity throughout many years in the first decades of its existence".[160]

The risks related to entering negative equity are more reputational than around solvency. [161] Such potential concerns include whether a central bank with negative capital would be able to maintain confidence in the currency and its operations – effectively the central bank would face constraints in the need to maintain price stability.[162] Here, the proposed implementation of a green TFS under a dual-rates approach aims exactly at balancing price stability goals with supporting green investment.

While negative equity, leading to potential debates about recapitalisation by the government, is also flagged as a threat to the central bank's independence,[163,164] *The Economist* suggests that "central bank losses are nothing to fear" and "rather than fret that losses erode their independence" we need to recognise the need for greater monetary-fiscal coordination in stabilising the economy.[165] Such considerations, therefore, need to become a part of a wider debate about the appropriate macroeconomic architecture that is fit to address multiple contemporary challenges, including climate change.

xxvii The Bank would need to assess whether such additional incentive was warranted under a green TFS to reach aggregate lending targets.

5. CONCLUSION

Despite some important steps, the UK financial system continues to be misaligned with the goals of the green transition and levelling up. UK policymakers are betting that mandatory climate risk disclosures and transition plans will lead the markets to self-adjust and redirect financial flows. However, evidence suggests this is unlikely. Despite the proliferation of voluntary climate-related financial disclosures since the Paris Agreement, banks have continued to direct billions of pounds towards fossil fuels, while leaving the green investment gap and the small and medium enterprise (SME) finance gap unresolved.

Faced with a climate emergency, society's resources must be mobilised in an efficient way to respond. The government will need to lead the way with fiscal policy, regulation, and direct public investment, but greening and reshaping private finance remains a crucial piece of the puzzle.

More pro-active intervention by central banks and regulators to guide finance towards priority investments and away from undesirable ones used to be the norm, before the subsequent turn towards more market-led approaches. Such credit guidance policies played an important role in supporting the post-World War II recovery in the west, and, more recently, in the rise of East Asian economic powers, notably China.

Simply increasing the main policy rate will do little to stave off external and supply-induced price rises. Instead, Bank rate rises could dis-incentivise new green investments that have notoriously large upfront costs and thus face higher funding costs. Green targeted credit policy interventions would enable the Bank to better realise its price and financial stability objectives and could help it better reflect the importance of environmental sustainability and the transition to net zero as recently mandated by the UK government.

The Bank can adapt its existing policy toolkit and stimulate green investment essential to the transition, while also reducing risks of future inflation driven by volatile fossil fuel prices. The Bank should launch a targeted green lending program (green TFS), and utilise dual interest rates to target its price stability goal while, at the same time, ensuring favourable financing conditions for green activities.

A coordinating Green Finance Action Taskforce (GFAT) should be set up to advise the Bank on the quantitative targets of annual green investment, such as for retrofitting UK homes, that are consistent with the Climate Change Committee's net zero transition pathways, public investment and other government policies. Having such targets would enable Parliament and the public to hold policymakers accountable.

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NEW ECONOMICS FOUNDATION

WWW.NEWECONOMICS.ORG
info@neweconomics.org
+44 (0)20 7820 6300 @NEF
Registered charity number 1055254

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Lukasz Krebel and Frank van Lerven

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