CENTRE FOR BREXIT
POLICY

DELIVERING A NEW GROWTH STRATEGY FOR BRITAIN'S ECONOMY

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THE CENTRE FOR BREXIT POLICY

The Centre for Brexit Policy (CBP) is a think tank backed by cross-party voices who support the UK leaving the EU. The CBP was formed to propose the critical policy changes enabled by Brexit that will boost national prosperity and well-being in years to come, as well as help ensure that Britain fully 'takes back control' after leaving the European Union.

The CBP aspires to trigger a deep and wide debate about what Brexit should mean for the UK over the next decade or two. By providing a focus for the development of post-Brexit public policy, the CBP hopes to help formulate an overarching framework for the UK that maximises the opportunities Brexit affords. This will be promoted to Government, Parliamentarians, and the public welcoming contributions from those who want to see Brexit open a new and fruitful chapter in our country's life.

The CBP has three core objectives:

- **Identify the benefits and opportunities of Brexit across the full spectrum of economic, trade, social, foreign, defence and security policy areas proposing new policies for the Government's agenda**
- **Continue to make the intellectual, evidence-based case for a 'real' Brexit and provide the Government with clear and constructive advice on how to deal with ongoing negotiation and implementation issues. A 'real' Brexit means regaining full control over our laws, borders, seas, trade, and courts.**
- **Check any attempts to dilute Brexit, as well as serving as a catalyst and rallying point for positive news stories that, over time, will be able to persuade and demonstrate the many substantial advantages of Brexit**

Delivery of these objectives is based on professional, substantive fact-based research by experts in their fields leading to authoritative reports, short papers, OpEds, events, and briefing meetings - both within and without Government.

The CBP is supported by a cadre of expert CBP Fellows drawn from multiple disciplines to provide additional expertise and experience in developing an agenda for policy change that will ensure the British people benefit from Brexit.

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EXECUTIVE SUMMARY

I – EXISTING ECONOMIC POLICIES – AS PROMULGATED BY THE TREASURY – ARE LIKELY TO LEAD TO RECESSION AND A SPIRALING DEBT RATIO

- Current fiscal policy is essentially that incorporated in last October's Budget, which proposed increasing Corporation Tax to 25 per cent from a scheduled fall to 17 per cent, imposing an increased 2.5 per cent National Insurance Contributions (in total across employees and employers), and stopped indexing income tax thresholds
- The Treasury's arguments for higher taxes are defective:
  - Increasing tax does not reduce inflation
  - Higher inflation does not increase debt service cost
  - Higher corporate taxation is not justified by the Treasury's 'Super-Deduction' tax allowance
- The current Treasury orthodoxy of raising taxes to strengthen the public finances and bring down the debt-to-GDP ratio is rooted in outdated lessons from the Thatcher era when economic conditions were very different from today
- The Treasury's current orthodox policies, even if inflation is brought down to two per cent, will lead to lower growth and tax revenues so that the debt-to-GDP ratio spirals upwards, reaching 125 per cent by the mid-2030s.
  - Increased business taxes reduce economic growth
  - Increase in NICs adds to the drag on competitiveness and output
- Growth is destroyed creating a 'doom loop' in which events and policies interact to destroy both the economy and the public finances

II – FORMULATING A SUCCESSFUL SUPPLY-SIDE BASED ECONOMIC STRATEGY

- Economic growth depends on an environment where entrepreneurial incentives to innovate are high, which requires 'supply-side' policies with an emphasis on reducing taxes and improving regulation. This leads to improved business innovation and to productivity growth.
- A successful economic strategy should be based on the following principles:
  - Tax rates set to the lowest possible level consistent with paying for long-term spending on goods and services, plus debt interest
  - Short-term deficits in spending/interest financed by long-term borrowing that maintains a 'safe' debt-to GDP ratio (eg, 50 per cent) in the long-term
  - The current balance of government spending less revenue – the 'fiscal deficit' – employed to stabilise output through recessions and booms (borrowing should be seen as a resultant policy option, not a constraint)
  - Monetary policy employed to control inflation, working in tandem with fiscal policy that stabilises output
- Key supply-side policy levers in a post-Brexit era are:
  - Tax reform
  - Post-EU global trade
  - Deregulation of labour, product/market standards, finance, energy and the environment

III– DELIVERING SUPPLY-SIDE ECONOMIC POLICIES FOR GROWTH

- By cancelling only the planned increases in the burden of businesses taxes - notably the increase in corporate tax, and reversing the increase in NICs - a significantly improved economy would be produced compared to current Treasury policy, with growth increasing substantially and the debt-to-GDP ratio falling to comfortable levels within 5 years
- Furthermore, an illustrative robust £100 billion supply-side stimulus package, comprising further cuts in business and personal income taxes, and additional public spending (focused on public services and infrastructure) would increase growth even more and bring the debt-to-GDP ratio down to safe levels before the end of this decade
- Research shows that supply-side policies applied nationally have a disproportionately positive impact on the economy of the 'North', thereby assisting significantly in 'levelling up'. A supply-side stimulus package would increase GDP growth in the North, relative to the South, because the North has relatively more underutilised assets.

IV - REFORMING GOVERNMENT'S APPROACH TO ECONOMIC MANAGEMENT

It has been obvious for some time that recent governments have had weak control over the levers of economic policy. In order to regain control, the new government should adopt the following measures:

1. **Replace short-term fiscal rules with long-term solvency targets**
2. **Establish a new Council of Economic Advisers responsible to Number 10**
3. **Expand the remit and capabilities of the existing OBR to establish an effective analytical support unit to the Council of Economic Advisers**
4. **Review the role, structure, and modus-operandi of the Treasury**
5. **Address weakness of economic management**
   - Re-establish indexation and provide immediate inflation crisis support by employing VAT/Universal Credit
   - Operate fiscal and monetary policy in tandem
   - Strengthen the Government Economic Service
   - Modernise and upgrade economic modelling

In addition, we support the already announced review of the mandate and accountability of the Bank of England, while preserving its operational independence on monetary policy

INTRODUCTION

Following the financial crises and the Great Recession, Brexit, and Covid, the UK needs a fresh economic policy. The imminent establishment of a new Prime Minister provides the opportunity.

In the early days of the financial crisis, governments responded by using fiscal policy to stabilise output in 2008 and in 2009. As economies stabilised and recovery began, governments exhibited an extraordinary reticence about using fiscal policy to stimulate growth. Instead, they relied on central banks using novel monetary tools such as quantitative and credit easing and forward guidance along with extraordinary low interest rates.

In the ten years to 2019, these monetary policies and reluctance to use fiscal policy resulted in slow and disappointing rates of economic growth. Indeed, growth was so insipid that it stimulated an economic debate about the extent to which advanced economies may have fallen into a condition of secular stagnation or were exhibiting the sort of conditions that classical economists considered when they explored what they called stationary states.

The UK has not escaped this: public expenditure and investment and public policy has been constrained and distorted by a Treasury orthodoxy based on a set of fiscal rules directed at controlling deficits and the stock of debt in relation to GDP. These fiscal rules and the reluctance to use deficits and borrowing as part of demand management have contributed to a deformed version of macro-economic policy. Instead of using both instruments of monetary and fiscal policy to manage adverse shocks, macro-economic policy has relied primarily on one instrument, monetary policy, with disappointing results.

The UK should recognise the present conjunction of events as an opportunity to reassesses long standing economic policies and economic institutions.

The purpose of this paper is to assess the implications of the Treasury orthodoxy, set out an alternative strategy for managing the economy, and to propose some institutional changes necessary to achieving such a changed economic approach. Accordingly, the paper is organised around the following four chapters:

I - Current Treasury economic policy leads to recession and spiraling debt

II - Formulating a successful supply-side based economic strategy

III - Delivering supply-side economic policies for growth

IV - Reforming government's approach to economic management

I – CURRENT TREASURY ECONOMIC POLICY LEADS TO RECESSION AND SPIRALING DEBT

The nation's current fiscal policy is essentially that incorporated in last October's Budget. The principal economic policy proposals in the Budget were:

1. Planning a rise in Corporation Tax to 25 per cent from a scheduled fall to 17 per cent
2. Imposing 2.5 per cent (in total across employees and employers) National Insurance Contributions
3. Stopping indexation of income tax thresholds

Instead of putting growth first, the Budget proposed higher taxes today with an intent to lower them at some time in the future in order, it seems, to satisfy the latest version of short-term fiscal rules that have been promulgated by successive governments since the time of Gordon Brown's Chancellorship. It has become clear that many Treasury and other civil servants have learnt to embrace an approach to economic policy in which reducing borrowing in the short run comes first and the effects of tax on growth are ignored. During the current Conservative Party leadership contest, the former Chancellor has essentially maintained this policy, notwithstanding a few small variations on the theme.

As we will show in this paper, this approach is misconceived. Instead of an economic strategy designed to improve the economy's performance, notably on growth, the Treasury's interest has focused mainly on reducing the growth of debt in the short term. The policies reveal a worrying confusion about tax direction as the up and down tax pattern is damaging to growth that, in turn, actually undermines long-run debt management.

DEFECTIVE ARGUMENTS FOR HIGHER TAXES

Current economic policy on taxes and the budget is scheduled to deliver rising corporate tax rates and are already raising tax rates on wages through higher NICs and higher income tax rates as inflation pushes people up the tax scale. The rise in taxes is intended to strengthen the public finances and bring down the debt-to GDP ratio (hereafter described as the 'debt ratio'). Ironically, by destroying growth, it does the opposite.

Consequently, under current policies, the UK economy is drifting into an economic future in which the gradual defeat of inflation by higher interest rates and reversing commodity prices will be accompanied by a nasty recession and substantially lower growth in the long term.

A variety of misdirected arguments are put forward to justify pushing up taxes today.

- Increasing taxes reduces inflation via reducing aggregate demand
- Inflation increases debt service costs, and so increases debt
- Increasing taxes facilitates the attractiveness of a 'Super-Deduction' for investment, thereby increasing investment

Increasing Taxes Does Not Reduce Inflation

The control of inflation is the task principally of monetary policy via the control of interest rates and the money supply. The government budget balance does not affect the money supply, unless it is financed by printing money through the Bank buying government bonds. Higher taxes do not affect the money supply. However they do reduce growth and the supply of goods; in this way, they actually increase inflation. Lowering taxes will by raising goods supply directly reduce inflation.

Higher Inflation Does Not Increase Debt Service Cost

There are five reasons why this argument is misdirected.

First, inflation erodes the value of debt, thereby lowering the real resources the government must use to repay the debt. This decrease in resources offsets the money paid in interest, resulting in no net inflation effect on real debt costs.

Second, the real cost of debt depends on the real rate of interest - ie, interest rates minus inflation. The current real rate of interest, as seen in the ten-year index-linked gilt market, is negative 1.1 per cent. Thus, under current conditions, the Government is being paid to borrow, since borrowing actually decreases the real cost of debt-service. Because in rising inflation cycles, interest rates often lag inflation, negative real interest rates can persist for lengthy periods of time.

Third, even if real interest rates were to rise as they well might, with UK debt having an average maturity of about 16 years, the real interest paid on government debt will rise only gradually and this slowly rising cost will be a minor element in overall debt-service cost.

Fourth, it often is forgotten that a substantial proportion of government debt is long-term index-linked bonds for which interest payments are 'rolled up' and paid only when the bond matures. This means there is no cash cost when interest rates increase, as the cash cost is deferred many years into the future. Furthermore, the key point is that index-linked payment as interest exactly cancels out the fall in real debt value due to inflation on maturity.

Finally, it is said that the Bank, by buying long-dated gilts in exchange for cash and bank reserves on which it may pay interest, has lowered the public sector's debt maturity. This is not true. Bank reserves are money not debt; banks cannot swap them at the Bank except for cash. No interest needs to be paid on them, any more than it is paid on cash.

The 'Super-Deduction' Does Not Justify Higher Corporate Taxes

The rationale for the increase in the rate of corporation tax is that it will stimulate capital investment via its accompanying super-deduction tax relief – ie, a 130 per cent capital allowance deduction applied to business investment in main plant machinery. The Treasury's judgement was that higher corporate tax rates would make the super deduction more attractive thereby simulating investment.

Unfortunately, this is not a free market approach but an attempt to micro-manage the private sector via a further complex tax expenditure. First, set a higher rate of tax on future profits, then offset this for investment in tangible capital by giving a rebate on today's spending. In this way, tangible investment that would have happened naturally due in the expectation of future profitability will still go ahead. But the problem is that all other business activity to raise profit is penalised: namely via intangible capital due to general innovation or via simply expanding the business via more employment.

An additional important objection to the super-deduction tax is the manner in which it further complicates the tax system.

The Chancellor has appealed to evidence that investment has not surged in recent years as justification for his proposed interventionist super-deduction. However, it is not possible to analyse historical investment trends and draw such a conclusion: many factors are at work.

In fact, there is strong evidence that a free market approach to cutting taxes and regulation on entrepreneurs has been successful here in the decades since 1970, once you allow for all the shocks that have buffeted the economy over the period. For example, the table of decadal growth below (which roughly eliminates business cycle distortions) shows that growth surged in the 1980s as the Thatcher reforms took hold. It provides evidential support for a policy of not merely keeping taxes down but actually cutting them further.

Table 1: UK Growth by Decades*

Decade	Growth Rate
1970s*	2.5
1980s	2.8
1990s	2.3
2000s	1.6
2010s	1.7

Source: Fed of St Louis databank, FRED
*1970s = (Q1 1970 to Q1 1980)

THE TREASURY ORTHODOXY

The 'Treasury Orthodoxy' maintains that restraint of government borrowing is the key priority for the government. For example, the Treasury's view is that debt contracted during Covid should now be repaid as soon as possible, as a priority, and, hence, any new spending must be met from new taxes.

This idea that borrowing is a bad thing goes back a long way, especially in Conservative circles after all the battles over the tough 1981 budget under Mrs Thatcher. But the world has changed radically since then:

- Inflation then reached 25 per cent, it has been close to or at 2 per cent for most of the last three decades, and even now is around 10 per cent
- Unions power then was great, today in an environment of balanced industrial relations law, outside of the public sector, it is much weaker and labour markets adjust to changing circumstances with greater ease
- In 1981, government controlled both debt and money and markets were afraid it had lost control of both. To bring inflation down the government had to convince the markets it meant business with that tough budget. In practice, the discretionary tightening of fiscal policy at the trough of the recession, was more than offset by a loosening in monetary conditions arising from a lower exchange rate. Between November 1980 and June 1981, sterling fell against the dollar by some 20 per cent and the Sterling Trade Weighted Index fell 7 per cent, the Bank Rate began an erratic fall from 14 per cent to 12 per cent in March 1981 and was down to 10 per cent at the end of 1982. And there was a powerful real balances effect arising from the sharp fall in inflation so that many economic agents felt the money they held was worth more.

- Finally, with the nominal interest rates of today, the cost of borrowing is low - three-month sterling interbank rates are around 2.35 per cent and long dated gilt yields are 2.85 per cent for thirty years, whereas in 1981 they were well into double digits. Real interest rates today are negative, which means the Treasury is actually being paid to borrow. Unfortunately – for unclear reasons - the Treasury has resisted all advice to reissue as much debt as possible at today's negative real rates.

The discretionary increase in taxes over the last year amounts to a fiscal tightening of around 1.8 percent of GDP, which alone threatens to halt short term economic growth. Moreover, by raising taxes just when, following Covid and Brexit, we most need growth to pay back debt and boost confidence in the economy's future, is a mistaken approach. It at variance with welfare-maximising debt policy and represents an 'unforced error' leading to unnecessary self-harm inflicted by the Treasury's failure to understand the role of debt management.

TREASURY ORTHODOXY LEADS TO LOWER GROWTH AND HIGHER DEBT

Having explained why the current economic policy espoused by the Treasury is based on flawed arguments, what is likely to be the economic outturn of this policy over time – in particular with regard to debt? [1]

To answer this question, we employed the modern successors to the Liverpool Model pioneered in the 1970s that have been further developed by the Applied Macroeconomics Group at the University of Cardiff. These models employ the well-accepted notion of 'rational expectations' - ie, expectations that are responsive to announced economic policy. In other words, these models take into account the reaction of people to their perceptions of what future economic policy will be. For example, if people believe the Bank will take a strong stance against inflation, their actions are less likely to assume that they will have to cope with high inflation in future. In addition, unlike models used by the Treasury and the Bank, these macroeconomic models deal with both the effects of fiscal and monetary policy on output, inflation and interest rates and incorporate the supply-side and the effects of policy on growth.

Table 2 is the long term projection for the economy assuming the Treasury's current economic policies. The models assume that monetary policy will succeed in bringing inflation down to around 2 per cent by the mid-2020s and will keep it there after that.

We see that the existing policy orthodoxy enshrined in the Treasury's policies is likely to produce very poor economic prospects for the UK economy. In particular, the debt ratio, while falling at first under the impact of sharply higher taxes per Treasury policy, later spirals upward as growth stalls, reaching 125 per cent by the mid-2030s.

The rising debt is a consequence of lower GDP growth. The Treasury's increase of corporation tax to 25 per cent will lower growth; on top of that, the rise in NICs will lower competitiveness and also depress output. The combined effect will be a lowering of growth in excess of 2 per cent pa. Since the baseline growth forecast, without the Treasury's tax increases, is assumed to be 2 per cent, this reduction in growth strictly taken implies negative growth. However, for conservatism, we have simply projected growth of zero, implying that nominal GDP growth is around 2 per cent pa, the same as the projected inflation rate.

1 The objective of these projections is to assess the trend in growth and the debt ratio under different policies. Thus, the projections are intended to highlight the different directional results produced by various policies, rather than serve as a realistic forecast.
In all cases the same real spending plans are assumed; also the same inflation rate, assumed to be brought down to 2%. Hence, the differences lie in the tax policies and their growth effects; they also create differences in the opening years' PSBR forecasts, which are currently highly uncertain, owing to the shocks in progress. But these have little effect on the trend debt ratio, which is dominated by the effect of growth on net tax revenue.
The debt ratio is calculated without regard to reactive policy changes. Hence, in the current policies projection with zero growth debt goes in the long term above 100% of GDP, with no evasive action taken. In practice, we would expect taxes to be raised further but according to the model this would create a 'doom loop' in which growth was reduced further, further worsening the finances; alternatively spending could be cut, also with growth consequences.

Table 2: Long Term Forecast under Current Treasury Policies

	Nom PSBR (£bn)	Nom GDP (£bn)	Nom Pub Spend (£bn)	PSBR/ GDP %	Spend/ GDP %	Nom Debt (£bn)	Debt Interest (£bn)	Debt/ GDP %	Net Taxes (£bn)	Net Tax Rate %
2019/20	49.1	2196.3	472.2	2.2	21.5	1621.0	48.1	73.8	471.2	21.5
2020/21	315.1	2007.9	479.2	15.7	23.9	1936.1	39.8	96.4	203.9	10.2
2021/22	146.2	2311.1	494.1	6.3	21.4	2082.3	42.6	90.1	390.5	16.9
2022/23	-68.2	2574.0	570.3	-2.6	22.2	2014.1	41.1	78.2	679.5	26.4
2023/24	-78.0	2742.9	603.2	-2.8	22.0	1936.2	42.9	70.6	724.1	26.4
2024/25	-55.0	2867.2	658.3	-1.9	23.0	1881.2	43.7	65.6	756.9	26.4
2025/26	-35.2	2915.9	690.2	-1.2	23.7	1846.0	44.3	63.3	769.8	26.4
2026/27	7.7	2965.5	745.7	0.3	25.1	1853.7	44.9	62.5	782.9	26.4
2027/28	58.5	3015.9	809.3	1.9	26.8	1912.2	45.4	63.4	796.2	26.4
2028/29	114.3	3067.2	878.0	3.7	28.6	2026.5	46.0	66.1	809.7	26.4
2029/30	175.9	3119.3	952.7	5.6	30.5	2202.4	46.8	70.6	823.5	26.4
2030/31	243.8	3172.4	1033.6	7.7	32.6	2446.2	47.7	77.1	837.5	26.4
2031/32	318.4	3226.3	1121.2	9.9	34.8	2764.7	49.0	85.7	851.7	26.4
2032/33	400.5	3281.1	1216.0	12.2	37.1	3165.2	50.7	96.5	866.2	26.4
2033/34	490.7	3336.9	1318.7	14.7	39.5	3655.9	52.9	109.6	880.9	26.4
2034/35	589.7	3393.7	1429.9	17.4	42.1	4245.6	55.8	125.1	895.9	26.4

GDP at market prices (Financial Year)

What these results illustrate is the circular economic process brought on by the Treasury's intellectual error in neglecting the effect of its policies on growth. Increased taxes result in entrepreneurial dis-incentives that lead to lower consumption/investment leading to lower growth and, consequently, to lower tax revenues requiring higher borrowing resulting in even greater debt.

In principle, the Treasury could react to this outcome by raising taxes even further to restore the finances. But this would worsen matters, creating a 'doom-loop' in which events and policies interact to destroy both the economy and the finances. As for inflation, if this continuing recession were to cause a sharp loosening of monetary policy in a forlorn attempt to restore growth, we could also face a worsening inflation outlook.

II – FORMULATING A SUCCESSFUL SUPPLY-SIDE BASED ECONOMIC STRATEGY

If the Treasury's orthodoxy of prioritising debt-repayment over economic growth leads to low or negative growth and increasing debt, what is the correct economic strategy for the country? How is long-term growth achieved? And, how can the economy be managed so that there is an appropriate balance amongst growth, inflation, and the government's balance sheet?

PRINCIPLES OF A SUCCESSFUL ECONOMIC GROWTH STRATEGY

According to much modern research, economic growth depends on an environment where entrepreneurial incentives to innovate are high. A huge research literature (see Appendix A) demonstrates that achieving this requires the correct 'supply-side' policies with an emphasis on reducing taxes and improving regulation. Research shows this improves business innovation and so productivity growth.

Consequently, a successful economic growth strategy should be based on the following principles:

1. **To maximise welfare, tax rates should be set to maximise growth over the long run.** This means, because higher tax rates reduce growth, taxes should be kept constant at the lowest tax rate the government can afford over the long term. This means that tax revenue should equal long run expected spending – ie, long run spending on goods and services plus debt interest – but no more.

2. **Short term deficits in spending and debt interest relative to tax revenues should be financed by borrowing that consequently 'smooths' out the need for tax rises** - much like households or businesses use borrowing to allow them to keep their consumption or investment spending constant. This 'tax-smoothing' function of borrowing must be consistent with the long run constraint that the debt ratio must come down to a safe level, say around 50 per cent of GDP. Once down to such a sustainable level, spending then matches tax in the long run, maintaining the ratio.

   A critically important implication of this is that the short-term fiscal rules of the various sorts used by successive governments since the time of Gordon Brown obstruct the vital tax-smoothing function of debt and borrowing. Consequently, they should be scrapped in favour of constant monitoring of the long-term debt ratio. There never has been any economic justification for such rules and they have, when not violated, been an obstruction to the proper use of the debt instrument in financing optimal tax-setting and also fiscal demand policy.

3. **Fiscal policy should be used to stabilise output effects on demand in the economy in the form of the 'fiscal deficit'.** There is more than just the supply-side agenda to 'fiscal policy'. In addition, there are the effects on demand in the economy from the current balance of government spending minus revenue – ie, the 'fiscal deficit'. This should stabilise output, going up when recession threatens and down in booms. At the present time when rising interest rates threaten a recession, fiscal policy should support demand and avert a recession. In other words, borrowing should be seen as a resultant policy option, not as a fixed constraint.

4. **Monetary policy's role is to control inflation by controlling interest rates and money supply, working hand-in-hand with a fiscal policy that stabilises output.** Currently, with inflation close to double digits, the Bank of England is raising interest rates. It is having to decide continuously how far to raise them to get inflation back down to its 2 per cent target. Supportive fiscal policy can assist the Bank in this task by allowing the Bank freedom to adopt a tough monetary policy without undue worry of crashing the economy.

HOW FISCAL AND MONETARY POLICY WORK IN TANDEM

A rich modern economic research literature suggests that the most successful policies for stabilising inflation, output and interest rates is a combination of a realistic and appropriate monetary policy reaction working hand-in-hand with a fiscal policy that stabilises output. Under such a regime, people and firms know that inflation will not be tolerated, so they act to restrain their wages and prices; but they also know that recession will be avoided so they keep on spending in a way that keeps growth on course.

Because this approach stops inflation from rising too much and also stops output from slumping, in addition it keeps interest rates relatively stable. Thus, the Bank would not need to raise rates too much when inflation shocks hit and would not be pressured to lower them to zero as it did after the financial crisis (with bad side-effects on saving and the survival of zombie firms). In other words, using the instrument of fiscal policy side by side with a monetary policy to control inflation ensures a generally stable economy - implying more stability in all of inflation, output and interest rates. It can be argued that the failure of successive governments to operate an effective supply-side based fiscal policy in recent years made the Bank's job very difficult and potentially motivated overly dovish behavior.

In other words, using the instrument of fiscal policy side by side with a monetary policy to control inflation ensures a generally stable economy - implying much more stability in output, accompanied by similar inflation and interest rates variability; and an improvement in overall welfare. [2]

Such a framework demonstrates why the claims of orthodox economists that the support of fiscal policy to the economy now is inflationary and pushes up interest rates are false. The opposite is true: reinforcing the Bank's freedom to get on top of inflation contributes both to lower inflation and lower interest rates. What the orthodoxy asserts is a simplification of the economy's workings which omits the way private expectations and responses interact with policy rules - this is a key element in modern models of the economy. What the orthodox see is just the direct effect of fiscal expansion on demand and inflation, and the assumed direct offsetting effect of interest rates needing to be raised by the Bank.

However, this leaves out the vital reactions of expectations to the policy rules. People see that the Bank is now freer to raise interest rates due to the recession being prevented by fiscal policy; it is also under less pressure to lower them towards the zero bound. This reinforces the Bank's credibility in the control of inflation, which in turn restrains people's inflationary reactions and so reduces inflation, without the Bank having to move rates by more. It is due to this indirect effect via expectations that the fiscal contribution to stabilising output does not trigger much increased inflation and interest rate movement, as the direct effects alone imply.

2 In the Cardiff macro model, the average changes due to including the fiscal rule are: average household welfare +3 per cent. Standard deviation of output, -34 per cent; of inflation, +8 per cent; of interest rates, +14 per cent. Hence there is a large gain in output stability for small rises in inflation and interest rate movement, improving overall welfare.

POLICY LEVERS FOR SUPPLY-SIDE REFORM

In the previous section, we described the conceptual framework for a successful economic strategy underpinned principally by low tax-rates. However, there are more elements to the supply-side than just tax. In this section, we review the policy levers the government has available for supply-side reform in the post-Brexit era.

Tax Reform

The UK needs a tax system for the 21st century that delivers large and stable revenues without penalising either savings or incentives for successful people. This can be done by rebasing the income tax system on consumption, and cutting marginal tax rates in the process. But the key need in tax reform is to eliminate the mass of high marginal tax rates currently embedded in the system by ad hoc changes, such as the rise in top rates, and the means-testing at high incomes of the basic allowances. These have created damagingly high marginal rates for top earners, which are well-known to reduce revenue and economic performance. There are similar issues in the operation of tax credits (benefits) though these have been much improved by the introduction of universal benefit- the marginal withdrawal rate on that was reduced beneficially in the Budget.

A good tax system is one that creates the minimum damage to everyone's incentives to work and save– the 'Ramsey Principle' – consistently with financing government spending and achieving the necessary income redistribution. This is achieved by taxes that are 'flat' (ie, the same proportional rate) across people of all incomes (the popularly known 'flat tax'); that are flat across commodities of all sorts ('tax neutrality'); and that are flat across time. This last point means that the tax rate is constant over present and future consumption; it implies both that tax should be levied on consumption and that the tax rate should be planned to be constant under forecast conditions ('tax smoothing'). Taxes can be cut without being balanced by simultaneous cuts in spending because extra work and less avoidance create an offsetting recovery in revenue (the Laffer effect) and because higher growth generates more future revenue. This is an important implication of tax smoothing.

Post-EU Trade and De-Regulation

Fiscal policy is bound up with all aspects of supply-side policy, for a very simple reason: in order to gain consent to policies that free up markets and put pressures on vested interests, the government often must grease the process with transitional help to those interested parties – this incurs a fiscal cost. We live in a democracy where veto power is widespread; to overcome it people and firms often need help to make the transitions required.

Indeed, many of the economic distortions in the EU come from its having no fiscal power to raise taxes and or to spend money at will in this way. Instead, the course of least resistance to vested interest demands is to award protection, either through trade barriers or through regulation. The EU environment is heavily encrusted with such distortions as a result.

Trade. At the heart of the EU's powers that Brexit has transferred to the UK is the control of commercial policy. This includes tariffs and non-tariff barriers, including standards set so as to exclude supplies from certain other countries notably the US, and anti-dumping duties and quotas on supplies from particular countries. Commercial policy is designed to create large trade barriers against non-EU competitors, both in agriculture and manufacturing.

In services such as financial, which are not as important as EU industries, EU commercial policy is fairly liberal, though national governments remain highly restrictive of foreign competition, including from

the rest of the EU. It is only recently that the single EU market has been extended to some services, so restraining national protection against the rest of the EU. UK service industries operate worldwide and so are little affected by this mainly national protectionism. UK service prices are therefore set by international competition at world prices; this will not change as a consequence of leaving the EU.

However, UK goods prices are currently dominated by EU prices, which are higher than world prices by the percentage of trade barriers, which are estimated in our research and elsewhere at around 20 per cent for both food and manufactures. Leaving the EU and negotiating wide Free Trade Agreements (FTAs) with non-EU suppliers so that they gain free access to our markets will bring UK prices down 20 per cent to world levels. If such FTAs are achieved across many major countries, the practical effect will be roughly equivalent in its effects to unilateral free trade. According to the GTAP trade model, now used by the Treasury, this will bring long-term gains of 4 per cent of GDP, through better prices to consumers and competition-led rises in productivity by UK producers. According to Cardiff research, the gain would be doubled if we simply abolished half the EU protection - our preferred (cautious) assumption.

Note however, that such a reduction of barriers will meet a hailstorm of business opposition, which largely accounts for the near-total opposition of UK business to Brexit. The government will need to meet this hailstorm with offers of transitional help, smoothing the business path to higher productivity. A well-known example is electric cars, where the government has pledged support. One source of gain to home firms is better access through FTAS to foreign protected markets- this in total could amount to several percent of GDP, depending on the size of FTA countries' trade barriers. This gain would accrue to UK firms which could mollify opposition to free trade.

Astonishingly, the Treasury, in its latest report, assumes the gain from free trade to be only 0.2 per cent of GDP, on the grounds that this policy will barely be carried out - totally contrary to announced government policy. The Treasury's negativism does not stop there. It also assumes that large trade barriers will spring up along the UK-EU border after Brexit, for two reasons. First, the EU will refuse to recognise that our exports satisfy their standards, and we will do the same; second, the EU and we will institute border checks that artificially delay our trade in both directions at the border. However, both these actions are illegal under WTO rules, to which both we and the EU remain entirely committed. Under the Treasury's GTAP model, these new barriers cost us over 5 per cent of GDP. But these costs are entirely illusory. It is true we have seen some disruption from the introduction of new paperwork at the EU-UK border, following the Trade and Cooperation Agreement with the EU; but this will be transitory.

De-Regulation. Regulation is the second major area controlled by the EU, now also transferred under Brexit, through its powers to regulate the Single Market. It exercises these powers according to a 'social market' philosophy. A nation state has the power to tax/subsidise, and it can use this power to redistribute income to the less well-off.

However, as just noted above, the EU has no tax powers because national governments have been unwilling to pass them over to it, even partially. Therefore, to achieve social objectives of a redistributive nature, the EU uses regulation; examples are labour market 'rights' that are essentially subsidies to workers paid for by implicit employment taxes on firms. Then, in order to compensate firms, it awards them protection either through trade barriers or favourable product regulation of standards - effectively creating non-tariff barriers against world producers meeting wide international standards.

Thus, one finds that labour market regulation is a series of subsidies to workers and trade unions, paid for by firms. The effects on the economy can be assessed according to the labour tax equivalent, plus the direct implied transfer to worker-households.

The EU's regulation extends beyond the labour market, to three main other areas.

- **The first is general product market standard setting**, which as we have seen is related to setting non-tariff trade barriers. The general aim of standards is to benefit the main producer industries of the EU. Thus, these industry lobbies essentially have had the power to legislate what suited them. As Adam Smith noted centuries ago, such power in the hands of business is likely to be anti-competitive; one notices that the EU Competition Directorate takes its most stringent actions against foreign, often US, companies such as Apple, Google and Facebook. One can in principle assess this producer regulation as like a consumer tax or a business cost. Its effect is to raise prices of non-EU competitors and so reduce their competitiveness. Retaining such standards in the UK is damaging to UK firms. One default assumption that could be made about the size of these costs is that they are similar to the trade protection given to EU industry, in that they are designed to withdraw that very margin from competing UK industries. (An interesting example of such a standard in operation is given by Sir James Dyson for the way hoovers are tested under EU standards. Because EU products typically have traditional bags, whereas the Dyson has no bag, they are tested for air purity effects with empty bags. This of course excuses EU producers from making costly adjustments to meet air purity, nullifying the purity advantage of the Dyson design.)
- **The second area beyond labour is finance**, a service where the EU has shown a strong desire to control activity, though, or perhaps because the biggest EU finance industry has been in the UK. It has intervened with highly prescriptive regulations in this major UK industry, in a way extremely unpopular among its practitioners- supposedly to protect consumers. These regulations have given rise to an army of 'compliance' executives; but while this has raised costs substantially, gains to consumers have been unclear; in other major markets, such as the US, similar interventionism has been avoided. The tax equivalent of these regulations is given by the cost of compliance.
- **Finally, there is the rest of the economy; the environment and climate** where the EU has regulated strongly to force the adoption of non-fossil-based energy; the regulation of technology, especially in agriculture (GM is forbidden) and pharmaceuticals, where the EU has given primacy to the precautionary principle, and held back technological innovation. The main effect in the first has been to raise energy costs substantially, instead of primarily focusing on developing new technology, which would be most effective in the long term and least costly in the short term. In technology, EU regulation has held back innovation. Furthermore, by forbidding state aid it hampers an important channel through which the state can boost R&D, as illustrated recently by the vaccine programme with Astra-Zeneca and Oxford University.

Clearly, the government has an opportunity to boost growth by reforming this mass of EU regulations (that we have transferred into our laws), reintroducing pragmatic regulation based on empirically revealed costs of different activities, in line with the UK's common law traditions. This objective is set out in the TIGRR report on regulation produced under the lead of Sir Iain Duncan Smith.[3] We welcome the mooted plans by the Conservative Party leadership candidates for a special office of regulation reform. It cannot begin its work fast enough.

3 Taskforce on Innovation, Growth and Regulatory Reform https://www.gov.uk/government/publications/taskforce-on-innovation-growth-and-regulatory-reform

III – DELIVERING SUPPLY-SIDE ECONOMIC POLICIES FOR GROWTH

Having set out the conceptual basis and underlying principles of successful economic growth strategies based on supply-side economic policies, this chapter describes the results that could be expected from two such strategies:

- The proposal by Liz Truss to reverse and delay three taxes that currently are Government policy
- An illustrative, more robust £100 billion supply-side stimulus package

REVERSING GOVERNMENT TAX RESTORES GROWTH

Lis Truss has announced that she will reverse the following tax increases:

- The increase of the corporate tax rate to 25 per cent
- The increase of NIC to 13.25 per cent
- Delay of the environmental levy

What would be the impact of these actions?

Table 3 (below), using the same University of Cardiff models as described above, shows the long-term forecast for the economy and the public finances, with the tax increases listed above having been reversed.

It can be seen that GDP growth is 2 per cent pa, in contrast to the zero/negative growth under current Treasury policies and the debt ratio declines to less than 70 per cent in the next 5 years and steadily falls to around 50 per cent by the mid-2030s (in contrast to 125 per cent under Treasury policy at the same time).

Table 3: Forecast of Truss Proposed Reversals/Delays of Certain Tax Increases

	Nom PSBR (£bn)	Nom GDP (£bn)	Nom Pub Spend (£bn)	PSBR/ GDP %	Spend/ GDP %	Nom Debt (£bn)	Debt Interest (£bn)	Debt/ GDP %	Net Taxes (£bn)	Net Tax Rate%
2019/20	49.1	2196.3	472.2	2.2	21.5	1621.0	48.1	73.8	471.2	21.5
2020/21	315.1	2007.9	479.2	15.7	23.9	1936.1	39.8	96.4	203.9	10.2
2021/22	146.2	2311.1	494.1	6.3	21.4	2082.3	42.6	90.1	390.5	16.9
2022/23	59.9	2574	565.8	2.3	22.0	2142.2	41.1	83.2	547.0	21.3
2023/24	34.1	2742.9	597.4	1.2	21.8	2176.3	42.9	79.3	606.3	22.1
2024/25	26.6	2867.2	641.6	0.9	22.4	2202.9	44.1	76.8	659.0	23.0
2025/26	3.8	2981.9	670.9	0.1	22.5	2206.7	45.2	74.0	712.2	23.9
2026/27	0.2	3101.2	724.7	0.0	23.4	2206.9	46.2	71.2	770.7	24.9
2027/28	0.2	3225.2	786.6	0.0	24.4	2207.1	47.2	68.4	833.6	25.9
2028/29	0.0	3354.2	853.5	0.0	25.4	2207.1	48.2	65.8	901.6	26.9
2029/30	0.0	3488.4	926.2	0.0	26.5	2207.1	49.1	63.3	975.2	28.0
2030/31	0.0	3627.9	1004.9	0.0	27.7	2207.1	49.9	60.8	1054.8	29.1
2031/32	0.0	3773.0	1090.1	0.0	28.9	2207.1	50.7	58.5	1140.9	30.3
2032/33	0.0	3924.0	1182.5	0.0	30.1	2207.1	51.5	56.2	1234.0	31.5
2033/34	0.0	4080.9	1282.4	0.0	31.4	2207.1	52.2	54.1	1334.7	32.7
2034/35	0.0	4244.2	1390.6	0.0	32.8	2207.1	52.9	52.0	1443.6	34.0

ROBUST £100 BILLION FISCAL STIMULUS PROGRAMME TRANSFORMS ECONOMY

The previous section shows how the proposed reversal of three taxes will restore growth and in the process stabilize public finances in the long term. But we can do better still by going further and introducing tax cuts and spending increases that underpin higher growth.

The economy is now recovering from the pandemic, after the collapse of 2021 and the resulting run-up in public debt to pay for the emergency. Post-Brexit and post-Covid, there are major challenges for government policy; the recovery needs to be sustained, and policies must be put in place for solid long term growth and levelling-up. This policy formulation requires the government to take a long term view and not lose confidence in the face of short term pressures.

This implies, having reversed the scheduled tax rises, as shown above, we need to do more to stimulate growth – eg, reinforcing our growth environment with a robust programme of actual tax cuts, not merely the reversal of scheduled tax rises.

Table 4 below, provides an example fiscal stimulus package costing £100 billion pa (which will be about 3.5 per cent of GDP in 2023/24 after factoring in current inflation). It includes reductions in corporate tax and personal tax rates, as well as £24 billion of targeted public spending.

Table 4: A Fiscal Stimulus Package Costing £100 Billion pa

Tax Cuts	Amount
Cut corporation tax by 10%	£32 bn
Abolish the top Additional 5% rate	£1bn
Cut the Top Rate of income tax to 30%	£15bn
Cut the Standard Rate of income tax by 5%	£28bn
Total Tax Cuts[1]	**£76bn**
Public Spending[2]	£24bn
Total Package	**£100 bn**

[1] Representing a weighted average tax cut across all income of about 15%
[2] On public services and infrastructure

Table 5 below shows the projections for the public finances under this supply-side fiscal stimulus. It is worth noting that the calculations relating to proposed cuts in personal income rates de-facto eliminate unintended high marginal tax rate anomalies associated with the rules on withdrawal of certain allowances – eg, Child Benefit transfer payments or personal allowances.

Growth is increased by a further 2.4 percentage points relative to the tax reversal scenario in the previous section. Tax revenues surge, pushing the debt ratio down rapidly. Assuming constant spending, the debt ratio reaches comfortable levels of less than 70 per cent within 5 years and 50 per cent before the end of this decade.

Table 5: Long Term Forecast with £100 Billion Stimulus Package

	Nom PSBR (£bn)	Nom GDP (£bn)	Nom Pub Spend (£bn)	PSBR/ GDP %	Spend/ GDP %	Nom Debt (£bn)	Debt Interest (£bn)	Debt/ GDP %	Net Taxes (£bn)	Net Tax Rate%
2019/20	49.1	2196.3	472.2	2.2	21.5	1621.0	48.1	73.8	471.2	21.5
2020/21	315.1	2007.9	479.2	15.7	23.9	1936.1	39.8	96.4	203.9	10.2
2021/22	146.2	2311.1	494.1	6.3	21.4	2082.3	42.6	90.1	390.5	16.9
2022/23	59.9	2574	565.8	2.3	22.0	2142.2	41.1	83.2	547.0	21.3
2023/24	34.1	2742.9	597.4	1.2	21.8	2176.3	42.9	79.3	606.3	22.1
2024/25	26.6	2867.2	641.6	0.9	22.4	2202.9	44.1	76.8	659.0	23.0
2025/26	59.4	3047.8	695.9	2.0	22.8	2262.3	45.2	74.2	681.6	22.4
2026/27	2.4	3239.8	749.7	0.1	23.1	2264.8	46.3	69.9	793.6	24.5
2027/28	-63.2	3444.0	811.6	-1.8	23.6	2201.6	47.4	63.9	922.2	26.8
2028/29	-143.0	3660.9	878.5	-3.9	24.0	2058.5	48.3	56.2	1069.8	29.2
2029/30	-239.2	3891.6	951.2	-6.1	24.4	1819.4	49.0	46.8	1239.3	31.8
2030/31	-354.7	4136.7	1029.9	-8.6	24.9	1464.7	49.3	35.4	1433.9	34.7
2031/32	-493.1	4397.3	1115.1	-11.2	25.4	971.6	49.0	22.1	1657.2	37.7
2032/33	-658.2	4674.4	1207.5	-14.1	25.8	313.3	48.0	6.7	1913.7	40.9
2033/34	-854.6	4968.9	1307.4	-17.2	26.3	-541.2	46.1	-10.9	2208.1	44.4
2034/35	-1087.5	5281.9	1415.6	-20.6	26.8	-1628.7	43.0	-30.8	2546.1	48.2

The model suggests that all debt would be retired by the early 2030s: of course, what this means in practice is that there would be scope for more tax cuts and more spending to support yet more growth, creating a virtuous circle, in contrast to the contrasting doom loop set up by the current government's tax raising policies.

Thus, this table shows the fiscal package pays for itself via higher growth, even though there is nothing built in to it that includes the benefits of deregulation or improved trade, post-Brexit.

SUPPLY-SIDE POLICIES FACILITATE LEVELLING UP

A major challenge is to bring the North's income up to the level of that of London and the South. The usual assumption when the problems of the North are mentioned relative to the South is that 'more should be spent' on Northern infrastructure. This may be true but it misses the point.

The essential point is that the North needs to achieve stronger cost competitiveness. The South achieves its results because it is highly competitive in world markets. This is certainly partly due to good infrastructure. But, mainly, it is the result of creating products and services that are in high demand internationally.

Lessons from London's Success

In a work analysing how UK growth occurred during the Thatcher years, Minford and Meenagh[4] showed that it was related to the cutting back of tax rates and regulation during the 1980s (See also Appendix A for the related literature). This led to a surge in entrepreneurship that boosted productivity growth. Essentially the same ideas apply to the North, as apply to the UK as a whole. The North, after all, is simply one part of the same UK organism.

It is helpful to start by understanding how London itself became such a competitive economy. Plainly much money has been spent on its transport infrastructure. But much of this has been in response to the economic activity it has created – ie, its success from other causes.

Essentially, this success has been tied up with the development of the City of London, the world's top financial centre. This, in turn, came from the provision and development of huge amounts of land in the docklands, feeding a demand for the City's services across the world. This City industry in turn was fed by supplies of skilled labour plentiful in the UK, due to expanding higher education and a liberal approach to skilled immigration. Other supply-side factors were the common law courts which made the UK an attractive place for dispute resolution, and that ample supply of land in the docklands that gave the City space to expand.

Implications for the North

Looking towards the North, what are the policy implications? Northern cities now have increased powers vested in mayors, just as London has had. This gives them an opportunity to think and act strategically to reduce costs and increase their regional competitiveness. If these cities and their cooperating surrounding regions can identify the infrastructure they need to support these moves, they now have a government strongly willing to oblige by providing it through central government funding.

However, to be fair to central government this is not entirely new. Money has flowed from the centre to well-organised northern initiatives for some time. One only has to look at roads around Manchester or expenditures on the old docklands of central Liverpool to be aware that central government has spent liberally on northern development where needs have been identified. Essentially the system for providing infrastructure is demand-led by local needs, these in turn being created by economic growth.

The failures of the North to grow as fast as London cannot therefore be laid at the feet of central government unwillingness to spend on northern infrastructure. It looks rather as if it is the failure of the North to grow that has slowed down the associated infrastructure provision.

4 Minford, L., and Meenagh, D. (2018) *Supply-Side Policy and Economic Growth: A Case Study for the UK*, Open Economies Review, Volume 31, pp. 159–193

How can central government policy break this slow-growth Northern equilibrium?

The answer is to be found in the way the Thatcher government broke into the low-growth UK equilibrium - by lowering taxes and similar regulative restraints on cost competitiveness. Lower taxes work across the whole economy. By lowering general taxes and easing economy-wide regulations, economic activity is boosted across the whole economy.

But such moves today, with a congested Southern economy, will primarily benefit the North, because that is where there is spare capacity. One can think of the process in two stages: (1) cutting taxes and regulative costs will boost competitiveness across the UK but (2) because of Southern congestion, Southern costs will rise in response, while Northern costs will not.

Hence, the net effect will be to lower Northern costs and raise Northern competitiveness, while leaving Southern competitiveness largely unchanged. It also will raise growth in the North faster than that in the South, so achieving levelling-up in a way that raises all boats.

Impact on North-South Growth

Table 6 below compares the impact on North vs South growth from the £100 billion fiscal stimulus package described above.

Table 6: Effects on Growth in Regional Model (% Of GDP over Next Decade) from £100 Billion pa Fiscal Stimulus Package

Percentage change in	GDPN	GDPS	GDP
Cut standard rate of income tax or VAT or other general income/consumption tax	3.3	1.5	
Cut Corporate tax rate	2.4	1.2	
Cut marginal tax rate and regulative burden on Entrepreneurs/SMEs	20	17	
Increase infrastructure spending in North	3.8	-	
Total	**29.5**	**19.2**	**24.4**

What does the fiscal stimulus package do for the regional picture?

On the cautious assumptions in Table 5, the North-South growth gap is reduced by 4 per cent, even while both North and South grow more strongly, with average GDP up 10% over the decade. During this period the growth of the North is roughly double that of the South.

The policy effect is therefore levelling up without pushing down. According to the Regional Model itself, the extra growth is more than double what is assumed in Table 6, implying even stronger finances, with growth in the North nearly 3 per cent pa higher than base and in the South, about 2 per cent pa higher, and the North-South gap reduced by 8 per cent over the decade.

IV - REFORMING GOVERNMENT'S APPROACH TO ECONOMIC MANAGEMENT

We have set out above what needs to be done in the way of reforming government economic policies. However, this leaves outstanding the question of how to deliver these reforms and policy changes. It has been obvious for some time that recent governments have had weak control over the economic levers of power.

In this section we propose some specific measures we believe will strengthen the government's control over economic policy. Failure to implement these is likely to deliver any new economic strategy stillborn.

There are five critical reforms required:

1. **Replace short-term fiscal rules with long-term solvency targets**
2. **Establish a new Council of Economic Advisers responsible to Number 10**
3. **Expand the remit and capabilities of the existing OBR to establish an effective analytical support unit to the Council of Economic Advisers**
4. **Review the role, structure, and modus-operandi of the Treasury**
5. **Address weakness of economic management**

In addition, we support the already announced review of the mandate and accountability of the Bank of England, while preserving its operational independence on monetary policy

REPLACE SHORT-TERM FISCAL RULES WITH LONG-TERM SOLVENCY TARGETS

In the ten years to 2019, public expenditure and public investment and public policy have been constrained and distorted by a set of fiscal rules directed at controlling deficits and the stock of debt in relation to GDP. These rules placed an emphasis on borrowing only for public investment and in many respects were perverse in their implications. It was never clear how either investment or current spending ought to be defined and scored. The emphasis on the merits of public investment suggested that it generated returns that matched or exceeded its costs yet, apart from the Green Book, there was little systematic analysis exemplifying the returns to public sector investment. And moreover, the trope - public investment good/ current public spending bad – was always artificial. A hospital operating theatre without a surgeon or school physics laboratory without physics teacher yields few benefits. The operation of the fiscal rules generated a myopic focus on hypothecating sources of revenue receipts to particular policy objectives in a manner that was unnecessary and damaging to underlying development of public policy.

These fiscal rules and the reluctance to use deficits and borrowing as part of demand management have contributed to a deformed version of macro-economic policy. Instead of using both instruments of monetary and fiscal policy to manage adverse shocks, macro-economic policy has relied only on one instrument, monetary policy, with disappointing results.

Thus, what we have seen in the evolution of what we have called the 'Treasury Orthodoxy' over the past decade and a half since the financial crisis is the freezing of both the tax instrument and fiscal policy by

the prioritising of short term rules to limit public borrowing. This has wreaked huge damage on the UK's economic performance. For example, by pursuing austerity after the crisis, the Bank was driven, as the only 'recovery game in town', to push interest rates down to the zero bound and pursue QE in massive quantities, creating a dysfunctional savings market and subsidising a host of 'zombie' firms, depressing productivity growth. More recently, this same orthodoxy has threatened to close down UK growth by a programme of highly damaging tax increases that we reviewed above.

What this implies is that short run rules mandating borrowing limits are damaging. These rules are set with the aim of ensuring that the government is solvent, and so will be confidently expected to be able to repay its debts in the future. Yet these rules do not guarantee solvency; instead they damage the economy by forcing damaging tax changes and preventing fiscal responses to the business cycle; this damage in turn may actually also threaten solvency.

These rules therefore make no sense and should be replaced.

Instead, the public finances should be managed on the basis of an approach that focuses on long-term solvency and recognises the role that fiscal policy has to play in macro-economic management and the scope that the public sector balance sheet has to manage crises and the long-term challenges of investment, infrastructure planning, and managing risk generally.

To ensure solvency, the government must instead check that its spending including debt interest will over the long term be financed by taxes in such a way that the debt ratio comes down to a sustainable level. The technical condition for solvency in infinite time is that the growth rate of real debt must tend over time to be less than the real rate of interest; this in turn implies that there must in the long run be a primary surplus-namely tax must exceed spending excluding debt interest.

In practice governments facing uncertainty in financial markets aim to bring the debt ratio down in the long run to a sustained level of about 50 per cent; being sustained. This implies that from then onwards the primary surplus/GDP must equal the debt ratio times (real interest rate minus the growth rate of GDP). In other words in the long run the tax rate must pay for direct spending and also provide a surplus to stop debt interest from raising the debt ratio.

Therefore, the new government should replace the damaging short run fiscal rules with an ongoing long run solvency test based on rolling forward projections about ten years ahead.

ESTABLISH A NEW COUNCIL OF ECONOMIC ADVISERS RESPONSIBLE TO NUMBER 10

In recent years, there has been a serous absence of meaningful economic thought at the heart of government and, consequently, little concentration on long-term management of the economy or economic strategy. Although the Treasury has attempted filled this gap, its initiatives have been short-term focused and blinkered.

Therefore, a major institutional question is how to strengthen the capacity of the elected government to carry out government economic policy according to its policy mandate from the electorate. The Thatcher Government dealt with this problem by importing experienced outside economists into Number 10, creating a strong policy unit with economics expertise (amongst other disciplines), and appointing like-minded strong ministers in important ministries. It should not be forgotten that the Thatcher Government had several years in opposition to prepare its policies. Even so, carrying out their programme required a huge effort of Whitehall transformation involving the removal or sidelining of numerous senior officials and the promotion of able junior civil servants who understood and implemented the programme.

Unfortunately, with the passing of the Thatcher Government and, in particular, upon establishment of the powerful Gordon Brown led Treasury, there has been no effective institutional platform for the Prime Minister to influence economic policy and strategy effectively. This needs to change.

If one looks at US economic policy institutions, potential lessons appear. The President has a Council of Economic Advisers (CEA), led by a Chair who is appointed by the President with the advice and consent of the Senate, and two members who are appointed by the President. It is an agency within the Executive Office of the President with a staff of senior economists, staff economists, research assistants, and supporting administrators, and is charged with offering the President objective economic advice on the formulation of both domestic and international policy. The Council bases its recommendations and analysis on economic research and empirical evidence, using the best data available to support the President in setting the nation's economic policy and recommending economic policies that advance the interests of the American people.

By contrast in the UK the Prime Minister has a 'Policy Unit' that theoretically is supported by the Cabinet Office but in practice has to rely on its own 'kitchen cabinet'. But, it lacks the ability to get modelling and forecasting done professionally to the highest standards. It needs to be able to assess policies with a view to long term solvency - as we have argued above - in place of misconceived short term rules. No 10 Policy Units have occasionally given highly successful assistance to the Prime Minister. However, their powers are precariously balanced against huge potential civil service opposition; hence they are a hit-and-miss solution.

Consequently, Prime Ministers have struggled to push back against the economic direction presented to them by the Treasury. This is partly because Prime Ministers have rarely had significant economic expertise established inside Number 10, as well as the fact, they have not had an appropriate institution that is aligned with their interests and is able to push back against the policy options presented by the Treasury.

A Council of Economic Advisors could fill this gap. The, say three-person Council should report directly to the PM. A successful reformation in economic management will require political willpower for a new Council of Economic Advisors not to fall into the same groupthink and lack of diversity of thought that characterises many parts of the economic policy establishment today.

EXPAND THE REMIT AND CAPABILITY OF THE OBR TO SUPPORT THE NEW COUNCIL OF ECONOMIC ADVISORS

The Treasury approach to fiscal policy has been further entrenched by the creation of the OBR. The OBR is a publicly funded body charged with economic forecasting and examining the financial implications of budget decisions. It does so in close consultation with the Treasury but being 'outside' Whitehall, it is then free to explain and defend the Treasury's policies in the public domain. It is a satellite of the official Treasury and a public platform for it.

OBR forecasts have an intellectual bias that inevitably reflects its institutional history and the genesis of the original Treasury model. Its perspective can be summarised briefly: tax increases and spending cuts are needed to meet the borrowing rules; possible disasters that may befall the Exchequer are emphasised. This conveys a pessimistic gloss that informs OBR forecasts of GDP, given that the function of these forecasts is to emphasize the possible dangers of increased borrowing arising from disappointing or falling tax receipts.

- Thus, the OBR has tended to serve as an echo chamber of Treasury orthodoxy. Its leadership mainly comprises ex-Treasury officials and its views rarely diverge from those of outside commentators, such as the IMF or IFS, or mainstream academia and the financial media.
- The OBR produces an enormous amount of material, mostly to fixed formats, but its current remit explicitly prevents it from considering alternatives to current government's policies. This is a wasted opportunity to produce more focused, policy-relevant analysis.
- While the OBR is strong on number crunching, it is weak on macroeconomics and modelling. It often simply takes consensus views from outside organisations, which reinforces the tendency towards 'groupthink'. A good example here is the OBR's assumption on the long-term impact of Brexit on UK productivity, which is simply an average of external estimates. Consequently, the OBR has tended to project an excessively negative outlook.

  Take for an example, the forecasts for the economy made in March 2021 - a critical time, informing the 2021 Budget. The table below compares forecasts made by the OBR, the Cardiff University macroeconomics team, Capital Economics, and the independent forecast consensus. [5]

	OBR	Cardiff	Capital Econ's	Consensus	Latest Data *(August 22)*
GDP Growth (%) 2021	4.0	5.7	5.2	4.8	7.4
PSBR (£billion) 2021/22	234	140	204	232	146

Our proposal of creating a new Council of Economic Advisers reporting to Number 10, together with lessons from US practice, suggest a way of improving this situation. In addition to the CEA, the President of the United States is supported by an additional unit, The Office of Management and the Budget (OMB). Its mission is to assist the President in meeting policy, budget, management, and regulatory objectives. While the US system operates differently to the UK, this leads to the notion of reframing the UK OBR as a bureaucracy akin to the OMB, supporting a UK Council of Economic Advisers.

The primary focus of the new OBR no longer would be primarily providing forecasts verifying that the Treasury's short-term fiscal rules had been met but rather supporting development of economic policy by the members of the Council of Economic Advisers and monitoring long-term solvency. Such a CEA/OBR set up could ensure the Prime Minister had the capability to formulate and implement economic policy in line with the UK economy's requirements.

This would provide a more productive and fulfilling role for the OBR. In any case, if short-term fiscal rules are to be discarded, much of the existing rationale for the OBR's existence will disappear.

The new role of supporting the new Council of Economic Advisers - by providing a first-class economic and analytical support capability - would require fundamental changes in the mindset of the OBR as well as major upgrading of its economics expertise and analytical capabilities, in particular, developing its own modern macroeconomic models, which they do not have today.

5 Source OBR and HM Treasury 'Forecasts for the UK economy- a comparison of independent forecasts'

REVIEW THE ROLE AND MODUS OPERANDI OF THE TREASURY

For many decades the UK public sector, the Treasury and the Government Economic Service have exhibited a collectivist reflex. This is a sophisticated micro-economic analysis that focuses on Paretian optimality and welfare, identifying malign externalities that need to be corrected by taxation, spending and regulation. There is a focus on containing borrowing as an instrument for raising taxation to enable higher future expenditure. A consistent feature of fiscal policy has been the asymmetry in approach to taxation and spending. Large discretionary increases in spending are accommodated with hardly a murmur of anxiety whereas any modest suggested reduction in taxation amounting to little less than the partial remission of fiscal drag is greeted by a neurosis bordering on a crisis.

For many years, the Treasury used a clumsy economic model that took no account of money in the economy or strong behaviour changes in supply by economic agents. Its principal properties were that no matter what was happening, economic activity and prices inevitably would return to trend within about three or four years. Taking out forecasting from the Treasury and placing it in the OBR has served at least one useful purpose. The defects and pessimism of the Treasury's economic analysis and approach to modelling has been exposed.

The Treasury should not be perceived as a sort of department of school prefects who mark the Prime Minister's homework and whose principal purpose is to hinder Number 10's political and economic agenda.

Ultimately effective democratic control of the Government's economic policy turns on two things – having a developed and coherent economic agenda and having the political will power to ensure it is applied. Our proposal for a Council of Economic Advisers providing economic advice to the Prime Minister and Cabinet, supported by an enhanced OBR, should improve this situation. Next should come a reassessment of the Treasury's role, its capabilities, and approach to its job in light of the new arrangements.

Academic research has highlighted the effects of government policies on productivity and growth ('endogenous growth'); and has also explored how policy rules affect private agents' behaviour through their expectations and best responses ('optimal policy').

Why does the Treasury not take such ideas on board? An important reason appears to be their lack of research into the workings of the modern economy.

The Treasury in particular has disengaged from research on the economy and left it to the Bank, which does not control fiscal policy; the OBR does much worthwhile work, including on modelling, but has so far not developed a proper model of the economy. Sadly, most of these economists do not do research themselves; their models, if they have any at all, are simply adding-up programmes into which they put some air-plucked numbers for direct policy effects.

Hence the vital role of fiscal policy both in stimulating supply and in regulating demand has been neglected in Whitehall. Essentially it has been written out of the script, its place taken by short-term rules for borrowing restraint, which as we have seen damage the economy by forcing tax mistakes and a failure of fiscal demand support.

It is an extraordinary failure of the civil service machine that it is so poorly equipped to determine optimal fiscal policy, a central policy tool. It should not be necessary for ministers to have to import teams of outside advisers to remedy Whitehall failings and resulting obstinacy. Admittedly recent governments have failed even to have good enough teams of advisers to get policy right, let alone ones capable of remedying Whitehall obstructionism.

This all needs to be remedied by reforms. As part of this, there needs to be a review of what went wrong in detail in the Bank and Treasury policy processes that permitted double digit inflation to take hold this year; while this is unlikely to recommend changing the Bank's independent mandate to control monetary policy, there may well be areas where practices can be improved.

This Whitehall situation has occurred before. When Mrs. Thatcher embarked on her 1980s monetarism and supply-side reform programme, it was widely opposed and misunderstood by the senior civil service. To carry it out required a huge effort of Whitehall transformation involving the removal or sidelining of numerous senior officials and the promotion of able junior civil servants who understood and implemented the programme. A similar effort seems needed today if the government is to succeed in launching the new reforms that must go forward.

ADDRESS WEAKNESS OF ECONOMIC MANAGEMENT

With implementation of the reforms discussed above, the new government should be in a good position to address past failures of economic management and to restore capabilities that have been allowed to atrophy. These are:

- **Re-establishing indexation and providing immediate inflation crisis support by employing VAT/ Universal Credit**
- **Operating fiscal and monetary policy in tandem**
- **Strengthening the Government Economic Service**
- **Modernising and upgrading economic modelling**

Re-Establish Indexation and Provide Immediate Inflation Crisis Support Employing VAT/Universal Credit

This year's fiscal position includes a massive covert tightening of the fiscal stance, even if the NIC rises are reversed and the corporation tax rise not implemented. This is occurring via the failure to index tax thresholds and spending plans to the high inflation now coming through. IFS estimates are that this fiscal year revenues will be £30 billion higher and real departmental spending nearly £10 billion lower, a tightening of about £40 billion, around 1.6% of GDP.

Our own estimates of the full effect of 7.7% average inflation this year on income tax revenue and real spending, is rather higher, around 2.4% of GDP *(£53 billion)*; that takes the careful IFS estimate on real spending as correct. Notice that this virtually all occurs instantaneously, because PAYE is paid at once. We assume in this that benefits and the tax credit thresholds remain indexed to inflation.

This is another major error that needs to be reversed. For spending this can be done by indexing it at once to inflation. For income tax and benefits it is too late to index thresholds this year but this can be implemented for the next fiscal year.

For the current year, there should be one-off transfers via the tax system that compensate households for the extra tax paid. This can be done via a cut in VAT, which can be implemented immediately during this fiscal year. Given the estimates above of the cost to households of non-indexation of tax thresholds - about £50 billion, or 1.6 per cent of GDP - a VAT cut of 6 per cent would return about £45 billion in a full year, roughly reversing the tax rise from non-indexation of tax thresholds.

In the next fiscal year, threshold indexation can be restored for future inflation, and the rest of the proposed future fiscal package can go ahead as planned. This would assist ordinary households in the cost of living squeeze. In this way the fiscal stance would be shifted to be positive, supporting the economy against recession.

In addition to the VAT cuts, there needs to be accelerated assistance to low income households, which we can assume are those on Universal Credit. Essentially, Universal Credit needs to be topped up regularly in real time according to the changing inflation rate. By the next fiscal year, the lagged indexation system should roll that up into the new going rates of Universal Credit.

Operate Fiscal and Monetary Policy in Tandem

A further element concerns the effect of the budget balance on demand. Optimal macroeconomic management includes the use of fiscal policy to stabilise output, resisting both recession and boom. This helps to stabilize both output and indirectly inflation and interest rates.

For example, after the financial crisis, fiscal policy was inert and this meant the Bank was the sole agent for reviving the economy; consequently, it both lowered interest rates towards zero and bought very large amounts of government bonds (Quantitative Easing, QE), which forced down longer term interest rates and asset yields generally, creating financial volatility. At the same time, inflation fell to stagflationary rates.

This would have been avoided if fiscal policy had been actively supporting demand. In today's situation, with high inflation, fiscal support to demand would lower the chances of recession from tightening money and so free the Bank to tighten as much as necessary to contain inflation. This would enhance the Bank's credibility, which in turn through market expectations would dampen current inflation.

In general, we find the interaction of such a fiscal rule with the Bank's monetary rule maximises stability in output, inflation and interest rates, particularly avoiding undesirable interest rate extremes like the zero bound. It is worth making the point that during the international financial crisis between 2008 and 2009 there was a significant revival of the use of fiscal policy as part of active macroeconomic management, which was then followed by a retreat in the UK into a reliance of monetary policy alone that, in the circumstances of the zero-rate bound, was like flogging a dead horse.

As we have seen, inflation control is the job of the Bank of England via its monetary policy - control of interest rates and the printing of money (QE). Unfortunately, so far, it has misjudged these, creating too much money and allowing interest rates to stay too low for too long. However, now it is getting its act together; interest rates are rising and money printing is being curbed. This monetary tightening will bring inflation down in time, especially as supply bottlenecks from Covid and the Ukraine war ease, as they eventually will.

Upgrade the Government Economic Service

Economic policy failures have come about from a failure of critical thought at the centre of UK policymaking – ie, our civil service. We have a Government Economic Service, supposedly well trained in modern economics, but it has failed to question the Treasury's evolving orthodoxy. Of course, mistakes will happen but one would expect them to be picked up, analysed and used to push back against the thinking that caused them. There has been no such critical thinking in the UK civil service.

Instead, a conventional wisdom has been allowed to form, in which growth is treated as exogenous, beyond policy control, trade thinking is protectionist and uncritically in favour of staying close to the EU, and regulation is allowed to be led by highly interventionist and risk-averse EU thinking. Admittedly, such thinking permeates a wide swathe of UK economists in academia and industry; but the civil service has been disappointing in not applying critical thinking to question it, given the obvious deterioration in UK growth that has played out over the past two decades.

This needs to change, much as it needed to change in 1980 after the long failures of UK economic policy in the 1960s and 1970s. The experience then shows that this is possible and occurs by change starting at the top. Senior civil servants were replaced and moved sideways, and promising younger officials who understood the necessary changes were promoted to take their place. Then the civil service responded by recruiting newly trained officials who took matters forward.

Indeed the irony is that today's senior civil servants were so attuned to the lessons of the 1970s in their youth – ie, monetary policy must be used to control inflation and that the government must demonstrate solvency - that they have failed to notice how much the facts of the day and problems have moved on, necessitating a rethink to deal with the new problems of growth and the modern business cycle, with its threat from the zero bound.

Revamp Economic Modelling

Owing to the changes of function due to Bank independence, the Treasury's adoption of borrowing rules and the rise of the OBR, the critical activity of modelling the economy's behaviour has been abandoned by the Treasury and the OBR has had inadequate resources to take it over, even if it has done some particular modelling projects.

The Bank has invested heavily in such modelling, as it must. But as we have seen, there is a need for understanding throughout government of how the tax, regulation, trade and fiscal policy instruments it ultimately controls affect the economy. This can only be done by good modelling, using state of the art testing and estimation methods. This is specialised expertise that must be hired from outside academic centres for such work.

A good place to locate this necessary new modelling effort would be in the new CEA/OBR set up suggested above. We envisage that the CEA/OBR would carry regular accounts of how the various policy developments were advancing trade and growth, besides its general forecasts; it would also update the public on its methods and models, explaining the principles by which these policies affected the economy.

These institutional reforms are necessary. But they will turn on the willpower of the Prime Minister and Chancellor and the appointments they make. If the new institutions are merely staffed from the normal UK public sector economic sources they will contribute to vitiating a supply-side orientated reform agenda. In the same way that the worthwhile reform of the creation of a national curriculum for schools was effectively hijacked, in the first instance, by the contemporary education establishment successfully subverting the ambitions of the original public service reform.

Hence, in addition to the CEA/OBR reforms just set out, there will be a need for a powerful policy unit in Number 10, with sufficient resources to initiate and supervise the carrying-out of the reform agenda across Whitehall.

REVIEW THE MANDATE AND ACCOUNTABILITY OF THE BANK OF ENGLAND

The Bank was given its independence in 1997, with a mandate to keep inflation at 2 per cent. If the inflation outturn was more than 1 per cent above or below this target, it was obliged to write a letter to the Chancellor explaining why and how it would remedy the situation. Plainly with inflation now in or close to double digits, it has failed massively in this task. It has excused itself by saying that world supply socks to commodity prices are the cause over which it had no control. However this is demonstrably false since two major developed countries - Japan and Switzerland - with different and also independent central banks succeeded in keeping inflation fairly close to similar targets. In fact one can account for the difference in terms of the differing money supply growth rates these different central banks permitted.

This implies that there is an important question to be asked of the Bank: why did it fail to see that QE in the environment of Covid was going to trigger highly excessive money growth? Was it pressured by the Treasury, its paymaster? Or did it just not embed the risks in its procedures? Was the composition of the MPC at fault in terms of willingness to make hard judgements about the extent of easing?

We concur with the proposal by Liz Truss to establish a review of the Bank with the important proviso that its operational independence on monetary policy should be preserved. The Bank's independence has proved a strength over a long period in successfully controlling inflation, which tallies with general international experience (by being outside politics it enables 'time-consistency'- ie, following through on potentially unpopular restrictive policies that may be needed for inflation control); so that should undoubtedly continue.

Given present inflation, an overhaul of monetary policy is needed and should not wait. This should start with a review of the inflation target. It should include an analysis of the Bank of England's operations and analytical framework, a review of the work and composition of its committees, and a review of the diversity of experience, intellectual interests and perspectives contributing the central bank's work. An assessment might be made of whether we should return to the office of Governor serving one five-year term, with the option of this being extended to a second.

APPENDIX A - RESEARCH ON TAX, REGULATION AND THE SUPPLY SIDE EFFECTS ON GROWTH

For the estimates of the effects of tax/regulative reform we have used recent Cardiff research modelling the UK's national and regional growth. This Regional Model has been estimated on UK postwar data and tested by the powerful method of indirect inference- powerful because it rejects incorrect models with high probability.

Research in Cardiff has produced a new regional model of the UK to frame the best way for policy to address this agenda. Our work (Gai, Y., Meenagh, D., and Minford, P. (2020) North and South: A Regional Model of the UK, Cardiff Economics Working Papers E2020/14, forthcoming Open Economies Review. http://carbsecon.com/wp/E2020_14.pdf) produces the policy results shown in Table 1 of the paper. The model is based on well-known and well-tried ideas of supply-side channels through which targeted tax cuts and regulative reform raise entrepreneurial incentives to innovate as well as creating labour market flexibility and lowering labour costs. Previous work has shown that these sorts of policy have worked well in the UK to boost the economy in the 1980s and 1990s. Much policy commentary has criticised the government for aiming at 'levelling-up' without any strategy for achieving it. We show here that there is a potential strategy that is feasible without affecting public sector solvency; also that it 'levels up' the North without cutting down the South- all boats rise in this strategy.

Previous work of this sort on the effects of supply-side reform on the UK includes:

Minford, Lucy and David Meenagh (2019). "Testing a model of UK growth: A role for R&D subsidies". Economic Modelling 82, pp. 152–167.

Meenagh, D., Minford, P. and Yang, X.(2021) 'A heterogeneous-agent model of growth and inequality for the UK' working paper No E2018/17, Cardiff Economics Working Papers from Cardiff University, Cardiff Business School, Economics Section; published as 'Inequality and Economic Growth in the UK', *Open Economies Review*, 2021, **32**, (1), 37-69

Work on the supply-side and the UK originated with the creation of the Liverpool Model to explain UK unemployment in the 1980s:

Marwaha, S., Minford, P. ,Matthews,K. and Sprague, A. (1984). "The Liverpool macroeconomic model of the United Kingdom". Economic Modelling 1.1, pp. 24–62.

There is a large empirical literature on the effects of tax on growth worldwide, which is reviewed at length in Philip Booth (ed.) 'Sharper Axes, Lower Taxes', IEA, see Minford, P. and Wang, J.,, chapter 1, 'Public spending, taxation and economic growth- the evidence' which tests the tax-growth hypothesis versus the investment subsidies-growth hypothesis on 100 countries from 1970 to 2000. It finds the former to be validated while there is no support for the latter. In addition, it reviews a large number of studies which find that tax reduces growth. The summary table is reproduced below- for detailed references see chapter.

Other studies reviewing these issues can be found in Booth, P. (Ed.) IEA 'Taxation, government spending and economic growth'- see especially chapters 6-8, which review both the literature of cross-country studies over time ('panel studies') and recent Cardiff work on the UK specifically which was able to test a causal theory of tax/regulation on growth, as now embedded in our Regional model above.

Table: The Negative Impact of Taxation on Economic Growth

Author	Data coverage	Main explanatory variables	Comment
Barrro (1991)	98 countries in the period 1960-85	Human capital, government consumption, political instability indicator, price distortion	1% point of GDP increase in tax-to-GDP ratio lowers output per worker by 0.12%.
Koester and Kormendi (1989)	63 countries for which at least five years of continuous data exist for the 1970s.	Marginal tax rates, average tax rate, mean growth in labour force and population.	10% decrease in marginal tax rates would increase per capita income in an average industrial country by more than 7%
Hansson and Henrekson (1994)	Industry-level data for 14 OECD countries	Government transfers, consumption, total outlays; education expenditure; government investment	Government transfers, consumption and total outlays have a negative impact on growth while government investment is not significant.
Cashin (1995)	23 OECD countries over the 1971-88 period	Ratio of public investment to GDP, ratio of current taxation revenue to GDP, ratio of expenditure on transfers to GDP.	1% point of GDP increase in tax-to-GDP ratio lowers output per worker by 2%.
Engen and Skinner (1996)	US modelling together with a sample of OECD countries	Marginal tax rates, human capital, investment.	2.5% point increase in tax-to-GDP ratio reduces GDP growth by 0.2% to 0.3%.
OECD - Leibfritz et al. (1997)	OECD countries over the 1965-95 period	Tax-to-GDP ratio, physical and human capital formation and labour supply.	10% point increase in tax-to-GDP ratio reduces GDP growth by 0.5% to 1%
Alesina et al. (2002)	18 OECD countries over the 1960-96 period	Primary spending, transfers, labour taxes, taxes on business, indirect taxes, government wage consumption (all in share of GDP).	1% increase in government spending relative to GDP lowers the investment-to-GDP ratio by 0.15%; cumulative fall of 0.74% after five years.
Bleaney et al. (2000)	17 OECD countries over the 1970-94 period	Distortionary tax, productive expenditure, net lending, labour force growth, investment ratio.	1% point of GDP increase distortionary tax revenue reduces GDP growth by 0.4% points.
Folster and Henrekson (2000)	Sample of rich OECD/non-OCED countries over 1970-95 period	Tax-to-GDP, government expenditure-to-GDP, investment-to-GDP, labour force growth, human capital growth.	10% point increase in tax-to-GDP ratio reduces GDP growth by 1%.
Bassanini and Scarpetta (2001)	21 OECD countries over the 1971-98 period	Indicators of government size and financing, physical capital, human capital, population growth.	1% point increase in tax/GDP ratio reduces per capita output levels by 0.3% to 0.6%.

For explanation of the method of indirect inference see:

Le, Vo Phuong Mai, David Meenagh, Patrick Minford, Michael Wickens, and Yongdeng Xu (2016). "Testing macro models by indirect inference: a survey for users". In: Open Economies Review 27.1, pp. 1–38.

Meenagh, David, Patrick Minford, Michael Wickens, and Yongdeng Xu (2019). "Testing DSGE models by Indirect Inference: a survey of recent findings". In: Open Economies Review, **30** (3), 593-620.

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