

# TAXES AND GROWTH: NEW NARRATIVE EVIDENCE FROM INTERWAR BRITAIN\*

James Cloyne    Nicholas Dimsdale    Natacha Postel-Vinay

July 2019

## Abstract

The impact of fiscal policy on economic activity is still a matter of great debate. And, ever since Keynes first commented on it, interwar Britain, 1918-1939, has remained a particularly contentious case — not least because of its high debt environment and turbulent business cycle. This debate has often focused on the effects of government spending, but little is known about the effects of tax changes. In fact, a number of tax reforms in the period focused on long-term and social objectives, often reflecting the personality of British Chancellors. Based on extensive historiographical research, we apply a narrative approach to the interwar period in Britain and isolate a new series of exogenous tax changes. We find that tax changes have a sizable effect on GDP, with multipliers around 0.5 on impact and exceeding 2 within two years. Our estimates contribute to the historical debate about fiscal policy in the interwar period and are remarkably similar to the sizable tax multipliers found after WWII.

JEL CLASSIFICATION: E23, E32, E62, H2, H30, N1, N44

KEYWORDS: Macroeconomic Policy, Fiscal Policy, Taxation, Public Finance, Fiscal History, Multiplier, Narrative Approach

---

\*Address for correspondence: James Cloyne (University of California Davis, NBER and CEPR); Nicholas Dimsdale (University of Oxford); Natacha Postel-Vinay (London School of Economics and CEPR). We are grateful for comments and advice from Benjamin Born, Brad De Long, Barry Eichengreen, Jason Lennard, Chris Meissner, Eric Monnet, Emi Nakamura, Albrecht Ritschl, Christina Romer, David Romer, Jon Steinson, Alan Taylor, Ryland Thomas, Jim Tomlinson, Harald Uhlig and seminar participants at Kingston University, Humboldt University, UC Davis, UC Berkeley, Oxford University, the York Macrohistory Workshop, the Economic History Society Conference 2018, the Monetary History Group at the British Treasury, the Financial and Monetary History Workshop at the Federal Reserve Bank of Cleveland and the London School of Economics. We would also like to thank Jason Lennard for kindly sharing his new fiscal data. All errors remain our own.

# 1 Introduction

What is the impact of changes in fiscal policy on economic activity? Can public spending boost growth? Will tax cuts stimulate the economy? Will austerity hurt? Despite nearly 100 years of debate, the efficacy of fiscal policy remains a particularly contentious issue and there is still much uncertainty about the empirical effects. We use the events and circumstances of Britain between the two world wars to shed light on an important aspect of this debate: do tax changes affect the macroeconomy? This remains a first-order policy question. Many countries cut taxes in 2009 and raised them after 2010, sometimes significantly. The United States has recently engaged in a large series of tax reforms. But this is also an important historical question: after World War I Britain stuck to a policy of austerity when many other countries did not. Could economic performance have been different? With its high overhanging debt, sluggish economic performance and low interest rates, interwar Britain resembles many economies today.<sup>1</sup> This period therefore remains highly relevant.

Interwar Britain has long stood out as a particularly contested case in the debate about the effects of fiscal changes on the economy. In the 1920s and 1930s, Britain stuck to budgetary orthodoxy — a doctrine favouring small and balanced budgets — and delivered austere budgets in most years until rearmament. This has led some (most notably Keynes (1933)) to advocate a fiscal stimulus to combat rising unemployment.<sup>2</sup> While later scholarship often agreed that such a stimulus would have been beneficial, others eventually suggested that there was no missed opportunity.<sup>3</sup>

Much of this debate, however, has focused on the role of government spending (defense expenditure in particular — see Crafts & Mills (2013, 2015)) and recent works have tended to find government spending “multipliers” below one for the rearmament era, well below

---

<sup>1</sup>This point is discussed further by Crafts & Mills (2013, 2015). In the wake of the Great Recession, some papers have looked into whether the impact of fiscal policy could vary depends on economic circumstances (Auerbach & Gorodnichenko, 2010, Christiano et al., 2011, Corsetti et al., 2010, DeLong & Summers, 2012, Jordà & Taylor, 2015, Ramey & Zubairy, 2018).

<sup>2</sup>Henderson & Keynes (1929) did not explicitly refer to a “multiplier.” The concept was worked out for employment by Kahn (1931), and was first taken up by Keynes in *The Means to Prosperity* (1933) and the *General Theory* (1936).

<sup>3</sup>Papers supportive of a sizable spending multiplier include (Thomas, 1981, 1983, Broadberry, 1986, Hatton, 1987, Dimsdale & Horsewood, 1995).

Keynes (1933)’s own calculations.<sup>4,5</sup> In the postwar years, changes in tax rates became an important part of demand management policy (Dow, 1964, Cairncross & Watts, 1989)<sup>6</sup> but, to our knowledge, no papers have studied the ability of tax policy to stimulate economic activity in the interwar period.<sup>7</sup> The economic circumstances of the interwar years also make this question particularly interesting. Low interest rates and a sizable degree of slack could imply higher fiscal multipliers. On the other hand, tax cuts in a high-debt environment might put pressure on government bond yields. The proceeds of any tax cut might also be saved by consumers.<sup>8,9</sup> New empirical evidence will therefore be particularly informative.

One reason why the macroeconomic effects of fiscal policy are hotly debated is that natural experiments in macroeconomics are rare and causal inference from observational data is challenging. While fiscal policy may affect the economy, the reverse is also true, making it hard to interpret any correlation between the two. A careful examination of specific historical episodes can, however, provide us with interesting changes in taxes that are better suited for this task. We show that interwar Britain is one such episode.

Drawing on dozens of British budget documents and political speeches we construct a direct measure of nearly 300 individual tax changes between 1918 and 1938 and apply a narrative approach to isolate exogenous movements in taxes. Specifically, we follow Romer

---

<sup>4</sup>By “fiscal multiplier” we follow the literature and use this term to mean the £ effect on GDP for a £1 change in government spending or tax revenue. We will define this more precisely below. A key part of this debate is whether this number is smaller or greater than 1. Larger multipliers imply the government can generate a more than one-for-one rise in economic activity.

<sup>5</sup>Ramey (2011), Barro & Redlick (2011) and Ramey & Zubairy (2018) make important contributions to estimating the effects of defense expenditure focusing on the post-WWII era or using long-run historical data for the United States. Ramey & Zubairy (2018) also examine whether the effects of defense spending vary with the degree of slack, and show that multipliers are always less than 1. While not focusing solely on Britain, Almunia et al. (2010) also make a significant contribution to the interwar debate on the impact of government expenditure by estimating defense-spending multipliers for 27 countries over 1925-1939. They find a large multiplier of about 2.5 on impact.

<sup>6</sup>This is despite the fact that Keynes was not a supporter of stimulus via taxes. When James Meade suggested to him that changes in taxes (direct and indirect) would be more appropriate, Keynes firmly disagreed (Dimsdale, 1987, p. 225), citing their short duration as a limiting factor. This explains why most of the interwar debate focused on public works, not on a fiscal stimulus via taxes.

<sup>7</sup>One exception is Romer & Romer (2014) who examine the incentive effects of changes in marginal tax rates on taxable income during the Interwar period in the United States.

<sup>8</sup>Alternatively, given the sizable tax burden following WWI, tax cuts might alleviate distortions and generate larger effects.

<sup>9</sup>Even the sign of the effect could be ambiguous. For example, some papers have argued that fiscal stimulus might have positive effects (for instance Aghion et al. (2009), Guajardo et al. (2014) and Mountford & Uhlig (2009)), others have been more reserved in their conclusions (see Alesina & Ardagna (2010), Alesina & Giavazzi (2012) and Friedman (1957))

& Romer (2010) (who examine the US after WWII) and use historical evidence in order to examine policymakers' motivations behind the overall budget and each individual tax change. This methodology has already been applied by a number of authors for the postwar era (for example Cloyne (2013), Mertens & Ravn (2013), Guajardo et al. (2014), Hayo & Uhl (2014), Cloyne & Surico (2017) and Gunter et al. (2018)) although the literature on the macroeconomics effects of tax changes still remains relatively small and limited to post-WWII episodes.<sup>10</sup> The objective is to isolate policy reforms that were directly influenced by contemporary fluctuations in the economy from those that can be seen as more independent, and use the latter to estimate the impact of fiscal policy on the economy. Through a detailed historical analysis, we argue that British fiscal policy was distinctly pre-Keynesian. Macroeconomic stabilisation policy was largely absent and, as a result, fiscal instruments were generally not used for such purposes. Tax changes tended to flow from longer-term political and social goals, often reflecting the personalities of particular politicians. And despite the generally austere character of fiscal policy at the time, there were surprisingly numerous tax rises and cuts.

Our main result is that tax multipliers are around 0.5-1 on impact, and exceed 2 after one year. These effects are remarkably similar to narrative-based estimates for the post-WWII period found by some of the papers mentioned above.<sup>11</sup> Our findings are also remarkably stable across a range of specification and robustness checks. In addition, we show that tax cuts reduce unemployment and lead to an increase in interest rates. The evidence for an effect on prices is relatively weak. Although the implied tax multiplier estimates are lower than Keynes suggested in his *Means to Prosperity* (1933) (for expenditure), they still suggest that greater stimuli to the economy may have been achievable by cutting taxes.

Interwar Britain is particularly well-suited to this kind of analysis. As is still the case today (see Cloyne (2013)), tax changes were clearly announced in the government's spring

---

<sup>10</sup>Barro & Redlick (2011) develop a new series of average marginal tax rates for the post-WWII United States and also make use of the Romer & Romer (2010) tax shocks. Nguyen et al. (2018) and Hussain & Liu (2018) study the effects of corporate, personal and consumption taxes in the U.K. by further decomposing the Cloyne (2013) dataset.

<sup>11</sup>This contrasts with somewhat smaller tax multipliers found using structural VAR approaches such as Blanchard & Perotti (2002). Mertens & Ravn (2014) reconcile the largest estimates in Romer & Romer (2010) with the Blanchard & Perotti (2002) approach using a proxy-VAR/external instruments approach. An alternative SVAR approach is proposed by Mountford & Uhlig (2009) using sign-restrictions. Mountford & Uhlig (2009) also consider how the multiplier varies depending on whether the stimulus is deficit financed.

Budget each year. Thus, by using each Budget's *Financial Statement* and related official publications, we are able to construct an extensive dataset of individual tax policy changes during the 1920s and 1930s. In addition, the reasons for these decisions were detailed in the annual Chancellor's Budget speech. The speeches provide abundant information about the nature of overall and specific changes as well as their motives. A companion paper (Cloyne et al., 2019) provides the detailed narrative, supporting evidence and interesting insights into the fiscal policy framework in interwar Britain. Our rich historical analysis is a further contribution of this paper that should be of independent interest to economists and historians alike.

In the postwar period, demand management measures tended to be easily identifiable under separate sections in the speech (Cloyne (2013)). This was not the case in the interwar period, where decisions tended to be more idiosyncratic. The nature of macroeconomic policy in the interwar period makes it harder to detect potential endogeneity purely from the overall motives given at the start of each Budget. We therefore dig into each Budget and examine policy changes individually, weighing these up against the aggregate motives. Furthermore, we also make extensive use of the historiography surrounding Budget decisions to understand the circumstances surrounding each Budget and the priorities and personality of individual Chancellors (Alesina, 1988, Daunton, 2007, Matthew, 1986, Middleton, 1985, 1996, Moggridge, 1972, Peden, 1987, Pollard, 1970, Short, 1985, Tomlinson, 1990, for instance).

Interwar British fiscal policy is often said to be pre-Keynesian. The fact that, as a rule, neither spending nor taxes were used for stabilisation purposes until the postwar era already suggests some potentially useful variation. And, indeed, many tax changes were related to longer-term goals. By documenting Chancellors' motives, we are able to show, for instance, that Chancellor Philip Snowden's 1924 tax cuts were partly aimed at reducing the tax burden on the poor, following his long-standing will to make society less unequal. Likewise, Imperial Preference was a trade-related principle favoured generation after generation in the Chamberlain family, and thus put forward by both Austen Chamberlain in the 1920s and Neville Chamberlain in the 1930s. Although we will isolate some tax changes that were clearly the product of current economic developments, many discretionary tax policy decisions over this period can be seen as either ideological (following, for instance, an ideal of fairness), or aimed at long-term performance (e.g. supply-side measures aimed at increasing productivity).

While policymakers did not, generally, use fiscal policy counter-cyclically, the high over-hanging debt in the period potentially generates some additional challenges. There was much discussion about tackling the persistent level of indebtedness and, naturally, the conduct of tax policy needs to be carefully analyzed in light of this. For example, one might be worried that fiscal stress affects some of the policy decisions. Furthermore, tax changes might have been related to government spending such that we are picking up a more general fiscal multiplier, whose interpretation depends on the response of government spending. The strength of the narrative method is that we can carefully examine these hypotheses.

We find that debt repayment would not generally elicit large changes in taxation. One institutional feature of this period is that Chancellors sought to make regular — indeed almost mechanical — payments into a sinking fund. Such sinking funds represented long-term commitments that did not respond to short-term fluctuations in the economy and year-to-year tax policy was generally separated from this consolidation plan. This approach to fiscal consolidation was deeply rooted in the budgetary orthodoxy followed by the British Treasury since the Victorian era. Of course, some discretionary tax changes were still designed to deal with alarming, contemporaneous movements in the deficit and we classify these as endogenous. On the spending side, we use our narrative evidence to exclude tax changes directly associated with changes in government spending. Furthermore, while all empirical fiscal multipliers are conditional on the response of other fiscal policy instruments, we show that the response of government spending to our identified tax policy shocks is relatively muted and the response of tax revenues is large (as one would expect). Our multiplier estimates are therefore closer to the concept of a deficit-financed tax multiplier than a balanced-budget multiplier.<sup>12</sup>

The remainder of the paper is structured as follows. In Section 2, we provide more detail on the empirical approach, the data sources and our narrative strategy for interwar Britain. In Section 3 we provide an overview of the tax changes identified using our narrative approach and explore the properties of our new series of exogenous tax changes. Section 4 presents our baseline results. Section 5 presents a range of further results and robustness checks. Section 6 concludes.

---

<sup>12</sup>To make this concrete, we also conduct a counterfactual exercise where we adjust our multiplier estimates for the response of government spending and show the results are very similar to our baseline estimates.

## 2 Empirical Approach and The New Dataset

### 2.1 Approach and Identification

Isolating the causal effect of tax changes on macroeconomic activity is notoriously difficult. Policymakers respond to economic conditions and, in turn, tax policy may have economic consequences. The co-movement of taxes and macroeconomic outcomes observed in the data has no clear causal interpretation and disentangling cause and effect is one of the most important challenges to address. In addition, studying the effects of tax changes in the interwar period poses a further challenge not usually faced by those using post-WWII data. To our knowledge, official fiscal data are not available at a quarterly frequency pre-WWII.<sup>13</sup>

Our empirical strategy needs to tackle both the issue of causality and the lack of data for this period. To do so, we employ a narrative approach following [Romer & Romer \(2010\)](#) for the United States and [Cloyne \(2013\)](#) for the United Kingdom for the period after WWII. The idea behind this strategy is simple: tax changes are not always motivated by changing economic conditions. Although we see clear evidence of tax policy responding to macroeconomic conditions in the United Kingdom, many tax changes in interwar Britain were taken for other reasons, and often reflected the priorities of particular politicians.

Using detailed historical documents, we first collect an extensive new dataset of all the legislated tax changes in Britain between 1918 and 1938. There were nearly 300 individual tax changes over these twenty years, providing a fascinating degree of variation in fiscal policy. To establish a causal relationship, we need to isolate the variation in tax policy that was not responding to economic fluctuations. In other words, we need some exogenous variation in tax policy to achieve identification.<sup>14</sup> Following [Romer & Romer \(2010\)](#), we

---

<sup>13</sup>For other macroeconomic data such as GDP, inflation and unemployment, we will draw heavily on the excellent datasets created by [Mitchell et al. \(2012\)](#) and [Thomas & Dimsdale \(2017\)](#). Later, to get a handle on the response of fiscal variables, we will also make use of a newly constructed dataset on tax receipts and expenditure by [Lennard \(2018\)](#). See Appendix B for more detail on the data sources.

<sup>14</sup>The most important concept of exogeneity is whether the tax reform was responding to *current* economic conditions. This is a form of “weak exogeneity” and tackles the within-quarter reverse-causality problem. Even if the reform had been influenced by past economic fluctuations, we can still identify the effects of tax changes if we control for historical movements in macroeconomics variables. Ideally, however, we are looking for tax changes which are exogenous with respect to the entire history of economic shocks (which are then referred to as “strictly exogenous”) and, for this reason, we study the historical evidence very carefully and focus on isolating these types of intervention. That said, later we will conduct Granger causality tests and include lagged controls in our regression analysis to show that our results are not biased by past economic fluctuations.

isolate these ‘exogenous’ changes in tax policy by examining policymakers’ motivations for each tax reform. As we discuss below, interwar Britain provides a range of interesting quasi-natural experiments. Not only is there a considerable number of tax reforms; we believe that a sizable proportion can be regarded as exogenous.

## 2.2 Method and Sources

The main event of the U.K. fiscal year is the annual Budget. Two key elements of the Budget are the annual Financial Statement — which outlines the state of the public finances and announces any new changes in taxation — and the Chancellor of the Exchequer’s (the U.K.’s Finance Minister) speech to the U.K. Parliament. The Budget speech outlines the economic situation, the government’s fiscal priorities for the coming year and then runs through all the individual tax measures and the motivations. To construct our new dataset of tax policy changes, our primary source is therefore the U.K. government’s *Financial Statements* (Stationary Office, 1919-1939). Not only does the Financial Statement outline each individual tax change, it (usually) reports the precise implementation date and provides an estimate of the projected impact on revenue.<sup>15</sup> The revenue estimate is computed for each tax change and is based on the assumption of an unchanged tax base. This is useful because the projection can then be seen as the effect of the tax holding all else constant. The revenue estimate is also given for a “Full Year” which is an estimate of the on-going change in tax liabilities associated with the reform. These features of the data side-step common problems with ex-post tax revenue data, which are a function the tax reform, the macroeconomic effect of the tax reform and the other economic fluctuations.

Table 1 provides an example of the tax data available from the April 1920 Budget. There are 17 tax changes in this one Budget alone. The reforms are distributed across a range of tax categories and the budget features both tax cuts and tax increases, with a range of implementation dates. By collecting this information for all Budgets between 1918 and 1938 we therefore construct a new dataset of all interwar tax reforms.

---

<sup>15</sup>Sometimes the precise implementation date is given in the Budget speech or the U.K. Finance Act which enacts the Budget measures. Occasionally we therefore have to cross-reference the Financial Statement with the Budget speech or the relevant Act of Parliament.

Table 1: Tax changes announced by Chancellor Chamberlain, April 1920 Budget

Tax item	Implementation date	Cost/Yield in a Full Year (£m)
Postage	04.08.1920	9.5
Motor spirit	01.01.1921	-3.2
Motor car	01.01.1921	-1.2
Spirits (Customs)	20.04.1920	6.4
Spirits (Excise)	20.04.1920	18.1
Beer (Customs)	20.04.1920	0.02
Beer (Excise)	20.04.1920	29.98
Wine	20.04.1920	4.1
Tobacco	20.04.1920	0.53
Total stamps	04.08.1920	6.3
Income tax (Graduation, differentiation)	06.04.1920	-29.2
Abolition of temporary war reliefs	06.04.1920	3.9
Relief for double income tax	06.04.1920	-2
Super tax	06.04.1920	11
Excess profits duty	01.01.1920	100
Corporations profits	01.01.1920	35
Motor Vehicle Duties	01.01.1920	9

Source: *Stationary Office (1919-1939)*

The next step is to split these tax changes into a group of ‘exogenous’ and ‘endogenous’ changes based on the reasons for the policy change. To do this, we first carefully study the Chancellor’s speech to the U.K. Parliament (recorded in the Official Parliamentary Record, [Hansard \(1919-1939\)](#)). The speech allows us to examine the *overall* policy objectives and the statements made about the *specific* policy measures. This provides a very useful point of departure and a sizable proportion of our narrative evidence is drawn directly from the Budget speech. However, it is hard to interpret the speeches, and to assign motives, without a fuller understanding of the period and the different influences that might have affected the Chancellor’s decisions. As a result, the underlying motivations are not always obvious from the Budget speech. We therefore use a range of historical sources to understand both the economic orthodoxy of the time, the key economic developments during the period and the various influences that might have affected each Chancellor.

Because demand management was not the norm, it is not always clear how to classify a set of policy changes from the overall motivation in each Budget. We therefore carefully weigh-up the aggregate discussion and the discussion around each policy change within a Budget. Sometimes, especially in times of crisis, the overall motive clearly dominates, and all changes within a Budget are classified the same way.<sup>16</sup> At other times, Budgets appear more

<sup>16</sup>When the individual motive could potentially be classified as exogenous but the overall motive was endogenous, we preferred to err on the side of caution and classify the individual motive as endogenous. An example is Neville Chamberlain’s 1932 tariff increase. In light of the Chamberlains’ long-running aversion towards free trade, this change can be seen as resulting from purely ideological motives. That said, the

nuanced and there are cases when classifying all changes in one budget the same way seemed problematic in light of the individual motives.<sup>17</sup> In these cases, individual policy changes may have individual classifications.<sup>18</sup> As in Cloyne (2013), we also include a robustness check where we classify all measures within a Budget the same way based on whether we judge the Budget to be largely endogenous or exogenous overall (at least with respect to aggregates like GDP). These results can be found in the Appendix and are discussed in Section 5. More detail on all these decisions and the evidence is provided in the companion paper Cloyne et al. (2019), which provides the full narrative for the period.

### 2.3 Key Aspects of Interwar Fiscal Policy

Before discussing the precise categorizations used to isolate exogenous tax policy changes, it is useful to ask: Which features of fiscal policy in the 1920s and 1930s are particularly useful for our purposes and which aspects require special attention? On the one hand, macroeconomic policy was “pre-Keynesian” and the idea that aggregate demand could be steered using tax policy was not the prevailing orthodoxy. As a result, many tax changes focused on more longer-term and social objectives, often reflecting the personality of each Chancellor. These aspects of the policy environment make the interwar period particularly well-suited for a narrative analysis. Many tax decisions were made for purely ideological reasons. For instance, many reflected support or disdain for Imperial Preference.<sup>19</sup> Likewise, some measures were passed with a view of making society less unequal. Others had to do with long-run productivity performance in certain sectors. On the other hand, although countercyclical fis-

---

circumstances in 1932 were such that raising substantial amounts via tariffs was highly opportune and Chamberlain’s policy can be seen as solving two problems at once. We therefore classify this change as endogenous.

<sup>17</sup>Take Austin Chamberlain’s 1919 Budget. As will be explained in more detail below, this was a non-emergency budget as Chamberlain was greatly underestimating expenditure for the immediate postwar period, so the overall motive was based on long-run objectives (such as Imperial Preference) and inherited fiscal conditions (his rise in estate duties by £10m can be seen in this light). Nevertheless, there was a rise in the excess profits duty (EPD) by £50m which was clearly related to ongoing defense spending. In that sense, the EPD rise is endogenous with respect to spending and it would be wrong to classify this individual measure as exogenous based on the overall objectives of the Budget.

<sup>18</sup>That said, we carefully examine relationship between the individual tax changes. Where two policy changes are directly correlated we classify them in the same way. For example, if one is clearly endogenous we classify both as endogenous.

<sup>19</sup>Imperial Preference was a protectionist policy. Those supporting it favoured protecting British production by raising tariffs on imports from the rest of the world, with some exceptions made for the British Empire. Members of the Chamberlain family (Joseph, Austin and Neville) were such strong supporters (Self, 2006).

cal policy was not the norm, this is not a sufficient condition for identification. For example, policymakers were still concerned with fiscal deficits and the national debt. In fact, this was a key part of the economic orthodoxy of the period and raises a number of issues to consider. For example, attempts to balance the budget in response to economic fluctuations are still likely to be endogenous for our purposes. A deeper understanding of the prevailing attitudes to fiscal policy is therefore important for understanding the motivations of each Chancellor. In what follows, we show that the interwar policy framework turns out to be very useful for our purposes and the narrative approach allows us to examine and tackle any issues with the deficit in detail.

A key aspect of the interwar fiscal framework is what has often been called Budgetary orthodoxy. This view recommended not only that budget balance be targeted in most circumstances except war time, but also that the budget be as small as possible. The literature is unanimous in describing budgetary orthodoxy as a strong, pervasive, and long-standing principle of fiscal policymaking in Britain. Indeed, it is widely agreed that it underlay the British Treasury’s fiscal stance for decades since the Victorian era, at least until the rearmament phase in the late 1930s. As a commitment to this policy, the UK Treasury, and successive Chancellors, sought to steadily reduce the national debt — which was sizable following the First World War — by isolating the repayments of debt from fluctuations in the economy by, for instance, committing to regular (indeed almost automatic) payments into a sinking fund. At the same time, governments aimed to keep expenditure and taxes low and fiscal policy was not used for countercyclical purposes. Middleton deems this general principle so pervasive in British budget-making history that he refers to it as the minimal balanced budget rule (MBBR) (Middleton, 1996, p. 181) although the term “rule” here may be somewhat of a misnomer — while it illustrates its ideological power, the MBBR reflects more a long-term objective than anything set into law.<sup>20</sup> An appreciation of the historical setting in which this principle evolved is therefore essential in understanding its importance over the period and its acceptance across the political spectrum; its “strength and diuturnity” as (Middleton, 1985, p. 84) calls it.

---

<sup>20</sup>While today’s 3% budget deficit rule laid out in European Union treaties is more akin to a rule (which, if broken, can trigger legal actions such as the Excessive Deficit Procedure and fines – see [European Union \(2009\)](#)), this one was much more informal. It was, in fact, broken a significant number of times, as we shall see below. Even at the EU level, the binding character of the rule may be debated.

The British defense of minimal taxes and expenditure has its origins in the *laissez-faire* view of the economy (starting with [Locke \(1689\)](#) and [Hume \(1987\)](#)) and a critique of eighteenth-century mercantilism, with the idea that government can too easily yield to specific interest groups ([Middleton, 1996](#), p. 53). Adam Smith himself had a deep mistrust of government: “always, and without any exception, the greatest spendthrifts in the society” (*ibid.*). Tied to this suspicion of big government was the idea that government spending and taxes crowded out private investment (*ibid.*, p. 181). This principle gathered strength, until it came to form the basis of economic policymaking in nineteenth-century Victorian Britain, especially under the Chancellorship of William Gladstone, famous for his judgement that “money should be best left to fructify in the pocket of the people” ([Peden, 1987](#), p. 27) (see also [Buchanan \(1985\)](#)). As [Hicks \(1953\)](#) emphasised: “Gladstonian budgeting is inextricably bound up with the theory of the ever-balanced (or even over-balanced) budget and with a perpetual desire for economy in public outlay.”

Chancellor Gladstone, himself inspired by Scottish evangelical thinker Thomas Chalmers, spread his minimal budget ethos to all areas of government, with long-lasting institutional effects ([Matthew, 1986](#), pp. 57, 73, 112). Spending plans, for instance, could not be allowed to automatically run from year to year, which is when the annual Budget became the centrepiece of the political year (see [Daunton \(2007, p. 463\)](#) and [Middleton \(1985, p. 85\)](#)). In 1866, he passed the Exchequer and Audit Act, which asserted Treasury control over all other departments ([Matthew, 1986](#), pp. 106), thereby imposing his minimal balanced budget to most areas of policymaking.

The First World War, however, led to society’s acceptance of a higher threshold of taxation, shifting upwards the “minimal” part of the MBBR. Democratisation, together with the broadening of both taxable income and national insurance coverage, meant that both taxation and public sector expenditure moved to a permanently higher level after WWI, relative to the prewar period (see [Peacock & Wiseman \(1961\)](#) and [Middleton \(1996, pp. 92, 98\)](#)). As [Middleton \(2010\)](#) notes, by the 1920s and 1930s “the budget was no longer minimal”. Nevertheless, the Treasury — and many Chancellors — still concentrated its planning on getting back to a so-called “normal year.” The normal year was referred to by policymakers as a pre-war economic standard in which taxes and government expenditure were both low. With a few exceptions (Horne and Churchill in particular), this ideal would permeate policymaking

across the political spectrum throughout the interwar era (Short, 1985, pp. xvii, 27-28). This approach meant that tax policy was often set looking through current conditions and with a more long-term perspective. This explains why various tax reductions can be seen as based on ideological and/or long run objectives, rather than for countercyclical purposes.

The most striking example of the application of the normal year principle is Labour Chancellor Philip Snowden's sweeping tax cuts of 1924. Despite solid economic performance in 1924, and despite Snowden being a Labour Chancellor, he aimed to keep the tax burden as small as possible. By and large, Keynesian demand management was not adopted until the rearmament phase.<sup>21</sup>

Although these long-term considerations shaped various aspects of tax policy during the interwar years, the goal of lower taxes sometimes conflicted with that of budget balance, (see Tomlinson (1990, p. 67), Middleton (1985, pp. 83-5) and Middleton (1996, p. 184)). Britain wished to maintain a tight fiscal stance throughout this period, for a number of reasons. First, Victorian Britain sustained a deep aversion towards debt, and the Treasury recommended that debt should be reduced at all costs and in most circumstances except war time. After the war, "the ultimate discipline imposed by balanced budgets had lost none of its appeal" (Middleton, 1996, p.315).<sup>22</sup> This "whole political culture of 'safety first'" explains why we sometimes see tax increases in our dataset even when the deficit was not getting any worse (see Tomlinson (1990, p. 67) and Middleton (1985, pp. 83-5)). Britain, indeed, was more particular about its overhanging debt (137 percent of GDP in 1919) than any other war-ravaged country (Alesina, 1988). As Middleton (1996, p. 340) makes clear, "the higher taxation relative to France and Germany was a clear consequence of the earlier imposition of strict budgetary control in Britain in the immediate postwar years" (see also Alford (1972, p. 65), Alesina (1988, p. 64) and Ritschl (1996)). Edwin Montagu indeed asked Lloyd George in 1921: "Is it conceivable that England should prostitute itself to the level of France and budget for a deficit?" (Short, 1985, p. 177).

Second, support for the Gold Standard also arguably played in favour of a balanced

---

<sup>21</sup>In 1944, Beveridge still accused the Treasury of being "still far too prohibited in regard to central finance, too fearful of increasing national debt" (Middleton, 1985, p. 89).

<sup>22</sup>Interwar support for the MBBR was based on a more complex view of crowding-out than the standard, full-employment, Ricardian one. It was based on the idea that crowding-out could occur even at low employment levels because any deficit spending would lower confidence in the government's ability to repay its debt, eventually harming the private sector (Middleton, 1996, p. 323).

budget. In order to stay on the Gold Standard and resist inflationary tendencies, Britain had to repay its debt in an orderly manner. Staying on the Gold Standard was a long-term goal which mattered to Britain because of its importance for trade and the City, as reaffirmed by the [Cunliffe Committee \(1918\)](#) just after the war (see [Brown \(1929, p.63\)](#), [Pollard \(1970, p. 17\)](#), [Moggridge \(1972\)](#), [Dimsdale \(1981\)](#), [Peden \(1987, p.17\)](#) and [Accominotti \(2012\)](#)).<sup>23</sup>

Finally, many have argued that the policy of debt repayment and deflation was partly designed to support the rentier class. [Alesina \(1988, p. 66-7\)](#) suggests that despite (and perhaps as a result of) tax increases, the policy of deflation and high interest rates mainly served debt holders to the detriment of taxpayers. The debt to GDP ratio actually increased and remained well above 150% throughout the 1920s. Such intentions were famously denounced by Keynes and Churchill (*ibid.*).

Policymakers therefore sought to steadily reduce the national debt burden for one or several of the aforementioned reasons and this is useful for our purposes. While there were some instances in which the fiscal situation seemed to deteriorate quickly and demand immediate action (such as in 1920 or 1931), in many other instances there was no such sense of emergency. This long-term interest in fiscal consolidation enabled the orderly payment of debt interest, which made up about half of government outlays every year, and regular payments into a sinking fund. The interwar view of the sinking fund was that of a “new” sinking fund whose amounts were to be pre-determined, scheduled in advance, and not responding to short-run economic fluctuations — usually around £50 million ([Brittain, 1959](#), pp. 202-203).<sup>24</sup> The fact that sinking fund payments were included as part of the Treasury’s calculation for the budget surplus was unusual even among European countries at the time and reflects the importance of this pre-determined commitment. While there were a few changes in the pre-committed amount, [Appendix Figure A.13](#) shows that once the sinking had reached a new plateau, such as in 1923 and 1933, any subsequent changes in the following decade were minor.<sup>25</sup>

---

<sup>23</sup>The Gold Standard was not just an end in itself. Some agreed that adherence to it was a means to constrain the Budget. At the infamous dinner party attended by Bradbury, Niemeyer, McKenna and Keynes, Grigg reports that “Bradbury made a great point of the fact that the Gold Standard was knave-proof. It could not be rigged for political or even unworthy reasons” (cited in [Moggridge \(1969, p. 61\)](#)).

<sup>24</sup>This is to be contrasted with Walpole’s “old” sinking fund concept whereby only any arising surplus from the previous year could be used for such payments (*ibid.*). The “old” sinking fund concept is closer to the post-WW2 view of sinking funds (*ibid.*).

<sup>25</sup>We deal with all changes, large and small, in our full narrative.

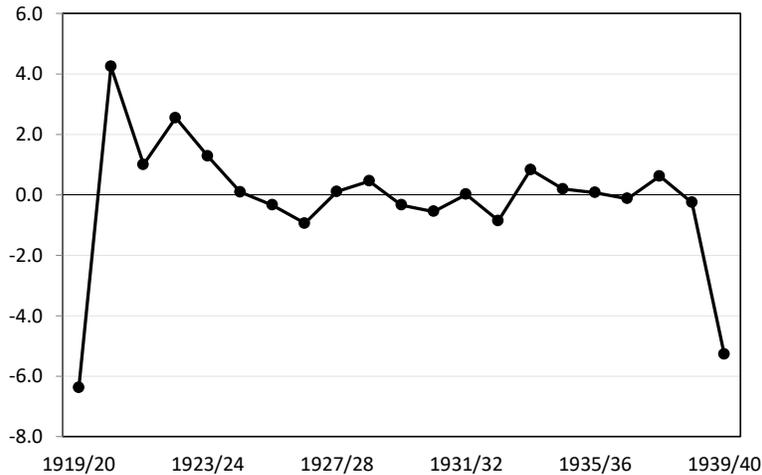


Figure 1: Central government budget balance (% GDP), 1919-1939

Notes: Central government budget surplus figures are from [Mitchell \(1988\)](#). They include sinking fund payments and exclude the social insurance funds, which was how Chancellors at the time evaluated the Budget in their speeches. Modern budget surplus definitions would exclude the sinking fund but include the social insurance funds, as [Middleton \(1985, pp. 78-81\)](#) showed. Even under this modern definition, though, budget deficits would still look remarkably low relative to other countries and relative to today (see Table 6.1 in [Middleton \(1985, p. 96\)](#)). GDP figures are from [Mitchell et al. \(2012\)](#).

Given the pre-determined and steady nature of the fiscal consolidation plan, debt redemption policy was largely separated from year-to-year tax policy reforms. Furthermore, tax increases that were designed to accelerate the repayment of the inherited level of debt closely fit the [Romer & Romer \(2010\)](#) concept of deficit-driven tax changes unrelated to contemporaneous economic conditions; we also therefore classify them as exogenous.<sup>26</sup> Emergency measures to deal with a sudden deterioration in the budget outlook, whether caused by a recession or a sudden increase in the national debt, are by contrast classified as endogenous. Figure 1 shows how a substantial, largely endogenous increase in the budget surplus in 1920, enabled by Austen Chamberlain’s emergency tax measures, put the British budget on a stronger foothold. Conditions became relatively more benign from then on. After 1920 the central government budget deficit, including sinking fund payments, never exceeded 0.9 percent of GDP. This can be compared with deficits of 3 percent of GDP which would become

<sup>26</sup>But, as these types of changes might reflect past economic shocks, this provides a rationale for including lagged economic variables in our regressions.

routine in the postwar era (Middleton, 2010, p. 431).

Despite these benefits, one concern is that some of the tax cuts we consider might imply further spending reductions, and vice versa. Although empirical fiscal multipliers always implicitly depend on the historical response of other fiscal variables, given the emphasis on fiscal prudence during this period it is worth paying additional attention to this. By examining the narrative we are able to exclude tax changes that were directly associated with spending changes.<sup>27</sup> Furthermore, we will estimate the response of government spending to our identified policy reforms to examine the role of movements in government spending in explaining our estimates.<sup>28</sup>

To summarise, the fiscal orthodoxy of this period has two important implications for our purposes. First, tax policy generally assumed a long-term character and was not used for countercyclical purposes. Second, while governments focused on fiscal prudence, the sustained debt-redemption policy was typically isolated from short-term fluctuations in the economy. These features of the budgetary framework are useful for our narrative identification strategy but we will still carefully consider whether tax changes might be correlated a deteriorating fiscal position and examine the relationship between taxes and spending.

## 2.4 Summary of Classifications

Having outlined the general objectives of fiscal policy during this period and the key econometric issues, we can now describe the categories we use to assign motives to policy changes. The primary distinction is whether the tax change was endogenous — responding to fluctuations in economic conditions such as GDP or the deficit — or whether the tax change was taken for other reasons, possibly related to ideological objectives. Table 2 summarises our classification system. The two main categories are split between endogenous (N) and Exogenous (X). But we also provide six sub-categories.

First, consider the different types of endogenous tax changes. As noted above, although

---

<sup>27</sup>When assessing the exogeneity of a particular Budget, we are also careful to look for any changes in general government expenditure plans that might be correlated with economic fluctuations. Seemingly exogenous tax changes might be correlated with such spending changes. Our strategy therefore excludes these. As a precaution, we can also control for lagged government spending.

<sup>28</sup>In particular, we will show that the response of government spending is in line with Budgetary orthodoxy, but the magnitudes are actually relatively muted. It is, of course, worth emphasizing that all empirical studies on the tax multiplier typically have government spending implications from tax shocks. We discuss these fiscal financing issues in more detail in Section 5.

policy was pre-Keynesian, there do appear to be some tax changes aimed at stimulating the economy. Following [Romer & Romer \(2010\)](#), we refer to these as countercyclical measures. As we mention later, many were aimed at improving the economic conditions for firms (an attempt to stimulate supply capacity (SS)) but a few, from a modern perspective, even look like attempts to stimulate demand (DM). In addition, given the focus on balanced budgets and the aversion of government debt, it is also possible that tax policy was responding indirectly to economic conditions. It is clear that at least some tax changes followed from a desire to maintain a sound budgetary position in response to sudden deteriorations in the fiscal outlook. We refer to these changes as urgent deficit reduction measures (DR). As noted above, the correlation of government spending and tax changes will affect the interpretation of our multiplier estimates. To help minimize this issue, we classify policy changes that are explicitly associated with spending changes as endogenous (SD).

Turning to the exogenous tax changes, various reforms were taken to meet social objectives, reflected a particularly ideology (for example Imperial Preference) or reflected personal priorities of the Chancellor (for example Churchill's Betting Duty – see [Cloyne et al. \(2019\)](#)). These types of changes we refer to as socially or ideologically motivated (IL). The fiscal orthodoxy of the period also generates two further categories. First, there was often a desire to keep taxes as low as possible to stimulate long-run growth. Following [Romer & Romer \(2010\)](#), we refer to these as long-run tax reforms (LR). Second, the government engaged in steady fiscal consolidation to lower the average level of government debt over time. This was influenced by debt inherited from the past, rather than year-to-year movements in the deficit. Although this may be a function of past economic events, these policy changes do not reflect immediate economic conditions. Again, following [Romer & Romer \(2010\)](#), we refer to these as long-run fiscal consolidation measures (FC).<sup>29</sup>

---

<sup>29</sup>To the extent that these types of policy changes are indirectly correlated with historical shocks, it may be necessary to control for past macroeconomic outcomes, see [Mertens & Ravn \(2012\)](#).

Table 2: Categories of tax changes

Group	Sub-category
<b>Endogenous (N)</b>	1. Countercyclical measures: stimulate demand (DM) and supply (SS)
	2. Urgent deficit reduction measures (DR)
	3. Spending-driven changes (SD)
<b>Exogenous (X)</b>	1. Social/ideological objectives (IL)
	2. Long-run performance (LR)
	3. Long-run fiscal consolidation (FC)

### 3 Interwar Tax Changes

#### 3.1 An Overview of the Narrative Evidence

What were the tax changes over this period? We discuss this in detail in our companion paper [Cloyne et al. \(2019\)](#), but here we provide a high-level overview of our narrative account and the main sources of variation we consider. Below we also try to give a flavour of how we weigh-up the different sources of evidence and compare more aggregate vs. individual policy specific motivations.

##### **Postwar Policy: 1919-1924**

From 1919 to 1924 Britain first went into postwar recession and soon emerged in a relatively swift recovery. This era was marked by both endogenous and exogenous tax measures. The most striking ones are Austen Chamberlain’s endogenous deficit reduction measure in 1920 and Snowden’s exogenous tax cuts in 1924.

Budgetary orthodoxy was an important pillar of Austen Chamberlain’s policymaking ([Short, 1985](#), p. xvii) and was followed just coming out of the war despite the absence of perceptible warning signals, which only came in the summer. The Chancellor may not have felt any strong sense of emergency due to his having grossly underestimated expenditure which he had assumed to be close to its pre-war basis (*ibid.*, p. 11). And as he emphasised himself in his Budget speech, “Death Duties are not a suitable instrument for meeting a temporary emergency” ([Hansard, 1919-1939](#), HC Deb 30 April 1919 vol 115 cc206-7). The rise

in estate duties is thus better seen within the fiscal consolidation framework. Some custom duties were lowered due to his long-running attachment to Imperial Preference. Another exogenous movement was the increase in beer revenue which simply resulted from relaxed war restrictions on alcohol. Nevertheless, the increase in revenue from both spirits and the excess profits duty (EPD) can be seen as endogenous: the former followed a rise in profits, while the latter was aimed at compensating some continuing war expenditures.

After the underevaluation of expenditure became evident in the summer of 1919, Austen Chamberlain was pressed by the Treasury and even *The Times* to pay more attention to the size of the national debt (Short, 1985, pp. 15-7).<sup>30</sup> A strong sense of emergency therefore emanates from the 1920 Budget. In a move that put Britain on a much stronger foothold for the years to come, he dramatically increased the EPD to £100m and the corporations profits duty to £35m. This move can no doubt be seen as endogenous. Despite this, for reasons of fairness Chamberlain still sought to substantially reduce income tax on the lower brackets, following the recommendations of the Royal Commission on Income Tax which had deliberated in 1919-20. This change is better seen as exogenous.<sup>31</sup>

Horne was the only other Chancellor along Churchill who did not strictly adhere to the prevailing orthodoxy (see Peden (1987, p. 147-9) and Short (1985, p. 152, 166). With Britain having entered a full-blown recession in 1921, he preferred to leave taxes broadly unchanged in his 1922 Budget and accept some kind of deficit budgeting, giving the appearance of a balanced Budget by temporarily suspending sinking fund payments (ibid., p. 180). Given the overall macro motives, any small tax reductions can be seen as endogenous.

On the other hand, the normal year concept was fully embraced by Baldwin and Snowden. Both Chancellors sought to significantly reduce taxation. Surprisingly given his support for the left-wing Labour Party, Snowden deeply believed in the importance of a limited state and low taxes for Britain (Snowden, 1920). As Boothby noted:

To every outworn shibboleth of nineteenth century economics he clung with fanatical tenacity. Economy, Free Trade, Gold – these were the key-notes of his political philosophy; and deflation the path he trod with almost ghoulish

---

<sup>30</sup>Rothemere actively campaigned against government spending (the “Anti-Waste” campaign) and used *The Times* as his main medium of expression.

<sup>31</sup>Section K also shows that our results are very similar if we classify all measures in this budget the same way, i.e. as endogenous.

enthusiasm. (...) To every plea for expansion – and many were made from both sides of the House of Commons – he remained totally deaf” (cited in [Middleton \(1996, p. 320\)](#)).<sup>32</sup>

His reductions in taxation can therefore be treated as exogenous. He differed from his Conservative counterparts only in his insistence that tax policy should be used to increase fairness and redistribution.

### **Churchill and the Gold Standard: 1925-1930**

With Britain back on gold in 1925 under Churchill, one could only expect further policies to keep her safely on this path. However, neither low taxes for everyone nor a balanced budget were really Churchill’s cup of tea.<sup>33</sup> While he was at the helm, for most of the second half of the 1920s, the economy was actually stimulated several times in 1928 to give a boost to dwindling demand and production following the General Strike. To preserve an appearance of integrity in such situations, he resorted to what he himself called “my adventitious resources” by, for example, raiding the Road Fund (see [Hicks \(1938, p. 7\)](#) and [Hancock \(1970\)](#)). Indeed Churchill often sought to flow against the stream, fuelled in particular by lengthy conversations with Keynes ([Pollard, 1970](#)). Deficit reduction was only resorted to when he perceived a dangerously widening gap in the state’s finances – for example, in the 1926 and 1927 budgets. Stimulus and deficit reduction measures alike are classified as endogenous.

Churchill also shared with Keynes the view that “gigantic taxation” and deflation mainly served rentiers at the expense of the average taxpayer, and sought to restore the balance by relieving the middle class while unnerving the elite (see [Daunton \(2002, p. 124\)](#) and [Short \(1985, p. 211, 223\)](#)).<sup>34</sup> Tempted by the capital levy as examined by the Colwyn Committee on the National Debt and Taxation, he eventually backed down. But his 1925 Budget greatly reduced the standard rate of income tax while substantially raising the estate duty. Both moves can be treated as exogenous as they were in accordance with his ideology, rather than a response to changing economic conditions.

---

<sup>32</sup>Baldwin’s philosophy, which was similar to Snowden’s, emanated from a fear of big government in the face of influences from communism and fascism ([Middleton, 1996, p. 317](#)).

<sup>33</sup>Although it was Churchill who led Britain back to gold, he eventually thought it had been “the greatest mistake of [his] life” ([Capie & Wood, 2012, p.187](#)).

<sup>34</sup>He said: “There is more to the life of a nation than the development of an immense rentier class quartered in perpetuity upon the struggling producer of new wealth” ([Daunton, 2002, p. 123](#)).

The Liberal party's pamphlet *We Can Conquer Unemployment* did not manage to garner sufficient political support, however, opening the way for the Labour Party to return to power. With Snowden back at the Exchequer, Churchill's "relative profligacy" (Tomlinson, 1990, p. 77) could only meet with contempt. In 1930 Snowden reasserted his will to balance the budget and raised all major tax items substantially. Though several economic indicators were starting to fall around that time, the general tone of the Budget is not one of emergency.<sup>35</sup> As Middleton (1996, p. 321) points out, Snowden's return to the Treasury "was welcome by officials who had been only too conscious of expenditure growth during the second Baldwin administration and Churchill's propensity to be distracted from the path of strict orthodoxy." These measures can thus be seen as exogenous (relating to inherited fiscal conditions) as well.

### **Crisis and Recovery: 1931-1935**

Snowden had remained quite hopeful throughout most of 1930, and his 1930 Budget had promised that no new taxes would be imposed in the next Budget. However, Britain's economy substantially deteriorated over the winter of 1930-1931. Although up to 1931 the Unemployment Insurance Fund had remained broadly outside the central government budget (Peden, 2000, p. 238), unemployment rose to 12% and financing the fund through the usual channels (employer and employee contributions) became very difficult.<sup>36</sup> Snowden kept his promise in his April 1931 Budget, but appointed the May Committee to look for ways to economise. Although a prospective deficit of £120m, or 3.1 % of 1931/2 GDP, would become common in the postwar era, it was widely viewed as alarmingly high (Middleton, 2010, p. 431). Labour could not, however, agree on cuts to unemployment benefits, leading to the formation of a new National coalition government in August, which precipitated the fall in the pound (Alford, 1972, Tomlinson, 1990, Capie & Wood, 2012).

The tone of the supplementary Budget speech delivered in September 1931 by Snowden, who had remained Chancellor in the new National government, is thus one of emergency. In a significant departure from his habitual policy goals, Snowden not only substantially

---

<sup>35</sup>Churchill eventually accused Snowden and the Treasury to be like-minded spirits who "embraced themselves with all the fervour of two long-separated kindred lizards" (Daunton, 2002, p. 144).

<sup>36</sup>Note that before 1931 social insurance payments did not come entirely from employer and employee contributions. Some Exchequer payments went into those funds. For example, in the early 1920s Exchequer contributions to the Unemployment Insurance Fund accounted for a fifth to a quarter the Fund's expenses, but were not officially included in the central government Budget (Stationary Office, 1997, Table 80, p. 106), and thus not discussed by Chancellors in their Budgets until September 1931.

increased taxes but did not even refrain from placing some of the burden on the middle class and the poor (Short, 1985, p.293) (see also Daunton (2002, p. 159)). The supplementary budget of 1931 is therefore a clear example of an urgent, and endogenous, increase in taxes for deficit reduction purposes.

In the following year the debt continued to be threateningly high. In October 1931 the National government was reelected, this time with Neville Chamberlain as Chancellor, who seized the opportunity to realise his long-standing wish of protection through tariffs.<sup>37</sup> Although it is possible to view such a move as ideological, the seriousness of the situation still does not warrant an exogenous treatment. Classification here is therefore based on the overall macro objectives, despite what is said about the individual measure itself.

With Britain off gold, the Budget under control and a successful conversion operation in the summer of 1932, interest rates could be brought down from 5 to 3.5%, and some supply and demand stimulus measures could be introduced. Neville Chamberlain's 1933 and 1934 Budgets are thus also mainly endogenous (Middleton, 2010), except for some small measures related to anomalies in the tax system.

With the economy facing more normal conditions in the mid-1930s, Neville Chamberlain turned his attention to cutting income tax. For example, in his 1935 Budget he announced that he would cut income tax for the poorer part of the population. Many of these we classify as exogenous measures based on ideological and long-run motives.

### **Rearmament: 1936-1938**

Preparation for war against Germany dominated the rest of the period. Budgets between 1936 and 1938 all refer to rearmament as the main priority, and are therefore mostly endogenous. The only exceptions are fairly important tax cuts in 1936 introduced by Chamberlain, which he explicitly justifies as technical provisions against tax avoidance.

## **3.2 The new tax shock series**

Our new dataset contains around 300 individual tax changes, 140 of which we regard as exogenous. We then assign these tax changes to the implementation dates given in the Budget documents and aggregate the tax changes into a quarterly time series for economic analysis. Following Romer & Romer (2010), a tax change implemented in the final half of

---

<sup>37</sup>Neville, like his father Joseph, had always worked against free trade (Self, 2006).

any quarter is assigned to the next quarter but, in Appendix C, we show that this timing choice makes virtually no difference to our results. The choice to assign a tax change to the implementation date (rather than the announcement date) also raises the issue of anticipation effects. If a tax change is implemented several quarters after it is announced, the economic effects could be realized before the measure is implemented. In Section 5.3 we show that most tax changes are implemented without a lag and show that our baseline results are very similar when we restrict attention to tax changes that were implemented in the same quarter that they were announced.

We therefore take our new set of tax changes, assign them to quarters, aggregate and scale by nominal GDP.<sup>38</sup> Figure 2 shows the resulting aggregate series for exogenous and endogenous tax changes.

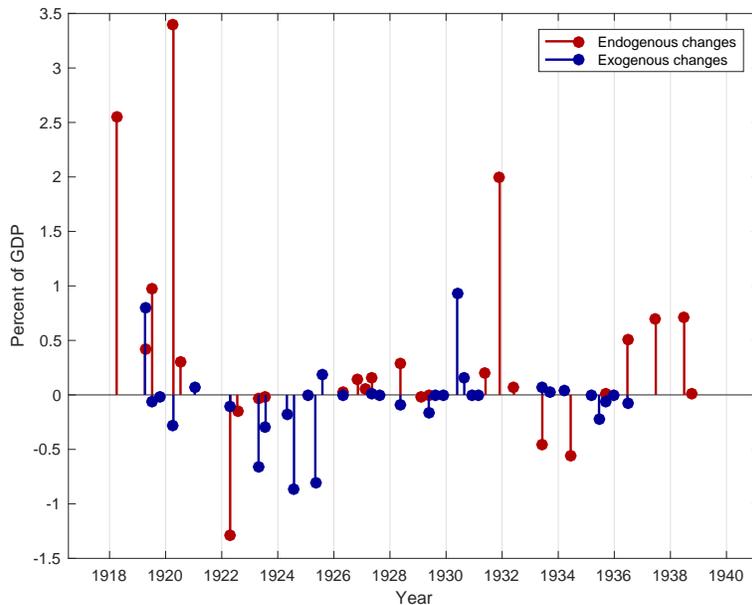


Figure 2: Tax shocks in interwar Britain

Sources: *Stationary Office (1919-1939) and authors' calculations*

There is considerable variation throughout the sample, and many of the tax changes are

<sup>38</sup>In the baseline specification we use nominal GDP in the previous quarter, but the results are not sensitive to this. Quarterly nominal GDP is also not directly available so we construct a nominal GDP series by multiplying the real GDP series from Thomas & Dimsdale (2017) by a price deflator. Our price deflator is a weighted average of consumer and export prices. The weights are chosen by matching our new series with annual nominal GDP data that is available for this period. The results are similar using lagged annual nominal GDP data to scale the tax changes.

sizable. This reinforces the suitability of this period of U.K. history for our analysis. Some of the key reforms outlined in Section 3.1 are also clearly visible. In 1919, the blue upward spike corresponds to Chamberlain's exogenous tax rise. However, the large endogenous increases in the early 1920s come from his emergency measures to tackle the large deficits following the economic downturn. Horne's downward spike in 1922 is easily recognizable. The sizable exogenous tax cuts in the mid-1920s reflect ideological beliefs held by both Baldwin and Snowden that the tax burden should be made permanently lower. Over the second half of the 1920s, Churchill's complex character resulted in many little changes, but few sizable ones.

The year 1930 sees Snowden back to power and the effect of his long-standing desire to balance the budget following Churchill's long-term inaction. In accordance with his optimistic economic outlook, he promises no further tax increases over the next few years. The unfolding crisis in 1931 however leads him to break his own promise, with taxes even falling on the poor – a clear endogenous response to contemporary economic troubles. Notwithstanding some smaller exogenous tax changes, the following years see mainly endogenous responses to the fiscal crisis. Rearmament, likewise, provides the impetus for most spending-driven commitments.

The narrative approach isolates exogenous tax changes based on the motivations given by policymakers. These are identification assumptions and we cannot test the contemporaneous exogeneity of our tax changes. We can, however, provide some statistical reassurance that our method has been successful by checking whether our exogenous changes are predictable based on past macroeconomic variables. Table 3 shows results of Granger causality tests. We attempt to predict our new series of tax changes using information on past quarterly GDP growth, the change in the unemployment rate, consumer prices and Bank rate, government spending and the Bank of England's policy interest rate. The results are striking: the endogenous tax series is highly predictable but the exogenous series is not. The null hypothesis is that lags of these variables do not Granger cause the exogenous series and this hypothesis is clearly not rejected, with very high p-values.<sup>39</sup>

---

<sup>39</sup>The endogenous tax series and the exogenous tax series are also essentially uncorrelated, the correlation coefficient is -0.04.

Table 3: Granger causality tests

Series	Test statistic	$p$ -value
<i>Exogenous series</i>		
GDP	0.47	0.98
Unemployment	1.62	0.81
Bank rate	3.41	0.49
Consumer prices	1.98	0.74
Government spending	3.68	0.45
<i>Endogenous series</i>		
GDP	11.66	0.02
Unemployment	11.62	0.02
Bank rate	34.83	0.00
Consumer prices	8.89	0.06
Government spending	1.29	0.86

Note: This table shows the test statistics and  $p$ -values associated with the Granger causality tests. A high  $p$ -value implies that it is not possible to reject the hypothesis that each variable does not predict the tax shock series. Each row shows the results of regressing our tax shocks (exogenous and endogenous) on four lags of GDP growth, the change in the unemployment rate, the log change in prices, the log change in government spending and the change in the Bank of England policy rate (Bank Rate). See Appendix B. Similar results are obtained using a different number of lags.

## 4 The Macroeconomic Effects of Tax Changes

With our new series of exogenous tax changes, we can now explore the link between tax reforms and economic outcomes. Tax changes are likely to have contemporaneous and dynamic effects: policy changes may affect the economy gradually over time and changes in tax rates may also persist for a number of years. We are therefore interested in the dynamic causal effects of changes in taxation. To do so, we estimate impulse response functions using the local projection technique of Jordà (2005).<sup>40</sup> Specifically, we estimate the following sequence of regressions:

$$y_{t+h} - y_{t-1} = \alpha^h + \beta^h \Delta\tau_t + \Gamma^h(L)X_{t-1} + u_{t+h} \quad (1)$$

where  $y_{t+h}$  is the variable of interest, for example log real GDP, at horizon  $h$ , and  $\Delta\tau_t$  is our new series of identified exogenous tax changes. Identification of the causal effect requires that the tax changes  $\Delta\tau_t$  are uncorrelated with the other macroeconomic disturbances contained in the error term  $u_t$ , conditional on observables  $X$ . Our narrative identification strategy

<sup>40</sup>The local projections approach here can be seen as a flexible way of estimating the same auto-regressive distributed lag model as in Romer & Romer (2010).

ensures this requirement is satisfied. To be cautious,  $X$  vector includes the lags of the tax shocks, real GDP growth, Bank rate, unemployment and prices. If our shocks are strictly exogenous adding controls should make little difference which, in Section 5.6, we show is the case. The number of lags for the shocks is denoted  $Q$  and the lag length for the other controls is  $P$ . To remain parsimonious, for the baseline results, we use  $P = 1$  and  $Q = 1$ . Appendix D shows that the results are remarkably stable across  $P, Q$  pairs. The variables of interest will be the log of quarterly real GDP, the unemployment rate, Bank Rate and the log consumer price index. All these data are available from Thomas & Dimsdale (2017) and the precise data definitions and sources are given in Appendix B.

By running a sequence of regressions for different horizons  $h$ , we can directly estimate the impulse response function for the variable of interest: the effect on  $y$ ,  $h$  periods after a 1 unit movement in  $\Delta\tau_t$ . Given that, by construction,  $\Delta\tau_t$  is the change in projected tax revenue divided by GDP, the  $\beta^h$  for the GDP regression can be interpreted as the fiscal multiplier: the £change in GDP  $h$  periods ahead for a £1 cut in taxes in the initial period. Given that the tax shock is in differences, the simulation can be thought of as a shock which persistently lowers the tax-to-GDP ratio ( $\Delta\tau_t = -1$  in the first period and zero afterwards). To study the GDP response, it is therefore useful to convert the impulse response function for GDP into a *present value multiplier* and plot this over time (see, for example, Mountford & Uhlig (2009), Uhlig (2010), Ramey (2019)). This statistic is the *total* £ change in GDP up to period  $h$ , divided by the total tax remission, in £, over the same period. To be precise, and following Mountford & Uhlig (2009), the present value cumulative GDP tax multiplier is defined as follows:

$$\frac{\sum_{j=0}^h (1+r)^{-j} \Delta GDP_{t+j}}{\sum_{j=0}^h (1+r)^{-j} \Delta T_{t+j}} \quad (2)$$

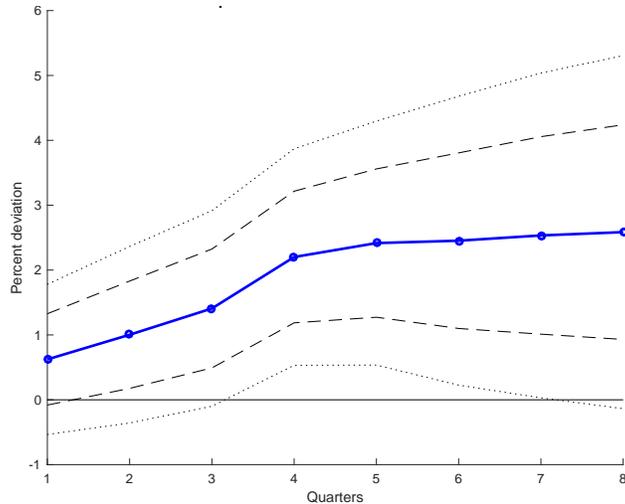
Where  $\Delta GDP$  and  $\Delta T$  are the £ change in GDP and tax revenue relative to the case where taxes are not adjusted and  $r$  is the sample average real interest rate, constructed from Thomas & Dimsdale (2017). Our shocks are normalized by GDP and, given the discussion above, we assume that our shocks lower taxes to GDP by 1% for the period of the IRF.<sup>41</sup> Ideally we would like to estimate the effect on tax revenues directly and use this for the

---

<sup>41</sup>Note that the percentage response in GDP to a 1% of GDP reduction in taxes is equivalent to the multiplier because the denominators cancel out.

denominator. Unfortunately, official quarterly tax revenues data are not available over this period, but we will investigate this issue using a newly collected dataset on tax cash receipts from [Lennard \(2018\)](#) in Section 5.1. We will show that tax receipts as a share of GDP indeed persistently decline by 1% of GDP and using these (albeit noisy data) to compute the present value multiplier produces very similar estimates to those reported in this section.

Figure 3: Present value GDP tax multiplier



Notes: The figure shows the present value GDP multiplier,  $\frac{\sum_{j=0}^h (1+r)^{-j} \Delta GDP_{t+j}}{\sum_{j=0}^h (1+r)^{-j} \Delta T_{t+j}}$ ,  $h$  periods after the shock, assuming taxes are reduced by 1% of GDP for 8 quarters. Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap.

Figure 3 plots our main results for the present value multiplier for GDP over time. The present value multiplier is 0.6 on impact and rising to 2.3 over two years. The figure also shows the 68 and 90 percent standard error bands, so this effect is also statistically significant over the period.<sup>42</sup> Narrative evidence for the post-war period typically reported impulse response functions rather than present value multipliers ([Romer & Romer \(2010\)](#), [Cloyne \(2013\)](#) and [Mertens & Ravn \(2013\)](#)). The impact effect is still comparable, but the peak effects in those papers do not take account of the persistence of the tax change. For consistency, Appendix E shows the actual impulse response function for GDP (rather than the present value multiplier shown in Figure 3). By definition, the impact effect (the impact multiplier) is the same as

<sup>42</sup> $u_{t+h}$  could be serially correlated, so it is common to use the Newey-West approach to computing standard errors. In our context, however, the present value multiplier at period  $h$  is a transformation of the original  $\beta$  coefficients. We therefore compute the standard error bands using the block bootstrap approach from [Tenreiro & Thwaites \(2016\)](#).

in Figure 3, at 0.6. The peak effect on GDP is 3.5% after 5 quarters.<sup>43</sup> These numbers are comparable to the post-war magnitudes in Romer & Romer (2010) (where the peak is just above 3) and Cloyne (2013) (where the peak is around 2.5).

Several things are worth noting. First, unlike the spending multipliers found by Crafts & Mills (2013, 2015), these GDP tax multipliers are well above 1.<sup>44</sup> Second, these findings are similar to the sizable GDP tax multipliers found in post-WWII narrative evidence, for example by Romer & Romer (2010), Cloyne (2013) and Mertens & Ravn (2013). This suggests that tax cuts do indeed have sizable effects on the economy and that these results are also applicable to the inter-war period. Furthermore, it suggests that tax multipliers are not materially different in this high-debt, positive slack, low interest rate period.<sup>45</sup>

We now examine the impact of our exogenous tax changes on other variables. Figure 4 shows the percentage point change in the unemployment rate and Bank Rate and the percentage response of the consumer price index. Unlike Figure 3, these figures show the impulse response functions as these variables are naturally expressed in percent, not £.<sup>46</sup> Given the expansionary effects on GDP, it is unsurprising that the unemployment rate declines persistently following a tax cut. Interestingly, the effect on prices seems very weak. Eventually prices rise, although the IRF is very imprecisely estimated. The muted effect on prices might reflect the supply-side nature of many of the tax cuts.<sup>47</sup> The policy interest rate — Bank Rate — also increases over the period.

---

<sup>43</sup>The present value multiplier is, of course, essentially the integral of this chart divided by the integral of the effect on taxes.

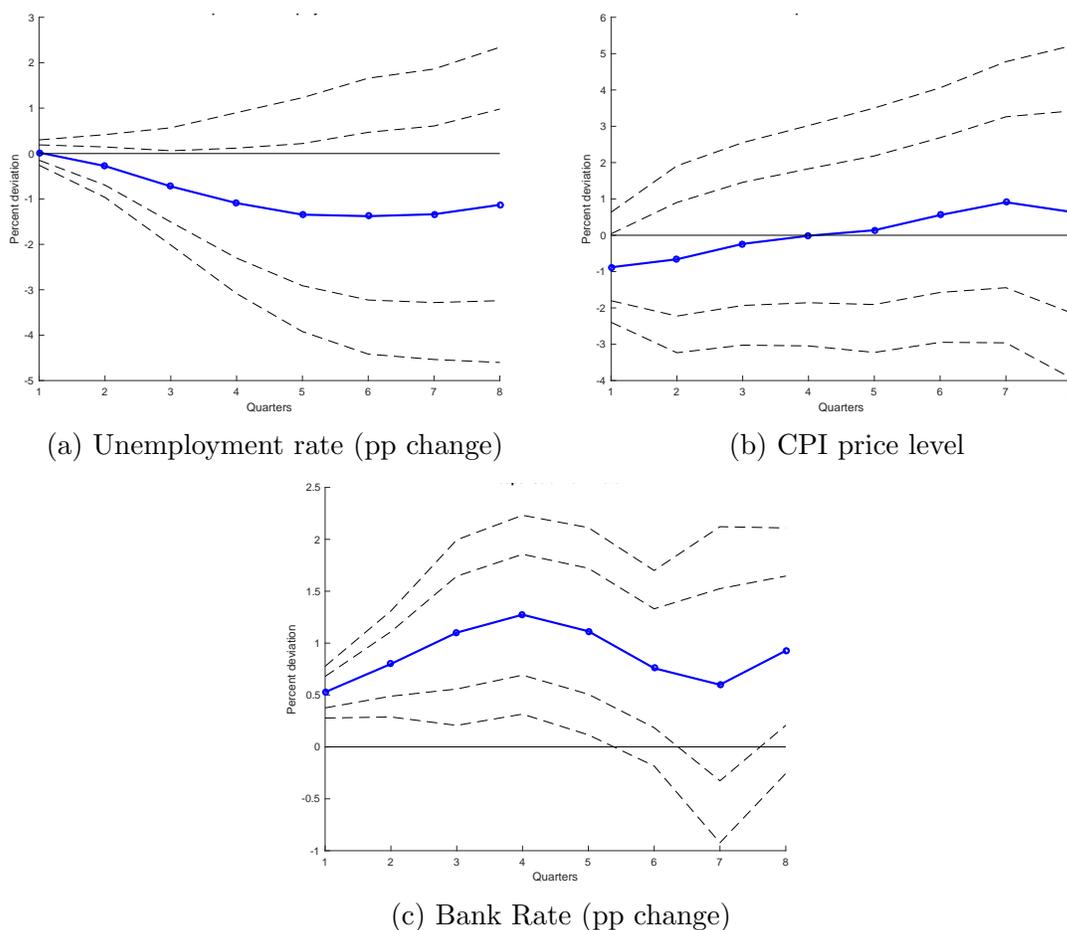
<sup>44</sup>This does not necessarily imply that spending multipliers are always lower than tax multipliers. These papers focus on rearmament and study the effects using a different econometric approach.

<sup>45</sup>This echoes Ramey & Zubairy (2018), although they show that defense spending multipliers are less than 1 irrespective of the degree of slack and we are not able to formally test this hypothesis in our sample.

<sup>46</sup>In the figures IRFs are smoothed as in Tenreiro & Thwaites (2016) using quarters  $t$ ,  $t - 1$  and  $t + 1$  except at the end-points.

<sup>47</sup>Some papers even find that tax cuts can lower prices, for example, see Mountford & Uhlig (2009).

Figure 4: Response of the unemployment rate, the price level and Bank rate



Notes: The figure shows the impulse response functions for the response of the unemployment rate (in pp), the percentage change in the price level, and the response of Bank Rate (in pp) for 8 quarters following a 1% cut in taxes as a share of GDP. Dotted and dashed lines represent 68 and 90 percent standard error bands.

## 5 Further Results and Robustness

In this section we consider a number of extensions, including using our shocks as instruments and the relationship between taxes, spending and the deficit. We then focus on the most important robustness checks, with further robustness exercises shown in the Appendix. In this section we consider: whether the implementation dates of some of tax reforms were anticipated; how to handle tax reforms with retroactive elements; excluding fiscal consolidation measures; and, the sensitivity of our results to a larger and smaller set of control variables.

## 5.1 Direct estimation and external instruments

As discussed above, ideally we would like to compute the present value multiplier (equation 2) using the actual response of tax revenues. The approach would be to estimate two versions of equation (1): one sequence of local projections for GDP and another set of local projections for tax revenues as a share of GDP. Specifically:

$$\ln GDP_{t+h} - \ln GDP_{t-1} = \alpha^{y,h} + \beta^{y,h} \Delta \tau_t + \Gamma^{y,h}(L) X_{t-1} + u_{t+h}^y \quad (3)$$

$$(T_{t+h} - T_{t-1})/GDP_{t-1} = \alpha^{T,h} + \beta^{T,h} \Delta \tau_t + \Gamma^{T,h}(L) X_{t-1} + u_{t+h}^T \quad (4)$$

As discussed in [Ramey \(2016\)](#) and [Ramey & Zubairy \(2018\)](#)), integrating (with discounting) these IRFs and dividing the response of GDP by the response of revenues (as a share of GDP) yields the present value multiplier over time. Because we are comparing the response of GDP and the response of revenue, this approach is equivalent to using the narrative shock as an external instrument.<sup>48</sup> Furthermore, if there is measurement error in the narrative shock (as discussed in [Mertens & Ravn \(2013\)](#)), this computation of the present value multiplier can already address this concern. We now implement this method as a robustness check.

The challenge we face is the lack of official tax revenue data. Luckily, we can make use of a new series of government cash receipts collected by [Lennard \(2018\)](#). Cash receipts data tend to exhibit very large spikes at the end of the U.K. tax year and such seasonality can affect the computation of the multiplier. To try and address this issue, we seasonally adjust the data and include 4 lags of the shocks in  $X$ .<sup>49</sup>

Figure 5 shows our original results and the new estimate of the present value multiplier computed using the ratio of the discounted integrals of the IRFs from the two equations above. The result is very similar to the baseline results. The reason for this is that our tax shock does indeed move tax revenues as a share of GDP by around 1% over 8 quarters (see Figure 6 in the next section). This also validates the assumptions used to compute

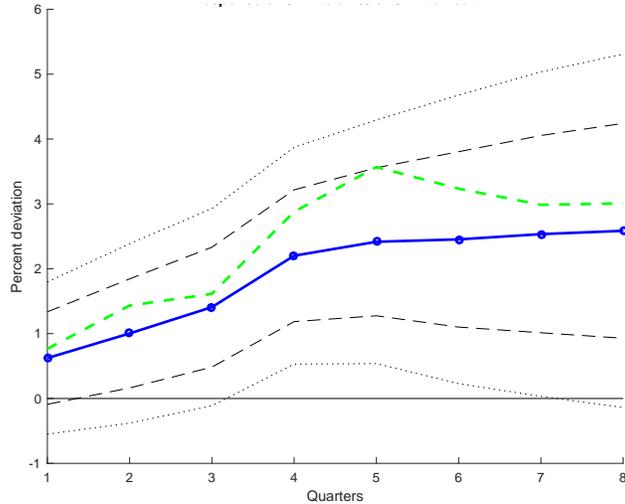
---

<sup>48</sup>[Ramey \(2016\)](#) and [Ramey & Zubairy \(2018\)](#) also provide a one-step method of estimating the same present value multiplier using the narrative shock as an instrument for the cumulative change in revenues as a share of GDP.

<sup>49</sup>Our shock is a measure of the change in tax liabilities from the start of the tax year. The receipts series spikes at the end of the tax year. As a result, the effect on non-seasonally adjusted measured cash receipts in the first quarter can be quite small, even if a revenues series measured on an accrual basis would record a positive change. Official data would usually be reported on an accrual basis.

the baseline results in Section 4. The impact effect is higher than 1, but the effect remains between 2 and 3 at 8 quarters.

Figure 5: Present value GDP multiplier using tax receipts data



Notes: The figure shows the present value GDP multiplier,  $\frac{\sum_{j=0}^h (1+r)^{-j} \Delta GDP_{t+j}}{\sum_{j=0}^h (1+r)^{-j} \Delta T_{t+j}}$ ,  $h$  periods after the shock. Estimates are computed using the local projection IV strategy using seasonally adjusted tax receipts data as outlined in the text. The result is shown in the green dashed line. The blue line and standard errors are the baseline results from Figure 3. Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap.

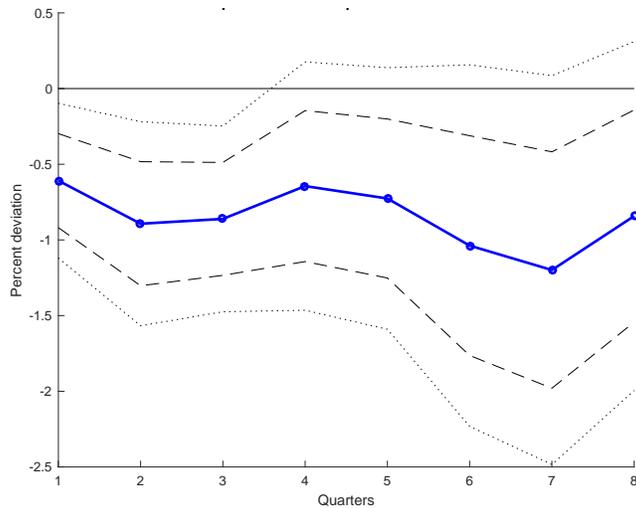
## 5.2 Taxes, government spending and the deficit

Fiscal multipliers are typically not structural parameters. Consequently, when interpreting multiplier estimates, an important question is: What’s happening to the other components of fiscal policy? A tax cut that eventually leads to a fall in government spending should have different effects to a tax cut that is purely deficit financed. Of course, this is an issue faced by the empirical literature in general but in our context it is a particularly interesting question to consider given the apparent aversion to running large budget deficits during this period. Although we have excluded tax changes that are directly associated with spending changes, this does not rule out the possibility that government spending responds after our tax shocks occur. It is worth noting that, even if taxes are cut by the same amount as spending, this is still an interesting object but it is closer to a balanced budget multiplier than a purely deficit financed cut in taxes. In this section, we therefore investigate the relationship between taxes, spending and the deficit in more detail using the cash receipts and expenditure data from

Lennard (2018).

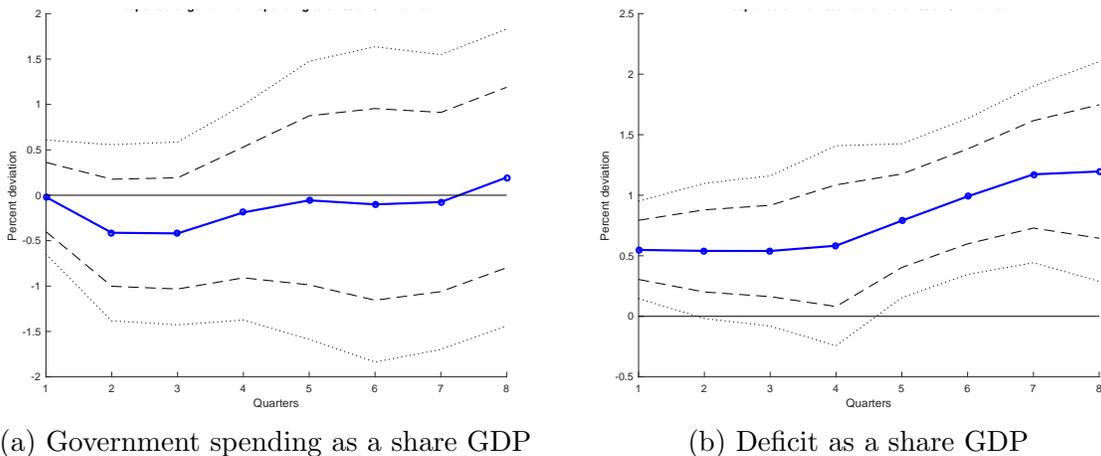
First, Figure 6 verifies that our tax shock does indeed reduce taxes as a share of GDP by around 1% over two years. This was an implicit assumption we made in the original computation of the present value multiplier and this can be indirectly seen already from Figure 5. We can also conduct the same experiment for the response of government spending and this is shown in Figure 7a. Interestingly the response of government spending as a share of GDP is relatively muted with wider standard errors. In the spirit of Section 5.1, we could even be more agnostic and think of our shocks as an instrument for some more general fiscal shock. Figures 6 and 7a tell us whether this is a largely tax-led or spending-led fiscal intervention. In short, this shock does indeed look like a tax cut. Although government spending does subsequently decline (which accords with the narrative account of the fiscal policy regime during the interwar years), these tax changes end up being more deficit financed. Figure 7b provides more direct evidence on this: following the tax cut the fiscal deficit rises significantly.

Figure 6: Response of tax receipts as a share GDP to a 1% of GDP shock to taxes



Notes: The figure shows the effect of our tax shock on actual tax receipts as a share of GDP for 8 quarters. This is the impulse response function where the y-axis reports the percentage point deviation of taxes as a share of GDP. Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap.

Figure 7: Response of government spending and the fiscal deficit as a share GDP to a 1% of GDP reduction in taxes



Notes: The figure shows the effect of our tax shock on government spending and the deficit as a share of GDP for 8 quarters. This is the impulse response function where the y-axis reports the percentage point deviation. Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap.

Given the response of government spending, our tax multiplier is not exactly a deficit financed multiplier. As noted by [Mountford & Uhlig \(2009\)](#), this affects how we should interpret multiplier estimates. On the other hand, if we also had an estimate of the deficit financed government spending multiplier, we could get a sense of how our baseline results for the effects of taxes would change if government spending did not fall as in [Figure 7a](#). [Crafts & Mills \(2013, 2015\)](#) provide estimates of the present value government spending multiplier in interwar Britain. One of their results is that this object is well below 1. We now conduct a back-of-the-envelope calculation to assess how the interpretation of our results might change if government spending were held fixed. To be conservative and make the calculations straightforward, assume that the deficit financed present value spending multiplier is always 1.<sup>50</sup> Given the path in [Figure 7a](#), and these assumptions, it is straightforward to adjust [Figure 3](#) and compute an approximate deficit financed tax multiplier. The full results of this exercise are shown in [Appendix F](#) but, given that the fall in government spending is relatively muted this makes little difference to our main results. Most of the adjustment is felt between quarters 2 and 4, with the present value multiplier further out still being around 2.

<sup>50</sup>This is “conservative” because a higher government spending multiplier would imply that a larger proportion of the GDP response in [Figure 3](#) is driven by the subsequent response of government spending.

As a robustness check, we also make use the [Lennard \(2018\)](#) data on government spending and tax receipts and add these as additional controls in our baseline regression. One concern might be that our shocks are correlated with past values of the deficit or government spending. The results are shown in Appendix [G](#). First we include total log (real) government spending. The second chart adds the deficit to GDP ratio (defined as receipts minus expenditure divided by GDP, which closely tracks the annual series in the Appendix). If our results were biased by the inclusion of other fiscal variables, this exercise should produce different results. The multiplier effects are, however, very close to the baseline.

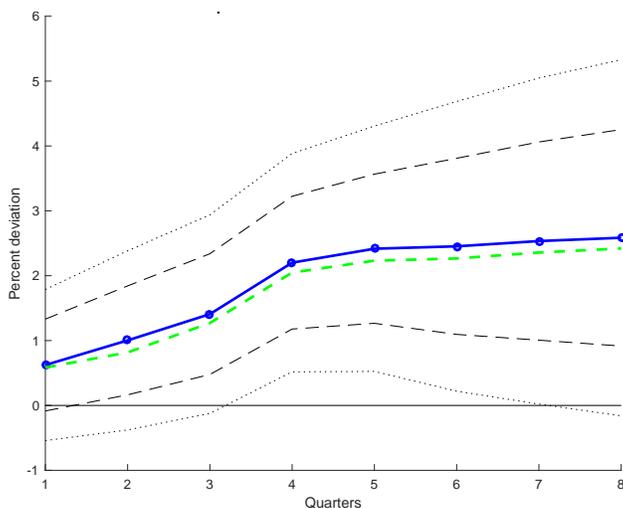
### 5.3 Anticipation

Some tax changes were announced during the Budget speech but were implemented later in the fiscal year. A concern is that these types of tax changes were anticipated from the date of the speech. As a result, the impact of these particular reforms might have been felt *before* they were implemented. To tackle this possibility, we construct a new version of our tax change series where “anticipated” tax changes are excluded. Following [Mertens & Ravn \(2012\)](#) we define an unanticipated tax reform as one that was implemented within the same quarter (90 days) as the announcement.<sup>51</sup> In Appendix [H](#), we show that the majority of tax reforms were actually “unanticipated” on this definition. But, to explore the robustness of our findings, we exclude anticipated changes from our baseline series. The effect of this exercise is shown in Figure [8](#). The figure repeats the baseline results from above, but also includes the effects using the new series (the green dashed line). The green dashed line is extremely close to the baseline results, suggesting anticipation is not a major concern in this context.

---

<sup>51</sup>Note that, while the announcements might also have been anticipated, if this was a significant issue the tax series would then be predictable which, in Section [3.2](#), was not the case.

Figure 8: Present value GDP multiplier excluding anticipated tax changes



Notes: The figure shows the present value GDP multiplier  $h$  periods after the shock, assuming taxes are reduced by 1% of GDP for 8 quarters. Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap. The green line shows results using a series excluding anticipated tax changes (defined as measures implemented more than 90 days after the announcement). The blue line and the black dotted lines repeat the baseline results from Figure 3.

## 5.4 Excluding fiscal consolidation measures

As discussed above, we carefully categorise all tax reforms based on their given motives. In this section we consider a more conservative definition of exogeneity which excludes all the fiscal consolidation measures. Our regressions already contain lagged controls so, to the extent fiscal consolidations are a function of lagged shocks, our results should be robust to excluding these changes entirely. Appendix I shows that the main findings are not overturned. The multiplier is still around 1 on impact and rises to between 2 and 3 over the first year. The effects do seem to be somewhat less persistent, although the multiplier remains above 1 for the whole period and the effect is not statistically different from the baseline results.

## 5.5 Retroactive changes, timing of the shocks and an alternative classification

One issue that faces post-WWII narrative approaches is that some tax changes include retroactive components. This means that the change in tax liabilities is back-dated, so that the effective implementation date is prior to the announcement date. In the baseline

specification we followed [Romer & Romer \(2010\)](#) and used the announcement date as the implementation date for retroactive changes. In this section, we now remove retroactive measures from our data. [Appendix J](#) shows the results of this exercise. The baseline result is again reported, with the results from the new series overlaid (the green dashed line). These lines are very similar, again suggesting that the inclusion of retroactive tax reforms is not biasing our results. An additional timing issue is how to assign implementation dates to tax reforms that occur late in a quarter. As discussed above, we follow [Romer & Romer \(2010\)](#) and assign tax changes that occur in the second half of a quarter to the next calendar quarter. In [Appendix C](#) we show that using the current quarter as the implementation date for all tax changes produces almost identical results. Finally, as noted in [Section 2](#), we proposed a modified version of our classification approach which classifies all measures within the same Budget using the same classification based on our judgment about the overall endogeneity or endogeneity of the motives (this overall budget classification is discussed in [Cloyne et al. \(2019\)](#)). [Appendix K](#) shows that the GDP multiplier is largely unchanged.

## 5.6 Additional controls

If our narrative identification strategy has been successful, changing the control set  $X$  in our regressions should not affect the baseline results. In smaller samples, there is, of course, still the possibility of chance correlations between variables, which is one reason for including the vector  $X$ . In this section we explore the robustness of our findings to varying the variables included in  $X$ . [Appendix G](#) considers a smaller specification with only the lags of GDP and tax shocks as controls, a medium sized specification with GDP, Bank rate and unemployment and a larger specification that includes wages. The size of  $X$  therefore makes very little difference to our findings. [Appendix G](#) also reports the results discussed above including lags of government spending and the fiscal deficit in  $X$ .

## 6 Summary and conclusion

There has been much debate about whether changes in fiscal policy can affect the macroeconomy. Interwar Britain has always been a particularly contentious case and, given the high-debt, low interest rate environment, it remains a particularly relevant case today.

Keynes argued persistently from 1924 onwards in favour of fiscal expansion through increased public expenditure, most notably in *Can Lloyd George Do It?* a pamphlet written jointly with Hubert Henderson. His argument for fiscal expansion through a programme of public works was strengthened by [Kahn \(1931\)](#)'s development of the employment multiplier, which enabled the impact of public expenditure on employment to be quantified. As a result, much of the debate focused on the “spending multiplier”. But, to our knowledge, there is no evidence on the effects of tax changes in the interwar period. This is all the more remarkable given that tax policy formed a key part of the demand management toolkit after the Second World War.

Using extensive histographical research — an effort that we hope provides an interesting contribution in its own right — we construct a new measure of tax changes for interwar Britain. Following the [Romer & Romer \(2010\)](#) approach, we believe these can reasonably be regarded as exogenous and are strong candidates for evaluating the dynamic causal effect of tax changes on economic activity. In fact, with macroeconomic policy distinctly “pre-Keynesian” interwar Britain is particularly well-suited for this exercise.

Tax changes have large effects on GDP: a one percent of GDP cut in taxes raises GDP by around 0.5-1 percent on impact. This effect reaches around 2.5 percent over 2 years. Although these numbers are still lower than Keynes' original multipliers, these are large relative to subsequent estimates of the expenditure multiplier for the interwar years. Our findings for taxes are, however, very consistent with the magnitudes found by narrative-based studies for the post-WWII period.

Our results suggest that tax changes had an important macroeconomic impact in interwar Britain, and that tax changes have the potential to generate sizable multipliers. Finally, we have provided a rich new dataset, and an extensive historical account of British interwar fiscal policy that should, we hope, provide a useful resource for future research.

## References

- O. Accominotti (2012). ‘London Merchant Banks, the Central European Panic, and the Sterling Crisis of 1931’. *The Journal of Economic History* **72**(1):1–43.
- P. Aghion, et al. (2009). ‘Credit constraints, cyclical fiscal policy and industry growth’. Tech. rep., National Bureau of Economic Research.
- A. Alesina (1988). ‘The end of large public debts’. In F. Giavazzi & L. Spaventa (eds.), *High public debt : the Italian experience*. Cambridge University Press.
- A. Alesina & S. Ardagna (2010). ‘Large changes in fiscal policy: taxes versus spending’. *Tax policy and the economy* **24**(1):35–68.
- A. Alesina & F. Giavazzi (2012). ‘The austerity question: ‘How’ is as important as ‘how much’’. *Austerity: Too Much of a Good Thing?* p. 11.
- B. W. E. Alford (1972). *Depression and recovery ? : British economic growth, 1918-1939*. Macmillan, London.
- M. Almunia, et al. (2010). ‘From Great Depression to Great Credit Crisis: Similarities, Differences and Lessons’. *Economic policy* **25**(62):219–265.
- A. J. Auerbach & Y. Gorodnichenko (2010). ‘Measuring the Output Responses to Fiscal Policy’. Tech. Rep. 16311, National Bureau of Economic Research, Inc.
- R. J. Barro & C. J. Redlick (2011). ‘Macroeconomic effects from government purchases and taxes’. *The Quarterly Journal of Economics* **126**(1):51–102.
- O. Blanchard & R. Perotti (2002). ‘An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output’. *Quarterly Journal of Economics* **117**:1329–1368.
- S. H. Brittain (1959). *The British budgetary system*. London : Allen and Unwin.
- S. Broadberry (1986). *The British Economy During the Wars*. Basil Blackwell.
- W. Brown (1929). ‘The Conflict of Opinion and Economic Interest in England’. In S. Pollard (ed.), *The Gold Standard and Employment Policies Between the Wars*. Methuen.
- J. M. Buchanan (1985). ‘The Moral Dimension of Debt Financing’. *Economic Inquiry* **23**(1):1–6.
- A. Cairncross & N. Watts (1989). *The Economic Section : a study in economic advising*. Routledge, London.
- F. Capie & G. Wood (2012). *Money over two centuries : selected topics in British monetary history*. Oxford University Press.
- L. Christiano, et al. (2011). ‘When is the government spending multiplier large?’. *Journal of Political Economy* **119**(1):78–121.

- J. Cloyne & P. Surico (2017). ‘Household Debt and the Dynamic Effects of Income Tax Changes’. *Review of Economic Studies* **84**(1).
- J. S. Cloyne (2013). ‘Discretionary tax changes and the macroeconomy: new narrative evidence from the United Kingdom’. *American Economic Review* **103**(4):1507–28.
- J. S. Cloyne, et al. (2019). ‘A narrative account of tax shocks in the United Kingdom, 1919-1938’.
- G. Corsetti, et al. (2010). ‘Debt consolidation and fiscal stabilization of deep recessions’. *American Economic Review* **100**(2):41–45.
- N. Crafts & T. C. Mills (2013). ‘Rearmament to the rescue? New estimates of the impact of Keynesian policies in 1930s’ Britain’. *The Journal of Economic History* **73**(4):1077–1104.
- N. Crafts & T. C. Mills (2015). ‘Self-defeating austerity? Evidence from 1930s’ Britain’. *European Review of Economic History* **19**(2):109–127.
- Cunliffe Committee (1918). ‘First interim report’. *His Majesty’s Stationary* .
- M. Daunton (2007). *Wealth and Welfare: An Economic and Social History of Britain, 1851-1951*. Oxford University Press.
- M. J. Daunton (2002). *Just taxes : the politics of taxation in Britain, 1914-1979*. Cambridge University Press.
- J. B. DeLong & L. H. Summers (2012). ‘Fiscal policy in a depressed economy’. *Brookings Papers on Economic Activity* **2012**(1):233–297.
- N. H. Dimsdale (1981). ‘British Monetary Policy and the Exchange Rate 1920-1938’. *Oxford Economic Papers* **33**:306–349.
- N. H. Dimsdale (1987). ‘Keynes on British Budgetary Policy, 1914-1946’. In F. J. Boskin, Michael & S. Gorini (eds.), *Private Saving and Public Debt*. Basil Blackwell.
- N. H. Dimsdale & N. Horsewood (1995). ‘Fiscal policy and employment in interwar Britain: Some evidence from a new model’. *Oxford Economic Papers* pp. 369–396.
- C. Dow (1964). *The management of the British economy 1945-60*. The Syndics of the Cambridge University Press.
- European Union (2009). ‘Council Regulation (EC) 479/2009: on the application of the Protocol on the excessive deficit procedure annexed to the Treaty establishing the European Community’.
- M. Friedman (1957). ‘A Theory of the Consumption Function’. *Princeton University Press* .
- J. Guajardo, et al. (2014). ‘Expansionary austerity? International evidence’. *Journal of the European Economic Association* **12**(4):949–968.

- S. Gunter, et al. (2018). ‘Non-linear effects of tax changes on output: The role of the initial level of taxation’. *World Bank working paper 8668* .
- K. Hancock (1970). ‘The Reduction of Unemployment as a Problem of Public Policy, 1920-1929’. In S. Pollard (ed.), *The Gold Standard and Employment Policies Between the Wars*. Methuen.
- Hansard (1919-1939). UK Parliament.
- T. J. Hatton (1987). ‘The outlines of a Keynesian solution’. In *The Road to Full Employment*. George Allen & Unwin London.
- B. Hayo & M. Uhl (2014). ‘The macroeconomic effects of legislated tax changes in Germany’. *Oxford Economic Papers* **66**.
- H. D. Henderson & J. Keynes (1929). ‘Can Lloyd George Do It’. *The collected writings of John Maynard Keynes* **9**:86–125.
- U. K. Hicks (1938). *The finance of British government, 1920-1936*. Oxford University Press, London.
- U. K. Hicks (1953). ‘The Budget as an Instrument of Policy, 1837-1953’. *The Three Banks’ Review* pp. 16–34.
- D. Hume (1987). *Essays, moral, political, and literary*. LibertyClassics, Indianapolis, rev. ed. edn.
- S. M. Hussain & L. Liu (2018). ‘Comparing the effects of discretionary tax changes between the US and the UK’. *The B.E. Journal of Macroeconomics* **18**(1).
- Ò. Jordà (2005). ‘Estimation and inference of impulse responses by local projections’. *American economic review* **95**(1):161–182.
- Ò. Jordà & A. M. Taylor (2015). ‘The time for austerity: estimating the average treatment effect of fiscal policy’. *The Economic Journal* **126**(590):219–255.
- R. F. Kahn (1931). ‘The relation of home investment to unemployment’. *The Economic Journal* **41**(162):173–198.
- J. M. Keynes (1933). *The means to prosperity*. Macmillan.
- J. Lennard (2018). ‘Uncertainty and the Great Slump’. *Lund Papers in Economic History. General Issues 170*. .
- J. Locke (1689). *Second Treatise of Government: An Essay Concerning the True Original, Extent and End of Civil Government*. John Wiley & Sons.
- B. Mallet & C. George (1933a). *British budgets : second series, 1913-1914 to 1920-21*. [s.n.], London.

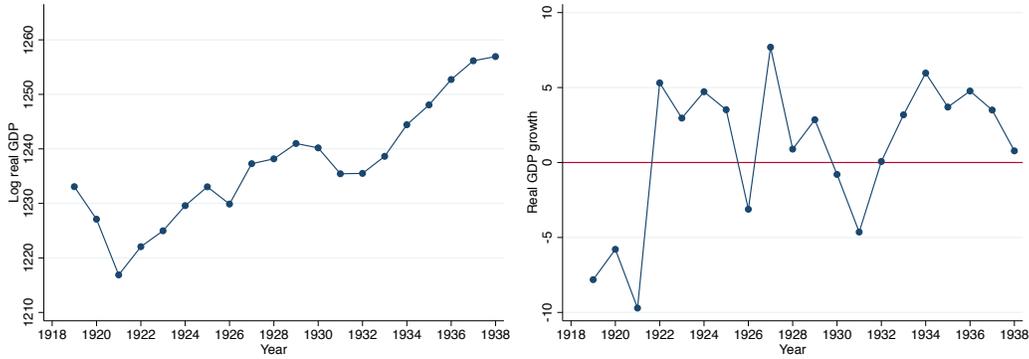
- B. Mallet & C. George (1933b). *British budgets : third series, 1921-1922 to 1932-33*. [s.n.], London.
- H. C. G. Matthew (1986). *Gladstone 1809-1874*. Clarendon, Oxford.
- K. Mertens & M. O. Ravn (2012). ‘Empirical Evidence on the Aggregate Effects of Anticipated and Unanticipated U.S. Tax Policy Shocks’. *American Economic Journal: Economic Policy* **4**(2):145–181.
- K. Mertens & M. O. Ravn (2013). ‘The Dynamic effects of personal and corporate income tax changes in the United States’. *American Economic Review* **103**(4):1212–47.
- K. Mertens & M. O. Ravn (2014). ‘A reconciliation of SVAR and narrative estimates of tax multipliers’. *Journal of Monetary Economics* .
- R. Middleton (1985). *Towards the managed economy : Keynes, the treasury and the fiscal policy debate of the 1930s*. Methuen.
- R. Middleton (1996). *Government Versus the Market: The Growth of the Public Sector, Economic Management and British Economic Performance, 1890-1979*. Edward Elgar.
- R. Middleton (2010). ‘British Monetary and Fiscal Policy in the 1930s’. *Oxford Review of Economic Policy* **26**(3).
- B. R. Mitchell (1988). *British Historical Statistics*. Cambridge University Press, Cambridge.
- J. Mitchell, et al. (2012). ‘Monthly GDP estimates for inter-war Britain’. *Explorations in Economic History* **49**(4):543–556.
- D. E. Moggridge (1969). *The return to gold, 1925: the formulation of economic policy and its critics*. Cambridge University Press.
- D. E. Moggridge (1972). *British monetary policy, 1924-1931 : the Norman Conquest of ... 4.86 [dollars]*. Cambridge University Press.
- A. Mountford & H. Uhlig (2009). ‘What are the effects of fiscal policy shocks’. *Journal of Applied Econometrics* **24**(6):960–992.
- A. D. Nguyen, et al. (2018). ‘The Macroeconomic Effects of Income and Consumption Tax Changes’. *Unpublished manuscript* .
- A. T. Peacock & J. Wiseman (1961). *The growth of public expenditure in the United Kingdom*. Princeton University Press ; Oxford University Press, Princeton : London.
- G. C. Peden (1987). *Keynes, the Treasury and British economic policy*. Macmillan Education, Basingstoke.
- G. C. Peden (2000). *The Treasury and British public policy, 1906-1959*. Oxford University Press, New York.
- S. Pollard (1970). *The gold standard and employment policies between the Wars*. Methuen.

- V. Ramey (2016). ‘Macroeconomic Shocks and Their Propagation’. *Handbook of Macroeconomics* **2**.
- V. Ramey & S. Zubairy (2018). ‘Government Spending Multipliers in Good Times and in Bad: Evidence from U.S. Historical Data’. *Journal of Political Economy* .
- V. A. Ramey (2011). ‘Identifying Government Spending Shocks: It’s All in the Timing’. *Quarterly Journal of Economics* **126(1)**:1–50.
- V. A. Ramey (2019). ‘Ten Years after the Financial Crisis: What Have We Learned from the Renaissance in Fiscal Research?’. *Journal of Economic Perspectives* **33(2)**:89–114.
- A. Ritschl (1996). ‘Sustainability of high public debt: what the historical record shows’. *Swedish Economic Policy Review* (3).
- C. D. Romer & D. H. Romer (2010). ‘The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks’. *American Economic Review* **100(3)**:763–801.
- C. D. Romer & D. H. Romer (2014). ‘The Incentive Effects of Marginal Tax Rates: Evidence from the Interwar Era’. *American Economic Journal: Economic Policy* **6(3)**:242–81.
- R. C. Self (2006). *Neville Chamberlain : a biography*. Ashgate.
- M. E. Short (1985). *The politics of personal taxation: budget-making in Britain, 1917-31*. Ph.D. thesis, University of Cambridge, Cambridge.
- P. S. Snowden (1920). *Labour and national finance*,. L. Parsons, London.
- Stationary Office (1919-1939). ‘Financial Statement’.
- Stationary Office (1997). *Annual abstract of statistics (Great Britain. Office for National Statistics : Online)*. Stationary Office, London.
- S. Tenreyro & G. Thwaites (2016). ‘Pushing on a String: US Monetary Policy Is Less Powerful in Recessions’. *American Economic Journal: Macroeconomics* **8**.
- M. Thomas (1983). ‘Rearmament and economic recovery in the late 1930s’. *The Economic History Review* **36(4)**:552–579.
- R. Thomas & N. Dimsdale (2017). ‘“A Millennium of UK Data”, Bank of England OBRA dataset’.
- T. Thomas (1981). ‘Aggregate demand in the United Kingdom 1918-45’. In *The Economic History of Britain since 1700*, vol. 2. Cambridge University Press.
- J. Tomlinson (1990). *Public policy and the economy since 1900*. Oxford University Press, Oxford.
- H. Uhlig (2010). ‘Some Fiscal Calculus’. *American Economic Review* **100(2)**:30–34.

## APPENDICES

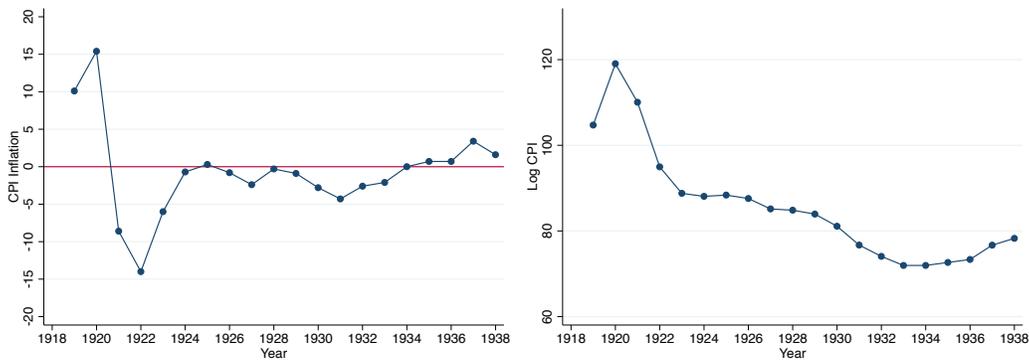
# A Macro trends 1919-1940

Figure A.9: Gross Domestic Product



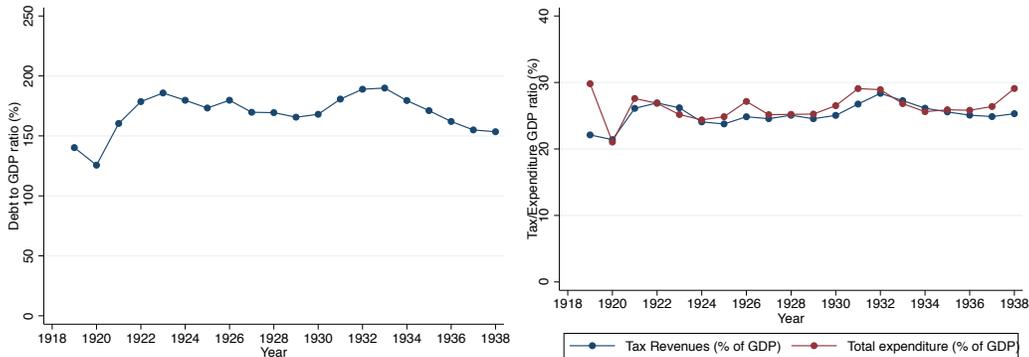
Notes: Panel A: log GDP, Panel B: GDP growth

Figure A.10: Consumer Prices Index



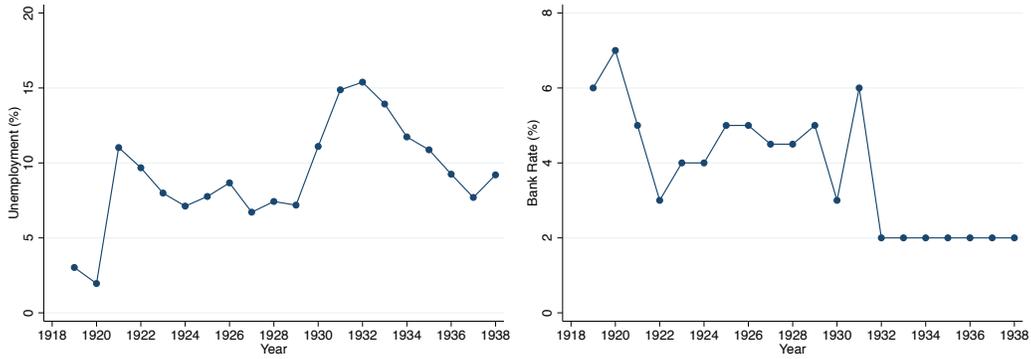
Notes: Panel A: CPI Inflation, Panel B: log CPI

Figure A.11: Debt, taxes and spending as a share of GDP



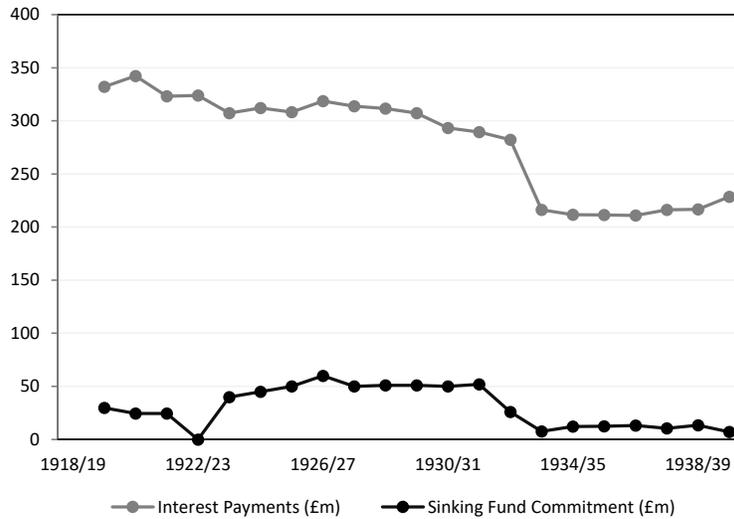
Notes: Panel A: Debt to GDP ratio, Panel B: Taxes and government spending as a share of GDP

Figure A.12: Unemployment Rate and Bank Rate (percent)



Notes: Panel A: Unemployment Rate, Panel B: Bank Rate

Figure A.13: Interest payments and sinking fund commitments (in millions of pounds), 1919-1939



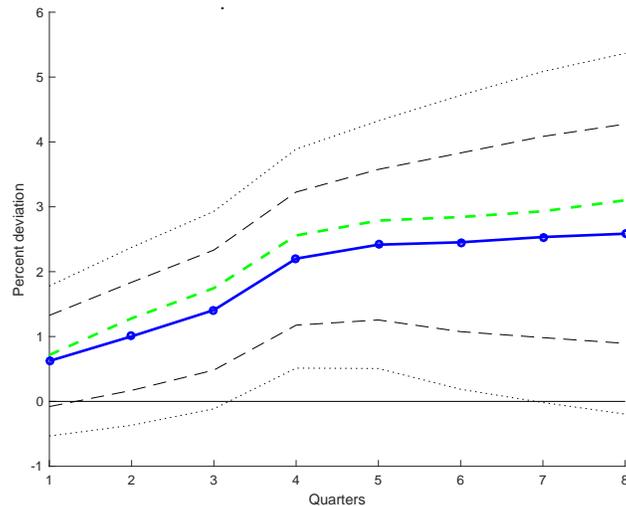
Notes: Interest payments are from [Mallet & George \(1933a\)](#) and [Mallet & George \(1933b\)](#). Sinking fund commitments are from those same sources and [Peden \(2000\)](#). Actual sinking fund payments collected at the end of the financial year sometimes differed from the amounts committed, such as in 1922/23 and 1925/26. For our purposes only amounts committed matter (this is similar to the distinction between tax change and tax revenue.)

## B Macro data sources

Data	Source
Tax changes and revenue effects	Stationary Office (1919-1939) and Hansard (1919-1939).
Quarterly real GDP	Mitchell et al. (2012).
Annual nominal GDP	Mitchell et al. (2012).
Annual tax receipts	series ANBV from Thomas & Dimsdale (2017)
Annual total government expenditure	ANLP-ANNS+NSRN from Thomas & Dimsdale (2017)
Annual GDP deflator	GDP deflator at market prices from Thomas & Dimsdale (2017)
Bank Rate:	Thomas & Dimsdale (2017)
Unemployment:	Monthly unemployment rate based on administrative data from Thomas & Dimsdale (2017), quarterly average.
Prices:	Consumer Price Index from Thomas & Dimsdale (2017), seasonally adjusted with X13ARIMA.
Quarterly government expenditure and receipts data	Lennard (2018). Seasonally adjusted using a 4-quarter moving average filter.

## C Sensitivity to the timing of the shocks

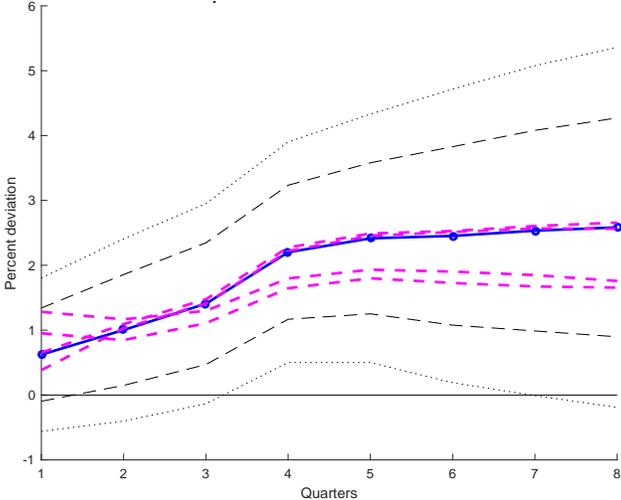
Figure C.14: Present value GDP multiplier: different implementation dates



Notes: The figure shows the present value GDP multiplier assuming taxes are reduced by 1% of GDP for 8 quarters. Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap. The blue line and error bands refer to the baseline specification reported in the paper. The green dashed line are based on the results where tax shocks are assigned to the calendar quarter based on their precise implementation date.

# D Lag length sensitivity

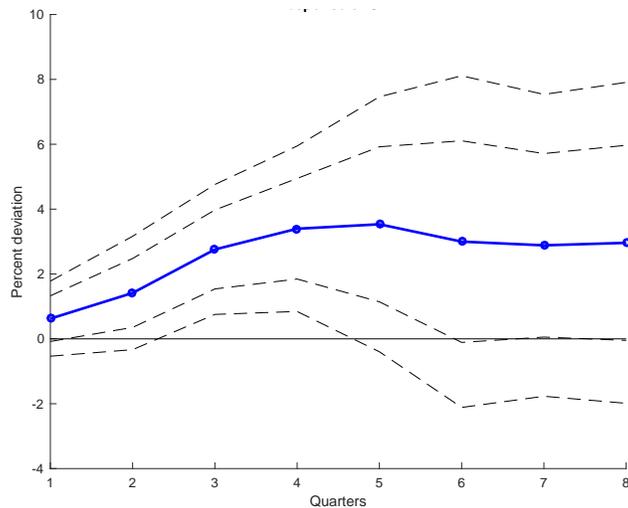
Figure D.15: Sensitivity of the GDP response to different choices of lag length



Notes: This figures shows the sensitivity of our present value GDP multiplier estimates to different choices of the lag length  $P$  and  $Q$ . This chart shows the  $P, Q$  pairs  $(1, 2)$ ,  $(2, 2)$ ,  $(1, 4)$ ,  $(4, 4)$  (note that our baseline, in blue, is  $1, 1$ ).

## E Impulse response function for GDP

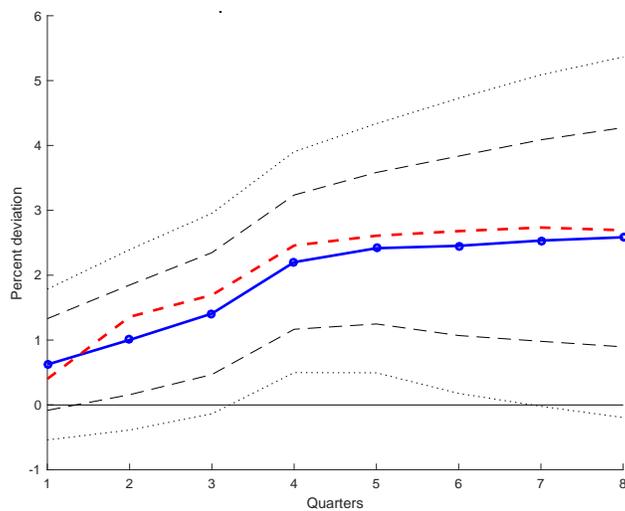
Figure E.16: Response of GDP to a 1% of GDP cut in taxes



Notes: The figure shows the impulse response function for the response of the percentage change in GDP over 8 quarters following a 1% cut in taxes as a share of GDP. Dotted and dashed lines represent 68 and 90 percent standard error bands.

## F Adjusting for government spending

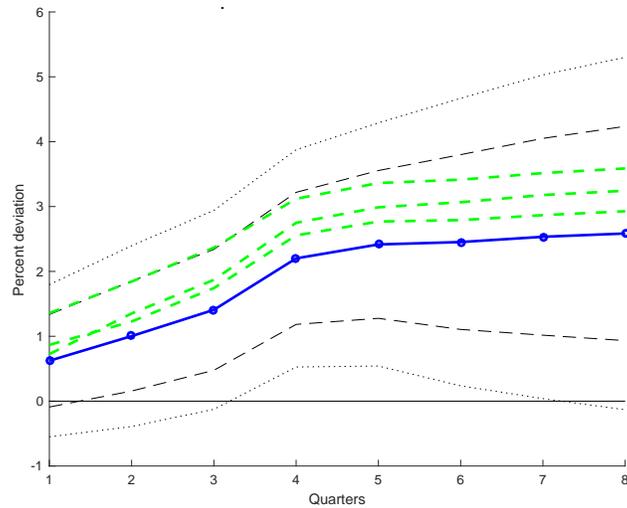
Figure F.17: Present value GDP multiplier adjusted for government spending



Notes: This figure shows the baseline results for the present value GDP tax multiplier (Figure 3) together with the same object adjusted for the response of government spending (red dashed line). See discussion in the text.

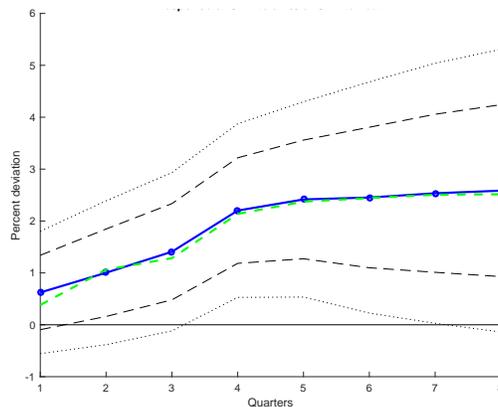
## G Additional controls

Figure G.18: Present value GDP multiplier: controlling for other variables



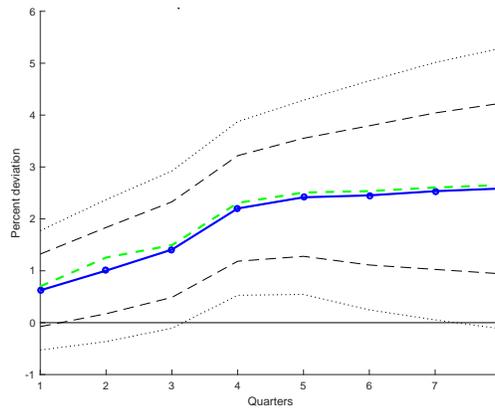
Notes: The figure shows the present value GDP multiplier assuming taxes are reduced by 1% of GDP for 8 quarters. Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap. The figure shows the baseline results as the solid blue line with standard error bands. The two green dashed lines show the model re-estimated (a) only with lagged real GDP and tax shocks; (b) including as controls: GDP, unemployment, and Bank Rate and c) including wages in addition to all other controls.

Figure G.19: Present value GDP multiplier: controlling for government spending



Notes: This figure shows the baseline results for the present value GDP multiplier (Figure 3) together with the same object (green dashed line) including (lagged) log real total government expenditure in the vector of controls  $X$ . Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap as in Figure 3.

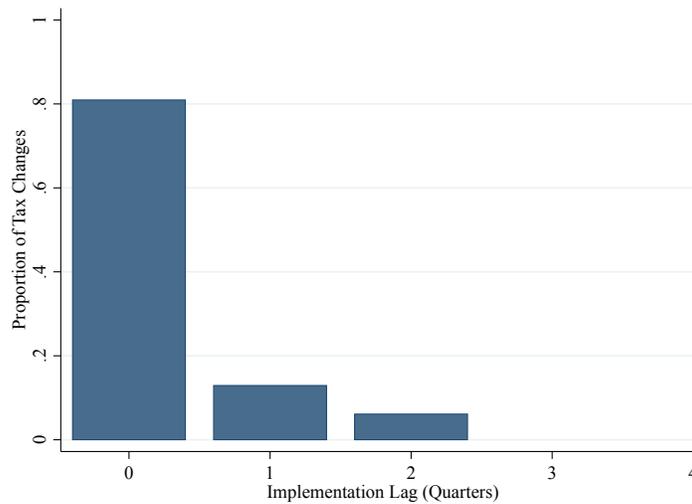
Figure G.20: Present value GDP multiplier: controlling for the deficit to GDP ratio



Notes: This figure shows the baseline results for the present value GDP multiplier (Figure 3) together with the same object (green dashed line) including the (lagged) deficit to GDP ratio in the vector of controls  $X$ . Dotted and dashed lines represent 68 and 90 percent standard error bands computed using a block-bootstrap as in Figure 3.

## H Implementation lags

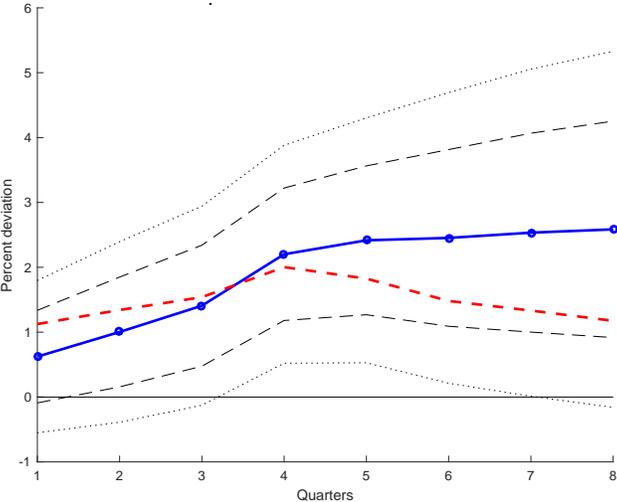
Figure H.21: Proportion of tax changes by implementation lag



Notes: This figure shows the proportion of tax changes by quarters since the announcement dates. Most tax changes are implemented within 90 days of the announcement.

# I Excluding fiscal consolidation measures

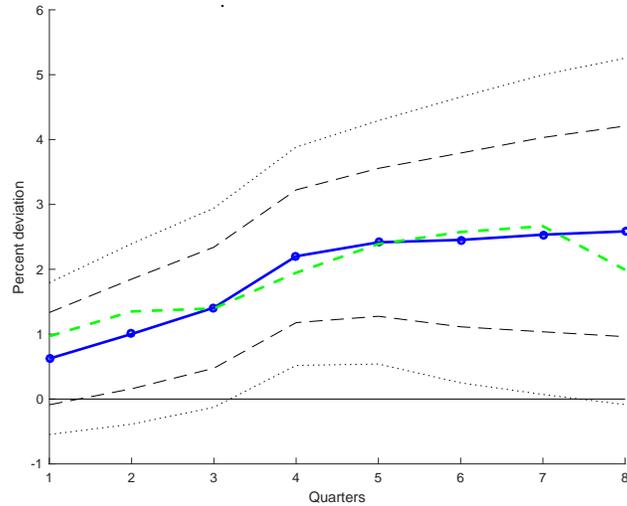
Figure I.22: Present value GDP multiplier: excluding fiscal consolidation measures



Notes: This figure shows the baseline results for the present value GDP multiplier (Figure 3) together with the same object (red dashed line) excluding fiscal consolidation based tax changes. Dotted and dashed black lines represent 68 and 90 percent standard error bands computed using a block-bootstrap as in Figure 3.

## J Retroactive changes

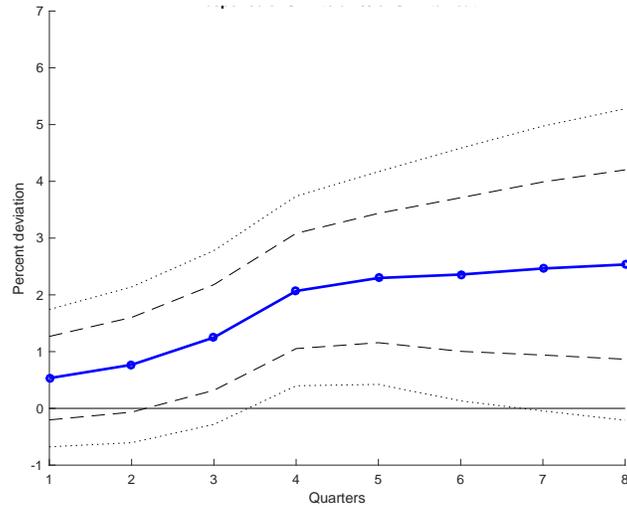
Figure J.23: Present value GDP multiplier: excluding retroactive tax changes



Notes: This figure shows the baseline results for the present value GDP multiplier (Figure 3) together with the same object (green dashed line) excluding tax changes with a retroactive component. Dotted and dashed black lines represent 68 and 90 percent standard error bands computed using a block-bootstrap as in Figure 3.

## K Present value GDP multiplier: Alternative classification method

Figure K.24: Present value GDP multiplier using the alternative classification



Notes: The figure shows the present value GDP multiplier assuming taxes are reduced by 1% of GDP for 8 quarters. Relative to the baseline results in Figure 3, the tax shocks are constructed using an alternative classification method where all changes in the same budget are classified the same way based on the macro motivations given in the budget. This figure shows the baseline results for the present value GDP multiplier (Figure 3) together with the same object (green dashed line) using the alternative classification method.