Government Bonds Supply Shocks

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Abstract

This paper studies the impact of government bond supply news shocks on debt prices. I exploit an institutional feature in the UK fiscal policy framework and high frequency identification to estimate the effect of a large government bond increase, which is not due to news about the fiscal deficit and total debt. The identification is based upon the price changes of futures on gilts around news published by the UK Debt Management Office in general and especially just after the budget speeches of the Chancellor of the Exchequer. While these speeches discuss fiscal policy and overall debt forecasts, they do not disclose the exact supply of government bonds. I find that a 1 percentage point increase in government bonds increases interest rates on a 10-year government bond by 9 basis points and the corporate bond risk spread by 2 basis points. My results are consistent with the preferred habitat theory of interest rates where constrained arbitrageurs arbitrage across both government and corporate debt markets. The paper suggests that fiscal policy transmits also through direct crowding-out in debt markets.

JEL classification: E62, E63, G12, G18, H32, H61, H63

Key words: government bond supply, high-frequency identification, public debt management.

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1 Introduction

Public debt levels have reached historically high levels in many advanced economies, forcing policymakers to confront how best to manage them. A central question that arises is: what is the impact of large changes in government bond issuance on asset prices? When the government issues bonds, how do interest rates respond in sovereign debt markets? Do such effects spill over to corporate borrowers and influence their financing conditions?

While it is natural to expect that an increase in bond supply should affect borrowing costs, addressing this question poses a fundamental identification challenge: government bond issuance is not exogenous. Government bonds issuance and fiscal policy systematically respond to macroeconomic conditions, much like the endogeneity problem faced in identifying monetary policy shocks. Moreover, even when fiscal policy shocks are identified, disentangling their effects is difficult: governments use bond proceeds to finance spending, transfers, or investment. Consequently, any observed change in asset prices may reflect direct financial crowding-out through debt markets or instead arise from broader fiscal effects on aggregate demand, taxes, or default risk. This makes it exceptionally hard to find variation in government bond issuance that is both large and clean. Yet, understanding such variation is crucial—not only for researchers seeking to isolate causal mechanisms, but also for policymakers managing substantial government debt portfolios and seeking to gauge the market impact of their financing choices.

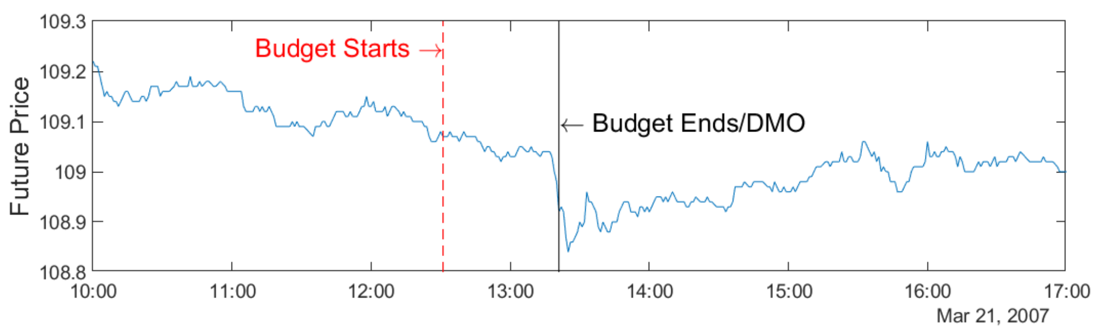
This paper proposes a new identification strategy to isolate large and clean shocks to government bond issuance. The approach exploits a unique feature of the UK fiscal framework together with high-frequency variation in futures prices. Specifically, I use the timing of announcements by the UK Debt Management Office (DMO, hereafter) regarding the supply of gilts, the UK government bonds, particularly those released immediately after the Budget speech of the Chancellor of the Exchequer, the UK finance minister.

The Budget speech is the central fiscal policy event in the UK. Delivered in Parliament by the Chancellor, it sets out the government's fiscal stance, discussing plans for spending, taxation, and broad policy and political points. Crucially for this paper, the speech provides projections of the consolidated debt and deficit going forward over several years. These projections are currently scored by the independent Office for Budget Responsibility. This speech is salient, markets are watching, and prices adjust. After the speech is completed, the Chancellor sits back on the government bench, and that is when the DMO immediately release the update in the sterling value of gilts issuance. Although this quantity is endogenous, as it reflects fiscal choices, it is not a one-to-one function of the consolidated debt or deficit because of differences related to non-gilt debt instruments, liquid asset holdings, local and public corporation borrowing, and cash-versus-accrual accounting.

The key insight is that gilt futures prices will have already adjusted to the fiscal information contained in the Budget speech. Therefore, any further change in futures prices around the DMO announcement window captures news about bond supply rather than fiscal policy itself. The identification assumption is that the DMO announcement contains information only about the supply of gilts, not about broader fiscal and economic conditions. Therefore, changes in gilts futures prices around the DMO announcement only reflect changes in the residual exogenous component and are a proxy for a government bond supply shock that is exogenous to contemporaneous macroeconomic and fiscal developments.

Figure 1 illustrates the mechanism using the March 21, 2007 Budget as an example. The figure plots the intraday path of the long gilt future, with the red dashed line marking the start of the Chancellor's speech and the black solid line indicating its end, when the DMO released its updated issuance figures. Futures prices respond throughout the day, but a sharp decline occurs precisely at the DMO announcement. The proposed instrument measures the change in gilt futures prices within this narrow event window.[1] I use this instrument to identify the effect of a government bond supply news shock on borrowing costs in the government and corporate bond markets.

Figure 1: Example of Budget Timing and DMO Announcement



Notes: This figure shows the Long Gilts Futures behavior during on budget day March 21, 2007. The data is shown on a minute by minute frequency. The red dashed line shows the beginning of the budget speech. The black solid line shows the end of the budget speech and the publishing of the DMO announcement.

This paper has results that are relevant to three audiences: policymakers, financial economists, and macroeconomists. First, policymakers responsible for managing large government bond portfolios, whether treasuries determining how to finance fiscal policy or central banks conducting QE and QT, have an immediate interest in understanding how bond flows affect financing conditions.[2] Second, the paper speaks to financial economists testing fric-

[1] Appendix Figure B.1 shows additional examples where futures prices fluctuate during both the Budget speech and the DMO announcement.

[2] Haddad, Moreira and Muir (2025) argue that QE announcements embed state-contingent policy promises, so observed asset price reactions may reflect expectations of future interventions rather than pure changes in bond supply. By focusing on a clean bond supply shock, this study provides evidence that can be used to

tional asset-pricing theories, such as preferred-habitat and demand-based asset pricing. The ideal experiment for these theories involves bond flow shocks that are both large enough to affect the risk-bearing capacity of arbitrageurs and independent of the stochastic discount factor (SDF). Because fiscal policy changes alter future taxation and debt expectations, and hence the SDF, they cannot serve this purpose. Finally, the paper contributes to macroeconomic research on the transmission of fiscal policy. If bond flows independently affect government and corporate borrowing costs, then fiscal policy, like monetary policy, also operates through the financial sector. This finding calls for incorporating financial crowding-out and explicit links between government and corporate finance into models of fiscal policy. Finally, it is important to note that the null hypothesis arising from consumption based asset-pricing and baseline RBC and New Keynesian models is that there should be no effect of this shock on either government or corporate borrowing costs.

Results. Government bond supply shocks have significant effects on borrowing conditions in both sovereign and corporate bond markets. A shock that is associated with a one-percent of GDP increase in gilts supply increases the interest on a 10-year government bond by 9 basis points, with strong and persistent effects across the entire nominal yield curve and similar responses in the inflation-linked government yield curve. The same shock widens the corporate risk spread—the yield difference between BBB and AA bonds—by about 2 basis points, indicating that riskier borrowers are more affected than safer ones that are, in principle, closer substitutes for government bonds. These results support a preferred-habitat framework in which arbitrageurs operate across government and corporate bond markets: larger government bond flows tighten risk-bearing capacity, raise the price of risk, and disproportionately affect riskier issuers. The effects are broad-based across maturities and ratings and remain significant for about a week. Furthermore, the results are also consistent with variation in the scarcity of government bonds: following an increase in government bond supply, convenience yields, measured as the spread between AA-rated corporate bonds and maturity-matched government bonds, decline

This experiment delivers large bond supply changes as the standard deviation of gilt supply changes exceeds one percent of GDP; this is large enough to influence the risk bearing capacity of arbitrageurs. To corroborate exogeneity, I show that the instrument, the high-frequency change in gilt futures prices around the DMO announcement, cannot be forecast with neither information released during the budget speech, nor with prior financial market variables. Moreover, gilt–interbank spreads widen at matching maturities, consistent with the DMO deploying part of its proceeds in money markets. Finally, the shock has no effect on the U.S. yield curve, reinforcing that it captures a UK-specific bond supply phenomenon

evaluate QE and QT transmission while holding the policy feedback rule constant.

rather than a global or common factor.

Related literature. This paper contributes to the literatures that study the impact of government bonds supply on asset prices and to the transmission of fiscal policy.

The literature on the preferred habitat theory and on convenience yields has argued that the supply and the composition of government debt can have effects on asset prices because of the functioning of financial markets. Krishnamurthy and Vissing-Jorgensen (2012) showed that periods with higher public-debt-to-GDP are associated with government bond yields being relatively higher vis-à-vis comparable corporate bonds, indicating a reduction in the specialness of government bonds. The preferred habitat theory proposed by Modigliani and Sutch (1966) and more recently modeled by Vayanos and Vila (2021) has argued that bond clienteles and limits to arbitrageur capacity imply that bond supply changes, either global or at a specific maturity, can have strong price effects. The large theoretical and empirical literature, recently surveyed by Greenwood, Hanson and Vayanos (2024) includes papers by Greenwood and Vayanos (2010, 2014), Greenwood, Hanson and Stein (2015), Bigio, Nuño and Passadore (2023), Greenwood et al. (2023), Ray (2019), Gourinchas, Ray and Vayanos (2022), Gilchrist et al. (2024).

Three recent papers develop theoretical frameworks consistent with this paper's findings, highlighting strong interlinkages between government and corporate bond markets. Costain, Nuño and Thomas (2025) show that an increase in safe bond supply raises term premia on both safe and risky yields roughly one-for-one, with amplification for riskier borrowers when default risk is endogenous, a mechanism that maps easily from the risky-sovereign case in that paper to corporate debt. Greenwood, Hanson and Liao (2018) model partially segmented markets where capital reallocates quickly within but slowly across asset classes, implying that government bond supply shocks can transmit to corporate yields less than, equal to, or more than one-for-one; in line with this, I find safer corporates respond less, and riskier ones more. Finally, Droste, Gorodnichenko and Ray (2024) embed safe and risky bonds in a preferred-habitat New Keynesian model, where stronger feedback between financial markets and the real economy can amplify responses for riskier borrowers.

The ideal empirical test of the preferred habitat theory requires large changes in the supply of public debt that affect the risk bearing capacity of arbitrageurs. However, existing studies have focused either on large changes in public debt, which could be contaminated by other fiscal policy effects, such as distortionary taxes or default risk or have focuses on well identified relatively small changes that compare similar bonds. A growing literature has brought causal identification to this question, primarily through the study of local price effects around government bond auctions. A first approach, also adopted here, exploits high-frequency identification. It includes Ray, Droste and Gorodnichenko (2024), who estimates demand shocks, and Phillot (2021), Lengyel (2023), Pal Mustafi (2024), who identify supply shocks. A second approach uses the difference between primary and secondary market prices of the same bond around treasury auctions, as in Bigio, Nuño and Passadore (2023) for the Spanish market and Albuquerque, Cardoso-Costa and Faias (2024) for the Portuguese market. A third line of research examines systematic price patterns around auction announcements, such as Lou, Yan and Zhang (2013), who shows that U.S. Treasury prices decline before and recover after issuance announcements, and Somogyi, Wallen and Xu (2024), who documents that large secular declines in long-term interest rates coincide with U.S. Treasury auctions. All these papers find evidence of price pressure, whereby higher supply is associated with higher yields and higher demand with lower yields, consistent with the findings of this paper. However, it is a priori unclear whether such local effects scale to large macro shocks.[3] The set of arbitrageurs able to exploit price differences at a single auction may differ substantially from those that arbitrage across maturities or across issuers in the broader bond market.

This paper bridges that gap by applying modern high-frequency identification to large, aggregate bond supply shocks, with a standard deviation of bond issuance exceeding one percentage point of GDP. The results confirm that the local mechanisms documented in auction-based studies extrapolate to the aggregate level. The evidence supports the preferred-habitat view, particularly the version in which constrained arbitrageurs jointly intermediate government and corporate bonds, leading to meaningful financial crowding-out.

In the recent demand-based asset-pricing literature (Koijen and Yogo, 2019), a number of papers, as Bretscher et al. (2025) and Chaudhary, Fu and Li (2023), have studied substitution within the corporate bond market. This paper calls for studying jointly government and corporate bonds and provides an instrument that shows that the cross elasticity from government bond supply differs between higher and lower risk bonds.

This paper contributes to the literature on how the quantity of public debt affects interest rates, focusing on the presence of financial crowding-out. Under the Ricardian equivalence of Barro (1974), public debt should not influence interest rates, as private agents offset higher public borrowing with greater savings in anticipation of future taxes. Empirically, Engen and Hubbard (2004) find mixed evidence on the relationship between public debt and interest rates, and VAR-based studies identifying government spending shocks reach similarly inconclusive results (see the survey by Murphy and Walsh, 2022). More recent work, using high-frequency identification as in this paper, finds that higher debt raises interest rates (e.g., Gomez Cram, Kung and Lustig, 2023, Wiegand, 2024). Yet it remains unclear whether this reflects financial crowding-out, through tighter arbitrage capacity in bond markets, or through broader effects of fiscal policy, as expectations of higher future taxation or

[3] The average Treasury bond auction was about USD 65 billion in 2024 for U.S. Treasuries, or about 0.2% of GDP, and GBP 3.4 billion in 2024/25, or about 0.1% of GDP for UK gilts, and is largely expected.

default risk. Studies exploiting identified local public debt variation (e.g., Huang, Pagano and Panizza, 2020, Pinardon-Touati, 2021) document local financial crowding-out but face the missing intercept challenge of scaling such effects to the aggregate level. This paper shows that large aggregate changes in government bond supply generate significant financial crowding-out effects, implying that models of fiscal policy should incorporate explicit linkages between government and corporate finance.[4]

This paper applies the high-frequency identification tools developed by Kuttner (2001) and Gurkaynak, Sack and Swanson (2004) for studying monetary policy shocks to the analysis of bond supply shocks. The closest methodological precedent is Nakamura and Steinsson (2018), who exploit cleanly identified shocks with regressions at daily frequency due to a power problem inherent with high frequency identification: while this approach ensures clean identification, it lacks statistical power to estimate long-run macroeconomic effects without imposing additional identification assumptions, such as a VAR structure with invertibility. This limitation is even more relevant in this context, as DMO announcements are less frequent than FOMC or Bank of England events. The main advantages of this approach are its transparency and its ability to test theories in both asset pricing and macroeconomics using fast-moving financial data. Interestingly, the estimated bond supply shocks in this paper behave similarly to identified monetary policy shocks: if we normalize a bond supply shock to increase 10 year nominal rates interest rates by 1 percent we see increases in interest rates across the entire nominal yield curve, one to one responses in the real yield curve, and stronger transmission to riskier compared to safer corporate bonds.[5]

Structure of the paper. The remainder of the paper is organized as follows. Section 2 discusses the institutional set up, the identification strategy, and the data used. Section 3 discusses the econometric methodology. Section 4 presents the empirical results. Section 5 concludes. In the appendix, Section A presents further details on the UK fiscal policy framework. Section B further discusses the data. Section C presents further empirical results and robustness exercises.

[4]In Andreolli (2023), I present a macroeconomic model in line with these results. The model links risk-averse arbitrageurs in the primary market with a financial accelerator for the corporate sector.

[5]Similar patterns are observed in both daily studies (Hanson and Stein, 2015, Nakamura and Steinsson, 2018) and in those combining high-frequency identification with VAR analysis, such as Gerko and Rey (2017) for the UK and Gertler and Karadi (2015), Jarociński and Karadi (2020), Miranda-Agrippino and Ricco (2021), Bauer and Swanson (2023) for the US.

2 Identification and Institutional Set Up

In this paper, we aim to find the causal effect of government bond supply to bond prices. This is subject to a significant identification challenge. First of all, fiscal and bond policies are not random. During economic stress, we typically observe a flight to safety, expansionary monetary policy, and rising deficits financed through increased bond issuance. All these features drive both interest rates and the government fiscal and debt actions. This creates endogeneity problems similar to those encountered in the monetary policy literature when identifying policy shocks. Identification of bond policy shocks faces an additional identification hurdle: the government actively uses the proceeds from the bonds it issues. Even if we successfully isolate an increase in bond issuance driven by an exogenous fiscal shock, the resulting asset price effects may reflect factors other than the bond flow itself, for example, a deterioration in fiscal sustainability (through higher default risk or expectations of future taxes) or other contemporaneous fiscal actions (such as transfers to households or increased public investment). Distinguishing the impact of pure government bond flows from these confounding effects is therefore central to the identification strategy.

In this paper, I address the identification challenge by combining high-frequency identification together with an institutional quirk in the UK fiscal policy framework that separated the timing of fiscal and bond policy announcements. Specifically, the strategy exploits price changes in gilt futures around news released by the DMO, particularly immediately following the Chancellor of the Exchequer's budget speech. The key identification assumption is that by the time the DMO publishes its remit, all relevant fiscal policy information has already been incorporated into market expectations. As a result, the DMO announcement provides new information only about the precise supply of government bonds. By examining futures price changes in a narrow window around the DMO announcement, I can isolate the effect of government bond supply news independently of fiscal policy. This section outlines the institutional background of the DMO and the UK budget process, and explains how the government bond news shock is constructed.

2.1 The UK Debt Management Office

The UK Debt Management Office is an executive agency of the UK Treasury and it is in charge of managing the public debt of the United Kingdom given the fiscal stance chosen by the Treasury. The DMO was established on April 1, 1998, obtaining the debt management responsibilities from the Bank of England. This happened as the Bank of England become independent and was granted authority over monetary policy. The objective of the DMO (UK DMO, 2005) is "to carry out the Government's debt management policy of minimising its financing cost over the long-term taking account of risk; to minimise the cost of offsetting the Government's net cash flows over time (while operating within a risk appetite approved by Ministers); to provide loans to local authorities for capital purposes; and to manage the funds of selected public sector bodies." Specifically, the DMO takes the projected cash requirements from the Treasury as an input and decides to fund them with gilts, T-bills, cash from the sterling money market, and non-marketable debt.

In terms of implementation, the DMO publishes a series of documents during the fiscal year in which it can alter the supply of marketable public debt for the current or next fiscal year. These are called the remit and the update to the remit. There are at least three of these documents each year: the first one is published in March just before the start of the fiscal year,[6] the second one is published in April after the outrun of the past fiscal year, and the third one in the fall with the update of the fiscal stance. Two of these documents, usually the March one and the fall one, are published just after the budget speech in Parliament of the Chancellor of the Exchequer.[7] In addition to these three remits the DMO published additional ones when there are additional budget speeches following general elections[8] and following sizable events.[9]

The most followed news by investors during the remit is the update on the total gilts being issued. However, the remit also contains information on the issuance of T-bills and changes in the DMO cash position in the sterling money markets and on the split of different types of gilts: short (1 to 7 years), medium (7 to 15 years), and long (more than 15 years) nominal bonds and the supply of inflation linked bonds.

In my identification, I exploit the differential timing of the DMO and Chancellor announcements on the gilts remit and on fiscal policy respectively during budget speeches. Therefore, before discussing the construction of the shock in more detail, it is worth describing the budget process in the United Kingdom.

2.2 Budget Process

The budget speech is the key news on fiscal policy in the UK. This speech is a politically infused presentation of the fiscal policy stance of the government by the Chancellor of the Exchequer. In addition to more qualitative political points and changes in particular taxes

[6] Fiscal years in the UK run from April 1st, to March 31st.

[7] This was the case in all years from 1998 to 2024 except in 2002/03, 2003/04, 2009/10 when the first budget speech was in April and not in March.

[8] These were on 08 July 2015, 22 June 2010, and the Mini Budget (which I exclude) on 23 September 2022.

[9] There are two of these events for which we have intra-day futures data, one that reduced borrowing following an unexpectedly profitable auction for the 3G spectrum in 12 June 2000 and one that increased borrowing on 13 October 2008 to fund the recapitalization of the UK banks during the financial crisis. Additionally, we have multiple updates during Covid, but I exclude them as they were published before market opening, so there is no intra-day futures data. These were on 07 January 2020, 29 June 2020, and 16 July 2020.

or spending measures, the Chancellor presents the fiscal forecasts on consolidated public debt relevant for fiscal sustainability and the corresponding deficit numbers.[10] This means that market participants can, with the information presented during the speech, assess all the changes in fiscal policy. To illustrate this point, take the budget speech by Chancellor Rachel Reeves on 30 October 2024; the Chancellor discusses the current deficit projections: *The OBR say that the current budget will be in deficit by £26.2bn in 2025-26 and £5.2bn in 2026-27 before moving into surplus of £10.9bn in 2027-28, £9.3bn in 2028-29 and £9.9bn in 2029-30.* She also discusses public sector net borrowing:[11] *And so the OBR confirmed today, that borrowing in this financial year is now £127bn. [...] Public sector net borrowing will be £105.6bn in 2025-26, £88.5bn in 2026-27, £72.2bn in 2027-28, £71.9bn in 2028-29 and £70.6bn in 2029-2930.*

Importantly for this paper, the Chancellor never discusses the exact amount of bonds that the government is going to issue during the current year to finance the deficit. There is no strong a priori reason for this; it is simply the consolidated practice and I exploit the differential timing for identification. This implies that all information pertaining to the fiscal policy of the government is already out in the market when the DMO publishes its remit, therefore the only new information released at that point is a news on the exact supply of marketable public debt. From the same budget, we can see in Panel A of Appendix Figure A.1 that the budget commentators on Bloomberg Live highlight that the DMO announcement on the total amount of gilts being is being disclosed when the Chancellor finishes the budget speech and sits and, in Panel B of the same figure, that the DMO gilt announcement of £297bn is one of the key market news for the same day from the Bloomberg Highlights, pinpointing to the salience of this metric. We can also see in Appendix Figure A.2 that the OBR publishes the public sector net borrowing, deficit, and GDP forecasts when the Chancellor is talking and before the DMO announcement, as can be seen from the timestamps.[12]

Therefore, by taking the change in the price of gilts futures around the DMO announcement one can measure the impact of the news on government bond supply, independent of fiscal policy. The mapping from the information relevant for debt sustainability as the deficit and public sector net debt over GDP to bonds supply is not one to one as the government has access to non-marketable public debt and the debt supply needs can reflect cash needs

[10] Since 2010, when the Office for Budget Responsibility, the independent fiscal watchdog in the UK, was constituted, the Chancellor discusses the OBR forecasts during the speech.

[11] Public sector net borrowing is the current budget deficit plus public net investment.

[12] In my analysis, I exclude the 23 September 2022 Mini Budget by Chancellor Kwasi Kwarteng under Prime Minister Liz Truss. The reason is that the Chancellor did not communicate during the speech any quantitative debt and deficit forecast and the only piece of hard evidence on the government fiscal and debt stance was the DMO announcement. gilts rate shot up after the Mini Budget and the government fell on 25 October 2022 as a direct consequence of the Mini Budget. This shows that this event would conflate both a fiscal shock and the bond supply shock and a deviation from the common practice of having two separate announcements is costly.

of the government which do not affect debt sustainability.

A key question is if it is not possible to fully predict the amount of gilts being issued by the DMO from the news about the deficit and consolidated debt. I proceed in three ways to show that the mapping from deficit and debt over GDP to gilts supply is not one to one and so there is separate information in the two announcements:

- First, the average gilt to consolidated general public debt ratio in 1997-2024 is 74.8%, so gilts are infra-marginally the biggest source of public debt but not the only one, and they might not necessarily be the marginal source of debt.

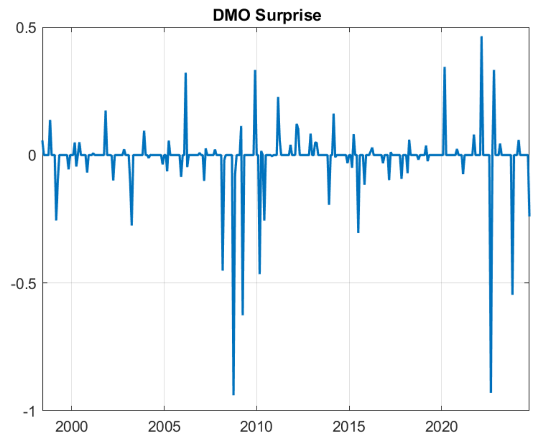
- Second, the concepts of public sector net debt and borrowing presented by the Chancellor are what is relevant to assess fiscal sustainability, default risk, future taxation or spending, and the overall fiscal stance, but does not map one to one to cash needs that affect gilts supply. A few examples that account for the discrepancy include the difference from accrual to cash accounting, a new hospital being built would have an immediate cash and debt requirement, but it would enter the deficit only through depreciation. Another example is that the government has access to liquid assets that are netted out in public sector net borrowing but not in the gilts issuance, and the government has access to non-gilts debt, such as non-marketable debt or borrowing in the Sterling money markets. Finally, the consolidated debt and deficit numbers include debt issued by local governments and public corporations, as the Bank of England or the BBC, but these do not affect the central government debt management numbers. In Appendix A.3, I show the detailed steps one needs to take to go from what the Chancellor communicates to the gilts news. In Appendix Table A.1, we can see that gilts have a similar order or magnitude volatility as non-gilts debt, liquid assets holdings, and consolidated government debt.

- Finally, I test, with a forecasting equation, whether the update on public sector net borrowing presented during the budget process fully explains the gilts update by the DMO on the same event. Column 4 of Table 2 shows that an increase in public sector net borrowing by 1 percentage point of GDP predicts an increase of 0.314 percentage point of GDP in gilts issuance. Furthermore, the R^2 is high at 0.667, but there is still a substantial amount of residual variation that I exploit for identification.

2.3 Constructing the Government Bond News Shock

In order to construct the government bond news shock, I proceed in two steps. First, I hand collect from the DMO website all the remit and remit update events. I extract the

Figure 2: The DMO Surprise



Notes: This figure shows "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. It is aggregated at a monthly frequency.

information on gilts issuance and debt composition in each event. As these events are not time stamped, I find the exact publication, with the method detailed in Appendix B.2.

As a second step, I look at the variation in the price of a Long Gilt Future in a tight window around the announcement of the DMO. Long Gilt Futures are a natural metric for this set up. Futures measure a market based risk adjusted expectations and Long Gilt Futures are highly liquid contracts with more than 8 Trillion USD notional volume in 2024 and directly map to the gilts announcement content. The underlying assets are gilts with maturities between 8 years and 9 months and 13 years. For the identification strategy employed in this paper, it is crucial to use a short window, to capture only information contained in the DMO announcement, and not on the budget speech. For this reason I use a 15 minutes window, shorter than the 30 minutes one used usually in monetary policy studies, as Gurkaynak, Sack and Swanson (2004) or Nakamura and Steinsson (2018) for the US or Gerko and Rey (2017) for the UK. I compute the change in price between the average price five minutes preceding the DMO announcement and the average price for five minutes after five minutes from the DMO announcement. I name the resulting variable "DMO Surprise" and this is the instrument I exploit to identify the government bond news shock. A positive surprise corresponds to an unexpected increase in the price of the future, so to a decrease in the yield of the underlying bonds. Figure 2 shows the time series of the DMO Surprise. To further validate the exogeneity of my bond shock, I also compute a surprise during the Chancellor speech before the DMO announcement to try to forecast the DMO Surprise. I do this by computing the change in price between the average price five minutes preceding the start of the budget and the average price for five minutes preceding the DMO announcement.

The resulting DMO remit dataset goes from 1998, the start of the DMO, to 2024 and it has

88 events. The summary statistics are shown in Table 1. We can see a few key figures here. First of all, the news on the gilts remit is large. The standard deviation of "Gilt News" is 1.12 percentage points of GDP, which is sizable and has the potential to affect the risk bearing capacity of arbitrageurs. To give an order of magnitude comparison, the financial net worth of all monetary financial institutions in the UK was around 5.8% of GDP between 1987 and 2023. Moreover, the data show that we are capturing changes in the overall volume of bond supply rather than shifts in its maturity composition. The shares of short, medium, long, and inflation-linked gilts exhibit means close to zero and relatively low standard deviations, indicating no systematic variation in the composition. Even the largest standard deviation — that of short gilts — is modest, at just 3.36 percentage points. This pattern is intentional: as a matter of policy, the DMO typically avoids altering the composition of issuance following remit updates, so as not to unsettle markets. While the total amount to be raised can vary substantially depending on fiscal policy and the government's cash needs — factors outside the DMO's control — the DMO does determine how this total is allocated across bond types, and it aims to keep this split as stable as possible. This does not mean that the maturity structure of government debt remains fixed. Rather, any maturity composition changes are communicated well in advance, typically following consultations with market participants, and are reflected in the initial remits rather than in the within-year updates that I exploit. In Andreolli (2023), I show that indeed the maturity of government debt in the US and in the UK is a slow moving object.

In the baseline regressions I present in the paper, I exploit the full dataset with all the DMO remits in order to maximize statistical power. However, I present also my main results in a restricted sample that contains only the remits that happen only after a budget speech in order to strengthen identification. Appendix Table B.1 presents the summary statistics of the DMO remit dataset in the restricted sample, which has 54 observations. It shows that they are almost identical to the full sample.

Appendix Figure B.1 shows the behavior of Long Gilts Futures around four sample budget events. It shows the price, the volume, and the number of trades. The figures reveal that the response of futures prices varies across events: in some cases, large movements occur around the DMO announcement, in others around the Chancellor's announcement, sometimes around both, and occasionally around neither. There is no consistent pattern. This visual evidence suggests that the two announcements contain distinct pieces of information, which I test formally in Table 2.

Appendix B.1 presents the sources of the data used in this paper, Appendix B.2 presents the steps I undertook to build the DMO event dataset, and Appendix B.3 presents the details of futures processing.

Having established how to measure exogenous variation in gilt supply, we next discuss

Table 1: Summary Statics DMO Remit Dataset

	mean	sd
Gilts News	0.25	1.12
Gilts News in bn GBP	4.64	22.19
Short Gilts % News	-0.09	3.36
Medium Gilts % News	0.34	2.73
Long Gilts % News	0.29	2.49
Index Linked Gilts % News	-0.04	1.31
Observations	88	

Notes: "Gilts News" measures the update in the DMO remit on the total supply of gilts scaled over GDP. "Gilts News in bn GBP" measures the update in the DMO remit on the total supply of gilts in billion of GBP. The following four metrics show the change in percentage points of the supply of a given gilt type over total gilts issuance: $\Delta \frac{Gilt^i}{Tot\ Gilts} \times 100$.

how this variation is used econometrically to estimate causal effects on asset prices.

3 Econometric Methodology

The identification assumption is that the DMO announcement conveys information only about the supply of gilts, not about the broader fiscal policy stance. In an ideal setting, we would observe minute-by-minute market expectations of government bond issuance, compare them in a tight window around the DMO announcement, and use the resulting surprise as a direct measure of the bond supply shock in a simple OLS regression on the outcome variables of interest. Since such data are not available, we instead rely on a proxy: the surprise in gilt futures prices. Under the identification assumption, this proxy is correlated only with bond supply shocks and not with any other shocks, allowing it to serve as an instrument for the government bond supply news shock. This approach follows the shock-identification framework widely used in macroeconomics.[13] The main benefit of shock identification is that we can find an instrument that uses asset prices identify it. Formally, the identification assumption is:

$$\mathbb{E}(Z_t, \text{bond supply news shock}) = \phi, \qquad \mathbb{E}(Z_t, \text{any other shock}) = 0$$

Where the instrument Z_t is the DMO Surprise. As in standard IV settings, the first condition corresponds to relevance (testable), and the second to exogeneity (an identifying assumption). A key difference, and its main downside, is that shock identification identifies the effect of the structural shock only up to a sign and scaling normalization: we can trace the effect

[13] This is similar in spirit to Proxy-VARs as in Stock and Watson (2012) and Mertens and Ravn (2014), though I do not impose a VAR structure on the data and work at a daily frequency.

of a shock that increases a chosen variable X_t by one unit on another variable Y_t. We can implement this with an instrumental variable framework:

$$\Delta Y_{t,t-1} = \beta_0 + \beta_1 X_t + \varepsilon_t, \qquad X_t = \eta_0 + \eta_1 Z_t + \varepsilon_t$$

I consider two alternative normalizations for X_t, either "Gilts News" which measures the change in government bond supply as a share of GDP, or "10Y Yield" defined as the change in the end-of-day yield on a 10-year zero-coupon nominal bond between the event day and the previous day. The first specification yields direct elasticities: the effect of a bond supply news shock that increases gilts issuance by 1% of GDP on the outcome variable. The second offers stronger first-stage results and facilitates interpreting the estimates as relative effects of a shock that raises 10-year yields government bonds by 1 percentage point.

Finally, when estimating the long lasting effect, I run Local Projections - Instrumental Variables (LP-IV) following Stock and Watson (2017). This simply entails using as an outcome variable a long difference: $\Delta Y_{t+h,t-1}$, for different horizons h.

4 Results

This section first establishes that the instrument is unpredictable and relevant, and then presents the main estimates for government and corporate bonds. It concludes with results on the interbank market, a placebo test on the US yield curve, and on the persistence of the effects.

4.1 Instrument Validation: Forecasting Regressions

While identification assumptions cannot be tested directly, the time-series structure of this setting provides several necessary conditions that must hold for the "DMO Surprise" instrument to be credible. In particular, we can ask whether changes in futures prices around the DMO announcement are predictable using information available beforehand. We conduct these tests for three related reasons.

First, by definition, a surprise should be unpredictable; otherwise, it may embed information unrelated to the DMO announcement. Second, recent work by Bauer and Swanson (2023) shows, in the context of U.S. monetary policy, that including recent public information can materially alter the estimated effects of monetary policy shocks, identified with high frequency variation in future prices, on key outcomes, as the shock is partially predictable, as also shown by Cieslak (2018). Third, government budgets are complex objects. Even though the Chancellor's budget speech contains hard fiscal information, it may take time for markets to fully digest it. The DMO remit, being salient and easy to interpret, may help market participants better understand the government's true fiscal stance.

The first two hypotheses call for the inclusion of any past relevant information to check for predictability. The third yields a clear testable hypothesis: momentum. If information is processed slowly by the market, we should observe two patterns. First, changes in gilt futures prices around the DMO announcement should be predictable using the changes in gilt futures prices around the Chancellor's announcement. Second, the change in public sector net borrowing forecast by the OBR, communicated during the Chancellor's speech, should predict the size of the "DMO Surprise".

Do we see such predictability? No. The results are shown in Table 2. Panel A focuses on information released during the budget, while Panel B also examines prior financial market information in the spirit of Granger causality. In Panel A, column 1 shows that the future surprise during the Chancellor speech cannot predict the "DMO Surprise", column 2 also shows that the public sector net borrowing forecast updates cannot predict "DMO Surprise", and column 3 includes both variables jointly. All three specifications yield very low R^2 values. This lack of predictability is unsurprising: long gilt futures are forward-looking by construction, highly liquid, and the budget speech represents the central fiscal and bond policy event, featuring extensive coverage and the release of hard information by the Chancellor. Market participants face strong incentives to process this information quickly, and the evidence suggests that they do. Note that the "Gilts News" is not random, the OBR update in public sector net borrowing has a R^2 of 0.667, which is high but leaves a substantial residual component that can be exploited for identification.

Panel B of Table 2 confirms these findings when incorporating financial market variables. Including changes in government bond yields over the two days preceding the event does not improve forecastability: column 1 uses 10-year yields, column 2 uses 1-year yields, and column 3 combines these with the budget information. In all cases, the p-values from the joint F-tests (reported in the last row) are high, indicating that we cannot reject the null that all predictors have zero explanatory power. Appendix Table C.1 further confirms the robustness of these results when including a corporate bond risk-spread measure and using the restricted sample.

4.2 Baseline Results

First Stage. We established that prior information is not helpful to forecast the instrument. The next step is to show that the instrument is relevant and not only noise. Table 3 reports the first-stage regression results to this aim. The "DMO Surprise" exhibits strong predictive power both for changes in gilt supply (as a share of GDP) and for daily changes in 10-year

Table 2: Predictive regressions

Panel A - Information released during the budget

VARIABLES	(1) DMO Surprise	(2) DMO Surprise	(3) DMO Surprise	(4) Gilts News
Chancellor Surprise	-0.238		-0.235	
	(0.168)		(0.173)	
OBR Borrowing Update		-0.00643	-0.00583	0.314***
		(0.0109)	(0.0109)	(0.0311)
Constant	-0.0288	-0.0232	-0.0248	0.00231
	(0.0286)	(0.0303)	(0.0305)	(0.0863)
Observations	54	53	52	53
R-squared	0.037	0.007	0.042	0.667

Panel B - Prior financial market information

VARIABLES	(1) DMO Surprise	(2) DMO Surprise	(3) DMO Surprise
10Y Yield = L,	-0.361		0.0490
	(0.417)		(0.804)
10Y Yield = L2,	0.405		0.418
	(0.462)		(0.869)
1Y Yield = L,		1.013	0.589
		(0.648)	(1.388)
1Y Yield = L2,		0.504	0.424
		(0.629)	(1.182)
Chancellor Surprise			-0.264
			(0.188)
OBR Borrowing Update			-0.00607
			(0.0114)
Constant	-0.0243	-0.0331	-0.0193
	(0.0241)	(0.0243)	(0.0327)
Observations	77	77	52
R-squared	0.023	0.038	0.083
F test	0.422	0.238	0.669

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "DMO Surprise" is the surprise in the Long Gilts Futures around the announcement of the DMO. "Gilts News" is the change in the amount of gilts over GDP in the DMO remit. "Chancellor Surprise" is the surprise in the Long Gilts Futures around the announcement of the Chancellor prior to the announcement of the DMO. "OBR Borrowing Update" is the update in public sector net borrowing over GDP by the OBR for the current fiscal year. "iY Yield" measures the daily change in a i years zero coupon government bond yield. The sample in all but columns 1 and 2 of Panel B is the restricted sample. The F test tests if the coefficients associated with all the explanatory variables are jointly zero and it shows the corresponding p-value.

yields. The direction of the relationship is as expected: a higher futures price corresponds to lower gilt issuance and lower 10-year yields. Moreover, the R^2 in the first column indicates that price changes measured within a 15-minute window around the announcement explain 22.6% of the variation in daily 10-year yield changes, a sizable share.

To assess the robustness of the first stage, following the spirit of Bauer and Swanson (2023), we examine whether including recent public information affects the estimated coefficients. Appendix Table C.2 reports these results. First, adding the Chancellor's futures surprise and the OBR borrowing forecast updates leaves the coefficient on "DMO Surprise" essentially unchanged. Next, augmenting the baseline specification with past 1 and 10 year government bond yields and a corporate bond risk spread measure likewise has no meaningful impact. These findings corroborate the idea that the "DMO Surprise" is a strong and credible proxy for exogenous bond supply news.

Table 3: First stage regression results

VARIABLES	(1) 10Y Yield	(2) Gilts News
DMO Surprise	-0.132***	-1.455***
	(0.0283)	(0.468)
Constant	0.00479	0.104
	(0.00596)	(0.0984)
Observations	77	77
R-squared	0.226	0.114

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "DMO Surprise" is the surprise in the Long Gilts Futures around the announcement of the DMO. "10Y Yield" measures the change in a 10-year zero coupon government bond yield during the day of the event. "Gilts News" is the change in the amount of gilts in the DMO remit.

Second Stage. I now turn to the IV regressions, which identify the effects of government bond supply news shocks on asset prices. As a first step, I estimate the elasticity of the 10-year government bond yield with respect to a government bond supply news shock that increases the gilts supply by one percentage point of GDP. This elasticity allows to scale all following relative impacts where we normalize the effect of the shock to increase the 10-year government bond yield by 1 percentage point. Next, I examine whether riskier borrowers are affected more strongly by these shocks than safer borrowers. This is motivated by two competing hypotheses. Under a pure substitution hypothesis derived from demand-based asset pricing, less substitutable assets (e.g., BBB corporate bonds relative to government bonds) should react less to an increase in government bond issuance than more substitutable assets (e.g., AA corporate bonds). In contrast, under a risk-based hypothesis, from either risk-adjusted demand-based models or preferred habitat theory with arbitrageurs operating in both government and corporate bond markets, holds the opposite prediction. Larger government issuance must be absorbed by arbitrageurs, reducing their risk-bearing capacity. This leads to an increase in the price of risk, implying that riskier assets (such as BBB bonds) should experience larger yield increases relative to safer assets (such as AA bonds).

I test these hypotheses in Table 4. Odd-numbered columns use "Gilts News" as the instrumented variable, while even-numbered columns use "10Y Yield". The outcome variable of the first column is "10Y Yield". Columns 2 and 3 examine a corporate bond risk spread measure, the BBB–AA corporate bond yield spread for bonds, restricted to bonds with maturity between 5 and 15 years. I use AA bonds as a benchmark for safe corporate debt because there are too few AAA bonds in the sample and because the UK government has a AA rating.[14] I restrict the maturity between 5 and 15 years to avoid capturing maturity composition effects (if AA bonds have a different maturity than BBB bonds, I would capture both a credit risk spread and a term risk spread), the main downside is that this limits the bonds in the underlying index. For this reason, columns 4 and 5 present results using a cruder but more liquid spread measure between BBB and AA bonds across all maturities. Finally, in the last two columns, I show the level effect on yields of all BBB bonds with a maturity between 5 and 15 years.

Table 4: Baseline regression results

VARIABLES	(1) 10Y Yield	(2) Risk Spread	(3) Risk Spread	(4) Risk Spread Broad	(5) Risk Spread Broad	(6) BBB	(7) BBB
Gilts News	0.0911***		0.0188***		0.0199***		0.0929***
	(0.0300)		(0.00675)		(0.00693)		(0.0305)
10Y Yield		0.207***		0.218***		1.020***	
		(0.0726)		(0.0732)		(0.0879)	
Constant	-0.00470	-0.00116	-0.00213	-0.00237	-0.00339	-0.000429	-0.00522
	(0.0101)	(0.00210)	(0.00227)	(0.00211)	(0.00233)	(0.00254)	(0.0102)
Observations	77	77	77	77	77	77	77
F-Stat	9.68	21.87	9.68	21.87	9.68	21.87	9.68

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "10Y Yield" measures the change in a 10-year zero coupon government bond yield during the day of the event. "Gilts News" is the change in the amount of gilts in the DMO remit. "Risk Spread" is the difference in yields between a AA and BBB composite corporate bond with maturity between 5 and 15 years. "Risk Spread Broad" measures the change in the difference in yields between a AA and BBB composite corporate bond across all maturities. "BBB" is the yield of a BBB composite corporate bond with maturity between 5 and 15 years.

The key result on elasticities is that a government bond supply shock that is associated with a one-percent-of-GDP increase in gilts supply increases the interest on a 10-year government bond by 9 basis points. How large is this? It lies between local effects, which focus on similar securities, and global effects, which capture the broader impact of fiscal policy without isolating bond supply. For comparison, Bigio, Nuño and Passadore (2023) find that in Spain a 1 percent-of-GDP increase in issuance lowers primary market prices relative to secondary prices by 8–56 basis points. Lou, Yan and Zhang (2013) document that in the U.S., a 1 percent-of-GDP increase in issuance raises auction prices by 14–23 basis points. Droste, Gorodnichenko and Ray (2024) identify the effects of debt demand on single auctions shocks, in the structural model that targets their estimates, 1 percent of debt to GDP increase in debt demand (QE) lowers 10-year government bond rates by 50 basis points. My

[14] The UK lost its AAA rating in 2013 by Moody's and Fitch and in 2016 by Standards and Poor.

effects are comparable but relatively smaller. This is consistent with the idea that a single bond auction involves a narrower set of arbitrageurs than the entire bond market. On the macro side, Wiegand (2024) finds that increasing the cumulative deficit-to-GDP ratio by 1% over five years raises 10-year yields by 2.3 basis points. My estimate of 9 basis points is larger, possibly because the U.S. Treasury market is more liquid than the UK gilt market, or because the normalization differs (deficit vs. debt). It may also reflect the importance of distinguishing between overall fiscal policy effects and the specific effects of government bond issuance. For example, higher government spending may improve economic conditions, reducing the likelihood of monetary easing and thereby dampening the interest rate response. This contrast highlights the importance of using different identification schemes depending on the question at hand. My results suggest that fiscal policy also transmits through the financial sector, implying that macroeconomic models that seek to capture the full effects of fiscal policy should incorporate a meaningful role for financial intermediaries.

The next key result is that riskier borrowers are more affected by government bond supply shocks than safer ones. Columns 3 and 5 show that a shock increasing gilt issuance by 1% of GDP raises corporate bond spreads by 1.9 and 2 basis points, respectively, depending on the metric used. When the shock is normalized to raise the 10-year government bond yield by 100 basis points (columns 2 and 4), the corporate bond spreads increase by 20.7 and 21.8 basis points, respectively. The last two columns confirm this pattern when examining the level of yields on BBB bonds with maturities between 5 and 15 years: yields rise by 9.3 basis points when normalized with "Gilts News" and by 102 basis points when normalized with "10Y Yields". These findings favor a risk-based explanation, such as a preferred-habitat framework in which arbitrageurs operate across both government and corporate bond markets, over a pure substitution-based view. They also underscore the advantage of identifying exogenous government bond supply shocks. Unconditionally, episodes of flight to safety typically move government and high-grade corporate bonds together and these are periods that often coincide with expansionary fiscal policy. By contrast, the shocks isolated here reveal financial crowding-out effects: increases in government bond supply tighten financial conditions for riskier corporate borrowers. From a macroeconomic perspective, these results call for models that explicitly link government and corporate borrowing, where fiscal policy transmits not only through the financial sector but also via its impact on credit conditions faced by firms. In Andreolli (2023), I develop a model consistent with this mechanism, in which constrained primary dealers intermediate both government and corporate debt.

Upon closer examination of Table 4, the first-stage F-statistic associated with instrumenting "10Y Yields" is 21.87, comfortably above conventional thresholds and indicating no weak-instrument problem. In contrast, the first-stage F-statistic for instrumenting "Gilts News" is 9.68, slightly below the Stock and Yogo (2005) rule-of-thumb value of 10, suggesting potential weak-instrument concerns. To address this issue, I proceed in two complementary ways. First, recall that under shock identification, the choice of instrumented variable is primarily a normalization. I therefore report results, in the remainder of the paper, using "10Y Yields" as the instrumented variable, which does not suffer from a low first-stage statistic. All coefficients can be mapped back to elasticities with respect to "Gilts News" by multiplying them by 0.0911, corresponding to the coefficient in column 1. Second, I provide results based on weak-IV robust inference using the Anderson–Rubin (AR) test, reported in Appendix Table C.3. This table presents the p-values for the null hypothesis that the instrumented "Gilts News" has no effect on the outcome variable, as well as the 95% confidence intervals associated with the same variable. We reject the null of no effect with a very low p-value in all specifications. The Anderson–Rubin confidence intervals suggest stronger effects than in the baseline estimates. Specifically, the estimated impact of the instrumented "Gilts News" on the 10-year yield ranges between 4.9 and 23.3 basis points, while the corresponding effects on the (broad) corporate bond risk spread range between 0.9 (1.0) and 4.9 (5.1) basis points. These results indicate even stronger financial crowding-out effects than in the baseline estimate, even under conservative weak-IV robust inference.

In the following sections, I examine additional metrics from the government and corporate bond markets to corroborate and extend these results.

4.3 Government and Corporate Bonds Results

Government Bonds. We have established that the bond supply news shock has a sizable effect on the 10-year government bond yield. The next question is how this effect transmits across the rest of the yield curve. Table 5 reports the estimated effects of the bond supply shock on three curves constructed from gilt data: the nominal yield curve, the inflation-linked yield curve, and the break-even inflation curve. The shock is normalized to raise the 10-year nominal government bond yield by 100 basis points, allowing the results to be interpreted as relative price changes.

Panel A shows the effects on the nominal yield curve. The coefficients follow an inverted U-shape, with the strongest responses for maturities between 5 and 20 years and the weakest at the short end (6-months and 1-year maturity). This pattern is consistent with the average maturity of the UK gilt portfolio—around 14 years—and with the notion that short-term yields are more firmly anchored by monetary policy.

Panel B presents the coefficients for inflation-linked gilts,[15] while Panel C shows the corresponding results for break-even inflation rates. Real yields move closely with nominal

[15] The UK has one of the most liquid inflation-linked gilt markets among advanced economies. As of March 2019, inflation-linked gilts accounted for roughly 20% of the total gilt portfolio. The UK was also a pioneer in this market, issuing its first inflation-linked gilt on 27 March 1981.

yields, and the break-even inflation responses are not statistically significant. These findings align with the evidence from U.S. monetary policy studies such as Hanson and Stein (2015) and Nakamura and Steinsson (2018), who similarly document nearly one-to-one movements in real and nominal rates following monetary policy shocks.

Overall, these results suggest that the transmission of bond supply shocks resembles that of monetary policy shocks. This highlights the importance of incorporating a meaningful financial sector and limits to arbitrage in bond markets into models that study fiscal policy. Appendix Table C.4 confirms that all these results—across the nominal, real, and break-even yield curves—are robust to using the restricted sample or estimating directly the reduced-form specification.

Table 5: Yield Curve Results

PANEL A - NOMINAL YIELD CURVE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	0.5Y	1Y	2Y	5Y	10Y	20Y	25Y
10Y Yield	0.303***	0.465***	0.756***	0.958***	1.000***	0.923***	0.872***
	(0.0992)	(0.142)	(0.172)	(0.0951)	(4.94e-09)	(0.0986)	(0.125)
Observations	69	77	77	77	77	77	77
F-Stat	24.28	21.87	21.87	21.87	21.87	21.87	21.87

PANEL B - REAL YIELD CURVE

	(1)	(2)	(3)	(4)	(5)
VARIABLES	$3Y^r$	$5Y^r$	$10Y^r$	$20Y^r$	$25Y^r$
10Y Yield	1.391***	1.261***	1.051***	0.719***	0.678***
	(0.413)	(0.270)	(0.158)	(0.122)	(0.137)
Observations	72	77	77	77	71
F-Stat	20.69	21.87	21.87	21.87	20.01

PANEL C - BREAK-EVEN INFLATION YIELD CURVE

	(1)	(2)	(3)	(4)	(5)
VARIABLES	$3Y^\pi$	$5Y^\pi$	$10Y^\pi$	$20Y^\pi$	$25Y^\pi$
10Y Yield	-0.520	-0.303	-0.0508	0.204*	0.185
	(0.368)	(0.246)	(0.158)	(0.112)	(0.116)
Observations	72	77	77	77	71
F-Stat	20.69	21.87	21.87	21.87	20.01

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "iY" measures the change in a i years nominal zero coupon government bond yield during the day of the event. "iY^r" measures the change in a i years real zero coupon government bond yield during the day of the event. "iY^π" measures the change in a i years break-even rate constructed from zero coupon government bonds yield during the day of the event. "10Y Yield" measures the change in a 10-year nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant.

Corporate Bonds. We have established evidence of own-crowding out: higher government bond issuance raises yields on all yields on government bonds. The next step is to look at corporate bonds with different cuts of the data. Tables 6 and 7 present the results of this analysis. In Table 6, Panel A reports the effects by maturity across all ratings, Panel B by rating across all maturities, and Panel C focuses on corporate risk spreads and convenience yields. Table 7 expands on these results by showing corporate risk spreads disaggregated by maturity–rating combinations (Panels A and B), and convenience yields by maturity (Panel C). Convenience yields metrics are defined as the spread over benchmark (over gilts) for AA bonds of different maturities.

The responses across maturities mirror those observed for government bonds. Bonds with maturities between 7 and 15 years exhibit the strongest yield reactions, while those with shorter maturities (1–3 years) show the weakest. When looking across ratings (Table 6, Panel B), relatively riskier bonds—those rated A and BBB—experience larger yield increases than safer bonds rated AAA or AA. It is reassuring that AAA bonds behave similarly to AA bonds, despite the median event including only nine bonds in the AAA index.

Panel C of Table 6 examines corporate spreads to shed light on asset pricing mechanisms—specifically, the behavior of convenience yields relative to risk spreads. Column 1 replicates the results from column 2 of Table 4, using a risk-spread metric defined as the yield difference between BBB and AA bonds with maturities between 5 and 15 years. Column 2 presents an analogous measure based on the difference in spreads over benchmark gilts for the same maturities. The two sets of results are nearly identical, despite the shorter sample (the spread-over-benchmark series begins only in October 2003) and the slightly different metric. This consistency validates the robustness of the findings. The reason I show the result with the spread over benchmark metric is to compare it to the results of the third column. Column 3 then reports the spread over benchmark for AA bonds with maturities between 5 and 15 years—a direct measure of the convenience yield. Following higher government bond issuance, the convenience yield declines by 21 basis points, indicating that government bonds lose part of their "specialness". The identification strategy proposed in this paper supports a substitution channel, whereby an increase in government bond supply raises interest rates on both government and corporate bonds. However, bonds that are closer substitutes for government securities exhibit a smaller increase, consistent with the results of Krishnamurthy and Vissing-Jorgensen (2012) for safe versus government bonds. At the same time, relatively riskier government bonds experience a stronger decline than safer ones, underscoring the value of this identification approach. It is likely that in periods of stress there is both a higher demand for safe assets and a higher government bond issuance that follows expansionary fiscal policy; this would create unconditionally the opposite results: lower risk spreads with higher government bond quantities. By isolating a pure bond supply shock, we uncover that the causal effect is a stronger relative response of riskier corporate bonds, consistent with financial crowding-out mechanisms.

Table 6: Corporate Bond Results

PANEL A - CORPORATE BOND YIELDS BY MATURITY

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	1Y-3Y	3Y-5Y	5Y-7Y	7Y-10Y	10Y-15Y	15Y+
10Y Yield	0.734***	0.952***	0.826***	1.045***	1.013***	0.924***
	(0.174)	(0.157)	(0.106)	(0.0861)	(0.0826)	(0.101)
Observations	77	77	77	77	77	77
F-Stat	21.87	21.87	21.87	21.87	21.87	21.87

PANEL B - CORPORATE BOND YIELDS BY RATINGS

	(1)	(2)	(3)	(4)
VARIABLES	AAA	AA	A	BBB
10Y Yield	0.878***	0.802***	1.051***	1.020***
	(0.0859)	(0.0874)	(0.0972)	(0.0915)
Observations	77	77	77	77
F-Stat	21.87	21.87	21.87	21.87

PANEL C - CORPORATE BOND SPREAD DECOMPOSITION

	(1)	(2)	(3)
VARIABLES	Risk Spread	Risk Spread SP	Convenience Yields SP
10Y Yield	0.207***	0.205**	-0.210**
	(0.0726)	(0.0799)	(0.0844)
Observations	77	57	57
F-Stat	21.87	19.97	19.97

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "iY-jY" measures the change in the yield of corporate bonds with maturity between i years and j years during the day of the event across all ratings. The outcome variables in Panel B are the change in the yield of corporate bonds with rating specified in each column during the day of the event across all maturities. "Risk Spread" measures the change in the difference in yields between a AA and BBB composite corporate bond with maturity between 5 and 15 years. "Risk Spread SP" measures the change in the difference in the spread over benchmark (the gilts yield curve) between a AA and BBB composite corporate bond with maturity between 5 and 15 years. "Convenience Yields SP" measures the change in the spread over benchmark (the gilts yield curve) of a AA composite corporate bond with maturity between 5 and 15 years."$10Y$ Yield" measures the change in a 10-year nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant.

Table 7 confirms that these results are not driven by any particular cut of the data. Panel A presents the BBB–AA spread by maturity. The effect is insignificant at shorter maturities (1–5 years) but becomes statistically significant for longer maturities, with the strongest effects observed between 10 and 15 years, similarly to government bonds. Panel B shows similar patterns for the A–AA spread, with even larger estimated effects than for the BBB–AA spread. Finally, Panel C documents that the convenience yield effect is present across maturities, peaking at the 10–15-year segment and remaining small and only marginally significant at the 1–5-year horizon.[16]

Table 7: Corporate Bond Results Across Maturities and Ratings

Panel A - BBB vs AA Spread

	(1)	(2)	(3)	(4)
VARIABLES	1Y-5Y	5Y-10Y	10Y-15Y	15Y+
10Y Yield	0.189	0.192**	0.221**	0.158**
	(0.127)	(0.0911)	(0.0908)	(0.0690)
Observations	57	57	57	57
F-Stat	19.97	19.97	19.97	19.97

Panel B - A vs AA Spread

	(1)	(2)	(3)	(4)
VARIABLES	1Y-5Y	5Y-10Y	10Y-15Y	15Y+
10Y Yield	0.325***	0.190**	0.404***	0.174***
	(0.116)	(0.0775)	(0.102)	(0.0641)
Observations	57	57	57	57
F-Stat	19.97	19.97	19.97	19.97

Panel C - AA Convenience Yield

	(1)	(2)	(3)	(4)
VARIABLES	1Y-5Y	5Y-10Y	10Y-15Y	15Y+
10Y Yield	-0.163*	-0.190**	-0.255**	-0.149**
	(0.0886)	(0.0748)	(0.104)	(0.0684)
Observations	57	57	57	57
F-Stat	19.97	19.97	19.97	19.97

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. The left-hand-side variables of Panel A are the change during the day of the event in the difference in the spread over benchmark (the gilts yield curve) between a AA and BBB composite corporate bond. The left-hand-side variables of Panel B are the change during the day of the event in the difference in the spread over benchmark (the gilts yield curve) between a A and BBB composite corporate bond. The left-hand-side variables of Panel C are the change during the day of the event in the spread over benchmark (the gilts yield curve) of a AA composite corporate bond. "iY-jY" restricts the bonds in the indices to be between i years and j years. "10Y Yield" measures the change in a 10-year nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant.

Appendix Tables C.5 and C.6 are the counterparts to Tables 6 and 7. They confirm that all results remain robust when the specifications are estimated in reduced form, with the restricted sample, or when using yield differences instead of differences in spreads over benchmark gilts.

[16] I also tested the convenience yield measure of Diamond and Van Tassel (2022), but the results were not statistically significant. This is consistent with the fact that their UK daily convenience yield series are populated only up to one year, where I also find weaker effects of the proposed shock. Results are available upon request.

To summarize, this subsection shows that an identified government bond supply shock generates crowding-out effects both within the government bond market and across to corporate bonds. Among corporates, bonds that are similarly safe to government securities experience an increase in yields, but a smaller one than on government bonds, consistent with the idea that government bonds lose some of their "specialness" when they become more abundant. In contrast, riskier corporate bonds are crowded out more strongly than safer ones, as reflected in higher risk spreads across multiple measures.

These findings underscore the importance of identification for uncovering financial crowding-out effects and suggest that theoretical models should explicitly incorporate this mechanism. In asset pricing, preferred-habitat models with arbitrageurs operating in both government and corporate bond markets naturally generate this pattern. In macroeconomics, models of fiscal policy should include limits to arbitrage and direct links between government and corporate financing to capture this key channel of transmission.

4.4 Interbank Market

Having established the key results in the bond markets, I now turn to the implications of the identification strategy for what the government does with the proceeds from gilts issuance. The identification strategy estimates the effect of higher gilts issuance while holding expectations of the consolidated deficit and debt projections constant. The next question is therefore how to reconcile these two dimensions. As discussed in Sections 2.2 and A.3, discrepancies can arise for several reasons: differences between cash and accrual accounting, financial transactions, local vs central government, t-bills, non-marketable debt, and as well as operations in the sterling money markets, where the DMO is a large player. It is generally difficult to move cleanly from one set of numbers to the other and this separation is a strength of the identification approach. Nevertheless, we can test one specific implication—whether the proceeds from additional gilts issuance are reflected in sterling money markets. If so, we should observe the opposite effect there: higher gilts issuance should correspond to lower borrowing (or higher assets) in sterling money markets.

Table 8 show the results of this exercise. In column 1 (3), I show the change in the level of the 6 months (1 year) interbank rate, column 2 (4) shows the change in the between the 6 months (1 year) interbank rate less the 6 months (1 year) government bond rate. The level results go in the expected direction: higher gilts issuance is associated with lower interbank rates at both maturities, although these coefficients are not statistically significant. The spread results, however, are statistically significant and consistent with the proposed mechanism. At a given maturity, interbank and gilt rates normally move together due to their similar risk profiles and close arbitrage relationships. Yet, following an increase in gilts supply, the two rates diverge. While we cannot conclude that all gilts proceeds are absorbed directly through the sterling money markets, the widening spread is consistent with part of these funds being used there.

Table 8: Interbank Market

VARIABLES	(1) Interbank 0.5Y	(2) Interbank - Gilt 0.5Y	(3) Interbank 1Y	(4) Interbank - Gilt 1Y
10Y Yield	-0.0493	-0.215**	-0.0718	-0.453***
	(0.0604)	(0.0946)	(0.0949)	(0.154)
Observations	62	58	62	62
F-Stat	28.96	29.38	28.96	28.96

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. The left-hand-side variables are the change during the day of the 1 year Sterling mean interbank rate (column 1), the difference between the 1 year Sterling mean interbank rate minus the 1 year nominal zero coupon government yield (column 2), the SONIA rate (column 3), and the difference between the SONIA rate minus the official bank rate (column 4)."10Y Yield" measures the change in a 10-year nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant.

4.5 US Yield Curve

The next set of results serves as a placebo test. I examine whether the UK gilt supply news shock has any impact on the US Treasury yield curve. While, in principle, UK shocks could transmit to the United States, recent work suggests that monetary and bond supply shocks do not. For example, Gerko and Rey (2017) show that UK monetary policy shocks do not affect the U.S. economy, whereas the reverse holds true (e.g., Rey, 2013). Similarly, Somogyi, Wallen and Xu (2024) find that government bond price movements around UK Treasury auctions do not transmit to U.S. yields.

Table 9 presents the results of this test. A bond supply shock normalized to raise the UK 10-year government bond yield by 100 basis points has no statistically significant effect on any of the US Treasury yields. This is reassuring, as it corroborates that the identified shock is not capturing a global or unobserved common factor, but rather reflects a UK-specific bond supply phenomenon.

4.6 Persistence

The results presented so far use daily changes around the event day as outcome variables and show strong crowding-out effects on both government and corporate bond rates. A key question, however, is how persistent these effects are. It is important to note that the shocks identified in this paper are news shocks—they capture revisions in expectations about the

Table 9: Placebo: US Yield Curve Results

VARIABLES	(1) 1Y	(2) 2Y	(3) 5Y	(4) 10Y	(5) 20Y	(6) 25Y
10Y Yield	0.0443	0.118	0.197	0.256	0.267	0.185
	(0.321)	(0.391)	(0.488)	(0.475)	(0.325)	(0.296)
Observations	74	74	74	74	74	74
F-Stat	11.17	11.17	11.17	11.17	11.17	11.17

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. The outcome variable "iY" measures the change in a i years nominal zero coupon US government bond yield during the day of the event. "10Y Yield" measures the change in a 10-year UK nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant.

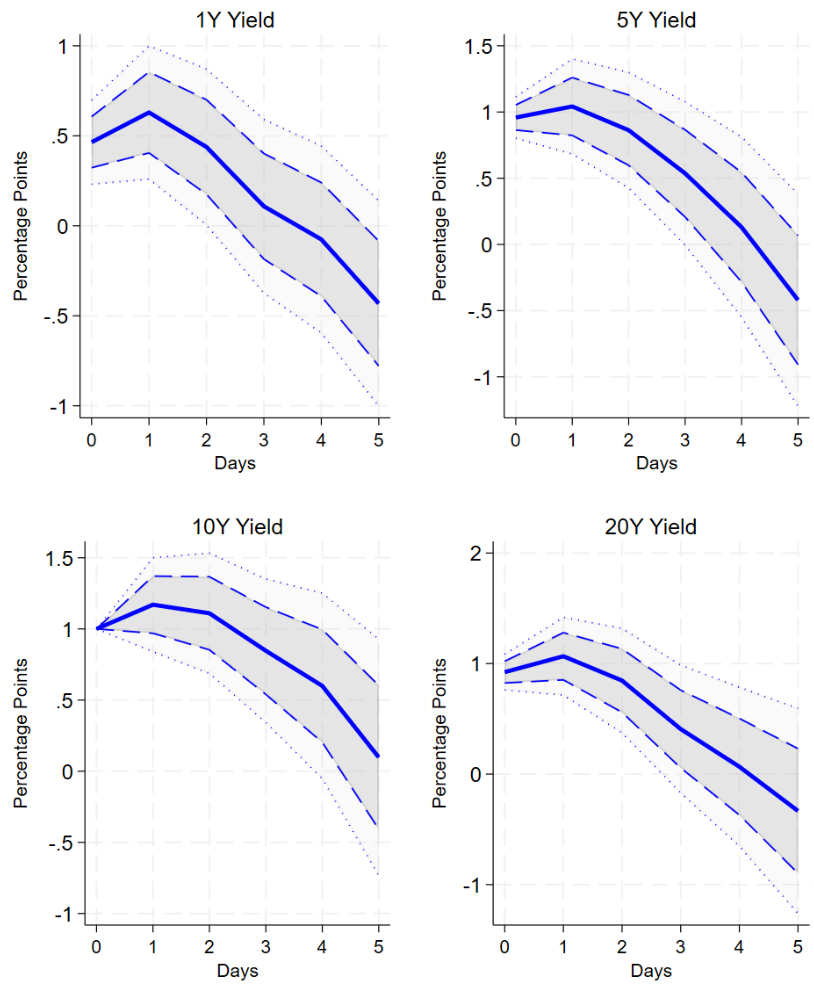
amount of government bonds to be issued over the fiscal year. It is therefore a priori plausible that their effects might persist over time.

To address this, I estimate a series of local projection instrumental variable (LP-IV) regressions, following the same specification as the baseline IV, where the outcome variable is defined as a long difference at horizon h: $Y_{t+h} - Y_{t-1}$. The advantage of this approach lies in its transparency and its direct comparability with previous results, though it comes at the cost of low statistical power, a common limitation of local projections (see Li, Plagborg-Møller and Wolf, 2024).

Figures 3 and 4 display the results for government and corporate yields, respectively. Figure 3 shows that the effects on government yields are persistent for almost a week, suggesting that the estimates capture a lasting adjustment rather than a temporary overreaction. The loss of statistical significance at the end of the horizon could reflect either a weakening of the effect or the limited power inherent in univariate local projections based on a small number of events. The effects are present throughout the yield curve, with the most persistent being the 5 to 20 years rates and the 1 year rate showing the least persistence.

Figure 4 focuses on corporate bonds. Here, risk spreads rise over time. In the first row, both the narrow (5–15 years maturity) and broad (all maturities) measures of the risk spread increase from an initial effect of around 20 basis points to a peak of roughly 100 basis points four days after the shock. This pattern is consistent with the lower liquidity of corporate bond markets relative to government markets. Decomposing the narrow risk spread into its components reveals that AA bonds behave similarly to government bonds, their yields revert to baseline levels within five days, whereas BBB bonds exhibit a slower adjustment: their yields rise in the couple of days following the shock and then decline as well. The delayed response of BBB bonds accounts for the gradual widening of risk spreads over time. Finally, when looking at the convenience yield metric, we observe that the decline remains negative but becomes statistically insignificant from the day following the event onward.

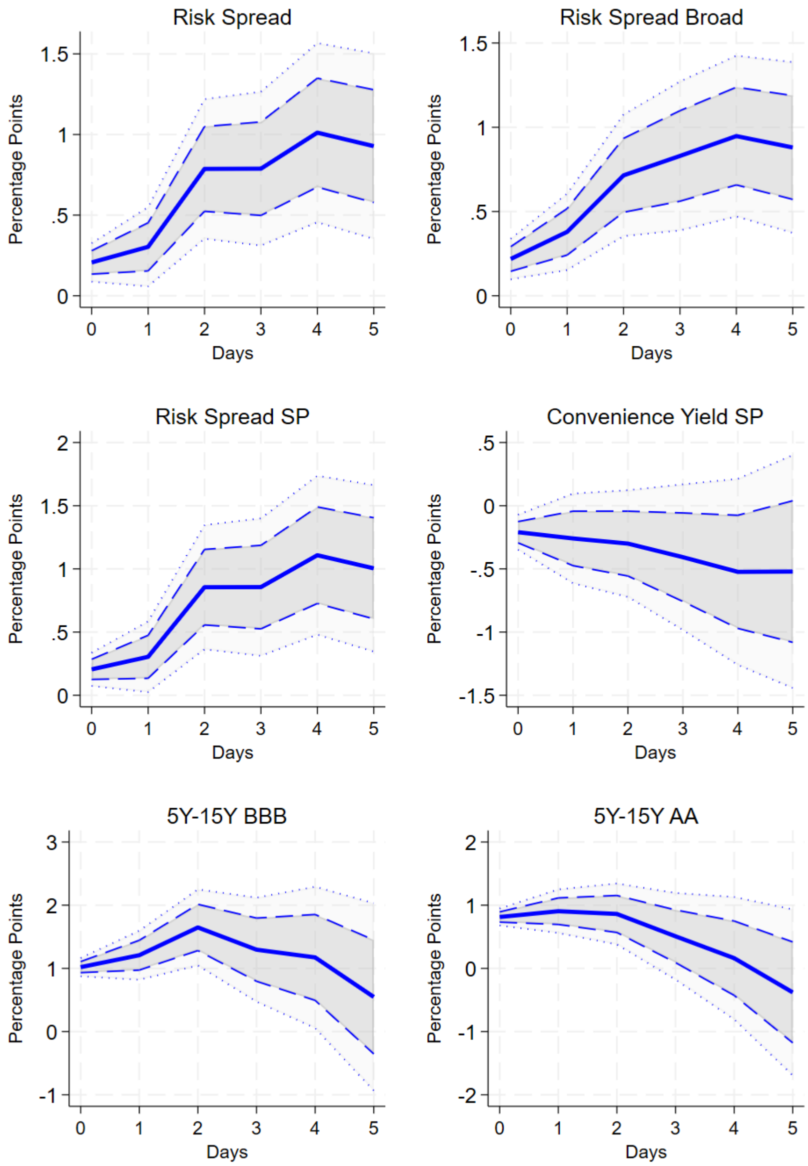
Figure 3: LP-IV Yield Curve Results



Notes: 68 and 90 confidence intervals. . "iY" measures a i years nominal zero coupon government bond yield. The each left-hand-side is measured with a long difference, the value at a given horizon less the value the day before the event. The variable which is instrumented is "10Y Yield" which measures the change in a 10-year nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant.

The simple LP-IV specifications presented in this section are highly transparent, but they may raise concerns due to the absence of controls. In particular, including lags of the left-hand-side variables is important for two reasons. First, from an econometric perspective, lag-augmented local projections tend to improve robustness and efficiency by helping to stationarize the residuals, even when the shocks are already identified (see Olea et al., 2025). Second, conditioning on past outcomes provides an additional robustness check by reinforcing the plausibility of the shocks' exogeneity. As shown in Appendix Figures C.1 and C.2, the results are virtually unchanged relative to Figures 3 and 4 when controlling for five lags of the growth rate of the left-hand-side variable.

Figure 4: LP-IV Yield Curve Results



Notes: 68 and 90 confidence intervals. “Risk Spread” measures the difference in yields between a AA and BBB composite corporate bond with maturity between 5 and 15 years. “Risk Spread SP” measures the difference in the spread over benchmark (the gilts yield curve) between a AA and BBB composite corporate bond with maturity between 5 and 15 years. “Convenience Yields SP” measures the spread over benchmark (the gilts yield curve) of a AA composite corporate bond with maturity between 5 and 15 years. “Risk Spread Broad” measures the difference in yields between a AA and BBB composite corporate bond across all maturities. “5Y-15Y BBB” (“5Y-15Y AA”) measures the yield of corporate bonds with maturity between 5 years and 15 years with rating BBB (AA) during the day of the event. The each left-hand-side is measured with a long difference, the value at a given horizon less the value the day before the event. The variable which is instrumented is “10Y Yield” which measures the change in a 10-year nominal zero coupon government bond yield during the day of the event. This variable is instrumented with “DMO Surprise”, the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant.

These results indicate that crowding-out effects do not dissipate quickly. The impact on government bond yields remains statistically significant for at least a week, while the effects on riskier corporate bonds appear even more persistent—though estimation uncertainty naturally increases at longer horizons. The fact that these patterns emerge using a relatively simple, and statistically not very efficient (in a bias–variance trade-off sense), LP-IV approach strengthens the conclusion that crowding-out effects are economically meaningful once we properly identify pure bond supply news shocks.

5 Conclusion

Policymakers and economists intuitively feel that increases in government bond issuance tighten financing conditions for both sovereign and corporate borrowers. Yet identifying this effect empirically is especially challenging. Government bond flows both respond to macroeconomic conditions and finance fiscal policy, making it difficult to disentangle the direct financial crowding-out effect of bond issuance from the broader effects of fiscal policy. This paper develops an identification strategy to address this challenge by exploiting the differential timing of announcements by the UK Debt Management Office and the Chancellor of the Exchequer within the UK Budget framework.

The resulting shocks are independent of changes in fiscal stance, unpredictable by markets or information released by the Chancellor, and are associated with large variations in public debt supply. The findings show strong financial crowding-out effects: interest rates rise across government and corporate bond markets, with riskier corporate bonds responding more strongly than safer ones.

The policy implication of this study is that financing choices are a first-order concern for both treasuries and central banks. For treasuries, the way fiscal policy is financed, through the composition and pace of bond issuance, directly affects financial conditions. For central banks, adjustments to the government bond portfolio through QE and QT similarly transmit to the economy via asset prices and borrowing costs. Because these flows influence corporate financing conditions, policy adjustments should be gradual, allowing markets time to absorb changes in the supply of government bonds.

The findings also prompt a reassessment of how fiscal news is interpreted. Consider a fiscal event that entails higher public spending, a larger consolidated debt, and increased bond issuance. Under the lens of frictionless capital market models, a rise in interest rates following such news would likely be read as a signal of greater default or monetization risk. The results of this paper suggest that this not necessarily the case: interest rates may rise simply because financial intermediaries need to absorb the additional bond supply. This highlights the need for structural models that can tease out the effects of fiscal policy on debt sustainability and its bond flow effects. Note that bond flow effects are not harmless, because financial crowding-out raises corporate borrowing costs, they may affect investment and aggregate activity. However, the results of the paper caution against interpreting all yield responses to fiscal events as shifts in fiscal credibility.

Finally, the evidence supports risk-based frictional asset-pricing theories over pure substitution effects. The results are consistent with preferred-habitat models in which constrained arbitrageurs operate across both government and corporate debt markets. Macroeconomic models studying fiscal policy, either its business cycle transmission or its optimal design in a Ramsey problem, should include explicit linkages between government and corporate finance to capture financial crowding-out. The identified results in this paper can serve as targeted empirical moments to discipline such models.

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A The UK Fiscal Policy Framework

A.1 Media Coverage

In Panel A of Figure A.1, we can see the live coverage on the Bloomberg live feed for the 30 October 2024 Budget. The market commentators are aware of the institutional structure, at 13:45 they remind viewers that the DMO will publish the remit update when the Chancellor sits, at 13:52 they discuss that the Chancellor has sat down, and finally, at 13:54 they publish the update in the remit in gilt issuance. Note that the number communicated is the total gilt remit change and the post is highlighted to underscore its importance. In Panel B of the same figure, we can see the Bloomberg highlights on 30 October 2024, here again the gilt remit update is a key news for the day. Note that this panel was taken from Bloomberg terminal located in the United States, highlighting that this is a key market news for the day even outside the UK.

In Figure A.2, we can see the tweets on X/Twitter by the OBR with the forecasts of public sector net borrowing (panel A), the budget deficit (panel B), and GDP growth (panel C). These tweets are published when the Chancellor discusses these numbers in the budget speech. We can see this by looking at the time stamps: 12:47, 12:51, and 12:52, all published well before the DMO update of 13:54.

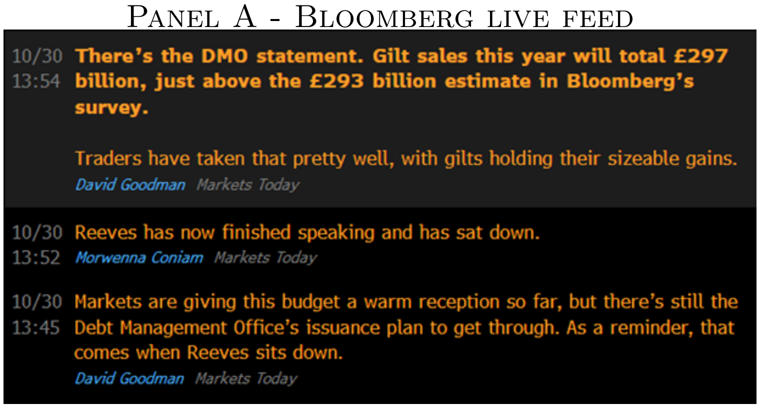
A.2 Speeches Excerpts

In this appendix, I present further evidence on budget speeches to show that the Chancellors have presented the same numeric projections of fiscal policy throughout my sample. Importantly, I show that the same presentation happened even before the institution of the OBR in 2010.

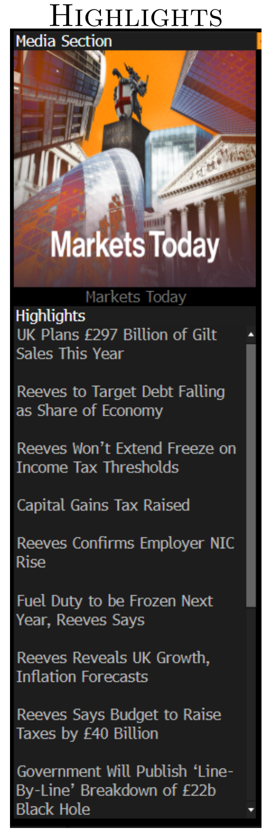
22 March 2006 Budget Speech by Gordon Brown Discusses public sector net debt: *Net debt is now 47% of national income in France, 47% in America, in Germany 62%, in Japan 83% and in Italy over 100% - but this year in Britain 36.4%. I can report that in future years debt will be 37.5, 38.1, 38.3, 38.4, and 38.4% of national income.* Discusses public sector net borrowing: *Net borrowing - which was £90bn just over a decade ago - will be £37bn this year, £36bn next year, then £30bn, falling to £25bn, £24bn and £23bn in 2010-11 as we borrow to invest, borrowing in that year 1.5% of national income compared to 8% just over a decade ago. In line with what I said in the pre-budget report, net borrowing adjusted for the economic cycle, will fall from 2.4% of national income to, in future years, 1.9 and then in successive years 1.6, 1.6, 1.6 and 1.5%.*

Figure A.1: Bloomberg live feed and Bloomberg Highlights on the 30 October 2024 Budget

Panel A - Bloomberg live feed



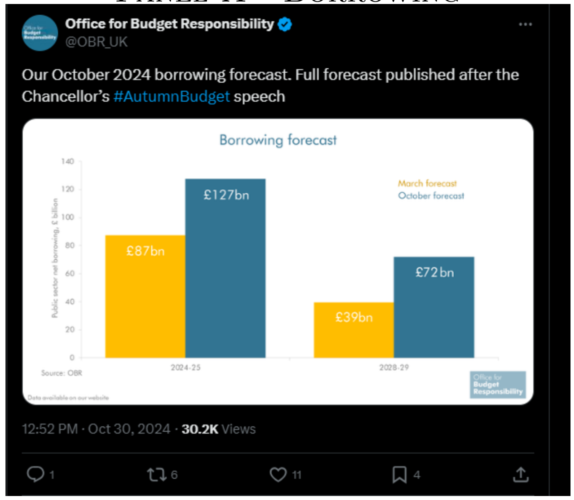
Panel B - Bloomberg Highlights



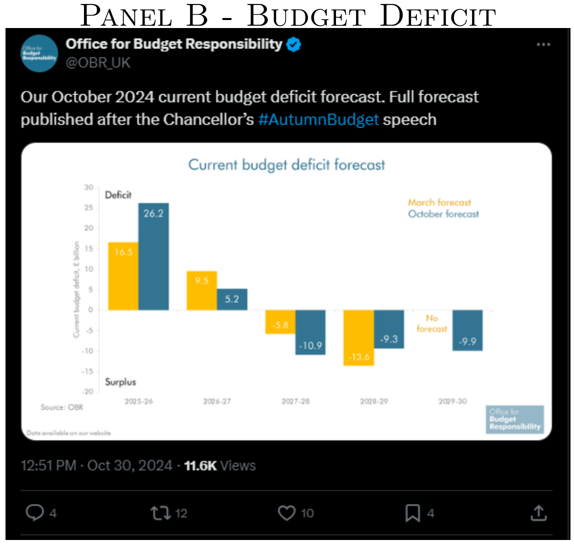
Notes: This figure shows the Bloomberg live feed in Panel A and the Bloomberg Highlights in Markets Today during the 30 October 2024 Budget. Timestamps are in British time.

Figure A.2: OBR Tweets on X during the 30 October 2024 Budget

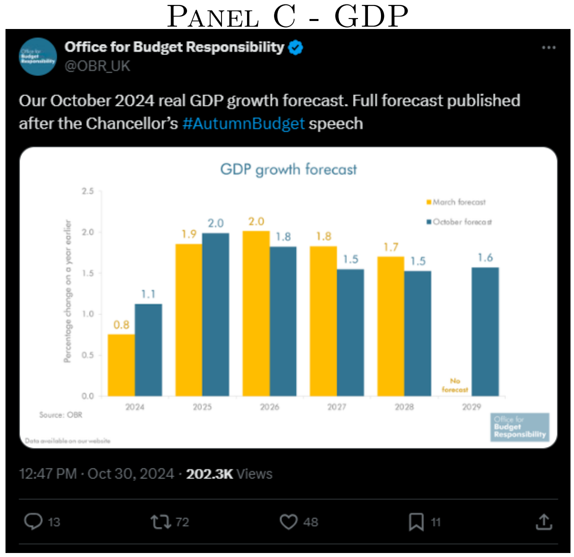
PANEL A - BORROWING



PANEL B - BUDGET DEFICIT



PANEL C - GDP



Notes: This figure shows the OBR Tweets on X/Twitter during the 30 October 2024 Budget. Panel A shows the public sector net borrowing forecasts, Panel B the budget deficit forecasts, and Panel C the GDP forecasts. Timestamps are in British time.

21 March 2007 Budget Speech by Gordon Brown Discusses public debt: *Debt is actually 44 per cent. of national income in America, 50 per cent. in the euro area and 92 per cent. in Japan, but in Britain, we expect debt from 2007-08 to 2012 to be 38 per cent., 38.5 per cent., 38.8 per cent., 38.8 per cent. and 38.6 per cent.* Discusses the deficit and public sector net borrowing: *Britain's net borrowing, which in the early 1990s went as high as 8 per cent. of our national income is this year just 2.7 per cent. In future years, it will be 2.4 per cent., falling to 2 per cent. and then falling to 1.8 per cent., 1.6 per cent. and just 1.4 per cent. Compared to a deficit equivalent to over £100 billion in a single year in the early '90s, the figure for this and future years will be just £35 billion—£1 billion less than forecast at the pre-Budget report—then falling to £34 billion, £30 billion, £28 billion, £26 billion and £24 billion.*

29 November 2011 Budget Speech by George Osborne Discusses the structural deficit and public debt: *The current structural deficit is forecast to fall from 4.6% of GDP this year to become a current structural surplus of 0.5% in five years' time, and the debt-to-GDP ratio, which is forecast to stand at 67% this year, is now set to peak at 78% in 2014-15 and to be falling by the end of the current Parliament.* Discusses the public sector net borrowing: *The OBR's analysis feeds directly through to borrowing numbers that are falling, but not at the rate that had been forecast. In 2009-10, the last Government were borrowing £156 billion a year. During the first year of this Government, that fell to £137 billion. This year the OBR expects it to fall again, to £127 billion, then to £120 billion next year, followed by £100 billion in 2013-14, £79 billion in 2014-15, then £53 billion in 2015-16 and £24 billion a year by 2016-17.*

29 October 2018 Budget Speech by Philip Hammond Discusses the deficit: *Today's forecast, taking into account all announcements since the Spring Statement [...] shows the deficit down [...] to less than 1.4% next year [...] and falling to just 0.8% by 2023-24.* Discusses the OBR debt projections: *The OBR confirm that our national debt [...] falls in every year of the forecast from 83.7% this year; to 74.1% in 23-24.*

A.3 From Consolidated Debt and Deficit to Gilts Issuance

In this appendix, I show that the consolidated debt concepts that are communicated by the Chancellor during the speech is a different concept from the gilts supply, which is the key metric communicated by the DMO. First, I show the exact steps that one needs to take to reconcile these numbers. Second, I show quantitatively that there is a meaningful difference.

The Chancellor discusses the public sector net borrowing (the overall deficit), the current deficit (public sector net borrowing minus public sector net investment), or the structural deficit as flow measures and Public Sector Net Debt as a stock measure. These are the relevant metrics to assess fiscal sustainability and the statistical agencies undertake an enormous amount of work to measure the economic liabilities of the government in a way that moves the number away from the amount of marketable bonds. We can see the principle presented by Eurostat (2022):[17] "*In the context of measuring government deficit and debt, this need to consider the economic reality affects such matters as follows.*

- *The classification of units: where a unit is included in the government sector or not, as government deficit and debt are primarily affected by units classified to the government sector. This is determined by considering whether or not a unit is controlled by the government and whether it is a non-market or market (financed mainly by its own sales) unit. Privately controlled market institutional units are not included in the government sector.*

- *The timing of transactions: ESA 2010 records transactions on an accrual basis, i.e., when the economic activity takes place, rather than when the cash is paid. The difference between cash and accrual amounts may be large in a single year, and therefore significant for the government deficit/surplus.*

- *The nature of a transaction: ESA 2010 distinguishes non-financial transactions such as consumption, wages and salary, subsidies or grants to cover losses, which directly affect the government deficit; and financial transactions as, e.g., the acquisition of financial assets or the repayment of debts, which do not.*"

The difference between accrual and cash accounting as well as financial transactions that the government makes create a wedge between the gilts amount and the budget deficit. Next, we focus on the numbers presented by the Chancellor directly.

From Public Sector Net Debt. The headline number that the UK uses to assess its public debt level is Public Sector Net Debt (PSND). It is defined as the gross liabilities of the public sector minus its liquid assets (such as foreign exchange reserves and cash deposits). To compute it, this first takes general government gross debt under the European System of Accounts (ESA 2010) framework: "*General government gross debt comprises outstanding stocks of liabilities in the financial instruments currency and deposits, debt securities and loans at the end of the reference period* (Eurostat, 2022). This is also known as Maastricht Debt. Then, it adds further adjustments from Maastricht Debt that make the gap with the

[17] The UK follows the European System of Accounts (ESA 2010) when computing internationally comparable debt numbers.

outstanding gilts amount even starker. Public Sector Net Debt includes public corporations' debt and the nets off of liquid assets (ONS, 2025). Public corporations and financial institutions, crucially, includes the Bank of England, in addition to other corporations as Network Rail or the BBC.[18]

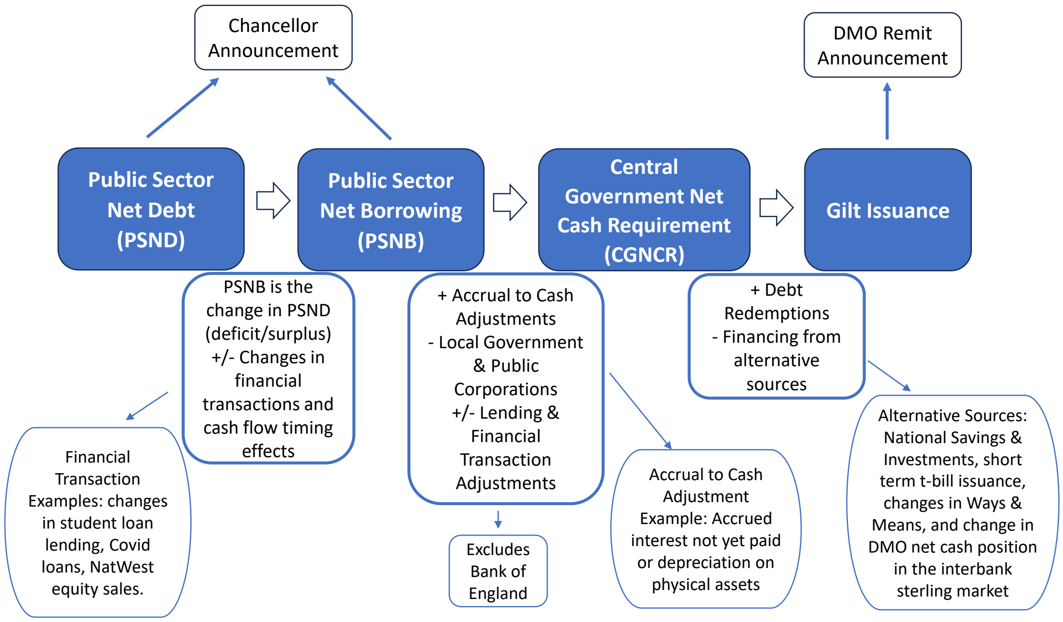
To Public Sector Net Borrowing. Next, we move to the Public Sector Net Borrowing (PSNB), the accrual-based fiscal deficit that measures the shortfall between public sector spending and receipts. Public Sector Net Borrowing is not simply the first difference in Public Sector Net Debt, but entails a further adjustment. It nets out changes in financial transactions, such as changes in student loans lending, loans from the Bank of England and their repayments (e.g. the term funding scheme during Covid), a cash flow timing effects (e.g. taxes due in one year but paid in another), or other financial transactions (e.g. the sale of equity in NatWest, a bank bailed out during the financial crisis and then gradually privatized) (OBR, 2025, ONS, 2023). Therefore, the PSNB is not a direct measure of funding requirements.

To Central Government Net Cash Requirement. The Central Government Net Cash Requirement (CGNCR) measures the amount of cash the central government needs to raise from financial markets and other sources to finance its operations. Converting Public Sector Net Borrowing into Central Government Net Cash Requirement requires adjustments for accrual-to-cash differences, the exclusion of local government and public corporations, and incorporation of lending/financial transaction adjustments. The Central Government Net Cash Requirement is the number that is communicated from the Treasury to the DMO and it is the relevant one for its decision making. The Central Government Net Cash Requirement is also never discussed by the Chancellor during the speech. We can see that there is a large conceptual difference from the deficit numbers, before we go into what the DMO has decision power on, the financing of the Central Government Net Cash Requirement.

To Gilts. The Central Government Net Cash Requirement, excluding NRAM Ltd, Bradford & Bingley, and Network Rail, is the starting point of the DMO remit (Treasury, 2025). However, this does also not translate one to one to the gilts amount. The Debt Management Office (DMO), to calculate the volume of gilts issuance, adds debt redemptions, then subtracts expected funding from alternative sources, such as National Savings and Investments (non-marketable debt), short-term T-bill issuance, changes in Ways & Means (an account at

[18] In the 2021 Autumn Budget and Spending Review, the government published its Charter for Budget Responsibility: Autumn 2021 Update, which introduced public sector net debt excluding the Bank of England as a key fiscal indicator. Public Sector Net Debt itself, which is the number discussed by the Chancellor however, includes the Bank of England's balance sheet (ONS, 2021).

Figure A.3: From Consolidated Debt and Deficit to Gilt Issuance



Notes: This figure shows the steps one needs to take to go from Public Sector Net Debt and Public Sector Net Borrowing to the gilts Issuance.

the Bank of England not used for deficit financing), and change in DMO net cash position in the interbank sterling market. Changes in T-bill issuance and especially in the net cash position are not predetermined or sticky, so can further mask the mapping from changes in Maastricht debt to gilts issuance.

Quantification. Each of these adjustments is due to very different reasons and when added up might end up being not being material. Therefore, as a final step, we want to know if these discrepancies are quantitatively important or if most of the variation in debt is coming from gilts. To this aim, I show here the 12 months rolling standard deviation of gilts debt, non-gilts debt, liquid assets holdings, and Maastricht debt,[19] all over GDP. I show the 12 months rolling standard deviation in order to focus on the yearly frequency that is the focus of this paper, to net out low frequency movements. Table A.1 shows the results of this exercise. Maastricht debt has a standard deviation of 1.79% of GDP. Gilts debt has a similar order of magnitude of volatility, with a standard deviation of 1.48% of GDP, but at the same time, the sum of standard deviations of non-gilts debt and liquid asset holding display a similar order of magnitude of volatility compared to gilts debt. This further corroborates that there is separate information contained in the Chancellor and in the DMO announcements.

[19] I use Maastricht Debt as this is the closer than public sector net debt to gilts in terms of adjustments.

Table A.1: Public Assets and Debts Volatility

	% of GDP
Gilts	1.48
Non Gilts Debt	0.65
Liquid Assets Holdings	0.58
Maastricht Debt	1.79
12 months rolling standard deviation	

Notes: gilts debt is "Central government gross debt, of which british government securities (gilts)" with ONS code BKPM. Liquid assets are "General government liquid assets" with ONS code MDK3. Maastricht Debt is "General government consolidated gross debt (Maastricht)" with ONS code BKPX. Non-gilts debt is defined as the difference between BKPX and BKPM. The sample goes from 1997 to 2024.

B Data Appendix

B.1 Data Sources

The intra-day future data comes from London Stock Exchange Group (LSEG) for the Long Gilt Future traded on the Intercontinental Exchange (ICE). The definition of long gilt differs from the DMO one: it has as underlying assets gilts with maturities between 8 years and 9 months and 13 years. In each year there are usually four delivery months, when the future can be exchanged with the underlying asset at any point during the month: March, June, September, and December. I use the continuation contract, which is the closest delivery contract except on the month of delivery, when it is the following delivery contract. Differently from short term interest rates futures, the contracts with delivery further in the future from the continuation contract are relatively illiquid, effectively yielding only one liquid contract at each point in time. I use data aggregated at the minute frequency.

The government bonds yield curves are produced the Bank of England for the UK and by the Fed from Gürkaynak, Sack and Wright (2007). All government bond yield curves refer to zero coupon bonds. Corporate bond information comes from iBoxx GBP Benchmark Index, differently from the government bonds data, the yields refer to coupon bonds. The government and bond yield data is at daily frequency. I use the change in closing price between the end of the event day and of the preceding day. The updates in public sector net borrowing projections come from the "Historical official forecast database" of the OBR/Treasury. The ONS is the source of the aggregated gilts, Maastricht debt, liquid assets, and GDP data.

B.2 Building the Events Dataset

In this section, I show the steps to build the dataset with all the events used in this paper. The DMO publishes on its website a document summarizing all the remit and remit update events since March 1998. This document contains the total gilts issuance and the split between short (1 to 7 years), medium (7 to 15 years), and long (more than 15 years), and inflation linked gilts, in addition to the T-bills, Ways& Means, and DMO net cash position forecasts. These numbers are for the current fiscal year and in March of every year also for the following fiscal year and in April also for the outrun of the past fiscal year.

These events are not time stamped. In order to find the exact publication time to construct the shock, I proceed as follows.

1. First, I go over each event in the DMO publication history to see if the DMO publishes in the days before the event an announcement for the publication time. This happens only for the events that do not follow a budget, as the Covid updates which happened all at 7:30am.

2. Then, I go over all of the event on Bloomberg News and Factiva to see when they first appear to add the time stamp. I take the first of the two.

3. Next, for the budget events, I go over the House of Commons Library records to obtain the initial time of the budget, which I use to construct the Chancellor future surprise. The House of Commons Library records only the starting time of each parliamentary event, but not the end. Therefore, I confirm that the starting time of the parliamentary event that follows the budget speech is always after the Bloomberg News and Factiva time-stamp for the DMO gilts remit update.

Appendix Table B.1 is an expanded counterpart to Table 1 with the summary statistics of the DMO remit dataset. It shows the DMO dataset in the full sample in the first two columns, with all the events except the Mini Budget and the restricted sample in the last two columns, focusing only on the budget dates. We can see that the two samples do not differ in any meaningful way. The standard deviation of the total "Gilt News" is above one percentage points of GDP, and there is no systematic or large tilting toward a given maturity type. This corroborates the strategy of using the full sample in the regressions of the paper to increase statistical power and confirming them with the restricted sample.

B.3 Futures During Budget Events

In this appendix, I present visual evidence of the behavior of Long Gilts Futures during various budget days. I show the price of the future and the corresponding volume and

Table B.1: Expanded Summary Statics DMO Remit Dataset

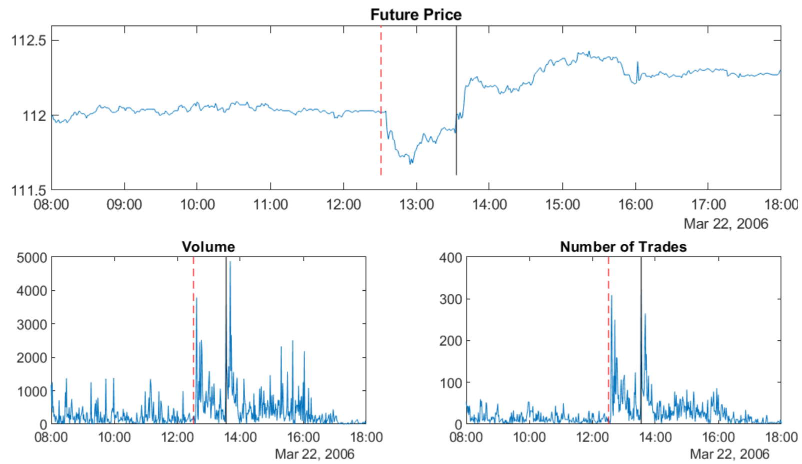
	Full Sample		Restricted Sample	
	mean	sd	mean	sd
Gilts News	0.25	1.12	0.18	1.05
Gilts News in bn GBP	4.64	22.19	2.94	20.12
Short Gilts % News	-0.09	3.36	-0.02	2.57
Medium Gilts % News	0.34	2.73	0.64	2.06
Long Gilts % News	0.29	2.49	0.21	2.18
Index Linked Gilts % News	-0.04	1.31	-0.03	1.15
Observations	88		54	

Notes: "Gilts News" measures the update in the DMO remit on the total supply of gilts scaled over GDP. "Gilts News in bn GBP" measures the update in the DMO remit on the total supply of gilts in billion of GBP. The following four metrics show the change in percentage points of the supply of a given gilt type over total gilts issuance: $\Delta \frac{Gilt^i}{Tot\ Gilts} \times 100$. The first two column show the full sample, the last two columns show the restricted sample.

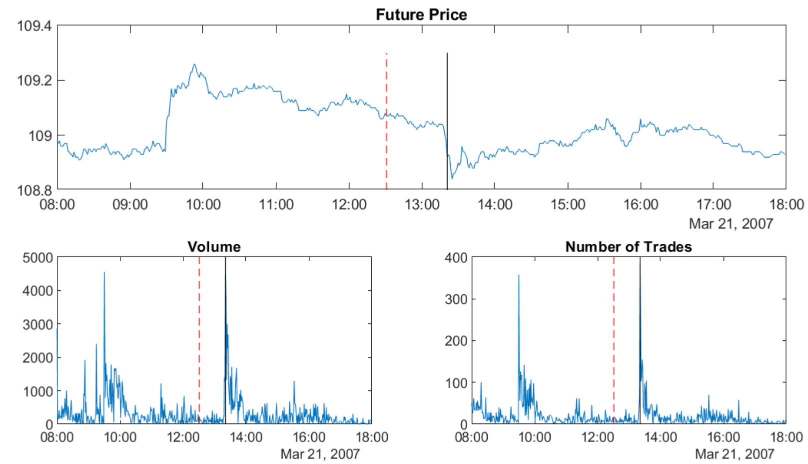
number of trades on 22 March 2006, 29 October 2011, 21 March 2007, and 30 October 2024 in Figure B.1. The red dashed line shows the beginning of the budget speech. The black solid line shows the end of the budget speech and the publishing of the DMO announcement. We can see that both the budget speech and the DMO announcement matter, but without a consistent pattern. In March 2006, we can see high volume and large changes in the future prices both during the budget speech and after the DMO announcement; in March 2007, it seems that most information comes from the DMO announcement; in October 2011 it seems the the whole budget was uneventful; and finally, in the October 2024 budget, we can see higher trading activity during the speech compared to just after the DMO announcement. These charts present anecdotal evidence that there is separate information presented by the Chancellor and by the DMO. Moreover, they also suggest that the DMO information is not simply trailing the information presented by the Chancellor, if that were the case we should see momentum in prices. I test this formally with the forecasting regression of Table 2. Finally, this figure confirms that the Long Gilts Futures is a highly liquid and traded contract, with hundreds of trades each minute.

Figure B.1: Gilts Futures Intra-day Paths

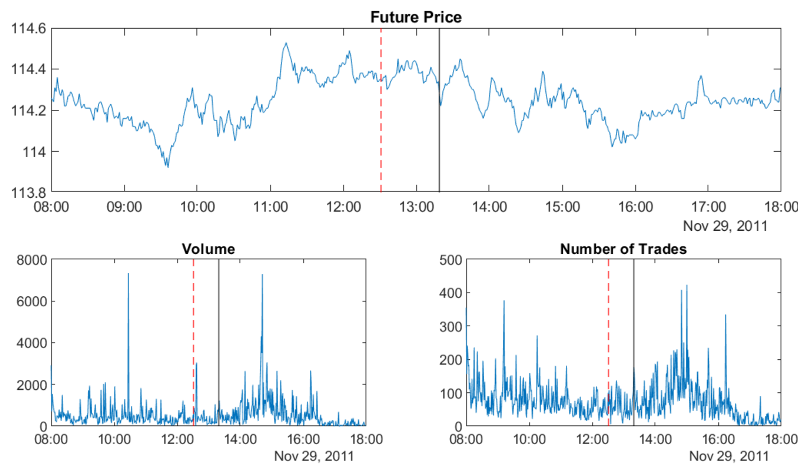
PANEL A - 22 MARCH 2006



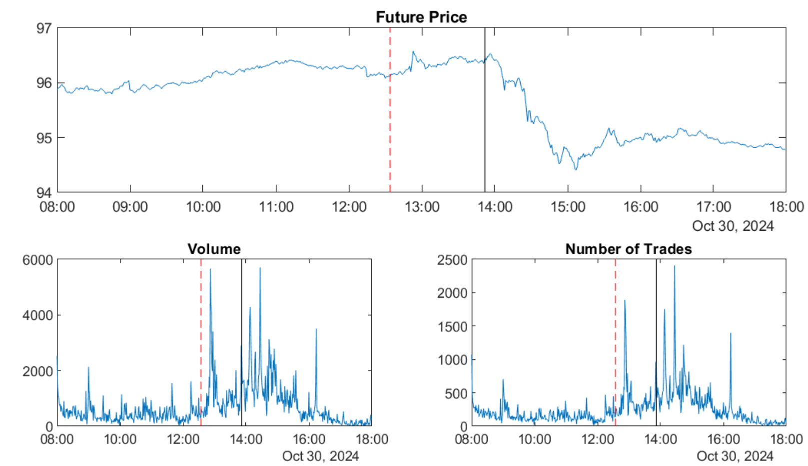
PANEL B - 21 MARCH 2007



PANEL C - 29 OCTOBER 2011



PANEL D - 30 OCTOBER 2024



Notes: These figures show the Long Gilts Futures behavior during 4 selected budget days. Each panel shows a given budget day. In each panel, the top figure shows the futures price, the bottom left panel shows the corresponding volume, and the bottom right panel shows the corresponding number of trades. The data is shown on a minute by minute frequency. The red dashed line shows the beginning of the budget speech. The black solid line shows the end of the budget speech and the publishing of the DMO announcement.

C Further Empirical Results

In this appendix, I present robustness of the various empirical results presented in Section 4 along various assumptions.

Forecasting regressions. Appendix Table C.1 reports a robustness exercise corresponding to Panel B of Table 2. We want to test if "DMO Surprise" is forecastable with prior information. In addition to the baseline predictors, the regressions also include a corporate bond market risk-spread measure, the yield differential between AA and BBB composite corporate bonds with maturities of 5 to 15 years, and, I estimate the results using the restricted sample. The last row of the table reports the p-value from an F-test of the joint significance of all regressors. The high p-values indicate that we cannot reject the null that all predictors have zero forecasting power for the DMO Surprise. This supports the validity of using the surprise as a proxy for exogenous bond supply news.

Table C.1: Granger Causality further results

VARIABLES	(1) DMO Surprise	(2) DMO Surprise	(3) DMO Surprise	(4) DMO Surprise
10Y Yield = L,	0.0653			
	(0.504)			
10Y Yield = L2,	0.712			
	(0.523)			
1Y Yield = L,		0.0521		
		(0.829)		
1Y Yield = L2,		0.886		
		(0.700)		
Risk Spread = L,			0.288	-0.757
			(1.833)	(1.227)
Risk Spread = L2,			3.238*	0.335
			(1.618)	(1.233)
Constant	-0.0224	-0.0253	-0.0393	-0.0314
	(0.0295)	(0.0294)	(0.0288)	(0.0253)
Observations	54	54	54	77
R-squared	0.036	0.031	0.076	0.005
F test	0.392	0.453	0.135	0.824

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "DMO Surprise" is the surprise in the Long Gilts Futures around the announcement of the DMO. "iY Yield" measures the daily change in a i years zero coupon government bond yield. "Risk Spread" is the difference in yields between a AA and BBB composite corporate bond with maturity between 5 and 15 years. The sample in all but column 4 is the restricted sample. The F test tests if the coefficients associated with all the explanatory variables are jointly zero and it shows the corresponding p-value.

First Stage. We next assess the robustness of the first-stage regressions. Appendix Table C.2 extends the baseline results reported in Table 3 by adding recent information to the specification and I show that the coefficients associated with "DMO Surprise" do not change meaningfully. This exercise follows the spirit of Bauer and Swanson (2023), who show that the mapping from identified monetary policy shocks to key outcome variables can change once recent public information is included. This is not the case for "DMO Surprise".

Odd-numbered columns report results using the "10Y Yield" as the outcome variable, while even-numbered columns use "Gilts News". The first two columns add the Chancellor's futures surprise and the OBR borrowing forecast updates announced during the budget. The next two pairs of columns sequentially add the past two days of 10-year and 1-year government bond yield changes, respectively. The final two columns add the past two days of growth in a corporate bond risk-spread measure. Across all specifications, the coefficients on "DMO Surprise" remain stable and statistically robust, indicating that the instrument's explanatory power is not sensitive to the inclusion of these additional controls.

This does not imply that the added variables are irrelevant. For example, increases in futures prices around the Chancellor's speech also affect 10-year yields in the expected direction, consistent with the idea that also broader fiscal policy announcements influence asset prices. Finally, we confirm that the coefficient on the OBR update in the "Gilts News" regression remains essentially unchanged when including both the DMO and Chancellor futures surprises, consistent with the results in column 4 of Table 2.

Robust inference under weak IV. Table C.3 presents results that extend those in Table 4 to weak-IV robust inference using the Anderson–Rubin test. This table reports the effect of a bond supply shock that raises "Gilts News" by one percent-of-GDP on the same outcome variables as in Table 4. We perform this exercise because the first-stage F-statistic is 9.68, slightly below the conventional rule-of-thumb threshold of 10.

The last row reports the p-value for the null hypothesis that the instrumented "Gilts News" has no effect on the outcome variable. The third and second-to-last rows show the lower and upper 95% confidence interval bounds for the effect of the instrumented "Gilts News". Generally, the main drawback of weak-IV robust inference is its low power, which often results in failure to reject the null and in very wide confidence intervals that can extend from negative to positive infinity. It is therefore reassuring that we reject the null of no effect with very low p-values across all specifications.

The Anderson–Rubin confidence intervals, which are nonlinear and not necessarily symmetric around the point estimate, indicate stronger effects of the instrumented "Gilts News" on the outcome variables than in the baseline, as the lower bound is closer to the point estimate than the upper bound. As discussed in the main text, the estimated impact of the instrumented "Gilts News" on the 10-year yield ranges between 4.9 and 23.3 basis points, while the corresponding effects on the (broad) corporate bond risk spread range between 0.9

Table C.2: First Stage Robustness

VARIABLES	(1) 10Y Yield	(2) Gilts News	(3) 10Y Yield	(4) Gilts News	(5) 10Y Yield	(6) Gilts News	(7) 10Y Yield	(8) Gilts News
DMO Surprise	-0.130***	-0.953**	-0.136***	-1.340***	-0.122***	-1.513***	-0.132***	-1.430***
	(0.0313)	(0.395)	(0.0287)	(0.471)	(0.0275)	(0.481)	(0.0288)	(0.472)
Chancellor Surprise	-0.128***	0.153						
	(0.0386)	(0.487)						
OBR Borrowing Update	0.00454*	0.308***						
	(0.00239)	(0.0302)						
10Y Yield = L,			-0.139	1.852				
			(0.103)	(1.699)				
10Y Yield = L2,			-0.0464	-1.953				
			(0.115)	(1.882)				
1Y Yield = L,					-0.426***	2.275		
					(0.156)	(2.722)		
1Y Yield = L2,					0.182	-0.727		
					(0.150)	(2.609)		
Risk Spread = L,							-0.0135	3.994
							(0.304)	(4.996)
Risk Spread = L2,							0.0925	-4.588
							(0.305)	(5.008)
Constant	0.00269	-0.0203	0.00530	0.0929	0.00852	0.0847	0.00456	0.132
	(0.00673)	(0.0849)	(0.00599)	(0.0983)	(0.00582)	(0.102)	(0.00632)	(0.104)
Observations	52	52	77	77	77	77	77	77
R-squared	0.373	0.706	0.245	0.144	0.315	0.124	0.227	0.126

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "iY Yield" measures the change in a i years zero coupon government bond yield during the day of the event. "Gilts News" is the change in the amount of gilts over GDP in the DMO remit. "Risk Spread" is the difference in yields between a AA and BBB composite corporate bond with maturity between 5 and 15 years. "DMO Surprise" is the surprise in the Long Gilts Futures around the announcement of the DMO. "Chancellor Surprise" is the surprise in the Long Gilts Futures around the announcement of the Chancellor prior to the announcement of the DMO. "OBR Borrowing Update" is the update in public sector net borrowing over GDP by the OBR for the current fiscal year.

(1.0) and 4.9 (5.1) basis points. We can conclude that weak instruments are not a major concern in this setting and, if anything, the baseline IV regressions may underestimate the financial crowding-out effects.

Government and corporate yield curves. Tables 5, 6, and 7 report the effects of a bond supply shock, normalized to raise the yield on a 10-year zero-coupon government bond by 100 basis points, on a broad set of government and corporate bond yields. In the baseline analysis, I present results normalized by the 10-year government rate and using the full sample to maximize statistical power. For the corporate risk-spread decomposition across maturities and ratings, I report results in terms of difference in spreads over benchmark (rather than yield differences) to maintain comparability with the convenience yield estimates, which are also expressed with spreads over benchmark.

A natural question is how sensitive the results are to these three choices. Tables C.4, C.5, and C.6 present a series of robustness exercises to show robustness. First, the reduced-form estimates display the same relative magnitudes and statistical significance as the IV estimates, with the expected sign reversal, since an increase in futures prices corresponds to

Table C.3: Inference with Potentially Weak IV

VARIABLES	(1) 10Y Yield	(2) Risk Spread	(3) Risk Spread Broad	(4) BBB
Gilts News	0.0911***	0.0188***	0.0199***	0.0929***
	(0.0303)	(0.00684)	(0.00702)	(0.0309)
Constant	-0.00470	-0.00213	-0.00339	-0.00522
	(0.0102)	(0.00230)	(0.00236)	(0.0104)
Observations	77	77	77	77
Anderson-Rubin Lower CI	0.049	0.009	0.010	0.051
Anderson-Rubin Upper CI	0.233	0.049	0.051	0.241
Anderson-Rubin p-value	0.000	0.000	0.000	0.000

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "10Y Yield" measures the change in a 10-year zero coupon government bond yield during the day of the event. "Gilts News" is the change in the amount of gilts in the DMO remit. "Risk Spread" is the difference in yields between a AA and BBB composite corporate bond with maturity between 5 and 15 years. "Risk Spread Broad" measures the change in the difference in yields between a AA and BBB composite corporate bond across all maturities. "BBB" is the yield of a BBB composite corporate bond with maturity between 5 and 10 years. The instrument is "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The Anderson-Rubin Confidence Interval results correspond to the 95% level. The Anderson-Rubin p-value corresponds to the null that the effect of "Gilts News" on the various left-hand-side variables is 0.

a decline in yields.

Results obtained with the restricted sample also show the same overall patterns. Several specific findings stand out. First, at the very short end of the yield curve, coefficients become statistically insignificant (Table C.4, column 1, Panels B and C). Second, the risk-spread results remain significant for maturities above 10 years but lose significance for shorter maturities (Table C.6, Panels C and D). Third, the convenience yield effects become statistically insignificant (Table C.6, Panel E). Importantly, the point estimates remain nearly identical to those in the full-sample results, suggesting that these changes in significance likely reflect lower statistical power due to the smaller number of events in the restricted sample.

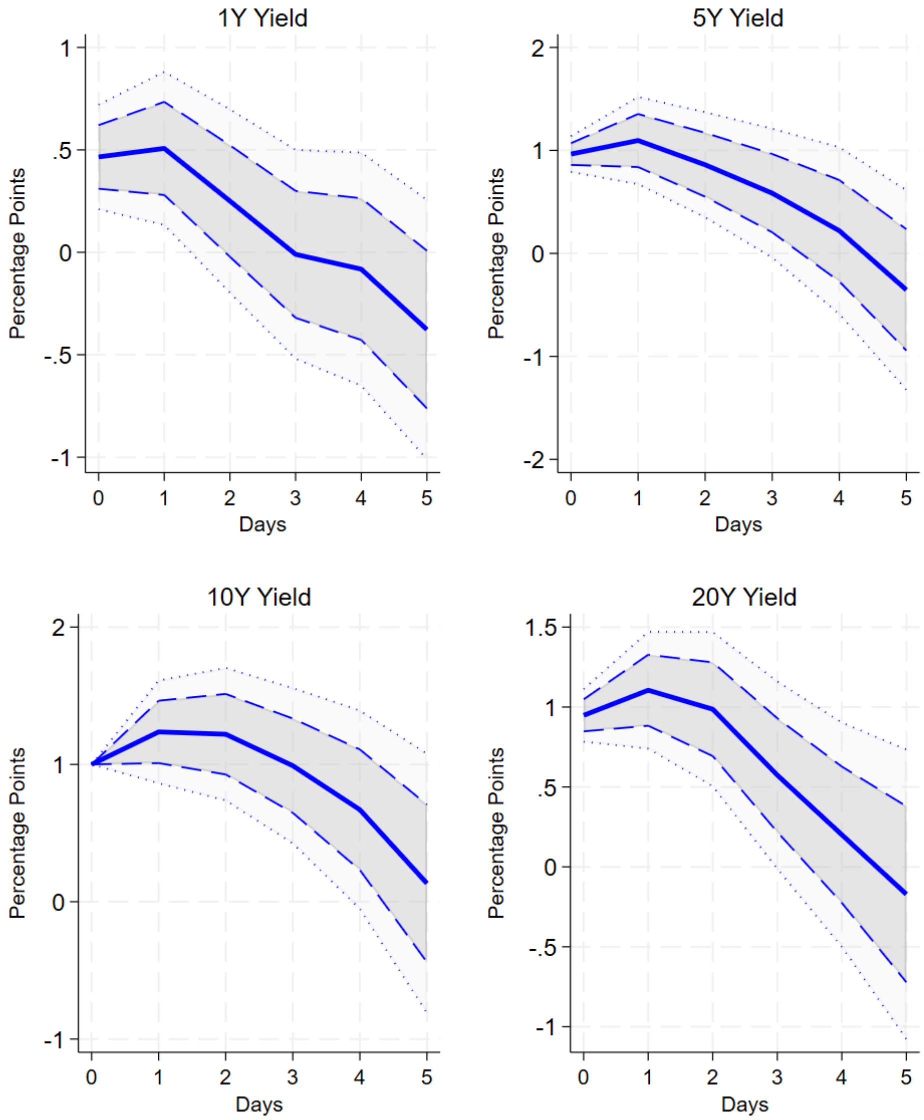
Finally, the choice of metric for computing risk spreads, whether based on yield differences or differences in spreads over benchmarks, has no material impact. Comparing Panels A and B of Table C.6 with Panels A and B of Table 7 shows that both the point estimates and their statistical significance are virtually unchanged.

Persistence. Figures 3 and 4 display the dynamic responses of a bond supply shock, normalized to increase the yield on a 10-year zero-coupon government bond by 100 basis points, across a broad set of government and corporate bond yields, estimated using a Local-Projection Instrumental-Variable framework. These specifications are deliberately parsimonious, including only the instrumented change in the 10-year zero-coupon government bond yield and a constant on the right-hand side, to enhance transparency.

Nevertheless, it is important to assess whether the results are sensitive to the inclusion of lagged values of the dependent variables. Even when shocks are plausibly exogenous, incorporating lagged outcomes in time-series regressions can help stationarize residuals and improve estimation efficiency (see Olea et al., 2025). In addition, examining the robustness of impulse response functions to the inclusion of lagged controls provides a useful diagnostic for identification, akin to the concerns raised by Bauer and Swanson (2023) in the context of monetary policy, and consistent with the static regression evidence presented earlier.

Appendix Figure C.1 corresponds to Figure 3, and Appendix Figure C.2 corresponds to Figure 4, but augments the baseline specification by including five lags of the growth rate of the dependent variable as controls, matching the impulse-response horizon. Across both figures, the point estimates remain virtually unchanged. While the confidence intervals widen slightly, the statistical significance of the responses is preserved. We conclude that these econometric and identification concerns are unlikely to play a major role in the conclusions of this study.

Figure C.1: LP-IV Yield Curve Results with Lags



Notes: 68 and 90 confidence intervals. . "iY" measures a i years nominal zero coupon government bond yield. The each left-hand-side is measured with a long difference, the value at a given horizon less the value the day before the event. The variable which is instrumented is "10Y Yield" which measures the change in a 10-year nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant and five lags of the daily growth in the left-hand-side variable.

Table C.4: Yield Curve Results Robustness

Panel A - Reduced Form

VARIABLES	(1) 0.5Y	(2) 1Y	(3) 2Y	(4) 5Y	(5) 10Y	(6) 20Y	(7) 25Y
DMO Surprise	-0.0438***	-0.0616**	-0.100***	-0.127***	-0.132***	-0.122***	-0.116***
	(0.0159)	(0.0238)	(0.0312)	(0.0293)	(0.0283)	(0.0282)	(0.0290)
Observations	69	77	77	77	77	77	77
R-squared	0.102	0.082	0.121	0.201	0.226	0.200	0.175

Panel B - Restricted sample

VARIABLES	(1) 0.5Y	(2) 1Y	(3) 2Y	(4) 5Y	(5) 10Y	(6) 20Y	(7) 25Y
10Y Yield	0.290*	0.324	0.495**	0.785***	1.000***	0.814***	0.723***
	(0.154)	(0.216)	(0.241)	(0.121)	(6.92e-09)	(0.153)	(0.195)
Observations	47	54	54	54	54	54	54
F-Stat	12.75	10.84	10.84	10.84	10.84	10.84	10.84

Panel C - Reduced Form, Real Yield Curve

VARIABLES	(1) $3Y^r$	(2) $5Y^r$	(3) $10Y^r$	(4) $20Y^r$	(5) $25Y^r$
DMO Surprise	-0.184***	-0.167***	-0.139***	-0.0953***	-0.0863***
	(0.0512)	(0.0353)	(0.0262)	(0.0229)	(0.0238)
Observations	72	77	77	77	71
R-squared	0.156	0.230	0.274	0.188	0.160

Panel D - Restricted sample, Real Yield Curve

VARIABLES	(1) $3Y^r$	(2) $5Y^r$	(3) $10Y^r$	(4) $20Y^r$	(5) $25Y^r$
10Y Yield	0.809	0.804**	0.807***	0.634***	0.631***
	(0.525)	(0.324)	(0.198)	(0.174)	(0.194)
Observations	52	54	54	54	51
F-Stat	10.69	10.84	10.84	10.84	9.69

Panel E - Reduced Form, Break-Even Inflation Yield Curve

VARIABLES	(1) $3Y^\pi$	(2) $5Y^\pi$	(3) $10Y^\pi$	(4) $20Y^\pi$	(5) $25Y^\pi$
DMO Surprise	0.0690	0.0401	0.00673	-0.0270	-0.0236
	(0.0439)	(0.0292)	(0.0205)	(0.0171)	(0.0164)
Observations	72	77	77	77	71
R-squared	0.034	0.024	0.001	0.032	0.029

Panel F - Restricted sample, Break-Even Inflation Yield Curve

VARIABLES	(1) $3Y^\pi$	(2) $5Y^\pi$	(3) $10Y^\pi$	(4) $20Y^\pi$	(5) $25Y^\pi$
10Y Yield	-0.198	-0.0194	0.193	0.179	0.0642
	(0.512)	(0.323)	(0.198)	(0.164)	(0.174)
Observations	52	54	54	54	51
F-Stat	10.69	10.84	10.84	10.84	9.69

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "iY" measures the change in a i years zero coupon government bond yield during the day of the event. "iY^r" measures the change in a i years real zero coupon government bond yield during the day of the event. "iY^π" measures the change in a i years break-even rate constructed from zero coupon government bonds yield during the day of the event. "DMO Surprise" is the surprise in the Long Gilts Futures around the announcement of the DMO. The restricted sample only uses budget events. "$10Y$ Yield" measures the change in a i years nominal zero coupon government bond yield during the day of the event and it is instrumented with "DMO Surprise".

Table C.5: Corporate Bond Results Robustness, by Maturity and Rating

Panel A - Reduced Form, Corporate Bond Yields by Maturity

VARIABLES	(1) 1Y-3Y	(2) 3Y-5Y	(3) 5Y-7Y	(4) 10Y-15Y	(5) 10Y-15Y	(6) 15Y+
DMO Surprise	-0.0972***	-0.126***	-0.109***	-0.138***	-0.134***	-0.122***
	(0.0282)	(0.0286)	(0.0261)	(0.0268)	(0.0268)	(0.0270)
Observations	77	77	77	77	77	77
R-squared	0.137	0.206	0.189	0.262	0.251	0.215

Panel B - Restricted sample, Corporate Bond Yields by Maturity

VARIABLES	(1) 1Y-3Y	(2) 3Y-5Y	(3) 5Y-7Y	(4) 7Y-10	(5) 10Y-15Y	(6) 15Y+
10Y Yield	0.436*	0.683***	0.627***	0.970***	1.008***	0.835***
	(0.242)	(0.195)	(0.134)	(0.115)	(0.111)	(0.140)
Observations	54	54	54	54	54	54
F-Stat	10.84	10.84	10.84	10.84	10.84	10.84

Panel C - Reduced Form, Corporate Bond Yields by Ratings

VARIABLES	(1) AAA	(2) AA	(3) A	(4) BBB
DMO Surprise	-0.116***	-0.106***	-0.139***	-0.135***
	(0.0268)	(0.0260)	(0.0261)	(0.0254)
Observations	77	77	77	77
R-squared	0.201	0.182	0.275	0.274

Panel D - Restricted sample, Corporate Bond Yields by Ratings

VARIABLES	(1) AAA	(2) AA	(3) A	(4) BBB
10Y Yield	0.715***	0.753***	0.892***	0.903***
	(0.131)	(0.127)	(0.113)	(0.110)
Observations	54	54	54	54
F-Stat	10.84	10.84	10.84	10.84

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. "iY-jY" measures the change in the yield of corporate bonds with maturity between i years and j years during the day of the event. The outcome variables in Panel B are the change in the yield of corporate bonds with rating specified in each column during the day of the event. "DMO Surprise" is the surprise in the Long Gilts Futures around the announcement of the DMO. The restricted sample only uses budget events. "10Y Yield" measures the change in a i years nominal zero coupon government bond yield during the day of the event and it is instrumented with "DMO Surprise". The models include a constant.

Table C.6: Corporate Bond Results Across Maturities and Ratings

Panel A - BBB vs AA Yield Difference

VARIABLES	(1) 1Y-5Y	(2) 5Y-10Y	(3) 10Y-15Y	(4) 15Y+
10Y Yield	0.238**	0.179**	0.232***	0.185***
	(0.119)	(0.0795)	(0.0844)	(0.0679)
Observations	77	77	77	77
F-Stat	21.87	21.87	21.87	21.87

Panel B - A vs AA Yield Difference

VARIABLES	(1) 1Y-5Y	(2) 5Y-10Y	(3) 10Y-15Y	(4) 15Y+
10Y Yield	0.326***	0.164**	0.410***	0.176***
	(0.106)	(0.0639)	(0.0957)	(0.0585)
Observations	77	77	77	77
F-Stat	21.87	21.87	21.87	21.87

Panel C - BBB vs AA Yield Difference - Restricted Sample

VARIABLES	(1) 1Y-5Y	(2) 5Y-10Y	(3) 10Y-15Y	(4) 15Y+
10Y Yield	0.148	0.0209	0.163*	0.132*
	(0.157)	(0.0855)	(0.0970)	(0.0742)
Observations	54	54	54	54
F-Stat	10.84	10.84	10.84	10.84

Panel D - A vs AA Yield Difference - Restricted Sample

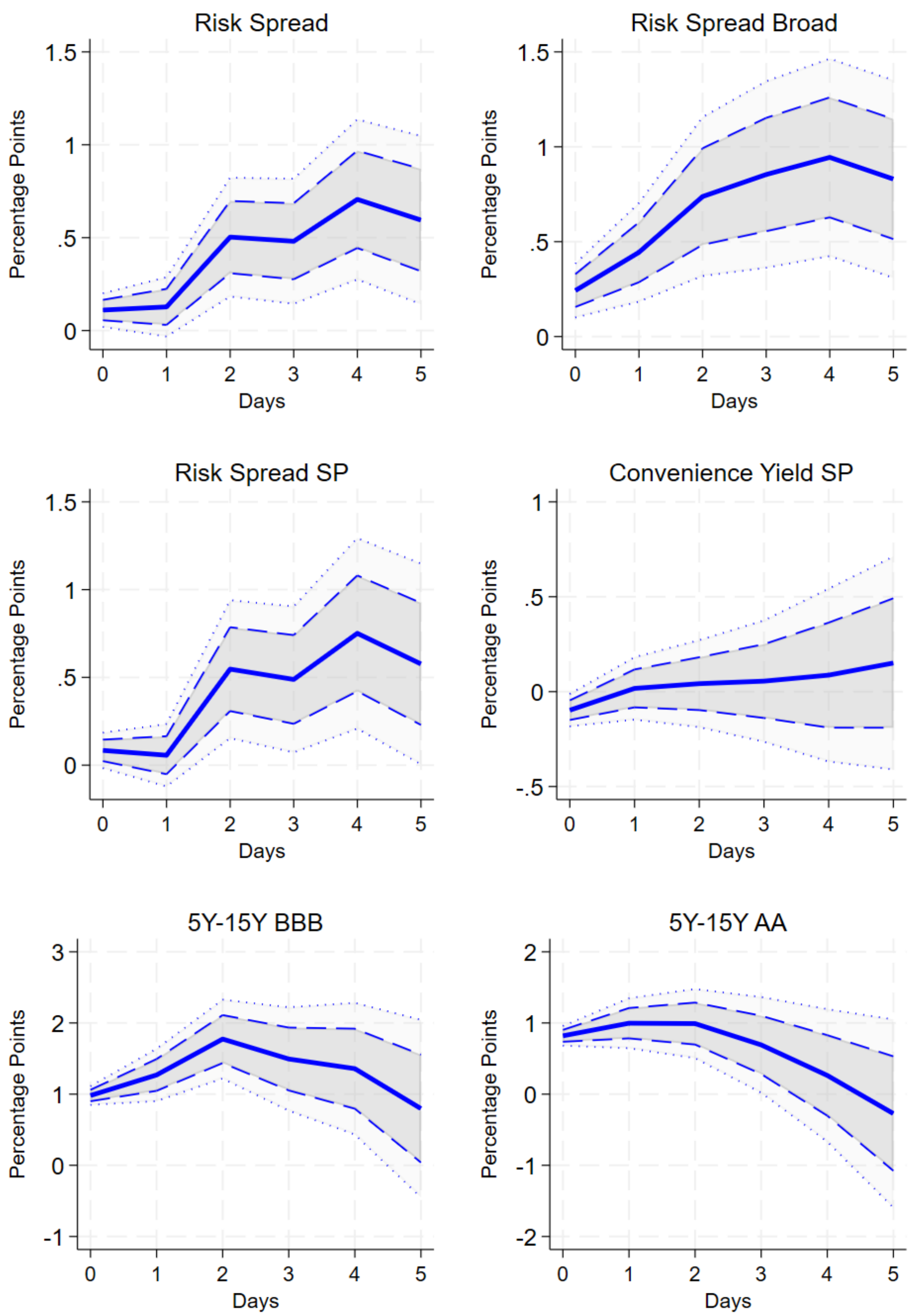
VARIABLES	(1) 1Y-5Y	(2) 5Y-10Y	(3) 10Y-15Y	(4) 15Y+
10Y Yield	0.0768	-0.00512	0.274**	0.125*
	(0.0948)	(0.0677)	(0.110)	(0.0687)
Observations	54	54	54	54
F-Stat	10.84	10.84	10.84	10.84

Panel E - AA Convenience Yield - Restricted Sample

VARIABLES	(1) 1Y-5Y	(2) 5Y-10Y	(3) 10Y-15Y	(4) 15Y+
10Y Yield	-0.0777	-0.122	-0.132	-0.0741
	(0.124)	(0.0990)	(0.117)	(0.0781)
Observations	41	41	41	41
F-Stat	10.14	10.14	10.14	10.14

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. The left-hand-side variables of Panels A and C are the change during the day of the event in the difference in the yield between a AA and BBB composite corporate bond. The left-hand-side variables of Panel B and D are the change during the day of the event in the yield between between a A and BBB composite corporate bond. The left-hand-side variables of Panel E are the change during the day of the event in the spread over benchmark (the gilts yield curve) of a AA composite corporate bond. "iY-jY" restricts the bonds in the indices to be between i years and j years. Panels C, D, and E use the restricted sample. "10*Y* Yield" measures the change in a 10-year nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant.

Figure C.2: LP-IV Yield Curve Results with Lags



Notes: 68 and 90 confidence intervals. "Risk Spread" measures the difference in yields between a AA and BBB composite corporate bond with maturity between 5 and 15 years. "Risk Spread SP" measures the difference in the spread over benchmark (the gilts yield curve) between a AA and BBB composite corporate bond with maturity between 5 and 15 years. "Convenience Yields SP" measures the spread over benchmark (the gilts yield curve) of a AA composite corporate bond with maturity between 5 and 15 years. "Risk Spread Broad" measures the difference in yields between a AA and BBB composite corporate bond across all maturities. "5Y-15Y BBB" ("5Y-15Y AA") measures the yield of corporate bonds with maturity between 5 years and 15 years with rating BBB (AA) during the day of the event. The each left-hand-side is measured with a long difference, the value at a given horizon less the value the day before the event. The variable which is instrumented is "10Y Yield" which measures the change in a 10 years nominal zero coupon government bond yield during the day of the event. This variable is instrumented with "DMO Surprise", the surprise in the Long Gilts Futures around the announcement of the DMO. The models include a constant and five lags of the daily growth in the left-hand-side variable.