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# Partisan politics and public debt: The importance of the ‘Whig Supremacy’ for Britain’s financial revolution

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It has become common for authors to argue that government commitment to repay debt depends upon institutions. In this article I present new econometric evidence which shows that in one prominent case, Great Britain after 1688, credibility depended more immediately upon partisan preferences. The ‘revolution’ in British public finance may indeed have been spurred forward by the constitutional changes of the Glorious Revolution, but it was only consolidated in 1715, almost three decades later, during a ‘Whig Supremacy’ where a single party established unchecked control over British political institutions. It mattered a great deal for the final outcome that the Whig party was intimately associated with government creditors while their opponents, the Tories, were not. I provide evidence of a structural break in both government costs of borrowing and Bank of England share prices that is consistent with this argument. Using an ARCH-in-mean model, I then show that the evolution of the Whig majority in the House of Commons provides a better explanation for the evolution of government credibility than does either the assumption of a simple structural break in 1715, or an explanation focusing strictly on political stability, and ignoring partisan preferences. These findings have broad implications for our understanding of the determinants of credibility.

## 1. Introduction

One of the major recent themes in historical studies of finance, development, and growth involves the link between credibility and institutions. Credible policy promises, it is said, depend upon the existence of institutions like a constitutional separation of powers or delegation to independent authorities. These restrain the ability of government officials to act opportunistically. As evidence of this link, authors often refer to the example of Great Britain after the Glorious Revolution of 1688, where constitutional changes limiting monarchical power appear to have triggered improved government access to credit. The seminal study by North and Weingast (1989) has been particularly influential in making this claim. A number of subsequent

studies have emphasised the link between representative institutions and government commitment in Early Modern Europe.<sup>1</sup> Several authors have also considered this issue for non-European cases.<sup>2</sup> However, arguments about political institutions as a source of commitment have been subject to criticism. Authors like O'Brien (2001) and Epstein (2000) argue that the British government's improved access to finance during the eighteenth century was actually a slow process and one dependent primarily upon technical reforms involving tax collection and debt management, rather than constitutional changes. Supporting these counter-arguments, in an interesting contribution Sussman and Yafeh (2003) show that the costs of borrowing for the British government remained high well after 1688. Finally, Clark (2005) has provided new wage data which argue against the idea that the Glorious Revolution triggered increased economic growth.

In this article I argue that when considering the revolution in British public finance, both the advocates of the 'constitutions and commitment' view and their critics have paid insufficient attention to the issue of partisan preferences; in other words who controls government and what societal interests constitute their support base. I present new econometric evidence that credibility in this area was not consolidated until a Whig coalition, which included government creditors, established durable control over Parliament. Credibility depended on the dominance of the Whigs after 1715, and it was not preordained after the Glorious Revolution of 1688 that they, and not the Tories, would establish supremacy. It should be noted that this article focuses on the question whether the Whig Supremacy led to increased credibility of debt repayment; I do not make a broader claim that the Whig Supremacy was associated with a general increase in the security of property rights, nor with a sudden increase in growth.<sup>3</sup>

To support my partisan preferences hypothesis I first show that there is evidence of a structural break in government costs of borrowing at the outset of the Whig Supremacy in 1715.<sup>4</sup> As described below, in order to measure government costs of borrowing, I use both the 'fiscal interest rate series' proposed by Sussman and Yafeh (2003) as well as a second series based on available yields on debt. A similar break can be observed for Bank of England share prices. Bank of England share prices serve as a good proxy for government commitment to repay debt during this period because the Bank's

<sup>1</sup> For examples, see Velde and Weir (1992), DeLong and Shleifer (1993), Hoffman and Norberg (1994), Sargent and Velde (1995), Greif (2001), Stasavage (2003), Acemoglu *et al.* (2005), and Weingast (2005).

<sup>2</sup> See Mauro *et al.* (2002), Summerhill (2004), and Razaghian (2001).

<sup>3</sup> Increased credibility of debt repayment might actually have slowed growth to the extent that heavy government borrowing crowded out private borrowing. See Williamson (1984) and Clark (2001).

<sup>4</sup> The term 'Whig Supremacy' comes from the title of the text by Williams (1939).

principal source of income involved its holdings of British government debt. The structural break I observe in 1715 supports my partisan hypothesis, but it might also be explained by other phenomena, such as the end of a lengthy period of warfare (in 1713), pre-1715 uncertainty over the royal succession, economic changes, or more generally the emergence of a stable political order. It should be emphasised that there will inevitably be difficulties assessing the importance of Whig dominance, given that a number of changes occurred around 1715.

In order to test my partisan hypothesis against these alternatives, I next present estimates of an ARCH-in-mean model, a technique commonly used to estimate determinants of asset yields. **Using this technique, one can model the factors that determine both the mean and the variance of a series, such as yields on government debt.** It is assumed that the variance of the series is serially correlated, and in addition, the estimate of the mean itself depends upon the conditional variance. This is a natural assumption for asset yields, where investors should require higher average returns on high volatility assets. The results of my ARCH-in-mean estimates show that the credibility of debt repayment after 1688 can actually be better explained by the evolution of the Whig majority in the House of Commons than by the simple assumption of a one-time structural break in 1715. I also demonstrate that credibility did not simply depend on the establishment of political stability after 1715. It mattered that the period after 1715 was one of Whig and not Tory hegemony.

My argument about partisan preferences draws on abundant historical research which emphasises the cleavage in British politics after 1688 between the Tory and Whig parties, two coalitions for which members tended to vote cohesively in Parliament and which shared features akin to modern political parties.<sup>5</sup> The Whig and Tory parties developed in a British social context that has been referred to as a 'divided society' with individuals divided over both economic and non-economic issues. The Tory party was dominated by landowners and advocated policies like reducing taxes on agricultural income that suited Great Britain's 'landed interest'. Because the land tax was necessary to service the rapidly growing stock of government debt, many Tories also openly railed against Britain's 'monied interest', at times calling for measures equivalent to a default on debt. In addition to their positions on financial issues, Tories also took common stands on non-economic issues involving monarchical prerogative, religious toleration, and involvement in foreign wars. In strong contrast to the Tory party, the Whig party was a heterogeneous coalition made up of both members of 'the monied interest' (in particular those who owned government debt) and those British

<sup>5</sup> In particular work by Williams (1939), Holmes (1967), Holmes and Speck (1967), Plumb (1967), Sedgwick (1970), Horwitz (1977), Speck (1977), Langford (1989), Carruthers (1996), Hoppitt (2000), Hayton (2002), and Pincus (2002).

landowners who shared similar preferences with the monied interest over issues like religious toleration, foreign policy, and constitutional reform. Credible commitment to service debt depended on the fact that members of the Whig party adhered to a party platform of continuing to service debt, favouring development of institutions like the Bank of England, and voting to maintain taxes necessary to repay debt.

The main observable implication of my partisan preferences hypothesis is that government costs of borrowing should logically have been lower during periods where it was expected that the Whigs would hold future control of the parliamentary majority, because Whig control would imply a lower risk of default. Since a default or suspension of interest payments would have had a major effect on the Bank of England's income, we would also expect to observe a lower dividend yield for Bank of England shares whenever it was expected that the Whigs would have future political control. In what follows I proxy for the expectation of future Whig control by using the current difference between the number of Whig MPs and the number of Tory MPs in the House of Commons.

An alternative to my partisan preference hypothesis is that yields on government debt depended above all on political stability. Rather than depending on the composition of the current majority, credibility may have instead depended on the establishment of large and stable majorities in Parliament irrespective of whether they were Whig or Tory. The implication here would be that large majorities are likely to survive for longer, so they will have longer time horizons and thus less incentive to take opportunistic actions like defaulting on debt obligations. This prediction does not contradict my partisan preferences hypothesis; the key empirical question is which effect appears to have been more important.

In addition to addressing general debates about institutions and credibility, this article also contributes to a more specific literature that has examined the impact of institutional change in Great Britain after 1688. Wells and Wills (2000) have shown that periods of Jacobite activity, where it was feared that the settlement of 1688 might be overturned by force, were associated with significant breaks in Bank of England share prices. Recent contributions by Broz and Grossman (2003) and Quinn (2005) have also considered the political economy of the Bank of England during this period. Both Clark (1996, 2005) and Sussman and Yafeh (2003) have presented evidence that they see as calling into question the idea that the constitutional changes of 1688 triggered significant economic changes.

In the remainder of the article, Section 2 describes the historical background of partisan conflict in Great Britain after 1688. Section 3 then examines whether there is evidence of a structural break in the costs of borrowing and in Bank of England share prices at the beginning of the Whig Supremacy. Section 4 presents my ARCH-in-mean estimates, and Section 5 conducts further tests regarding the effect of political stability. Section 6

considers the distribution of government debt holdings in the UK. Section 7 concludes.

## 2. Historical background

While recent scholarship on the political economy of eighteenth century Britain has focused on the constitutional changes of 1688, a great deal of work in political history has emphasised that the period was also marked by another major development, the emergence of cohesive political parties.<sup>6</sup> Here I briefly review partisan politics during this period.

The division between the Whig and Tory parties reflected the fact that opinions in British society after 1688 were sharply divided over a number of economic and non-economic issues. For one, there was a cleavage between those who advocated religious toleration (for Protestant denominations other than the Church of England), a limited monarchy, and engagement in conflict with France, compared with those individuals who emphasised obedience to the Church of England, the traditional rights of the monarchy, and limited engagement in foreign wars. Members of the Whig party tended to subscribe to the former set of views while members of the Tory party generally subscribed to the latter. Those associated with the Whig and Tory parties were also divided over a second, economic cleavage. The members of the Tory party came overwhelmingly from Britain's landed interest. In contrast, the Whig party was more heterogeneous; a majority of its members came from the landed interest, but a prominent minority came from the 'monied interest', the group of London-based financiers who invested in government debt after 1688.<sup>7</sup>

Historical scholarship has demonstrated that throughout the period considered here, the Whig and Tory parties voted as cohesive units in Parliament. In order to ensure party cohesion the two parties also had institutionalised mechanisms for party leaders to communicate to individual MPs as well as sanctions mechanisms for those voting against an established line. In terms of positions, the members of the Whig party consistently voted in favour of policies necessary to service government debt. Many members of the Tory party were openly critical of Britain's 'monied interest' in which ownership of debt was concentrated; they suggested that the British government's financial policies were exploiting 'the landed interest', and they at times adopted rhetoric favourable to suspension of debt payments and/or curtailing the role of the Bank of England. There is clear evidence that Whig

<sup>6</sup> The volume written by Hayton (2002) for the History of Parliament Trust presents the most extensive recent review of party politics in Great Britain after 1688, and of the evolution of historical debates about the importance of the Whig/Tory divide and the extent to which these two parties functioned cohesively at this time.

<sup>7</sup> See Holmes (1967), Horwitz (1977), De Krey (1985), and Stasavage (2003).



landowners supported continued taxation of land income, even though this went against their immediate economic interest, because doing so helped ensure that the Whig party would continue to act cohesively.<sup>8</sup> This allowed Whig landowners to achieve preferred outcomes on non-economic issues involving religious toleration, restraints on the monarchy, and engagement in wars against France. Stasavage (2003, ch.5) provides evidence on how this heterogeneous Whig coalition functioned, as well as reviewing specific examples of logrolls between different Whig groupings. Available evidence for a number of parliamentary votes during the 1702–1714 period shows that 88 per cent of Whig MPs consistently voted with the party line (Speck 1981). For the period between 1715 and 1742, Sedgwick (1970) shows that an average of 79 per cent of Whig MPs voted with their party. These are high level of voting cohesion, even if they may not be as high as those achieved by many contemporary political parties.

Conflict between Whigs and Tories during the years considered here can be divided into two clear periods. The first period, from 1688 to 1714, was one of fierce disputes and frequently shifting majorities in the House of Commons. The second period, from 1715 to 1759, was that of the Whig Supremacy where the Whig party established lasting control of Parliament. The study by Plumb (1967) has argued that the sudden emergence of political stability in England after 1715 was intimately linked to the triumph of a single political party. It should be acknowledged, however, that the divide between the two periods (1688–1714) and (1715–1759) also coincided with several other important changes. My empirical tests will also attempt to control for these other factors as determinants of government credibility.

In order to examine trends in partisan control, I have collected data on Whig and Tory representation in the House of Commons from several historical sources, and in particular the detailed histories financed by the History of Parliament Trust. Table 1 lists the number of Whig and Tory MPs following each election, as well as those MPs that cannot be easily classified into one of the two groups based on available historical information. The greater number of unclassified MPs before 1715 reflects the stricter classification method used by Hayton (2002) when compared with the studies cited for other periods.

During the period between 1688 and 1714 government indebtedness first became a political issue as the British monarchy began to contract long-term loans in order to finance military spending incurred as a result of the War of the League of Augsburg (1689–97) and the War of the Spanish Succession (1702–1713). While the Whig party in Parliament favoured the development of government borrowing in order to finance war expenditures, the Tory party was largely opposed to the development of a national debt. Its members were less eager to engage in continental wars, and they also railed

<sup>8</sup> The parliamentary diary of Sir Richard Cocks (Hayton 1996) provides particularly interesting evidence in this regard.

Table 1. *Partisan composition of the House of Commons, 1690–1760.*

	Whig		Tory	Unclassified
1690	241		243	28
1695	257		203	53
1698	246		208	59
1701 (Feb.)	220		248	45
1701 (Dec.)	248		240	24
1702	184		298	31
1705	233		260	20
1708	268		225	20
1710	168		329	14
1713	148		354	11
1715	341		217	0
1722	389		169	0
	Ministry Whig	Old Whig		
1727	415	15	128	0
1734	330	83	145	0
1741	286	131	136	0
1747	351	92	115	0
1754	368	42	106	26

Sources: Hayton (2002), Sedgwick (1970), Namier and Brooke (1964), Holmes (1967) and Holmes and Szechi (1993). For each election figures apply to situation after petitions on contested elections were heard.

against the creation of the land tax, a tax on agricultural income designed to service the debt.<sup>9</sup> Some Tories on occasion spoke openly of defaulting on government debt.<sup>10</sup> The Whigs and Tories also had different opinions about the desirability of new institutions like the Bank of England. Whig members of the House of Commons were instrumental in the Bank’s creation and in subsequently renewing its charter and extending its privileges. In contrast, a number of Tories spoke openly of abolishing the Bank.<sup>11</sup> Given the differing positions of the two parties, it is not surprising that shifts in their electoral fortunes appear to have had significant effects on financial markets. In the run-up to the Tory electoral landslide of 1710, Bank of England share prices dropped precipitously.<sup>12</sup> In addition, the Tory ministry

<sup>9</sup> Hoppit (2000, p. 50) suggests of this period that ‘The level of the land tax was, indeed, to become the litmus test of a government’s respect for the landed interest’.

<sup>10</sup> For an example, see Jonathan Swift’s well-known tract *The Conduct of the Allies* (1711).

<sup>11</sup> This was the case of a Tory backbench group known as the October Club.

<sup>12</sup> See Morgan (1921) for an in-depth discussion of the election of 1710 and the effect of the Tory landslide on financial markets. As noted above, Wells and Wills (2000) have also identified significant breaks in Bank of England share prices during periods of Jacobite activity before 1715, which is consistent with my partisan argument to the extent that the Jacobites were more closely associated with the Tories than the Whigs (remembering of course that only a small minority of Tories probably had Jacobite sympathies). We also observe a significant downward break in Bank of England share prices that is contemporaneous with the Jacobite rebellion of 1745.



after October 1710 found itself borrowing at higher rates of interest than its Whig predecessor (Dickson 1967).<sup>13</sup> There is clear evidence that a large number of Bank of England directors in the period before 1715 were Whigs and very few were Tories (De Krey 1985) identified 30 Whig directors and only 3 Tory directors). Given the close association between the Bank of England and government debt, this may also provide an indication of the relative balance between Whigs and Tories in terms of direct ownership of government debt.<sup>14</sup>

The period between 1715 and 1759 was dramatically different from the preceding years as the Whig party established an unassailable majority in the House of Commons. The election of January 1715 produced a landslide in favour of the Whigs, and it followed the accession to the throne of George I, the Elector of Hanover, who was himself dependent on the Whigs for his selection as King.<sup>15</sup> In contrast, the Tories were marginalised beginning in 1715, with their lost popularity stemming in no small part from the fact that a number of their members had been associated with the Jacobite rebellion of 1715. All the evidence suggests that during its long period of dominance after 1715, the Whig party remained very closely associated with the financial interests who were the British government's principal creditors. The number of directors of the Bank of England who were MPs increased.<sup>16</sup>

While after 1715 Whigs and Tories continued to be divided over issues of public finance, it would be inaccurate to suggest that their positions on other issues remained unaltered. A number of authors have argued that divisions in Great Britain over issues like religious toleration and the status of the monarchy gradually became less salient. In addition, many Whigs altered their previous attitudes with regard to civil liberties and restraints on the executive. So, for example, the Riot Act of 1715 was passed by a Whig majority in Parliament, as was the Septennial Act of 1716, which made Parliament less immediately accountable to the electorate (Kenyon 1977). During the tenure of Robert Walpole, the Whig party leadership also became increasingly associated with the use of government patronage, and in other

<sup>13</sup> As part of its effort to raise funds the Tory Ministry in 1711 created the South Sea company, a project which gave investors in the company certain trading privileges in exchange for funds. One might see this as an institutional evolution analogous to the creation of the Bank of England by the Whigs. However, there was at least one significant difference. Unlike the Bank of England, the South Sea Company was created as an involuntary conversion of certain short-term debts to government. Dickson (1967) suggests that 'The establishment of the South Sea Company got rid of the floating debt, with the grudging acquiescence of the financial community in the City'.

<sup>14</sup> It should be acknowledged that the idea of a fundamental difference between Whigs and Tories over government financial policy has not gone unchallenged. Colley (1982) argued that such distinctions were overdrawn.

<sup>15</sup> George I's accession derived from the Act of Settlement of 1701.

<sup>16</sup> Based on data compiled by De Krey (1985) and Sedgwick (1970).

cases outright corruption, to maintain its majority in Parliament. This was true with regard to both elections to the House of Commons and incentives for MPs to vote with the Ministry. Finally, Walpole also followed a deliberate policy of drawing an increasing share of revenue from customs and excise taxation, helping to stave off increases in the land tax that had proved so politically unpopular with the Tories. This was combined with institutional innovations in the management of public debt.

The year 1715 was also a turning point in that parliamentary elections were subsequently held far less frequently than was the case beforehand. This provides an additional reason why a number of authors have referred to the period 1690–1714 as one of political instability and 1715–1760 as one of stability. Infrequent elections helped ensure that potential shifts in parliamentary majorities were rare. It should be noted, however, that this institutional change was not an exogenous development. It was a massive Whig majority in the Commons that passed the Septennial Act of 1716, increasing the maximum period between elections to seven years and replacing the Triennial Act of 1694.

One final point regarding my partisan preferences hypothesis is that it clearly applies to a context where government debt is owned by a concentrated group. Once the pattern of debt ownership changed, then we should also expect the relationship between partisan control and credibility of debt repayment to have changed. I return to this issue in Section 6.

### *2.1. Endogeneity of the Whig Supremacy*

Ultimately the emergence of a durable Whig majority after 1715 must have been the outcome of some fundamentals, economic, political, or other. As a last step in considering the historical background, it seems important to ask to what extent the Whig supremacy was endogenous to economic fundamentals. Growth of trade and commerce both before and after 1688 might have increased the numbers and influence of members of the 'monied interest', leading inevitably to the emergence of a Whig majority in Parliament.<sup>17</sup> One key fact pointing against the idea that the Whig supremacy was purely endogenous to economic fundamentals, however, is that throughout the period from 1688 to 1759 the 'monied interest' remained a small minority in Parliament. If economic growth had led inexorably to its dominance by 1715 we might have expected to see a steady increase in the number of 'monied men' in the House of Commons after 1688, in particular given opportunities for such individuals to gain parliamentary seats through corruption of borough electors. Based on the data in Hayton (2002),

<sup>17</sup> In making this argument one could also draw on the geographical perspective on political divisions during the English Civil War by Hochberg (1984). I would like to thank Barry Weingast for suggesting this point.

no such increase was observed. In fact, it seems difficult to explain how the monied interest gained influence in Parliament without referring to the non-economic issues, such as common religious attitudes, that drew both Whig landowners and Whig monied men together. This is not to deny the possibility that growth in trade and commerce ultimately helped strengthen the position of the Whigs; I am simply suggesting that by referring to economic developments alone, it would be difficult to explain why the Whigs triumphed over the Tories as early as 1715.

As a final endogeneity issue, one might also want to consider to what extent the decline in interest rates on British public debt after 1715 was endogenous to international conditions, such as a shift in Dutch interest rates or a change in international capital markets more generally, given the high level of integration of London with continental markets that has been identified by Neal (1990).<sup>18</sup> My empirical tests will control for the effect of changes in Dutch interest rates by examining the spread between British interest rates and interest rates on Estates of Holland debt. One should also emphasise that while foreign purchases of British government debt were common, the dependence of the early eighteenth century British state on foreign capital should not be exaggerated. Based on the careful estimates provided by Wright (1997, p. 657), even as late as 1750 only 13.8 per cent of British government debt was held by foreigners. Finally, one could also note that Dutch investors in the second half of the eighteenth century also made significant purchases of French government securities, but the data collected by Velde and Weir (1992) suggest a 2 per cent average premium on French debt relative to British debt at this time. As a result, changing international conditions cannot explain the emergence of this premium for French debt relative to British debt.

### 3. The Whig Supremacy as a structural break

I begin my empirical tests by examining whether there is evidence consistent with the idea of a structural shift in government credibility in 1715. This serves as an initial test of my partisan hypothesis before proceeding to the ARCH-in-mean models in Section 4. It is useful to begin by noting that the choice of time period here (1688–1759) is necessitated by the lack of data for the pre-1688 period. The principal reason for this is that before 1688 the British Crown did not have a regular system of long-term borrowing, though available data on pre-1688 loans secured by revenue suggest that nominal interest rates for these contracts were similar to those that prevailed during

<sup>18</sup> There is little evidence that the fall in interest rates in British debt was driven by a drop in domestic interest rates on borrowing, based on the data presented by Quinn (2001) and Homer and Sylla (1996, p. 165).

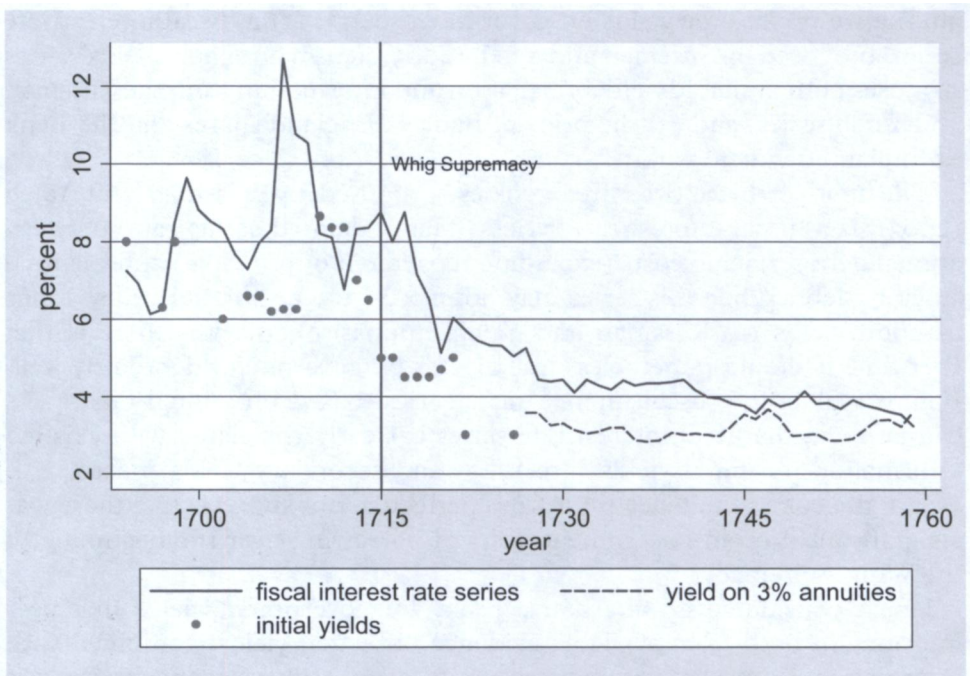


Figure 1. *British Government costs of borrowing, 1694–1759.*

*Notes and Sources:* Cost of borrowing calculated following the method proposed by Sussman and Yafeh (2003). Initial yields from Cohen (1953), Dickson (1967), and Homer and Sylla (1996). See text for description.

the period between 1688 and 1715.<sup>19</sup> Available data do allow us to examine more closely how quickly interest rates dropped after 1688.

### 3.1. *Proxies for yields on government debt*

One of the problems with measuring market expectations of British borrowing credibility after 1688 is that we lack a continuous series of secondary market yields on identical debt instruments. Secondary market yields on 3 per cent government annuities are available from 1727 (in 1753 these became the debt instrument known as the consol). These yields are indicated by the dotted line in Figure 1. For the period before 1727 we have incomplete data available from Cohen (1953), Dickson (1967), and Homer and Sylla (1996) on initial yields for government debt issues. In Figure 1 this initial yields data is shown by the small circles for the period 1694–1727. In order to overcome the incomplete nature of this data, I consider three

<sup>19</sup> Homer and Sylla (1996, p.126) report that Charles II was able to borrow at 8–10 per cent secured by revenue in 1665. In 1680 he was able to borrow at 6 per cent.

alternative proxies for yields on government debt : (1) a 'fiscal interest rate series' proposed by Sussman and Yafeh (2003), (2) an 'available yields' series that uses both available yield information and information from the Sussman and Yafeh series, and (3) the price of Bank of England shares and the Bank of England dividend yield.

The first of the above three proxies, proposed by Sussman and Yafeh (2003), is a 'fiscal interest rate series'. This is defined as the ratio between annual debt servicing costs (excluding repayment of principal) and the total stock of debt. While this series may not closely track short-term deviations in bond yields (as Sussman and Yafeh emphasise), the idea here is that over time it should nonetheless track yields on government debt fairly well. Figure 1 plots the 'fiscal interest rates series' based on annual data.<sup>20</sup> As can be seen, the fiscal interest rate series is clearly correlated with existing information on initial yields (pre-1727) and secondary yields (post-1727), even if the correspondence is far from perfect, and it suggests that there was a significant drop in government costs of borrowing near the beginning of the Whig supremacy.

I next considered an alternative proxy for government yields that uses information both from available evidence on actual yields, combined with information from the fiscal interest rate series. This second series was constructed in the following three steps. First, for the 33 years in which secondary market yields were available I used these yields. Then, I merged this data with the available data on initial yields from the pre-1727 period. This added a further 23 observations, leaving 10 observations missing from the sample period (1694–1759). Finally, I imputed the missing observations by using a linear regression of the available observations on Sussman and Yafeh's fiscal interest rate series. The result of this exercise was extremely close to that obtained by simply using linear interpolation.

The third proxy involves Bank of England shares. The price of these shares should have been affected by changes in government debt yields, given that a significant share of the Bank's income at this time was derived from income on government debt. In addition to providing a continuous series, the Bank of England data is also available at higher than annual frequency. For Bank of England shares, in this section I focus on identifying whether there is a break in the share price based on end of month prices compiled by Neal (1990) and originally published in Castaing's *The Course of the Exchange*. In the next section's ARCH-in-mean tests I focus on the dividend yield on Bank of England shares, which is simply the ratio between the current dividend payment (in annualised terms) and the share price. As I will discuss below, focusing on the dividend yield fits with existing literature in financial econometrics, and it facilitates comparison with my government cost-of-borrowing estimates. The pairwise correlation between

<sup>20</sup> Data from Mitchell (1988).



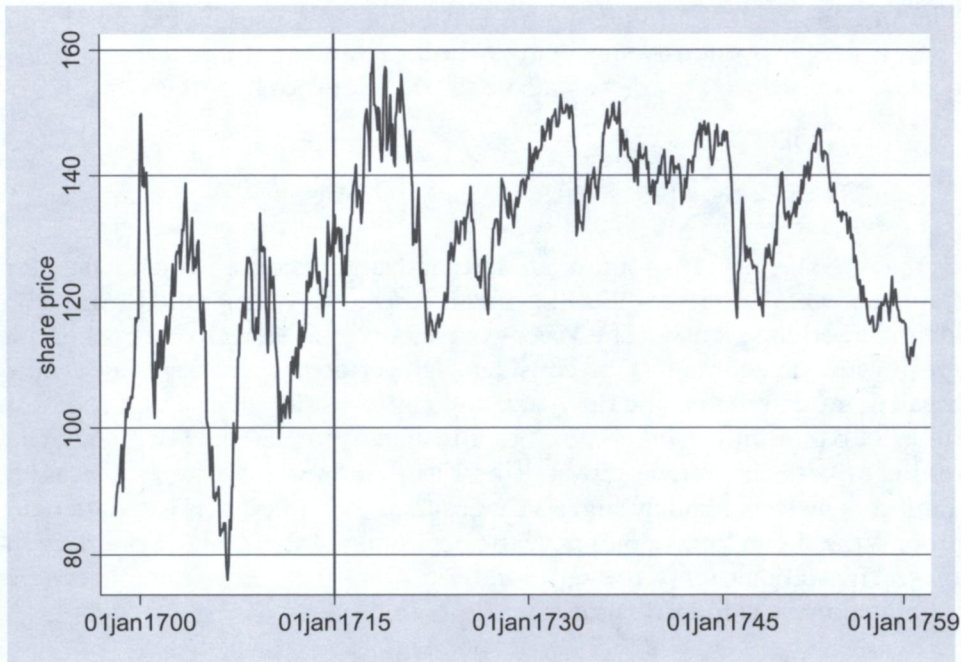


Figure 2. *Bank of England share prices, 1698–1759.*

*Notes and Sources:* End of month share price based on data collected by Neal (1990). See text for description.

the annual average for the Bank of England dividend yield and the yield on 3 per cent government annuities is high (0.64). The evolution of Bank of England share prices between 1698 and 1759 is shown in Figure 2, where visual inspection suggests a clear break in the series near the beginning of the Whig Supremacy.

3.2. *Tests for structural breaks*

I next tested more formally whether each of the above three series had a structural break at the beginning of the Whig Supremacy. To do so I used several tests commonly employed to both identify the timing of series breaks and to test for unit roots. It has been observed that many time series that appear to have unit roots may actually be better characterised as stationary series with a structural break. I first followed the testing procedure proposed by Perron (1989). The specification used to test for structural breaks is shown in expression (1) below (with the number of lags based on the Bayesian Information Criterion). Under the null hypothesis, each series has a unit root and a constant rate of drift, with no structural breaks. Under the alternative hypothesis the series is trend-stationary with a structural break at time  $t_b$ .



The variable  $B$  takes a value of 1 for all values of  $t \geq t_b$ . The Perron (1989) test involves exogenously specifying  $t_b$  and then using the  $t$ -statistic on the coefficient test  $\beta_1 = 1$  as a test statistic for the unit root hypothesis.

$$\begin{aligned} H_0 : i_t &= \beta_0 + i_{t-1} + \varepsilon_t \\ H_A : i_t &= \beta_0 + \beta_1 i_{t-1} + \beta_2 t + \beta_3 B + \sum_{i=1}^k \gamma_i \Delta i_{t-i} + \varepsilon_t \end{aligned} \quad (1)$$

As a next step, I adopted an alternative procedure which tests for stationarity of the series while allowing the most likely structural break to be identified endogenously. The Zivot-Andrews (1992) test involves using the specification in equation (1) to consider each period in the series as a possible break point and then using the  $t$ -statistic on the test  $\beta_1 = 1$  as a unit root test statistic, based on the break point that results in the largest  $t$ -statistic. The results of both the Perron test and the Zivot-Andrews test are presented in Table 2. The tests strongly suggest that each of the three series is a stationary process that has a break point near the beginning of the Whig Supremacy in 1715. The stationarity of the series indicates that their determinants can be estimated using standard regressions in levels.

### 3.3. *The possibility of credit rationing*

While this article focuses on interest rates, because of the possibility of credit rationing one might also want to consider borrowing quantities as a measure of credibility. North and Weingast (1989) and Robinson (1998) have suggested that the post-1688 change may have had as much to do with an increased access to funds as with a fall in interest rates.<sup>21</sup> This is difficult to assess in full, given that the period before 1688 was one where the British Crown was less engaged in international conflict, and thus less in need of borrowing than was the case during the wars after 1688. Low pre-1688 borrowing may have been attributable to rationing, but it may also have been simply due to a lack of demand. The idea that there was an important shift in demand, and not in just the supply of funds, after 1688 is supported by the fact that the War of the Spanish Succession (1702–1713) prompted four European powers (Austria, Britain, France, and Spain) to assume unprecedented large debt burdens, yet it is generally emphasised that only Britain was successful in establishing credibility for debt repayment.<sup>22</sup>

<sup>21</sup> One could use the theoretical model provided by Ghosh *et al.* (2000) to demonstrate the general conditions under which we might expect reduced incentives for a government to voluntarily default to produce both a lower interest rate and an increase in the quantity of credit supplied.

<sup>22</sup> This observation about the War of the Spanish Succession has been made by Carlos *et al.* (2005), though not with regard to credit rationing. If we take the example of France, using the estimates by Félix (1994) for total debt stock at the death of Louis XIV and estimates

Table 2. Tests for structural change.

Series	Perron (1989) test			Zivot and Andrews (1992) test		
	Break date (exogenous)	Test statistic $\beta_1 = 1$	Coefficient on break $\beta_3$	Break date (endogenous)	Test statistic $\beta_1 = 1$	Coefficient on break $\beta_3$
Fiscal interest rate series (1694-1759, n = 66)	1715	-5.06**	-0.78* (0.39)	1718	-6.12**	-1.47** (0.40)
Available yields (1694-1759, n = 66)	1715	-5.58**	-1.33** (0.33)	1715	-5.58**	-1.33** (0.33)
Bank of England share price (1698-1759, n = 743)	1/1715	-4.61**	1.59** (0.61)	5/1714	-4.77**	1.74** (0.60)

*Notes and Sources:* Fiscal interest rate series calculated as described in the text, following the method proposed by Sussman and Yafeh (2003). Available yields series calculated as described in the text. Bank of England share price represents end of month prices drawn from Neal (1990). \*, \*\* represent significance at the 5 per cent, and 1 per cent levels. For the test statistics these are based on the critical values reported by Perron (1989) and Zivot and Andrews (1992) respectively. For the break coefficients these are based on standard probabilities for two-tailed t-tests.

In addition to considering 1688 as a watershed for credit rationing, we should also ask the same question about the beginning of the Whig Supremacy in 1715. One way to do this is to consider the level of debt that the British Crown was allowed to accumulate as a multiple of annual revenues. Beyond a certain level, creditors might begin to ration funds. Based on this evidence, one can conclude that the Whig Supremacy was associated with a dramatic increase in the quantity of credit available to the Crown. At the end of the War of the Spanish Succession in 1713 the ratio between public debt and annual revenue was 6.0. By the end of the Seven Years War in 1763 this ratio had more than doubled to 13.5.

#### **4. ARCH-in-mean estimates of borrowing costs and share prices**

The structural break in government costs of borrowing and in Bank of England share prices coincides with the beginning of the Whig Supremacy in 1715, but it also coincides with several other events that might explain the shift in borrowing costs. In this section I will demonstrate that the size of the Whig majority in the House of Commons actually provides a better predictor of each series than does the specification of a simple structural break in 1715. I concentrate first on estimating a model using annual data for the 'fiscal interest rate series' and the 'available yields' series.

##### *4.1. Partisan preferences and the cost of borrowing*

Standard asset pricing theory suggests that risk-averse investors will be concerned with both the expected return on an asset as well as the variance of the return. As a result, when investigating determinants of the cost of government borrowing in eighteenth century Britain, it makes sense to consider how factors like partisan politics may have influenced both the mean and the variance of returns. Theories of asset pricing also suggest that there will be a direct relationship between the expected return on an asset and the expected variance of this return. The greater the expected variance, the higher the return investors will require to hold the asset. Engle *et al.* (1987) proposed a way of modelling this problem econometrically, the ARCH-in-mean model, which builds upon the ARCH model (autoregressive conditional heteroskedasticity) first formulated by Engle (1982). In equation (2) below  $y_t$  represents the log of the one-period excess return

by Forbonnais (1758) for gross revenues, the French ratio of debt to revenues in 1713 would have actually been equal to 10.7, significantly higher than the British figure of 6.0 for the same period. If debt was compared to GDP the two countries would have had more similar ratios (given the larger size of the French economy at this time).

for holding an asset relative to a risk-free asset. The parameters  $\mu_t$  and  $\varepsilon_t$  represent the risk premium on the asset and a disturbance term respectively. In an ARCH-in-mean model the risk premium is then expressed in terms of a constant  $\beta_o$ , and the conditional standard deviation of the disturbance term, as shown in equation (3). In the most basic specification the conditional variance of the disturbance term is then modelled as a function of past squared realisations of disturbances as shown in equation (4). The idea here is that following a large disturbance (a large realisation of  $\varepsilon_{t-1}^2$ ) the return on the asset is likely to remain volatile in the next period.

$$y_t = \mu_t + \varepsilon_t \quad (2)$$

$$\mu_t = \beta_o + \beta_1 \sqrt{\text{Var}[\varepsilon_t | \varepsilon_{t-1}]} \quad (3)$$

$$\text{Var}[\varepsilon_t | \varepsilon_{t-1}] = \gamma_o + \gamma_1 \varepsilon_{t-1}^2 \quad (4)$$

In what follows I estimate the conditional mean and the conditional variance of the excess yield on British government debt, relative to the yield on debt of the Estates of Holland. As suggested by Sussman and Yafeh (2003), the yield on Estates of Holland debt can be proxied using the same type of fiscal interest rate series used for the British case.<sup>23</sup> The idea here is that by the beginning of the eighteenth century, the Estates of Holland had already established a reputation for consistently servicing its debt, and as a consequence it is the best available proxy for a risk-free asset.

To estimate the conditional mean and variance of excess yields I use a specification that includes several additional independent variables.

$$y_t = \beta_o + \beta_1 y_{t-1} + \beta_2 B_{1715} + \beta_3 \text{whig}_t + \beta_4 g_t + \beta_5 \text{debt} + \beta_6 \sigma + \varepsilon_t \quad (5)$$

$$\sigma_t^2 = \exp(\gamma_1 + \gamma_2 B_{1715} + \gamma_3 \text{majsize}_t) + \gamma_4 \varepsilon_{t-1}^2 \quad (6)$$

Equation (5) presents the conditional mean equation for excess yields on British debt  $y_t$ , which is defined as the difference between the log of the yield on British debt and the log of the yield on Estates of Holland debt.<sup>24</sup> In addition to a lagged dependent variable, the equation contains a dummy variable  $B_{1715}$  for the structural break of 1715.

The variable *whig* is designed to test the partisan preferences hypothesis. It represents the difference between the number of Whigs and the number of Tories in the House of Commons in a given year. As discussed in the introduction, this is included as a proxy for the expected probability of future Whig control, which should in turn influence the expected probability

<sup>23</sup> I reconstructed this spread from the same data source <www.le.ac.uk/hi/bon/ESFDB>.

<sup>24</sup> The fact that there are several years at the end of the sample where the spread between British and Estates of Holland debt is negative necessitated using the specification  $y_t = \ln(r_{uk}) - \ln(r_{hol})$ .

of default. It is possible to use data from the period to show that the variable *whig* is a strong predictor of future Whig control of Parliament. Since a higher expected probability of default would prompt investors to require a higher yield in order to hold government debt, we would expect *whig* to have a negative coefficient.

In equation (5) the variables *g* and *debt* are two economic controls that may also affect the yield. The former represents the deviation of government spending (in real terms and relative to GDP) from trend. This should be positively correlated with costs of borrowing.<sup>25</sup> The variable *debt* represents British government debt as a share of trend GDP, and it can be expected to have a positive coefficient to the extent that high levels of debt imply a greater risk of default. The final variable in the mean equation  $\sigma_t$  represents the estimated conditional standard deviation of the series. This is designed to control for the fact that risk-averse investors will need to be offered a higher yield if they are to hold an asset for which the expected variance is high. Inclusion of this variable also allows for verifying that any conclusions about the effect of my partisan preference variable *whig* remain robust even when one controls for the effect of increased expected volatility on the conditional mean.

Equation (6) models the conditional variance of costs of borrowing. It includes a constant, a structural break in 1715, the variable *majsize*, and an autoregressive term. The variable for the structural break is included in order to control for the possibility that the break observed in Section 3 may also have influenced the conditional variance of costs of borrowing. The variable *majsize* represents the absolute size of the Commons majority, and it is simply the absolute value of *whig* since there were only Whigs and Tories in the Commons at this time. The logic for including *majsize* is as follows. If the yield investors require to hold government bonds is influenced by the current partisan composition of Parliament, then whenever an election results in a realignment between the Whig and Tory parties, we should observe a shift in this yield. Electoral shifts will therefore be associated with an increased unconditional variance in yields. If investors expect that changes in majority are more likely to take place when the current majority is small, then the conditional variance of yields should be negatively correlated with *majsize*. We can support this with political data from the period. Using a probit model with selection, it is possible to show that *majsize* is a highly significant predictor of a change in parliamentary majority.

As an alternative to the specification presented above, one might want to consider whether the variable *whig* should also enter the variance equation. If *whig* is proxying for the probability of a default, then a change in this probability should affect both the conditional mean and the conditional

<sup>25</sup> A similar measure was used in a study of determinants of British interest rates by Barro (1987).

variance of  $y_t$ . I consider this possibility in Section 5 below, concluding in favour of the present specification. Section 5 also considers the effect of entering *majsize* into the mean equation to capture the effect of political stability.

Table 3 presents maximum likelihood estimates of the ARCH-in-mean model. In the mean equation for model (1) the partisan variable *whig* has a negative and statistically significant coefficient, implying that larger Whig majorities in the House of Commons were associated with lower government costs of borrowing. This estimated effect of partisanship on yields is also substantively significant. Based on the full model (col. 1 in Table 3), if the spread between British and Dutch costs of government borrowing was at its pre-1715 average of 4.7 percentage points, then the estimated long-run effect of a shift from a 150 seat Tory majority to a 150 seat Whig majority would be a reduction in the spread to 0.9 percentage points (this holds the indirect effect of *majsize* from the variance equation constant).

The result for the mean equation also shows that, as we would expect, the coefficient on the volatility term  $\sigma_t$  is positive and statistically significant, implying that higher expected volatility prompts investors to require a higher yield for holding debt. The negative coefficient on exceptional government spending in the mean equation is counter-intuitive, as we would expect that higher government borrowing should drive up interest rates. The main reason for this result seems to involve the fact that the fiscal interest rate series does not accurately track the increase in interest rates observed in the 3 per cent annuities series for the War of the Austrian Succession (1740–48) and the Seven Years' War (1756–63). As can be seen from comparison with model (4) in Table (3), the 'available yields' series accurately captures the increase in interest rates during this period, and in model (4) the coefficient on exceptional government spending has the expected positive sign.<sup>26</sup>

When we consider the estimates of the variance equation for model (1) in Table 3, we observe that as predicted, partisanship also mattered for the conditional variance of yields. The coefficient on the variable *majsize* is negative and highly significant, implying lower expected variance of costs of borrowing during periods where either the Whig party or the Tory party held a large majority in the House of Commons. As an example, taking into account both the direct effect on yields of *whig* in the mean equation, as well as the indirect effect on yields of *majsize* in the variance equation, a shift from a 50 seat Tory majority to a 250 seat Whig majority would reduce the spread between British and Dutch yields from 4.7 to 0.1 percentage points. The

<sup>26</sup> I also explored the possibility that exceptional government spending is itself endogenous to the interest rate, and this simultaneity bias might also be influencing the results. Attempts to instrument for exceptional spending with French military spending, as well as with various lags, provided very similar results.



Table 3. *ARCH-in-mean estimates of government bond yields: 1694–1759.*

Dependent variable →	Fiscal interest rate series			Available yields series		
	(1)	(2)	(3)	(4)	(5)	(6)
Mean equation						
$y_{t-1}$	0.523 (0.073)	0.896 (0.041)	0.626 (0.072)	0.416 (0.096)	0.722 (0.090)	0.496 (0.081)
$\beta_{1715}$ (structural break)	0.101 (0.012)	−0.141 (0.350)		−0.289 (0.118)	−0.190 (0.045)	
$whigt$	−0.00092 (0.00023)		−0.00056 (0.00014)	−0.00041 (0.00023)		−0.00083 (0.00020)
$g_t$ (exceptional spending)	−2.17 (0.47)	−0.295 (0.923)	−2.05 (0.57)	0.903 (0.706)	1.78 (0.66)	1.38 (0.55)
$debt_t$ (share GDP)	0.103 (0.112)	0.031 (0.190)	0.175 (0.110)	0.293 (0.195)	0.037 (0.133)	0.041 (0.117)
$\sigma_\epsilon$ (conditional std. dev.)	1.45 (0.47)	−0.23 (2.81)	1.47 (0.50)	0.765 (0.435)	0.028 (0.207)	0.271 (0.364)
Constant	0.134 (0.082)	0.183 (0.544)	0.068 (0.071)	0.186 (0.061)	0.155 (0.31)	0.173 (0.064)
Variance equation						
$\beta_{1715}$ (structural break)	1.30 (1.34)	−2.06 (0.45)		1.82 (1.89)	−0.55 (1.28)	
$majsize_t$	−0.019 (0.006)		−0.0114 (0.0005)	−0.013 (0.007)		−0.0057 (0.0030)
$\epsilon_{t-1}^2$ , ARCH(1) term	0.474 (0.197)	0.070 (0.134)	0.190 (0.105)	0.261 (0.208)	1.31 (0.40)	0.702 (0.383)
Constant	−2.92 (0.38)	0.182 (0.544)	−3.02 (0.14)	−3.77 (0.45)	−6.14 (1.24)	−4.29 (0.77)
Log likelihood	76.7	60.3	74.0	67.3	63.8	63.7
Akaike Information Crit.	−131.3	−102.6	−130.0	−112.5	−109.7	−109.4
Bayesian Information Crit.	−107.2	−82.9	−110.3	−88.4	−89.9	−89.7

Notes: Number of observations = 66. The variable *whigt*, is defined as the difference between the number of Whigs and the number of Tories in the House of Commons. The variable *majsize*, is equal to the absolute value of the difference between Whigs and Tories. Standard errors in parentheses.

variable *majsize* remains statistically significant even though the regression includes a dummy variable for a structural break in 1715.

The next two columns in Table 3 consider two restricted versions of model (1). Model (2) excludes the political variable *whig* from the mean equation while also excluding the political variable *majsize* from the variance equation. As can be seen, while the two coefficients on the structural break variable are now negative, only the coefficient in the variance equation is statistically significant, and in addition this restricted model provides a much poorer fit with the data than does model (1). This can be seen by the different model selection criteria at the bottom of the table. When we turn to Model (3), which excludes the break variable from both the mean and variance equations, we see that the coefficient on *whig* remains highly significant in this specification. Interestingly, Model (3) also provides a similar overall fit with the data to Model (1). Based on the Bayesian Information Criterion, one would actually prefer Model (3).

The next three columns in Table 3 (models 4, 5, and 6) repeat the exercise while using the 'available yields' series as dependent variable. As can be seen, the results with regard to the political variables are quite similar to those obtained using the fiscal interest rate series as dependent variable. The coefficient on *whig* is negative and borderline statistically significant  $p = 0.08$  in the full specification. Based on this estimate, a shift from a Tory majority of 150 to a Whig majority of 150 would result in a decrease in the spread between British and Dutch government bond yields from 3.5 percentage points (the pre-1715 average) to 1.8 percentage points. An identical increase in *whig* from a 50 seat Tory majority to a 250 seat Whig majority (thus increasing *majsize* by 200) would be estimated to reduce the spread to 1.5.<sup>27</sup>

The regression estimates in Table 3 provide compelling evidence for the effect of Whig majorities on government bond yields. For these models standard tests indicated that there was no serial correlation in the residuals, nor evidence of higher order ARCH effects.

#### 4.2. Partisanship and Bank of England dividend yields

If partisan considerations influenced yields on government debt between 1688 and 1759, then we should also expect to observe that partisanship influenced the Bank of England dividend yield (monthly data are used in this section). We can derive an empirical model for Bank of England shares from a standard 'Gordon growth model' where the stock price is expressed in terms of the present value of expected future dividends. The stock price in

<sup>27</sup> One final thing to note is that in Table 3 (models 4–6), the coefficient on the volatility term  $\sigma_t$  is positive as we would expect, but it is not statistically significant at conventional levels ( $p = 0.079$  for model 4). I also considered estimating these models without the volatility term and obtained similar results with regard to partisanship.

equation (7) is expressed in terms of the expected dividend payment in the next period  $D_{t+1}$ , the required rate of return  $R_t$ , and the growth rate of dividends  $G$ . The relationship in (7) will apply whenever the expected growth rate of dividends is constant.<sup>28</sup> In those cases where expected dividend growth is equal to zero, the share price reduces to the ratio between the expected dividend payment in the next period, divided by the return required by investors to hold the asset. In my empirical analysis I assume that  $E[G] = 0$ .<sup>29</sup>

$$P_t = \frac{E_t[D_{t+1}]}{R_t - G} \quad (7)$$

Since a significant fraction of the Bank of England's income at this time came from its holdings of government debt, any expected probability that the government might default should also have an effect on expectations regarding future Bank of England dividends. One way to incorporate this into the model is to suggest that the expected dividend payment in period  $t+1$  is equal to the current dividend  $D_t$  multiplied by  $q$  where  $(1 - q)$  is the expected likelihood that the government will suspend debt servicing payments, with a knock-on effect on the Bank's income. In log terms the expression for stock prices would then become

$$\ln(P_t) = \ln(D_t) + \ln(q_t) - \ln(R_t) \quad (8)$$

Though I have presented evidence above that the Bank of England stock price is a stationary process for the period considered, in empirical applications in finance it is common to use the log dividend yield  $\ln(D_t) - \ln(P_t)$ , rather than the stock price, based on the fact that the log dividend yield is more likely to be stationary. This would suggest estimating (9).

$$\ln(D_t) - \ln(P_t) = \ln(R_t) - \ln(q_t) \quad (9)$$

The idea here is that based on the Gordon growth model, a stock price will have a unit root if the dividend has a unit root; therefore taking the log dividend ratio should produce a stationary series.<sup>30</sup> In addition, this will facilitate comparability with the dependent variables for the Table 3 regressions. Though the log dividend price ratio is generally used in financial econometrics as an independent variable in order to forecast actual returns, in this article I am interested in evaluating to what extent the dividend price ratio is itself endogenous to partisan politics. My results are also robust when estimating actual long horizon returns.

My empirical test of (9), which is the conditional mean equation for the Bank's share price, follows the specification presented in (10) below where  $y_t$  represents the difference between the log dividend yield and the

<sup>28</sup> See Campbell *et al.* (1997) for a presentation.

<sup>29</sup> A similar assumption is made by Neal (1990).

<sup>30</sup> See Campbell and Shiller (1989) for an example.

log yield on Estates of Holland debt, calculated in the same manner as the previous sections  $y_t = \ln(D_t) - \ln(P_t) - \ln(r_{hol})$ . Equation (10) includes monthly dummies (not shown) which control for the effect of dividend timing on prices.

$$y_t = \beta_0 + \sum_{i=1}^3 \beta_i y_{t-i} + \beta_4 B_{1715} + \beta_5 whig + \beta_6 g_t + \beta_7 bubble + \beta_8 \sigma_t + \varepsilon_t \quad (10)$$

$$\sigma_t^2 = \exp(\gamma_0 + \gamma_1 B_{1715} + \gamma_2 majsize_t + \gamma_3 bubble) + \gamma_4 \varepsilon_{t-1}^2 + \gamma_5 \sigma_{t-1}^2 \quad (11)$$

In equation (10) the variable  $B_{1715}$  captures the observed structural break in the share price that occurred in January 1715. The variable *whig*, as before, measures the difference between the number of Whigs and the number of Tories in the House of Commons. I use this as a proxy for the probability of debt being serviced. In addition to the above, the mean equation includes a dummy variable *bubble* which controls for the dramatic but temporary increase in share prices during the South Sea Bubble of 1720 (May to September). Finally, equation (10) also includes the conditional standard deviation  $\sigma_t$ .

The equation for the conditional variance (11) includes a structural break variable that takes a value of 1 from January 1715 onwards, and the variable *majsize* which measures the size of the Commons majority whether Whig or Tory. As in the case of costs of government borrowing, I predict that when parliamentary majorities are small there will be greater uncertainty about future partisan control and thus higher expected variance of the dividend yield. The variance equation also includes an ARCH(1) term, representing the squares of the lagged squared residuals, as well as a GARCH(1) term  $\sigma_{t-1}^2$ . The latter provides a parsimonious way of estimating higher order serial correlation in the variance. Finally, the variance equation also includes a dummy for the South Sea Bubble episode of 1720.

The maximum likelihood estimation results presented in Table 4 strongly support the partisan hypothesis. In model (1) the coefficient on *whig* is negative and statistically significant. In substantive terms the coefficient on *whig* implies that a shift from a 150 seat Tory majority to a 150 seat Whig majority would result in an estimated decrease in the spread between the dividend yield and Dutch interest rates from 3.9 percentage points to 1.6 percentage points. We can also observe in the mean equation that the coefficient on the variance term is positive and statistically significant, as we would expect. Results of the variance equation for model (1) show that an increase in the Commons majority is negatively correlated with variance in the Bank of England dividend yield.

A comparison of model (1) in Table 4 with models (2) and (3) produces similar conclusions as with the previous estimates of government bond yields. First, the full specification including both political variables and the structural break provides a much better fit with the data than does model (2) which excludes the political variables. Second, the specification

Table 4. *ARCH-in-mean estimates of Bank of England dividend yields: 1698–1759.*

	(1)	(2)	(3)
Mean equation			
$y_{t-1}$	0.960 (0.035)	0.960 (0.043)	0.956 (0.038)
$y_{t-2}$	−0.002 (0.048)	0.005 (0.065)	−0.010 (0.056)
$y_{t-3}$	−0.014 (0.035)	0.011 (0.046)	−0.009 (0.041)
$\beta_{1715}$ (structural break)	0.0081 (0.0074)	−0.0028 (0.0082)	
$whig_t$	−0.000060 (0.000021)		−0.000057 (0.000014)
$g_t$ (exceptional spending)	0.052 (0.055)	0.026 (0.066)	0.051 (0.056)
South Sea Bubble (dummy)	−0.186 (0.083)	−0.156 (0.060)	−0.182 (0.075)
$\sigma_\varepsilon$ (conditional std. dev.)	0.587 (0.256)	0.450 (0.262)	0.578 (0.194)
Constant	−0.003 (0.010)	−0.012 (0.013)	0.005 (0.006)
Variance equation			
$\beta_{1715}$ (structural break)	−0.707 (0.092)	−1.85 (.097)	
$majsize_t$	−0.0059 (0.0004)		−0.0084 (0.0003)
South Sea Bubble (dummy)	4.09 (0.39)	5.01 (0.50)	3.64 (0.43)
$\varepsilon_{t-1}^2$ ARCH(1) term	0.004 (0.016)	0.061 (0.014)	0.017 (0.013)
$\sigma_{t-1}^2$ GARCH(1) term	0.721 (0.046)	0.762 (0.034)	0.719 (0.050)
Constant	−6.87 (0.11)	−7.69 (0.19)	−6.89 (0.23)
Log likelihood	1,652.6	1,630.0	1,647.0
Akaike Information Crit.	−3,253.2	−3,211.8	−3,246.0
Bayesian Information Crit.	−3,133.3	−3,101.7	−3,135.3

Notes: N = 743. Monthly dummies included but not reported. Standard errors in parentheses.

in model (3), which excludes the break variable but retains the political variables, provides a good fit with the data and is preferred based on the Bayesian Information Criterion. In model (3) the coefficient on *whig* remains negative and statistically significant.

4.3. *Summary*

The ARCH-in-mean estimates provide strong support for my partisan hypothesis. British government credibility after 1688 depended significantly on whether the Whig party or the Tories controlled the House of Commons. The results are also robust to alternative specifications, such as substituting a simple dummy variable for Whig majorities, including a trend variable, alternative lags, and different frequencies for the Bank of England data.

### 5. Comparisons with a political stability model

So far I have taken my empirical results as supporting my partisan preference hypothesis; partisan preferences mattered because Whig majorities, and in particular larger Whig majorities, were associated with lower yields on government debt and lower dividend yields for Bank of England shares. But the results might also support an alternative interpretation that it was above all political stability that mattered. In other words, it was important that one party established a durable majority, but it was less important whether this majority was Whig or Tory. I have already controlled for a political stability effect to some extent by including the variable *majsize* in the variance equation. However, it might also be the case that one should consider the direct effect of majority size in the mean equation for the reasons outlined in the introduction. If a large current majority implies that a current ministry (whether Whig or Tory) has a longer time horizon, then it should be less inclined to take an opportunistic action like defaulting on debt which would have clear reputational consequences. The Tables 3 and 4 results for the *whig* variable might be primarily picking up this effect. This would argue for estimating the mean equations (5) and (10) with *majsize* included. There is no reason in theory why both the political stability effect and the partisan preferences effect might not operate simultaneously, since they are not mutually inconsistent. I re-estimated Table 3 models (1) and (4) and Table 4 model (1) while adding *majsize* to the mean equation and found that it was not statistically significant while the coefficient on *whig* remained negative, statistically significant, and of similar magnitude. The problem with this specification, however, is that it is not clear what effect each variable is capturing.

As a further step, I used the following strategy to attempt to distinguish whether my results are driven primarily by a political stability effect or by a partisan preferences effect.<sup>31</sup> I defined two new partisanship variables. The first, *whig\_s* is equal to the size of the Whig majority if there is a Whig majority, and zero otherwise. The second variable *tory\_s* is equal to the size of the Tory majority if there is a Tory majority and zero otherwise. The variables were entered into the mean equation as follows.

$$y_t = \beta_0 + \beta_1 y_{t-1} + \beta_2 B_{1715} + \beta_3 whig\_s_t + \beta_4 tory\_s + \beta_5 g_t + \beta_6 debt + \beta_7 \sigma + \varepsilon_t \quad (12)$$

$$\sigma_t^2 = \exp(\gamma_1 + \gamma_2 B_{1715} + \gamma_3 majsize_t) + \gamma_4 \varepsilon_{t-1}^2 \quad (13)$$

<sup>31</sup> I also used this same strategy to consider the effect of including the variable *whig* in the variance equation, concluding in favour of the specification used in Section 4.



Table 5. *Political stability versus partisan preferences.*

	(1)	(2)	(3)
Original specification→	Table 3 (1)	Table 3 (4)	Table 4 (1)
$\beta_3$ ( <i>whig_s</i> )	−0.00074 (0.00054)	−0.00100 (0.00051)	−0.000092 (0.000040)
$\beta_4$ ( <i>tory_s</i> )	0.00133 (0.00079)	0.00011 (0.00049)	0.000005 (0.000064)
Partisan preference effect $\frac{1}{2}(\beta_3 - \beta_4) = \phi$	−0.00104 (0.00030)	−0.00055 (0.00022)	−0.000049 (0.000024)
Political stability effect $\frac{1}{2}(\beta_3 + \beta_4) = \phi$	0.00030 (0.00060)	−0.00045 (0.00045)	−0.000043 (0.000048)
$H_0 : \beta_3 = \beta_4 = 0$	$p < 0.01$	$p = 0.03$	$p = 0.01$
Log likelihood	76.8	67.7	1,653.0
Akaike Information Crit.	−129.7	111.4	−3,252.0
Bayesian Information Crit.	−103.4	85.1	−3,127.5

Notes: Coefficients based on estimates of each model indicated, replacing the *whig* variable with the two variables *whig\_s* and *tory\_s*. Standard errors in parentheses.

Table 5 reports the results of estimated coefficients for  $\beta_3$  and  $\beta_4$  in equation (12) and the analogous equation for the Bank of England dividend yield. As is to be expected, the coefficient estimates of  $\beta_3$  and  $\beta_4$  are less precise than those for the *whig* variable in the Table 3 and 4 regressions. We can nonetheless use the estimates of these two coefficients to extract separate estimates of the partisan preferences effect and the political stability effect as follows. For each coefficient the political stability effect, denote by  $\phi \leq 0$ , should have a negative effect, since political stability suggests that a larger majority should produce lower yields irrespective of whether the majority was Whig or Tory. The partisan preferences effect, denote by  $\phi \leq 0$ , should have a negative effect on  $\beta_3$  but a positive effect on  $\beta_4$ , reflected the differential predicted effects of a Whig or a Tory majority. As a result, taking the average of the two coefficients provides an estimate of the political stability effect, while taking their difference gives us an estimate of the partisan preferences effect.<sup>32</sup>

Table 5 presents the estimates of the partisan preferences and political stability effects, based on this linear combination of coefficients, together with standard errors for the effects. As can be seen, the partisan preference effect is negative and statistically significant in all three cases, and it is very close in magnitude to the estimates from Tables (3) and (4). The political stability effect is only negative in the second and third columns, and though in these cases it is similar in magnitude to the partisan preferences effect, it is not statistically significant. In sum, this extension suggests that my results regarding the partisan preference effect are not produced by a failure to

<sup>32</sup>  $\frac{1}{2}(\beta_3 + \beta_4) = \frac{1}{2}[(\phi + \phi) + (\phi - \phi)] = \phi$   
 $\frac{1}{2}(\beta_3 - \beta_4) = \frac{1}{2}[(\phi + \phi) + (\phi - \phi)] = \phi.$

control for a political stability effect in the mean equation. These results are also consistent with the observation referred to in Section 2 that aside from the shift of 1715, partisan electoral shifts at other moments (like the election of 1710) also appear to have had effects on perceived government credibility (Stasavage 2003).

## **6. The evolution of debt ownership after 1760**

My arguments and my empirical evidence have focused on the importance of partisan politics for explaining the British government's commitment to repay public debt. The complication for applying such an explanation to the period after 1760 is that during these years, both the Whig and Tory parties more or less ceased to exist. After 1760, parliamentary politics was instead characterized by *ad hoc* coalitions that rarely had any durability, and it was only in the early nineteenth century that stable parties would re-emerge. Given these facts, one might ask why did the end of the Whig Supremacy in 1760 not trigger an increase in borrowing costs? There are two complementary explanations for this. First, though the parliamentary force most favourable to government creditors (the Whigs) had splintered, the Tory group in the House of Commons that had most consistently railed against 'the monied interest' also became fragmented. As a result, it was unlikely that a Ministry would come to power that might overtly favour default. Second, a number of historians have noted that after the middle of the eighteenth century, opinions in the British political elite became far less polarised with respect to the issue of public debt (Langford 1989, Hoppitt 1990). One very plausible reason for this reduced polarisation of opinions involved the massive increase after 1750 in the number of British citizens owning government debt.

The number of British citizens owning debt remained small throughout the first half of the eighteenth century, but expanded dramatically after this point. For the government loan of 1694 that established the Bank of England there were only 1,268 individual subscribers, 88 per cent of whom were based in London and the home counties (Dickson 1967). Fifteen years later, the number of government creditors remained small (roughly 5,000), and these individuals were overwhelmingly based in London. By 1752 the number of government creditors had expanded to 58,819, but this was still quite a small number compared to Britain's overall population, and 93 per cent of these creditors remained based in London (Dickson 1967, p. 285). During the second half of the eighteenth century the British government made a deliberate effort to sell government bonds to a broader public. The main result was that it became common for members of Britain's middle class to invest in public debt, and by the early nineteenth century, estimates suggest that there were over 500,000 government creditors (Dickson 1967, p. 250).

This was a significant share of Britain's overall population of 8.9 million (based on the 1801 census), and given the restricted franchise in force at this time, government creditors certainly represented an even larger share of the electorate. Langford (1989) has argued that this expansion in the number of public creditors 'bound together the propertied nation in its widest sense and the political elite' (p. 642).<sup>33</sup>

## 7. Conclusion

Great Britain's revolution in public finance may have been initiated during the Glorious Revolution of 1688, but the British state's credibility as a borrower was only consolidated after 1715, once the Whig party established lasting political supremacy. In this article I have demonstrated that the changing fortunes of the Whig and Tory parties after 1688 can be used to explain changes in both the level and the volatility of costs of government borrowing and Bank of England share prices. My estimates show that Whig control was associated with lower yields on government debt and lower dividend yields for Bank of England shares. These results regarding partisan politics and partisan preferences are robust to a number of controls, including the possibility that the observed structural break in 1715 was attributable to the end of a period of warfare, or a more general reduction in political instability. My empirical results suggest that in addition to focusing on institutions as sources of credibility, more attention should be devoted to examining whether credibility is associated with the political prominence of particular societal groups, those with the strongest preferences for maintaining a certain policy (like debt repayment). While many might acknowledge this point, the literature on democratic institutions and government commitment has not considered it in full. In the case of Great Britain, the evidence suggests that the ultimate outcome for government commitment would have been very different if the Tory party, rather than the Whigs, had established a lasting supremacy.

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<sup>33</sup> Macdonald (2003) has made a similar argument.

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