Paying for Privilege: The Political Economy of Bank of England Charters, 1694-1844

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ABSTRACT: The Bank of England was established by Parliament in 1694 as an explicitly temporary institution, which could be dissolved upon one year's notice after the eleven-year life guaranteed by its initial charter had passed. Renewed nine times between 1694 and 1844, we argue that the element of renegotiation inherent in the Bank's existence reflected uncertainty, by both Parliament and the Bank, and we test this hypothesis by analyzing the timing of the renewals of the Bank's charter. We find renegotiation of the charter was initiated by Parliament when the Crown's budgetary circumstances, shaped by unforeseen military expenditures, required additional funds and when the monopoly value of the Bank's charter rose.

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The establishment of the Bank of England can be treated, like many historical events both great and small, either as curiously accidental or as all but inevitable.

Clapham (1944, p. 1)

1. Introduction

The Bank of England is amongst the most studied of Britain's economic institutions, with a long and distinguished history. It is the world's second oldest central bank,[1] was Britain's only incorporated bank for more than a century,[2] and, during the heyday of the international gold standard in the late nineteenth and early twentieth centuries, was the world's dominant financial institution, private or public. Despite this impressive lineage, an observer who had been present at its creation in 1694 could be forgiven for viewing the Bank of England as just another privileged entity that loaned the government money in return for favors.

The founding of the Bank has been the subject of extensive study and debate. Classic scholarly works on the Bank and its early years include those by Andréadès (1924), Clapham (1944), Rogers (1887), and Richards (1965). More recently, North and Weingast (1989) have taken a more analytical approach to the causes and consequences of the founding of the Bank of England, arguing that it was one of several innovations in modern public finance that followed the Glorious Revolution of 1688. The first innovation came in 1693, when government finances were placed under the control of Parliament. North and Weingast (1989) contend that divesting public finance from the Crown's control removed a major source of time-inconsistent policy

[1] The Swedish Riksbank predates the Bank of England by more than three decades, although the modern concept of central banking did not emerge until the nineteenth century (Broz 1998, Goodhart et al 1994).

[2] We refer to the Bank alternatively as a "corporation" and "joint-stock company." Legally, any institution with a corporate existence was technically a corporation while any firm that raised capital from subscribers was a joint-stock company. Edwards (1986).

making, followed by improvements in tax collection and fiscal administration, which paved the way for serviceable long-term debt. The final innovation was the creation of the Bank of England by Parliament in 1694. Broz (1998), Jones (1994), Root (1994), and North and Weingast all argue that the creation of the Bank of England enhanced the credibility of Parliament's promises to repay its debts. By institutionalizing those providing long-term finance in the Bank of England, Parliament effectively tied the hands of later Parliaments (Weingast 1992).[3]

A shortcoming of this account is the implicit assumption that the delegation to the private and privileged Bank of England was permanent. In fact, Parliament could have passed legislation at virtually any time revising the Bank's charter; in the extreme, Parliament could have eliminated the Bank altogether. While Root (1994: 187-88) argues that the establishment of an independent judiciary prevented the government from violating the Bank's charter to usurp creditor rights, he ignores the possibility that a government might have passed a new law altering or canceling the original charter. Any such statutory action would have been legal since there were no constitutional limits on what a statute could achieve (Jones 1994: 83). Parliament was fully sovereign with respect to the Bank of England.

The Bank of England, of course, was not voted out of existence or seriously altered by Parliament until the Bank Charter Act of 1844 (Peel's Act) changed its structure to accommodate its emergent role as monetary manager under the gold standard. Indeed, the Bank persisted despite its legal vulnerability and played a major role in establishing the credibility of public

[3] Sargent and Velde (1995) argue that the absence of a similar commitment mechanism prevented the French government in the eighteenth century from establishing its credibility. See also Bordo and White (1991).

finance to 1844. But the micro-foundations behind the persistence of the Bank have not been previously explored.

In this essay, we make two contributions to the extant literature. First, we delineate the incentives of both the government and the Bank to build flexibility into the original 1694 Bank of England charter. Our simple argument draws on the "contracting under uncertainty" perspective to explain why the Bank was not created as a permanent institution *de novo*. Second, we exploit information on the timing of rechartering legislation to 1844 in order to statistically evaluate the motivations that lay behind decisions to maintain the Bank's existence. In both ways, we hope to build on existing work that sees the Bank of England as a linchpin of credible public finance in early-modern England.

Most of the modern studies of the Bank cited above have focused on the conditions of late seventeenth century public finance and credit markets that led to the Bank's founding: that is, the government's need for funds to pursue war with France and the incentives faced by the group of private entrepreneurs who hoped to establish a profitable institution with government-granted privileges. However, the Bank's founding in 1694 did not permanently establish the Bank in law. As shown in Table 1, the Bank's original charter guaranteed a minimum lifespan of only eleven years. At the end of that time, the government, with one year's notice, could exercise an "option" to repay its loan and dissolve the charter. In fact, the Bank's charter was not dissolved but was renewed nine times by Parliament between 1694 and 1844–the date of the last "Continuance" Act. Each renewal extended the Bank's lifespan to a new option date, but these renewals occurred at irregular intervals, as the government and the Bank often renegotiated the terms of their ongoing contract prior to the option date. Although the Bank could continue to exist indefinitely after the option date without a new charter, as it did after 1844, during the

century and a half following the Bank's founding, charter renewals were a recurrent feature of the Bank's life.

Although the initial charter has received a great deal of attention, the Bank's subsequent charters have, for the most part, not been subject to detailed analysis. Our goal in this paper is to examine the process of rechartering after the initial 1694 charter up until 1844 in order to discern the motivation behind and timing of the renewals. More generally, we exploit data on Bank of England recharters to quantitatively evaluate arguments about the purposes and persistence of this important institution. Our analysis ends with Peel's Act of 1844, since that charter so fundamentally changed the Bank that we take it as qualitatively different from earlier charters (Fetter 1965, Bagehot 1873).

Ideally, we would like to examine all aspects of each of the Bank's charter renewals. These include the size of the outstanding loan, the terms of the loan (e.g., interest rate, management fee), and other aspects of the charter (e.g., granting the Bank a monopoly on incorporated banking). In theory, each element of each charter could be valued, allowing us to precisely calculate the costs and benefits to both parties to the recharter. However, because of the complicated and multifaceted nature of the contracts, we cannot, at this stage of our research, assess all aspects of the charters. Consequently, we focus on one simple element of each charter: timing. Although each of the charters we consider was granted for a specific period, renewals could–and were–enacted before the previous charter's option date, sometimes many years before. The irregular intervals between recharters provide the leverage necessary to empirically investigate the motivations that led to periodic recharter.

We argue that the rechartering process reflected the needs of both the government and the Bank of England to respond to unforeseen contingencies. The initial charter was an incomplete

contract between the government and the Bank's proprietors. The government obtained immediate financial support from the Bank, but also benefited from the rechartering feature of the contract as a means to adjust to unanticipated changes in its fiscal environment. The Bank's managers, acting as agents of stockholders, saw the government as a source of economic rents, and gained from renegotiating its charter when it faced new competition in banking. A permanent contract could not be written to cover all future contingencies. The renegotiation clause thus gave the parties the flexibility to adjust the contract to changed conditions.

Briefly, we find that, like the original charter of 1694, the government's motive for rechartering was primarily fiscal. Recharters that took place more than a decade before the option date of the previous charter seem to have been motivated by substantial government deficits and a need for increased financing. However, charters that were renewed closer to their option dates were also preceded by heightened deficits. Statistical tests indicate that the probability of enacting a new charter increased as fiscal deficits, most likely unanticipated and war-related, increased. We also find that a new charter was more likely when the Bank appeared to be earning excessive rents from its monopoly privileges, as signaled by prior upward movement in Bank of England share prices. This finding accords with our view that the government was also uncertain about the franchise value of the monopoly it granted the Bank, and that it used the rechartering process to adjust to unanticipated increases in Bank profitability.

As for the motivations of the Bank, we find that the Bank's share prices typically rose in the aftermath of recharters, suggesting that recharters benefited the Bank's shareholders as well as the government. Although the government may have used Bank of England share prices as an indicator of the value of the Bank's monopoly franchise, the market apparently viewed a successful recharter as signal that the voluntary "rents-for-loans" bargain between the Bank and

the government would be maintained. Our results not only indicate that recharters had a positive and significant effect on the price of Bank stock, but also that the government's fiscal balance was an important determinate of Bank share prices.

2. The Bank of England and Public Credit

From its origins, the Bank of England played a major role in English public finance (Roseveare 1973, Chandaman 1975, Dickson and Sperling1970). The impetus for the Bank's founding was a large wartime loan to the government, but its roots go back to the Glorious Revolution of 1689 (Rogers 1887). Prior to this political event, the king had supremacy over fiscal policy; following it, the Crown lost most of its fiscal independence (North and Weingast 1989, Root 1994, 190-91).

Constraining the king's power allowed Parliament to undertake a series of financial innovations during the period 1693-1720 that have come to be known as the Financial Revolution (Dickson 1967). This revolution was marked by the replacement of short-term debt with long-term loans secured by specific sources of revenue. In the language of the day, it was a switch from "unfunded" short-term to "funded" long-term debt (British Parliamentary Papers, 1898).

Funded long-term loans had three advantages over short-term debt. First, subscribers to the loans were paid back annually over long periods, which helped the government to finance the immediate needs of war on a relatively small and inelastic revenue base (Brewer 1989, 119-22; Carruthers 1996, 73). Second, the funded debt allowed the government to borrow large sums to finance wars via a policy of tax smoothing (Barro 1987, Sargent and Velde 1995, Brewer 1989). Third, the loans were "funded," meaning that Parliament set aside specific revenues to meet

interest payments, a feature that further enhanced confidence in lending to the government. Figure 1 shows the evolution of the funded and unfunded debt as a proportion of total government borrowing between 1693 and 1844.

Borrowing from corporate entities was an important part of the funded debt. The first such loan came with the creation of the Bank of England in 1694 and this loan formed a model for subsequent bargains establishing the New East India Company in 1698 and the South Sea Company in 1711. The principle behind such loans was the "incorporation of the public debt" (Philippovich 1911, 80-84), which is to say the government incorporated creditors into joint-stock companies and granted these companies economic privileges in exchange for permanent loans. The initial 1694 charter of the Bank of England, for example, provided for a loan of £1,200,000 to the government at 8 percent. The capital stock of the Bank thus constituted a loan to the state, which was secured by new customs and excise revenues.

Borrowing from corporations created permanent debts, meaning that subscribers would receive interest in perpetuity, but no repayment of principal. Although the repayment of principal was possible, it was not required by the initial contract. This was an advantage over the other forms of long-term borrowing for two reasons. First, the government could borrow larger sums on the same revenue base. Second, since the government retained the right to repay the capital of the loan after a certain date, it could always dissolve the contract with the corporate creditor if the creditor would not agree to a change in the terms.[4] The right of the government to terminate a corporation at notice could also be a useful tool to cajole new loans or other services from the corporations.

[4] The 1694 charter of the Bank of England allowed the government to repay the debt to the Bank and dissolve the corporation after giving 12 months notice any time after August 1, 1705.

Another advantage of corporation loans was that they created but one creditor, thus reducing the government's transactions costs. Subscribers to these loans were ordinary stockholders in every sense of the word: they were entitled to regular dividend payments out of the profits of the company (i.e., payments from the government plus any additional profits earned in the course of business) and were free to transfer their shares, which were more liquid than other types of government obligations. (Philippovich 1911, 83). Company shares could be sold, which allowed creditors to regain their capital without the government having to repay the loan. (Carruthers 1996, 82)

Finally, each company received monopoly privileges in its area of economic activity. The two foreign trading companies received exclusive rights in their original charters to trade in their respective areas of the world. The Bank of England received no exclusive privileges in its initial 1694 charter beyond making the notes of the Bank assignable by law. It was granted rights to conduct a general banking business, something no other corporation had been afforded (although there was no guarantee that this would be exclusive). Extensive monopoly privileges did not come until the Bank's recharters of 1697 and 1708.

By the end of the war with Spain in 1721, the funded debt had grown to over £62 million, the bulk of which (£32.8 million) was owed to the three major joint-stock companies. After mid-century, the share of long-term borrowing from the companies fell steadily as lotteries and various combinations of annuity loans became more favored (Figure 2). Yet the companies, especially the Bank of England, grew to play a predominant role in administering the public debt (Philippovich 1911, 143-82). And, unlike the East India Company and the South Sea Company, the Bank of England was able survive, in close association with the government, as it successfully negotiated continuances of its charter.

3. Bank of England Charters

The Bank of England's initial charter was passed in 1694. Although a number of innovations were introduced and specific terms changed in subsequent charters, many important features of the charter remained remarkably constant for the next century and a half. The original charter granted a group of individuals a corporate existence styled as the "Governor and Company of the Bank of England." The Bank was to provide the government a loan of £1,200,000 in return for an annual interest payment of £100,000 per year[5] to be secured by tonnage duties. The original charter did not grant the Bank a privileged position as the government's banker, as it would later become, nor did it grant the Bank a monopoly on joint stock banking (also to follow), nor did it make the Bank's notes legal tender. The main import of the charter was to raise funds for the government's war against France, in return for which the government promised a predetermined annual payment secured by a discernable source of revenue.

Important aspects of the loan contract were asymmetric and, from a modern perspective, favorable to the government. For example, the loan contract was non-callable. That is, the Bank could not demand early repayment. Conversely, the government was given the option to prepay the loan and terminate the Bank's charter, with one year's notice, at any time starting eleven years from the date of the charter. Subsequent charters held to this same general pattern, specifying the amount that the loan would be increased, if at all, the loan terms, and the guaranteed minimum length of time that the loan/charter would be in effect. The basic features of the charters of 1694 to 1844 are summarized in Table 1.

[5] Equal to 8.33 percent. According to Clapham (1944), the interest payment was construed as 8 percent interest plus an annual £4,000 management fee.

On the asset side, the Bank could deal in bills of exchange, make loans on promissory notes, and lend on mortgages. Its borrowing privileges were not specified, however, it could take deposits on any terms as long as its liabilities did not exceed the amount of the government debt (which formed the bank's capital stock). The Bank could issue notes up to the amount of its capital. Notes, bills of exchange, and other debts of the Bank received the same treatment: they were the liabilities of the Bank, and their security rested on the government debt. It was not long, however, before competitive threats led the Bank of England to seek and receive *exclusive* rights in the banking and in managing government debt.

In 1695, Parliament chartered a rival Land Bank that never began operation because its promoters failed to raise the capital needed for a loan to the government (Horsefield 1960, chaps. 14-16). The Land Bank challenge prompted the Bank of England to negotiate an exclusive privilege in the recharter of 1697. In return for additional loans to the government, the 1697 Continuance Act stated that "no other Bank or Constitution in the nature of a bank be erected or established, permitted or allowed by Act of Parliament during the Continuance of the Bank of England." The Bank "wanted no more Land Banks" (Clapham 1944, 47).

In 1708, during the War of Spanish Succession and again in exchange for a fresh loan, the Bank obtained from Parliament its most significant barrier to entry: the legal prohibition of associations of more than six individuals from carrying on a banking business in England. This was crucial in restricting competition, because issuing bank notes was the major source of bank funding in this era (White 1989, 73). The Act of 1708 thus gave the Bank a monopoly over joint-stock note issue. Despite the absence of a ban on joint-stock deposit banking, "the intention was to give the Bank of England a monopoly of joint-stock banking, and had any other

institution of more than six partners attempted to carry on a banking business in England . . . it would have been suppressed" (Feavearyear 1963, 167-68).

The Bank regarded its monopoly on paper currency (issued by banks with over six partners) as critical to its profitability and was willing to make financial concessions to the government in order to protect and extend it. The government, in turn, was willing to grant the Bank a monopoly, because it needed the Bank's assistance to help it finance frequent foreign wars. Just prior to the expiration of its charter in 1742, the Bank provided an interest-free loan to the government in return for receiving a confirmation of its monopoly powers (the privilege of issuing circulating notes was reinforced) and a lengthening of its charter to 1764. In that year, the Bank gave the government a gift of £110,000, plus a loan at 3 percent. In 1781, another extension was granted in return for yet another cheap loan, giving the Bank a charter until 1812.

Our decision to focus on the timing of charter renewals does not signal a belief that other aspects of the charters were not important. On the contrary, we believe that other aspects of the recharters were crucial aspects of the contract between the Bank and the government. For example, the charter of 1697 gave the Bank a monopoly on joint stock banking in England and Wales that would last for more than a century. Similarly, the charter of 1708 exempted the Bank from a law that limited note issue to partnerships of no more than six people. These elements clearly had important, although for purposes of the current analysis, hard to quantify, effects.

4. The Argument

We conceive of Bank of England charters as mutually beneficial exchanges between the government and the Bank's private owners (shareholders) designed to ensure that the parties remained mutual hostages to an initial incomplete contract. The first three charters of the Bank

of England (1694, 1697, and 1708) established the initial contract: the government would use its authority to restrict competition in the banking and government debt markets to the advantage of the Bank in exchange for permanent loans and other financial support from the Bank. Subsequent charters were designed to ensure that both parties lived up to this agreement in the face of changing circumstances. A single permanent contract could not be written to cover all future contingencies, nor could it prevent either party from acting opportunistically *ex post*. Every Bank of England charter thus contained a renegotiation clause that gave the parties the flexibility to adjust the initial bargain to changed conditions and allowed for sanctioning in the event of opportunism. In short, the Bank of England was not made a permanent institution due to problems of incomplete contracting.[6] The rechartering process mitigated these problems.

Our argument relies on a combination of political economy and the economics of information and uncertainty. On one hand, we have a political actor–Parliament–that seeks to provide fiscal public goods (financing wars via a policy of tax smoothing) and which also holds the power to create monopoly rents for favored groups. On the other hand, we have a rent-seeking group that lobbies the government for special favors. These features sets our analysis apart from much of the contracting literature in which the two parties are modeled as firms trying to mitigate the problems of arm's-length exchange. That the two parties here are not the archetypal agents of the existing literature does not change the basic nature of contracting in the face of uncertainty and asymmetric information. The Bank of England's charters were contracts, albeit incomplete contracts, that stipulated the initial terms of the relationship between the Bank and the government and allowed for future renegotiation of these terms.[7] Hence, we can analyze

[6] See Hart (1995) and Tirole (1999) for the current state of this literature.
[7] For analogous literatures on labor and loan contracts, see Dye (1985) and Harris and Holmstrom (1987). See also Koremenos (1999) on international agreements.

the characteristics of these charters in terms that are familiar to economists and, increasingly, to political scientists.

In our view, the Bank of England was designed to exist as series of agreements (charters), renegotiated at irregular intervals, in order to accommodate two kinds of uncertainty that accumulated during each agreement period: (1) unforeseen changes in the government's fiscal position, and (2) uncertainty regarding the future distribution of gains between the parties. As for the fiscal position, the government's future financial requirements were a complex combination of the likelihood of war, its creditworthiness, its access to other types of loans (e.g., annuities, lotteries, and various short-term loans), and its capacity to adjust revenues and expenditures to meet unforeseen contingencies. In the face of such persistent financial uncertainty, the right of the government to terminate the contract with the Bank provided flexibility. By design, the charters gave the government the authority to repay its permanent debt to the Bank and to dissolve the corporation upon a year's notice. This feature provided the government with an instrument of leverage over the Bank. Since the Bank valued its exclusive banking privileges and its role in managing the public debt, the threat of dissolution could be used to extract further financial assistance from the Bank.[8] The government could use the threat to renegotiate the terms of the existing debt due the Bank, to obtain new loans from the Bank, or to require the Bank to aid in the consolidation of other existing loans (short- and long-term) by engrafting these loans to the debt due to the Bank.

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[8] Following through on any such threat would have been costly for the government. First, they would have had to actually repay the loan. Second, they would no longer have access to the Bank's fund-raising potential. Finally, if Parliament decided to found a replacement institution, its shareholders might be even more wary of the actions of a future Parliament and demand a greater risk-premium.

In addition, the renegotiation provision allowed the government to adjust the distribution of the gains in an environment where the players learned about the actual distribution over time by observing outcomes under the agreement. The parties selected an initial distribution of gains, based on their relative bargaining power at the time of the Bank's founding, but this distribution then evolved over time under the agreement. The government could not know with certainty the future value of the monopolies it granted the Bank, however, by planning *ex ante* to renegotiate the agreement after some time has passed, the government ensured that it could re-contract in light of experience. It might employ the threat of redemption to ensure that the Bank did not earn excessively high rents from its monopolies. More generally, it was a threat "by means of which the good behavior of the corporation might be secured" (Philippovich 1911, 71).

While the loan contract was asymmetric in the sense that the government retained discretion over the continuance of the Bank of England, the Bank also found advantages to renegotiating its charters. Most importantly, the dependence of the government on the Bank allowed the Bank to protect its monopoly franchise when faced with new competition that was unforeseen at its founding. The case of the Land Bank is illustrative of this point. The Bank of England's original charter contained no limitation on the ability of Parliament to charter competing banks. But when Parliament acted opportunistically on this loophole by chartering the Land Bank in 1695, the Bank of England may have demanded in the 1697 renegotiation of its charter that the government commit itself to enforcing a legal Bank of England monopoly. Likewise, when the Bank realized that its charter had not prevented the rise of unincorporated (private) bank competitors, it secured a new clause in the recharter of 1708 stipulating that no firm consisting of more than six persons could issue bills or notes in England. In short, the

rechartering process allowed the government *and* the Bank to adjust to changing economic and political conditions.[9]

Contemporary parliamentary debates suggest that the government and the Bank understood the value of this flexibility. In 1781, for example, five years before the prior charter had reached its option date, Prime Minister Lord North advocated passage of a new charter that would secure the government a loan of £2,000,000 at 3 percent, in exchange for extending all the Bank's privileges to 1812. Though the record does not indicate who initiated the early recharter, North made it clear that the bargain would help ease the financial burden of the American war. The full amount of the loan would be used to pay down the expensive navy debt that "hung like a millstone on the neck of public credit " (Cobbett's Parliamentary History 1781, 520). By "paying off three times as much navy debt this year as was paid off the last," North hoped to raise the price of navy bills and lower the navy's borrowing costs – an important public benefit given that navy expenditures would reach a new all-time high of £10,807,000 in 1782 (Mitchell 1988, p.580). Lord North estimated the overall gain to the public from the bargain to be on the order of £300,000 to £500,000 (Cobbett's Parliamentary History 1781, 520-521).

For some members of parliament, the use of loans from the Bank was secondary to the distribution of the gains between the government and the Bank, and recharters were opportunities to reallocate the gains. In 1781, for example, George Savile of Yorkshire pointedly asked Lord North if he was selling the Bank's monopoly franchise too cheaply: "The public had an estate to sell. It was not therefore the question, how the produce of the sale was to be applied? The real jet of the question was, what was the worth of the estate?" (Cobbett's Parliamentary History

[9] The erosion of the Bank's monopoly on joint stock banking followed the crisis of 1825, which was blamed, in part, on the weak state of the country banks (Thomas 1934, 57-58). The government's willingness to weaken the Bank's monopoly can, perhaps, be traced to the fact that it had developed alternative sources of funds by then (see Figure 2).

1781, 522-23). By Savile's calculations, the government was "about to sell several millions [of monopoly rents] for the paltry sum of £150,000." Savile also questioned the timing of the recharter. Since the previous charter had another five years to run, better terms would be possible after the war ended and the government's creditworthiness improved. The recharter passed despite these objections by a vote of 109 to 30.

In debates over the distribution of benefits between the government and the Bank, Parliament struggled with the problem of estimating the present value of the Bank's charter. In 1781, several members, including Savile, argued that all the Bank's profits were attributable to its charter. Others, such as North, Jenkinson, and Ewer (Governor of the Bank), maintained that some portion of the profits resulted from the Bank's reputation, its large capital, and the "industry" of the Bank's directors. Clearly, some of these factors were endogenous to the charter, as some members pointed out. David Ricardo was of this ilk. In a debate over the renewal of the 1800 charter, Ricardo said he opposed "to the utmost" the renewal of the charter because he was "satisfied that every farthing made by the Bank ought to belong to the public" (Hansard's Parliamentary Debates 1822, 760).

5. Quantitative Evidence

Among the widely noted incentives faced by the government in chartering (and rechartering) the Bank was the government's fiscal situation. As noted earlier, the impetus for the Bank's foundation came primarily from the government's need to raise money for war with France. If the fiscal incentive did, in fact, drive the rechartering process, then we would expect to see a relationship between rechartering activity and the government's budget balance.

Figure 3 presents data on the average size of the government's surplus (revenue – expenditure), measured as a percentage of expenditure, revenue, and total budget, as well the proportion of the budget devoted to military expenditure, in the years before and following recharters.[10] On average, the budget deficit grew in the half dozen or so years preceding recharters, reaching a maximum two years prior to recharter. The deficit declined in the subsequent year (the year preceding recharter), rose again in the year in which the new charter is granted and declined in subsequent, post-charter years. The broad outlines of the rise and fall of the budget deficit mirror changes in military expenditures.

Although the timing is somewhat imprecise, the general outline is clear. The period prior to a recharter was typically one of increased fiscal pressures upon the government, possibly driven by military spending. Post-charter years were characterized by declining deficits, as the government's budget was bolstered by infusion from the Bank.

To further assess the proposition that the government's decision to seek a charter renewal was driven by fiscal factors, Figures 4a-4b present similar data for two different types of charter renewals: one for charters that were renewed less than two years prior to the "option date" and another for charters renewed more than ten years prior to the "option date." If charter renewals were driven, on the government's side, by fiscal pressures, then we would expect early recharters to coincide with greater fiscal stress than later recharters. In fact, although the average budget balance does move towards deficit prior to recharter in both cases, the movement is much more pronounced in the early recharters. Thus, the government's incentive to press for an early charter renewal does appear to be fiscally driven.

[10] The correlation coefficient between total expenditure and total military spending is 0.9.

What of the incentive faced by the proprietors of the Bank of England? This is more difficult to assess since we do not know much about the wealth and opportunity costs of Bank lending to the government. Nor do we have specific information on the Bank's *informal* efforts to initiate a renegotiation of its charter. While the government alone had legal authority to call for a recharter, the Bank was consulted on these decisions.[11] But records of these pre-recharter negotiations were either not kept or have not survived, as far as we know. We can, however, see the reaction of the price of Bank of England shares and dividends to charter renewals (Figure 5). The price of Bank shares declined before recharter and rose in its aftermath, although the pattern is neither especially dramatic nor substantially different between early and late recharters. For the late recharters, the decline in price may reflect, in part, the uncertainty of renewal as the "option date" drew near. For early recharters, the slightly more dramatic fall may reflect the more severe budget deficits that characterized early recharters, and an accompanying fear that the government would not be able to meet its obligations. The price of Bank shares should reflect the present discounted value of expected future dividends; although we have not modeled the pattern of expected dividend payments, the parallel between share price and dividend payments is suggestive.[12]

Although these figures are illustrative, they only describe what happens, on average, to various measures prior to and after a charter renewal. Furthermore, they assess only one factor at

[11]During the parliamentary debate on the 1800 recharter, an MP asked William Pitt whether the proposal originated with him or with the Bank, to which Pitt responded that he drew it up and submitted to the Bank for consideration and consultation (Cobbett's Parliamentary History 1800, 1515).

[12] Our Bank share price and dividend data are taken from Global Financial Data. There appear to be some discrepancies in dividends reported in this source and Clapham (1944, vol. 1, Appendix B).

a time and do not specifically consider the decision to recharter. How then, should we evaluate the timing of charter renewals?

Our goal is to understand the characteristics that lead to a charter renewal. More precisely, the question we pose is: "Given that the current charter has lasted for *t* periods, what is the likelihood that it will last for an additional period?" Such questions are best addressed with duration models (Kalbfleisch and Prentice 1980, Kiefer 1988, and Lancaster 1990 summarize this class of models).[13] Duration models have a dependent variable that measures how long it takes for some event of interest to occur. Analysts model the elapsed time until such an event (termed a "failure" by convention), or equivalently, the length of a non-eventful "spell." In our example, the event of interest is a rechartering of the Bank of England–the Bank's charter "survives" or is "at risk" until it fails and is replaced with a new charter. The "hazard rate" indicates of how likely a charter is to fail at any given time, provided it has survived until that time. We model baseline hazard rates and then estimate the effects of multiple covariates.

In order to estimate duration models, a distribution of the data must be selected. The specification of the distribution determines the shape of the hazard function. There are a number of duration distributions from which one might choose – e.g., the Weibull, the gamma, and the exponential to name a few. Given that we have only nine cases of charter "failure," and are therefore unable to ascertain statistically significant duration dependence, we estimate the

[13] This question can also be addressed with a binomial dependent variable model, in which the dependent variable is whether or not a new charter was issued in any given year. See Beck, Katz, and Tucker (1998) for how to deal with temporal dependence in logit/probit models of grouped duration data. We also ran probit models, incorporating a time variable (i.e., the time since last event), and obtained results that are qualitatively similar to the hazard model results presented below.

survival model with a Cox proportional hazards model.[14] The Cox model is the most general--and a commonly used--duration model because it does not make any assumptions about the nature or shape of the underlying survival distribution. The model assumes that the underlying hazard rate (rather than survival time) is a function of the covariates (i.e., independent variables); no assumptions are made about the nature or shape of the hazard function. However, the Cox model does assume that the hazard ratio is proportional over time; in other words, that the ratio is the same at any point in the time scale. That is, given two observations with particular values for the covariates, the ratio of the estimated hazards will be constant over time; hence the name of the method: the *proportional hazard* model. The validity of this assumption may often be questionable, but for our data, we confirmed its validity with a test based on Schoenfeld residuals, elaborated in Box-Steffensmeier and Zorn (2002).[15]

At the bottom of Table 1, we present summary information on the baseline hazard rate. Note that there are nine subjects in our data, representing each charter that "failed" (in the sense of being replaced by a new charter) in our sample period. These nine subjects were at risk for 151 years, conforming to the fact that a charter could fail (be replaced) at any time. The median survival time of a charter is 17 years and the incidence rate (i.e., the hazard function) is estimated as .0596 per year.

[14] In fact, the data appear to exhibit positive duration dependence, although the trend is not statistically significant. We have also run survival analysis assuming a Weibull distribution (which would be the appropriate distribution in the case of positive duration dependence). The results are qualitatively similar to those yielded by the Cox model, although the coefficients on the budgetary measures have lower statistical significance.

[15] The test retrieves the residuals of a Cox model, fits a smooth function of time to the residuals, and then tests whether there is a relationship. A graph of our scaled Schoenfeld residuals depicted a curve with essentially a zero slope, providing support for our proportional hazards assumption.

The Cox model estimates a hazard rate for a Bank of England charter at a particular point in time as a function of the baseline hazard (h_o) at time t – which is simply the hazard for an observation with all x variables set to zero – and our explanatory variables, the estimates of which indicate proportional changes relative to the baseline hazard. Table 4 presents results for our Cox model with robust standard errors (i.e., errors adjusted for clustering on each subject/charter). Note that hazard ratios of more than one indicate an increase in the rate of charter failures, while ratios of less than one indicate a reduction in the rate of failure. Specifications 1-3 include as covariates different measures of the government's fiscal situation: the government surplus (revenues minus expenditures) as a proportion of the total government budget (revenues plus expenditures), as a proportion of revenues, and as a proportion of expenditures (see Table 3 for variable descriptions and sources). In each case, the estimated hazard ratio is less than 1, indicating that a one percentage point increase in the government's budget surplus decreases the hazard rate by the given percentage. For example, the estimate in Model 1 suggests that a one percentage point decrease in "surplus to budget" (i.e., an increase in the deficit) increases the likelihood of a new charter by 6.6 percent. This hazard ratio differs significantly ($P = .010$) from one.

We can illustrate our argument that war-related fiscal deficits prompted the government to initiate recharters as a means to extract fresh loans from the Bank with a simple example. Great Britain was at war for 70 of the 151 years in our sample.[16] During these war years, the average "surplus to budget" was -16.814 percent (i.e., a deficit). By subtracting this value from the sample mean of "surplus to budget" (-6.578) and then raising the hazard ratio to the power of

[16] Our coding of war years – 1694-1697, 1702-1713, 1718-1721,1739-1748, 1756-1763, 1775-1783, and 1793-1815 – is from British Parliamentary Papers (1898), and Dickson (1967, 10).

this difference, $0.934^{10.236}$, we get a hazard ratio of 0.497. This estimate suggests that during periods of war-related fiscal stress, the likelihood of a charter renewal increases by 50 percent.

Models 2 and 3 show hazard ratios for other measures of the government's fiscal position. In each case, the hazard is less than one and significant: the larger the government's deficit, the greater the likelihood that it would enact a new charter including, presumably, additional funding for the government. The estimated hazard has a slightly higher level of significance on the "surplus to expenditures" covariate than on the "surplus to revenues" covariate. This makes sense since we would expect the government to be most sensitive to the deficit in relation to its desired expenditures.

Specifications 4-12 include, in addition to the three measures of the government's fiscal position, a measure of the change in the Bank of England's share price in the preceding one, two, and three years. The fiscal measures retain negative coefficients that are significantly different from one. The hazard on the change in Bank share price over all three different time spans—despite the inclusion of fiscal covariates—are greater than one and significant. For example, a one percent increase in the price of Bank stock over the preceding year increased the chance that the government would recharter the Bank by 13 percent. This suggests that the government was more likely to initiate a recharter if the value of the Bank's monopoly rents rose in preceding years.[17]

[17] Evidence from Parliamentary debates indicates that the government monitored Bank profitability by comparing Bank stock prices (and Bank dividends) to market rates of return. See, for example, the discussion of the 1781 renewal in Clapham (1944, 177-82).

Figure 6 provides a sense of the fit of our models. This figure plots the calculated linear prediction from Model 4 for each observation (year) in the sample.[18] Vertical lines indicate the actual dates of Bank of England charter renewals. Visual comparison indicates that most renewals do, in fact, occur near peaks in our linear predictions. In some instances, predictions lead or lag actual renewal dates. The 1764 renewal, for example, occurs just after our model indicates a charter failure. We are not sure why, but we speculate that the length of time it takes to renegotiate a new charter varies idiosyncratically across the cases, due perhaps to differences in personality or procedure. Archival research might bear this out.

In other instances, such as the 1833 renewal, our model does not perform well. We think that renewals after 1800 may have been qualitatively different from prior Bank recharters, since by then the Bank was more firmly established. On the one hand, the development of government bond (consol) and annuity markets gradually reduced the government's financial dependence on the Bank and other chartered companies for loans (Figure 2). With the development of alternative sources of public finance, the timing of renewals no longer hinged on the government's fiscal position. On the other hand, the Bank of England had become the nation's central bank, and charter debates after 1800 focused far more on monetary policy issues than on bank restrictions and public finance. Our arguments are therefore less relevant to these charters.

The results presented in this section indicate that government recharters of the Bank of England were motivated by both fiscal necessity and the observed value of the Bank's monopolies. Charter renewals were more likely the larger the government budget deficit. Early charter renewals seem to have been provoked by increases in the deficit, which may have been

[18] To obtain these predicted values, we fit Model 4 and then calculated the linear prediction as $\hat{y}_j = b_1 x_{1j} + b_2 x_{2j} + \ldots b_k x_{kj}$. Predicted values from several of our other models are very similar.

brought about by war or other unforeseen spending demands. The government also appears to have been sensitive to the monopoly profits accruing to the Bank: the greater the share-price increase in the recent past, the more likely the government to enact a new charter.

Our statistical analysis has focused on the government's incentive to renew the Bank's charter. Our quantitative evidence is less useful than the qualitative evidence presented in Section 3 for discerning the motivation behind the Bank of England's willingness to finance a charter renewal. Evidence presented in Figure 5 indicates that as the time remaining on a charter declined, the value of Bank stock fell, suggesting that the uncertainty faced by Bank shareholders had a negative impact on stock prices. Supporting this view, new charters, with their extension of the guaranteed life of the Bank, had a positive impact upon Bank dividends and share prices.

6. Conclusion

In most industrial democracies, important constitutional institutions are permanently established. Although the personnel at the head of these institutions change, the continued existence of the institution itself is generally not in question. In this paper, we look at an institution that, over the course of a century and a half, became one of Britain's important—and permanent—constitutional institutions.[19] The Bank of England was not, however, permanently established at the time of its foundation. By the middle of the nineteenth century, however, the Bank had become so well established that it's continued existence was no longer in doubt.

The incentives that allowed the Bank to maintain its existence in the face of the possibility that the government would drastically change or eliminate the institution have not

[19] The *de facto* constitutional status of the Bank was acknowledged as early as 1781 by the prime minister, Lord North, when he argued in favor of the charter renewal of that year (Cobbett's Parliamentary History 1781, 519.

been previously explored. In fact, the pioneering paper by North and Weingast (1989) and the work flowing from it largely ignores this possibility and treats the Bank as essentially characterizing a stable equilibrium. By specifying the incentives of both the government and the Bank in the context of contracting under uncertainty, we are able to uncover the inducements that allowed the institution to persist.

We analyze the timing of the renewal of Bank of England charters after the Bank's initial charter in 1694 until the adoption of the Bank Act of 1844 as a means to test our simple contracting hypotheses. Our view is that the periodic recharters allowed the government—and the Bank—to adjust to changing conditions and needs in the contract's renegotiation. We find that recharters of the Bank were driven by fiscal concerns on the part of the government: wars and other increases in expenditure tended to hasten the renewal of the Bank's charter. Thus, the primary motivation for the government to offer recharters is clear. In addition, the government used the renewal process to assess the value of the monopoly franchise it conferred upon the Bank. Since the value of the franchise could not be accurately foreseen at the time when anticompetitive barriers were established, the government looked to increases in the price of Bank stock as an indicator of excessive rents. Hence, persistently high share prices also increased the probability of a recharter.

The Bank's motivation in the recharter process is more difficult to analyze. If the enactment of a new charter bolstered the Bank's monopoly position, new charters should have a positive impact on the price of Bank stock. The data presented in Figure 5 suggests that as charters approach expiration, the value of Bank stock did fall. Bank share prices seem to get a larger boost from early recharters, suggesting that government's enhanced fiscal demands in these early recharters translated into a better deal for Bank shareholders.

Our preliminary analysis of the rechartering process leaves many unanswered questions, which we hope to address in future work. First, although we have addressed the timing of Bank charter renewals, we have largely ignored other aspects of the Bank's charters. In future work, we hope to explicitly address other aspects of these contracts, ranging from the terms of the loan and the length of the charter granted, to the privileges granted by the government to the Bank. Specifically, we hope to assess which side might have had the "upper hand" in negotiations and how that balance might have affected the outcome of the negotiations.

Second, our analysis relies entirely on annual data. By employing monthly data and a closer examination of the historical record about when negotiations over charter renewals began, we could conduct more formal tests on the consequences of anticipated renewal versus actual renewal and thus gain a better understanding of the Bank's motivations.

Third, we have assumed throughout out our analysis that government spending decisions were exogenous.[20] That is, we have not allowed for the possibility that spending decisions were affected by chartering decisions. It is possible that the government undertook new spending in the years before a charter was up for renewal in the knowledge that new funds would be available.

The Bank of England played a central role in the Britain's development in the eighteenth and nineteenth centuries. The charters of the Bank—and indeed, the process generating these charters—had important consequences. The economic privileges the Bank secured in recharters,

[20] We also assume that the government cannot predict far enough in advance when a war will occur, so it does not act preemptively.

for example, helped propel its rise to a modern central bank, with monetary and lender of last resort functions.[21] Given the complicated nature of these contracts, further analysis is warranted.

[21] "With so many advantages over all other competitors, it is quite natural that the Bank of England should have outstripped them all…Thus our one-reserve system of banking was not deliberately founded upon definite reasons; it was a gradual consequence of many singular events, and of an accumulation of legal privileges on a single bank" (Bagehot 1873, 66-7).

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Table 1: Bank of England Charters, 1694-1844

Charter Date	***Act of Parliament***	***Option Date***	***Time to Option***	***Time Left at Renewal***		***Financial Aspects***	***Regulatory Aspects***
			Years	*Years*	*Proportion of Charter*		
1694	5 & 6 Will. 3, c. 20	1705	11	.	.	B of E lends £1.2 million to government at 8%	Incorporation via Royal Charter gives B of E banking privileges, including the issue of notes, and limited libaility.
1697	8 & 9 Will. 3, c. 20	1710	13	8	.73	B of E's capital increases by £1,001,171 in new subscriptions (4/5 in tallies - then at a 40% discount - and 1/5 in B of E bills or B of E notes, all paying 8%).	Bans absolutely the establishment of any other banks. B of E stock made personal, not real, property, and profit thereon exempted from taxation.
1708	7 Anne, c. 7	1732	23	1	.08	Interest free loan of £400,000 by B of E to government. B of E doubles capital stock with new subscription of £2,531,347.	Bans joint stock companies (of any description) of more than six persons from doing business as banks.
1713	12 Anne, c. 11	1742	29	19	.83	B of E circulates £1.2 million in Exchequer Bills at 2d per diem per £100; receives allowance of 3% and fee of £8,000 per annum.	Repeats foregoing prohibitions.
1742	15 Geo. 2, c. 13	1764	22	0	0	B of E lends £1.6 million to the government without interest; reducing interest on total debt of £3.2 million to 3%.	Reasserts B of E's privilege of exclusive banking.
1764	4 Geo. 3, c. 25	1786	22	0	0	B of E lends £1 million on Exchequer Bills for two years at 3% (repaid in 1766). Pays a fee of £110,000 for privileges.	Repeats foregoing prohibitions on banking

1781	21 Geo. 3, c. 60	1812	31	5	.23	B of E lends £2 million to government at 3% for 3 years.	Reasserts B of E's banking privileges.
1800	40 Geo. 3, c. 28	1833	33	12	.39	B of E lends £3 million to government without interest for 6 years.	Repeats prohibitions of 1697 and 1708 to clarify intent "that no other bank shall be erected, established, or allowed by Parliament" (s. 15).
1833	3 & 4 Will. 4, c. 98	1855	22	0	0	Government pays off ¼ of its debt to the B of E (£3,671,700).	Permits joint stock banks of *deposit* in London or within 65 miles thereof.
1844	7 & 8 Vict. c. 32	1855	11	11	.5	Last continuance Act.	Separates Bank and Issue Departments and confirms B of E's monopoly of note issue.
Average			21.7	6.22	0.31		
Std.Dev.			7.99	6.78	0.32		
Median			22	5	0.23		

*Notes: "*Option Date" refers to the date at which Parliament could dissolve the Bank's charter, with one year's prior notice. Recharters could and did occur before this date. *Sources:* Statutes of the Realm (various years), Statutes at Large (various years), British Parliamentary Papers, 1875.

Baseline Hazard Rate

			Survival time		
No. of subjects	*Time at Risk*	*Incidence Rate*	25%	50%	75%
9	151	.06	11.0	17.0	22.0

Table 2: Summary Statistics

	Obs.	*Mean*	*Std. Dev.*	*Max.*	*Min.*
Surplus to Budget (Percent)	151	-6.58	13.94	15.15	-49.03
Surplus to Revenues (Percent)	151	-19.94	40.14	26.31	-192.41
Surplus to Expenditures (Percent)	151	-9.41	22.69	35.71	-65.80
Change in Bank of England Share Price (one year)	150	0.93	8.94	25.28	-27.71
Change in Bank of England Share Price (two years)	149	1.87	13.62	46.77	-35.42
Change in Bank of England Share Price (three years)	148	2.73	16.38	77.10	-35.63

Table 3: Variable Descriptions and Sources

Surplus to Budget	(revenue - expenditure) / (revenue + expenditure). Mitchell, B.R. 1988. *British Historical Statistics.*
Surplus to Expenditure	(revenue – expenditure) / expenditure. Mitchell, B.R. 1988. *British Historical Statistics.*
Surplus to Revenue	(revenue –expenditure) / revenue. Mitchell, B.R. 1988. *British Historical Statistics.*
Bank of England Share Price Growth (1, 2, and 3 years)	Percent change in the Bank of England share price over the previous one, two, or three years. *Global Financial Database*, series GBBEPM

Table 4: Cox Proportional Hazard Model

	1	2	3	4	5	6
Budgetary Measures						
Surplus to Budget	0.934****			0.913****		
	(0.025)			(0.027)		
Surplus to Revenues		0.978***			0.970****	
		(0.010)			(0.010)	
Surplus to Expenditures			0.957****			0.945****
			(0.016)			(0.015)
Change in Bank of England Share Price						
One Year				1.132****	1.138****	1.122****
				(0.048)	(0.045)	(0.047)
Two Years						
Three Years						
Log Likelihood	-10.230	-10.461	-10.110	-8.629	-8.699	-8.674
Observations	151	151	151	150	150	150

Robust (Huber-White) standard errors in parentheses.

significance level: **** 1 percent; *** 2.5 percent; ** 5 percent; * 7.5 percent.

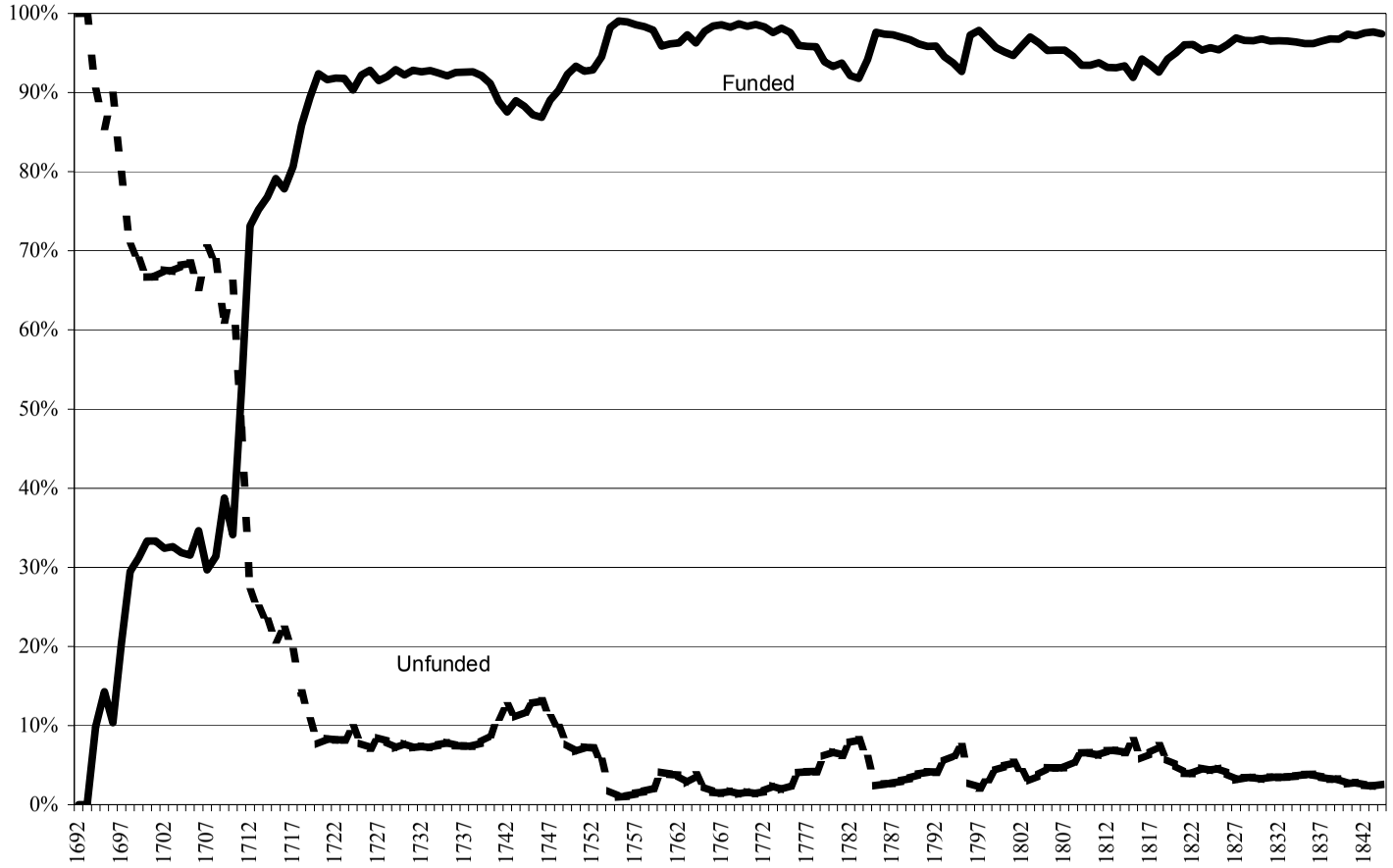
Table 4: Cox Proportional Hazard Model, con't

	7	8	9	10	11	12
Budgetary Measures						
Surplus to Budget	0.756**			0.762****		
	(0.102)			(0.063)		
Surplus to Revenues		0.912***			0.888***	
		(0.037)			(0.046)	
Surplus to Expenditures			0.883****			0.896****
			(0.037)			(0.019)
Change in Bank of England Share Price						
One Year						
Two Years	1.301*	1.329**	1.202****			
	(0.183)	(0.186)	(0.085)			
Three Years				1.264****	1.386**	1.171****
				(0.095)	(0.208)	(0.063)
Log Likelihood	-4.565	-3.967	-5.536	-4.671	-3.642	-5.631
Observations	149	149	149	148	148	148

Robust (Huber-White) standard errors in parentheses.

significance level: **** 1 percent; *** 2.5 percent; ** 5 percent; * 7.5 percent.

Figure 1: Funded and Unfunded Debt as a Share of Total Debt, 1693-1844



Source: B.R. Mitchell, *British Historical Statistics* (Cambridge: Cambridge University Press, 1988).

Figure 2: Government Debt to the Chartered Companies as a Share of the Funded Debt, 1694-1844

Source: British Parliamentary Papers (1898), *Report of the Proceedings of the Commissioners for the Reduction of the National Debt from 1786-1890, together with A History of the Funded Debt From 1694-1786*. National Finance—General, Vol. 7. Shannon, Ireland: Irish University Press.

Figure 3: Budget Ratios Before and After New Charters

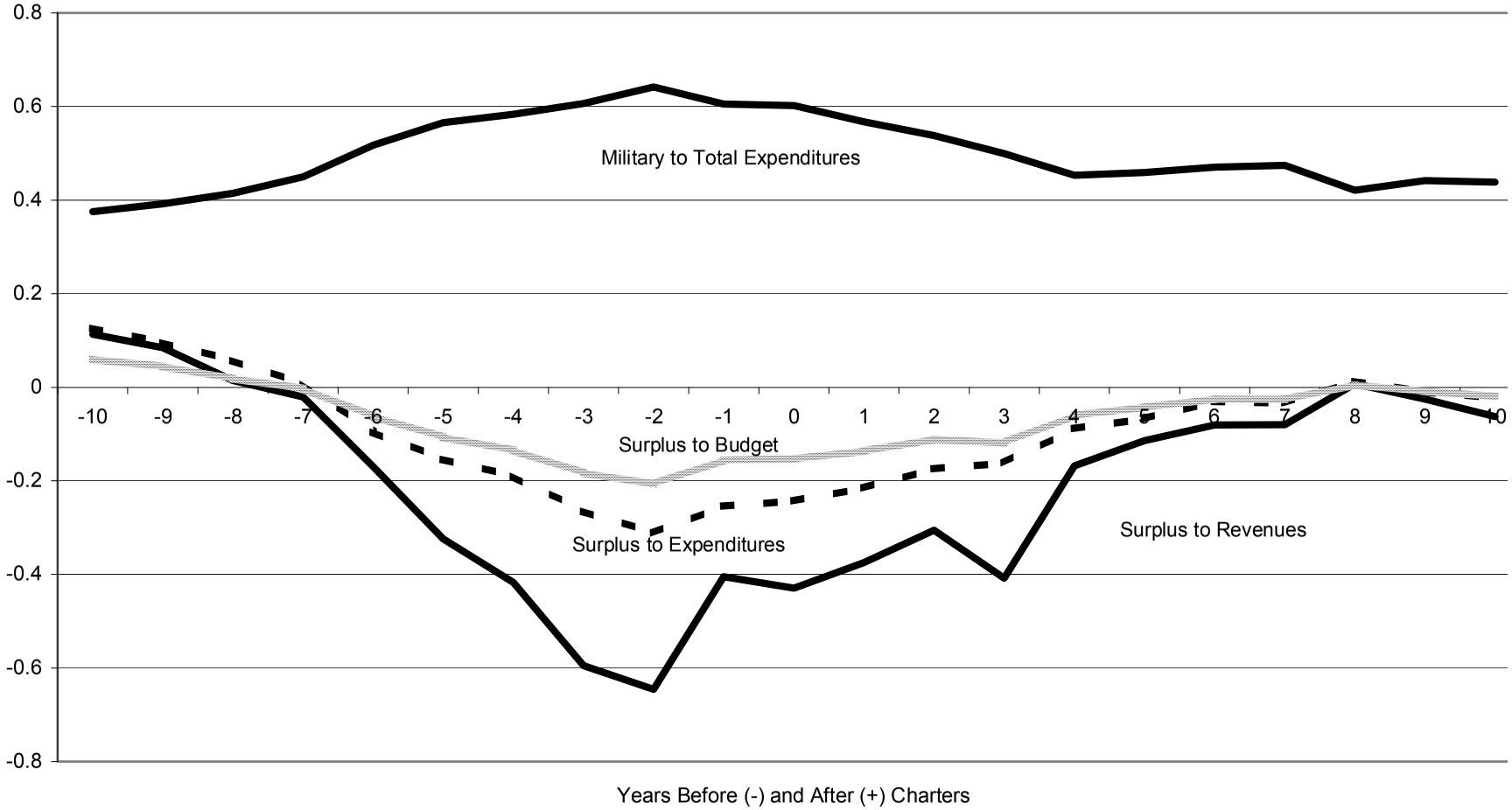


Figure 4a: Budget Ratios in Early and Late Reharters

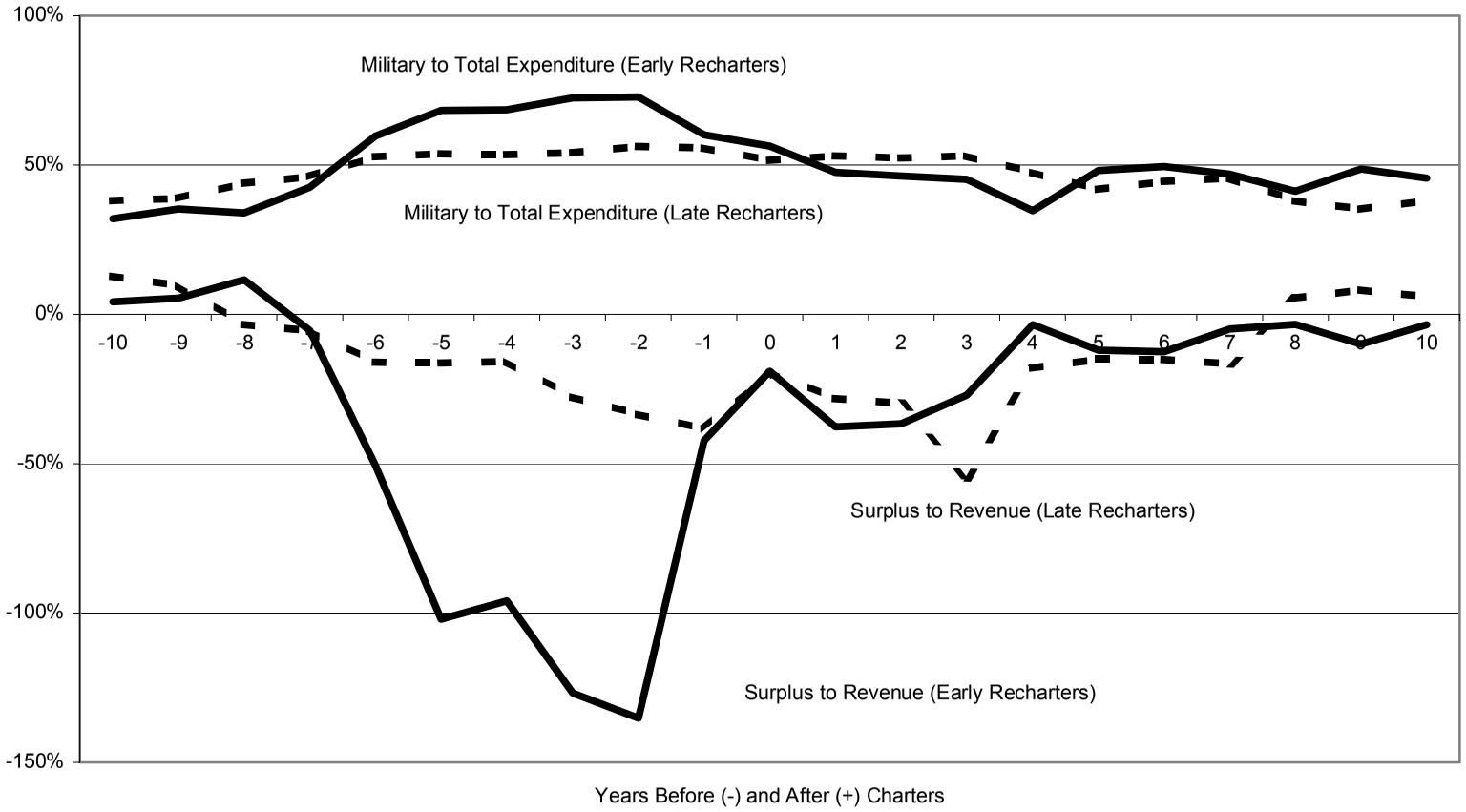


Figure 4b: Surplus to Expenditure and Budget Ratios in Early and Late Recharters

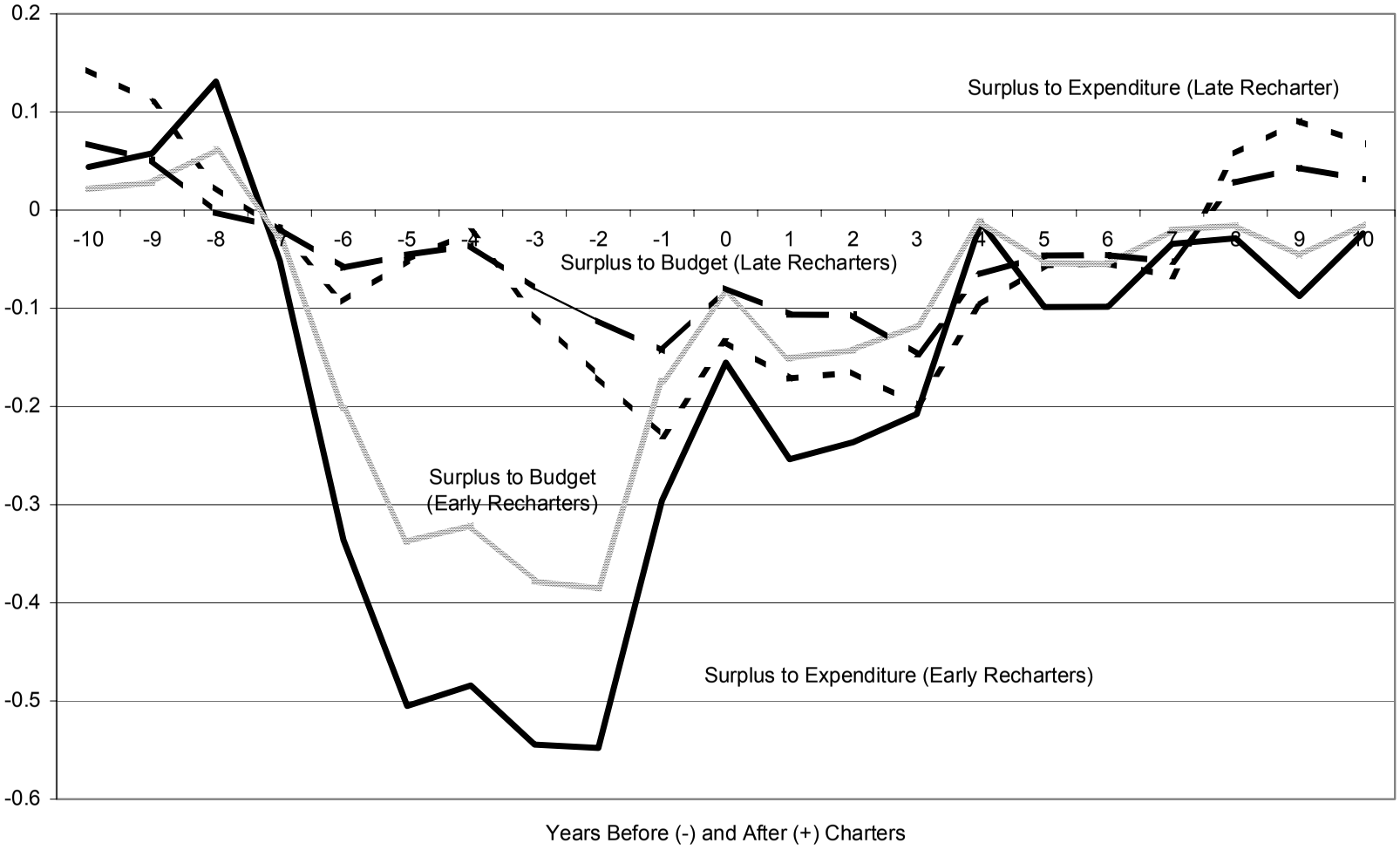


Figure 5: Dividends and Price of Bank of England Stock

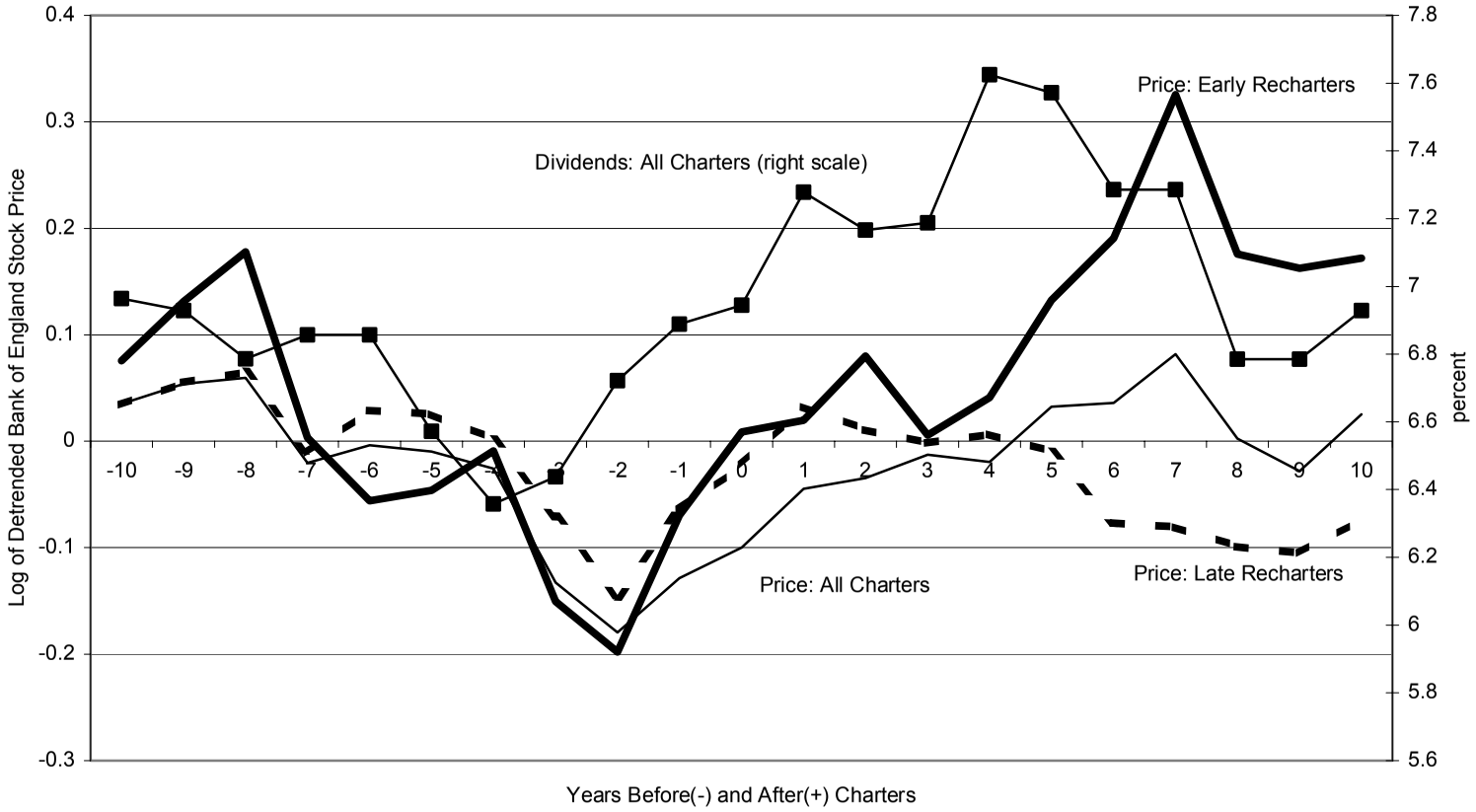


Figure 6: Linear Prediction from Cox Estimation of Model 4

Source: Authors' calculations.