The Monetary Foundations of Britain's Early 19th Century Ascendency

Carolyn Sissoko

University of the West of England (UWE), Bristol

Economics Working Paper Series

1906

The Monetary Foundations of Britain's Early 19th Century Ascendency

Carolyn Sissoko*

First Draft: June 18, 2018
This Draft: September 11, 2019

Abstract: This paper argues that Britain's monetary system at the start of the Napoleonic Wars was substantially different from its monetary system at their end, and that the Restriction and the Bank of England's discount policy during the Restriction played a determining role in the transformation of the monetary system. Specifically, I argue that Britain's monetary system through the second half of the 18th century was built on transaction-based credit, and that by the end of the war this monetary system had been transformed into one based on personal credit. I find that the Bullion Committee deliberately reset the public's inflation expectations in order to stabilize the monetary system. And that the Bank was acting as a lender of last resort with an explicit duty to support commercial interests in the crisis of 1810-11.

Key words: Bank of England, lender of last resort, discount market, real bills, bullion controversy, monetary policy

JEL codes: E58, N13, N23

---

* I thank Charles Goodhart for his very helpful comments. All errors are of course my own.
Author affiliation: University of the West of England; Author email: carolyn.sissoko@uwe.ac.uk

Introduction

The Bank of England has put all the minutes of the meetings of its Court of Directors online including those from its earliest years. This provides students of banking history with an extraordinary resource that was previously accessible only to a very select group of scholars. The sequence of papers that this paper introduces exists solely because of my access to this remarkable resource.[2] Here, I discuss how the Bank's operations were transformed in the Suspension era and argue that this led in turn to a transformation of the British monetary system.

Clapham's magisterial *The Bank of England: A History* (1945) is an excellent guide to the broader context of the minutes. His focus is, however, broad, whereas mine is relatively narrow: I am interested in how the Bank interacted with the private sector and consider its government financing activities as only peripheral context. My approach contrasts with Fetter, who opens his *Development of British Monetary Orthodoxy: 1797-1875* (1965: 7, 58-59) with the statement that "the Bank of England had been organized to meet the financial needs of the government" and dismisses as "untested" the role played by the Bank in supporting British commercial interests through the Suspension.[3] Duffy (1982), on the other hand, alerted me to the fact that the received wisdom about this period was not consistent with the content of the minutes.

Here, I expand on Duffy (1982) and seek to extract as much information as possible from the minutes in order to place Britain's private banking history in its proper context. I am able to document the origins of the "elaborate system of reporting [that] enabled [the Bank] to control its exposure to both discounters and acceptors" that was found by Flandreau and Ugolini (2013) based on discount window data from the 1860s. I am also able to use the Bank's unpaid bills reports to demonstrate that the expansion of last resort lending in the first decade of the 19th century was indeed associated with an increase in losses to the Bank, contrary to the claim made for later years in Bignon et al. (2011).

This paper opens with a brief discussion of the early years of British banking, and then focuses attention on the first eighteen years of the Restriction, during which Bank notes were inconvertible and the Napoleonic Wars were in progress. I argue that Britain's monetary system at the start of the Napoleonic Wars was substantially different from its monetary system at their end, and that the Restriction and the Bank of England's discount policy during the Restriction played a determining role in the transformation of the monetary system. This is similar to O'Brien and Palma (2016: 25)'s claim that the Restriction "caused a permanent shift to a fiat-based monetary system." Their time series data and analysis of the narrow and the broad money supply are complementary to the approach here. My approach is, however, a qualitative study of the institutional details of the mercantile monetary system and how these details shifted over the years. Thus, I view both the pre-

[2] All citations to these minutes in this paper give the date only.

[3] Fetter (1965: 59) writes: "The Bank's responsibility to the banking and business community in times of crisis, as distinct from its responsibility to furnish funds to the government to finance the war, was really not tested in the years 1797-1815." This claim, which as I demonstrate was erroneous, has arguably influenced a generation of scholars, see e.g. Laidler 2000, Eichengreen 1996: 31 n51.

Restriction and the post-Restriction monetary systems as credit-based systems that are anchored by gold, and have argued elsewhere that a gold or silver coin-based monetary system – at least as far as mercantile activity was concerned – was left behind roughly speaking with the founding of the Bank in 1694 (Sissoko 2018a).

Here, I argue that Britain's monetary system through the second half of the 18th century was built on transaction-based credit, and that by the end of the war this monetary system had been transformed into one based on personal credit. This system of personal credit played a role in the finance of the campaign against Napoleon in its final years (Sissoko 2018b), and I will argue in future papers that it also played a key role in Britain's industrial development (cf. Ingham 2004).

Section I discusses the early years of banking in Britain, which I call the real bills era, and outlines the legal changes that supported the transformation of the monetary system. Section II explains how the dramatic growth of discounts due to the Restriction forced the Bank to completely revamp its internal operating structure. Section III discusses how the Bank directors slowly recognized the growth of discounts as a monetary problem and then began to address it. This section concludes with an analysis of the Government's 1810 Bullion Committee Report and the active role that it played in protecting the new monetary system and in ensuring that the Bank had the opportunity to grow into its new role. Section IV explains how subsequent to the 1810 crisis the Bank directors took their first steps in developing a monetary policy. Section V concludes.

A changing legal framework: From real bills to a system of accommodation paper

In the second half of the 18th century the British banking system flourished until by the end of the century the system was fully articulated: almost every county had a bank and every country bank was connected to the London money market (Pressnell 1956; Turner 2014). This was the real bills era of British banking. The monetary system was based on bills of exchange, and what had traditionally made a bill negotiable was the fact that it had been created through and represented a genuine commercial exchange.[4]

To clarify the latter point, a bill is negotiable only if it can circulate from one person to another and if the final holder of the bill has the legal right to collect payment from the issuer of the bill. Initially, the legal right to collect payment on a bill that had been negotiated derived directly from the fact that something of value was given in the original transaction that led to the creation of the bill (Rogers 1995: 149-50). The term "real bill" derived from its legal status and referred to a bill that had arisen from an actual commercial transaction.[5]

Consider the case where a bill does not represent a trade of goods, but only an accommodation to the recipient of the bill, so that the issuer writes an IOU to the recipient simply to allow the recipient to get cash at the bank

[4] Note that Rogers (1995) when discussing transferability/negotiability focuses on the liability of the individual who endorses the bill (e.g. p. 149), instead of on the legal right of a third party holding the bill to make a claim against the issuer – apparently because of his concern regarding anachronisms in the 20th literature on bills (pp. 189-93). This difference in approach to the concept of negotiability leads to some differences between his discussion and my discussion of this era.

[5] Rogers (1995: 180) explains that by the start of the 18th century a creditor pursuing his claim in court no longer had to plead the facts of the original transaction in his claim against the debtor but could plead only the "custom of merchants" together with a bill signed by the debtor.

by discounting the bill. Then when the bank (or the final holder of the bill) at maturity seeks to collect from the issuer of the bill, if the issuer refuses to pay, the bank or holder has the burden of proving that there was an original transaction and will be unable to do so in the case of an accommodation bill. (For the logic of this, think of your right to challenge a credit card charge when the item that was supposed to be shipped never arrived.) Thus, the British banking system began its development in an environment where "real bills" were the norm and the monetary system was grounded in transaction-based credit.

The development of the British banking system was, however, naturally accompanied by an increase in transactions, and in lawsuits. As a result, court decisions steadily laid the outlines of a more detailed legal framework. The legal system moved away from its focus on the transaction in which the bill originated, and in 1791 issuers of bills lost their last formalist defense against payment based on the original transaction.[6] (Needless to say issuers could still offer what are now called "real defenses" against payment such as forgery.) By the early 19th century the legal rule was that as long as the holder of an accommodation bill could prove that he had given value for the bill, he had a right to payment (Rogers 1995: 241).

These legal changes reflected a commercial environment where accommodation bills were becoming more and more common. Thus, by 1800 accommodation paper was a familiar sight and often there was little effort to hide its use.[7] At the same time judges still tended to view accommodation paper with skepticism, and even as having "something of actual fraud" in them (Rogers 1995: 239, 244-45). Indeed, there was a strong consensus that the Bank of England should restrict its discounts to "bills growing out of real commercial transactions" (H.C. 1810: 46; Rogers 1995: 232). Even so, accommodation paper began to be discounted at the Bank, as will be discussed in detail below.

By the 1830s accommodation paper was a ubiquitous means of payment. The legal system eventually adapted to mercantile practice when in 1836 the law was changed so that accommodation paper was treated just like an ordinary bill: there was a presumption that value had been given (Rogers 1995: 244). By eliminating the need to prove any transaction in order to demand payment on the bill in a court of law, the cornerstone of the English law of negotiable paper was laid: the paper embodied the obligation entitling the holder to payment and no further proof was needed.[8] A late 19th century legal scholar explained that by giving "full play to the system of accommodation paper" English law made it possible for bills to develop "into a perfectly flexible paper currency" (Chalmers 1896: lvii).

A financial system based on accommodation paper is, however, very different from a financial system based on real bills. The latter is anchored to mercantile transactions, whereas the former is based on personal credit.

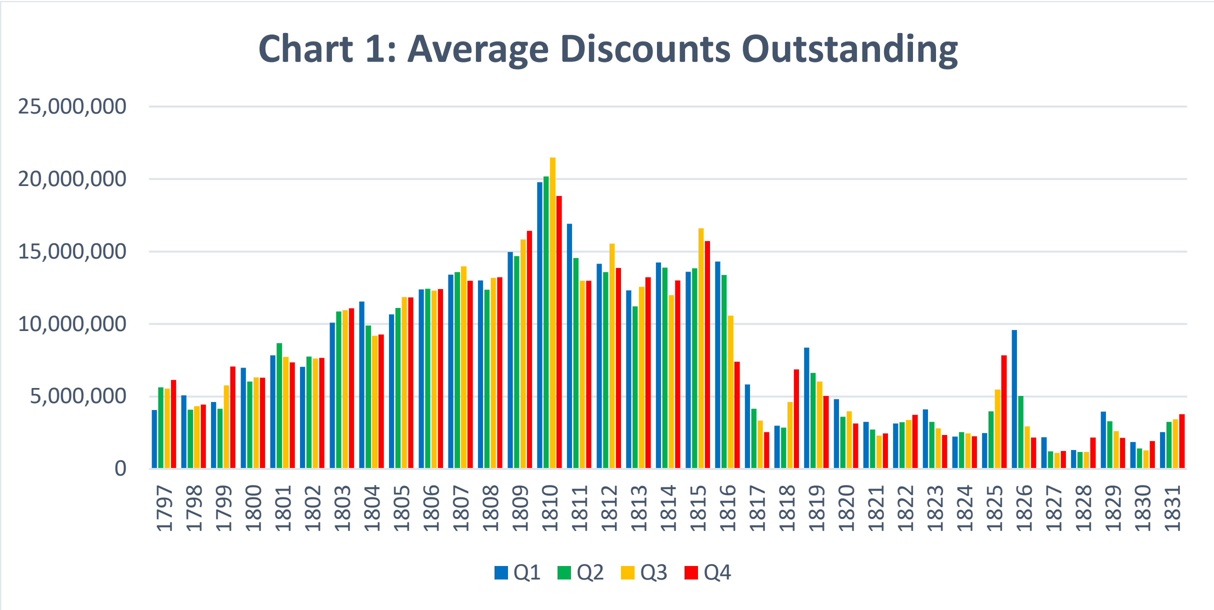
---

[6] By 1781 the right of the creditor to collect no longer depended on the original transaction with one exception: the holder of the bill to prove his claim against the issuer had to demonstrate that the endorsement of the original payee was valid (Rogers 1995: 188-90, 233). In 1791 even this last requirement was eliminated in a case of the issuer's fraud (Rogers 1995: 235-36).

[7] As Thornton (1802: 87) observes about accommodation bills "in many cases, it is sufficiently obvious what they are."

[8] The holder's right to payment could still be challenged, but the burden of proof that the holder did not give value for the bill or did not receive it in good faith was placed on the challenger, that is, on the debtor.

This transformation forced the Bank of England to develop new means of regulating the growth of credit – and thereby of controlling the money supply – that were appropriate to a system of personal credit. Through the first half of the 19th century the Bank of England was progressively developing the principles of such a system. The first step in exploring this evolution of the Bank's regulation of the money market is to understand the context in which these reforms were implemented.



from 1832 Report from the Committee of Secrecy on the Bank of England Charter, Apps. 56 and 58

Growth of discounts: A back office problem

Almost immediately after the Restriction was put in place, the discount business of the Bank grew dramatically (see Chart 1). Clapham (1945: 12) explains that immediately after the suspension "the Bank had felt it its duty to discount freely, in order to maintain public confidence; and it was right." From 1798 to 1804, the business doubled and by 1810 had increased the same amount again. While at first the Bank did not see any need to control the discounts, concern about them grew over time. They became a frequent topic of discussion at the weekly meeting of the Court of Directors of the Bank and provoked revision of the regulations governing discount. This growth culminated in the crisis of 1810 and a very public debate over the need to control the money supply.

An important motivation for the dramatic rise in borrowing from the Bank was, as Clapham (1945: 15) observes, the fact that for the first two years of the Restriction and then from mid-1803 to late-1805, there was a clear arbitrage opportunity available to those with discount accounts. The discount rate was fixed at 5%, while the price of government bonds had fallen so low that they were paying more than 5%. What made this arbitrage tricky was that the Bank would only discount bills and notes with less than two months to run and discouraged the use of funds raised by discount to pay amounts due on maturing notes (May 1 1700, February 2 1804, February 16 1804). Even so, a discounter who credibly handled a great deal of business could mask the fact that discounts at the Bank were being rolled over in order to finance the purchase and carry of government bonds.

The first issue created by the growth of discounting at the Bank was a serious back office problem, as the Bank found itself straining to deal with the business that was being brought in. New executive committees were created, and the internal structure of the bank was completely overhauled. The rules governing discount accounts were also revised.

Initially the Bank's day-to-day executive functions had been handled by two Committees: the standing Committee of Treasury and the rotating Committee in Daily Waiting (also called the Committee in Waiting).[9] Although the business offices of the Bank had in the past been supervised by the Committee of Treasury, the growth of business made alterations necessary. The business offices were divided into four groups and three new standing committees were created: the Committee for the Inspection of the Stock Offices, the Committee for the Inspection of the Printing Office, etc., and the Committee for the Inspection of the Drawing Office, etc. The only offices remaining under the Committee of Treasury's immediate direction were the Secretary, the Chief Accountant, the Chief Cashier, and the Bullion Office. Because each Committee reports directly to the Court, the goal of this reform was fairly clearly to reduce the burden – and the responsibility – placed on the Committee for Treasury (September 4 1800, 324).

Notes Committee

Around the same time that the reporting structure of the Bank was reformed, a new committee was also designated to assist the Committee in Daily Waiting. The latter committee was a rotating committee. The Court of Directors was divided into three sets according to seniority with a director serving in rotation from each set. The list of the rotation was kept by the door keeper who checked off the names of the Directors as they entered (Oct. 27 1803).

The existing protocol was to have the Governor, the Deputy Governor, and the three directors currently serving on the Committee in Waiting review each bill or promissory note that was brought in for discount. Bills, each of which carried three independent promises of payment by the issuer, the acceptor,[10] and the discounter, were reviewed on a daily basis and approved or rejected outright. Promissory notes, which bore only the promises of the issuer and the discounter, were reviewed on Wednesdays and either approved, rejected, or submitted to the Thursday meeting of the Court of Directors for evaluation. All promissory notes brought in for discount by a Director of the Bank were to be submitted to the Court at the Thursday meeting (April 14 1764).

Within the first year after the Restriction, bills with forged acceptances had been discounted, and the Bank put in place new procedures: two capable clerks were to be given the sole duty of examining the bills and promissory notes submitted for any suspicious circumstances that would be brought to the attention of the Directors before transferring the documents to them for review. To protect the Committee in Waiting from interruption the Committee were to be given a separate room into which even Directors were to enter only

[9] The other original standing committees were: the Committee for Accounts, the Committee for House and Servants, and the Committee of Building.
[10] The issuer had an established relationship with the acceptor that permitted the bill to be drawn on the acceptor. Once the bill had been stamped accepted by the acceptor, the acceptor was (with few exceptions) liable on the bill.

after having received permission. Bills and promissory notes that were taken up again by the discounter before they matured (which was part of the process by which the forgery had remained hidden for months) were to be recorded, tracked, and the related book to be submitted to the Committee in Waiting every morning (March 22 1798).

In February 1800 a Notes Committee was created to reduce the burden on the Committee in Waiting. This Committee had six directors appointed in rotation and met only on Wednesdays. It was however open to all directors to attend (Feb. 6 1800). Three and a half years later the Bank is apparently still struggling "to secure the attendance of a sufficient number of directors for the purpose of discounting the notes on Wednesdays" and a Committee is appointed to work on the problem. A month later the Notes Committee was given its own list, like the Committee in Waiting, on which the door keeper would mark off the names of the directors as they arrive. The relevant resolution adds that "no Gentleman who forms one of the Committee to be permitted to leave the Tables, until the Notes be finished unless he provide some other Director to take his place," and that the Deputy Governor is to report to the Court with the names of defaulters (Sept. 29 & Oct. 27 1803). A year later punctual attendance is apparently an ongoing problem, and a committee is appointed to address it (September 27 1804).

Clerks also posed a staffing problem. This was first addressed by reallocating some of them from the Accounting Office which was less busy (March 8 & 22 1804). In November 1804 the pay of the clerks in the Discount Office was also increased. The mechanism by which this increase took place is interesting, though one can only speculate as to the story behind it. The committee appointed to address the problem of timely attendance by the directors at the Wednesday's Notes Committee reports instead – that is, without even touching upon their assignment – that "money and presents to a very considerable amount have been received from the Discounters of Bills and Notes by the Head of the Office, and by him distributed to the Clerks in such proportions as he has thought proper. This practice your Committee think not only disgraceful and corrupt in itself, but as having a direct tendency to operate most injuriously to the interest of the Bank." The committee recommends that an immediate stop be put to this practice on pain of immediate dismissal, but also observes that "in consideration of the great labor of the business in the Discount Office, and the late hours the Clerks are obliged to attend," gratuities are appropriate (November 8 1804, 295-96). From this date up to 1822 gratuities to clerks in the Discount Office "in lieu of emoluments" becomes an annual entry in the business of the Court. To summarize, it appears that it was a long-standing tradition that clerks in the Discount Office receive a portion of their income in the form of tips – and that the committee appointed to find a way to discipline their fellow directors chose instead to make a scandal of this tradition, apparently in order to avoid dealing with their actual assignment.

In the meanwhile, the problem of staffing the Wednesday Notes Committee apparently continues. In 1809 the Court resolves to impose a one guinea fine on any Director who fails to attend the Notes Committee or to provide a director to attend in his stead (March 23 1809).

Policies designed to reduce the press of business

A variety of policies were adopted that were designed to control the paperwork burden, not all of them successful. A resolution limiting discounts to bills and notes larger than £20 was clearly more targeted to reducing the paperwork burden than to controlling the total amount under discount (Feb 2 1804). In response to the problem that the Out Tellers, carrying bags full of cash, had to travel throughout the various neighborhoods of London demanding payment from the tradesmen who had issued the bills, the Bank adopted the policy that it would only discount bills or notes drawn on London if “they are accepted payable at the Bank or at some bankers.” Subsequent to the regulation, the Out Tellers had only to visit the various banking houses (November 22 1804, February 7 1805).[11]

Efforts to control the number of discount accounts at the Bank were less successful: in January 1, 1800 there were 1184 discount accounts and the number peaked in 1810 at 1429. In early 1800 a resolution recommends to the directors to inquire very carefully into “the character, description and solidity of the Parties who may apply to them to discount at the Bank” as the number of discount accounts is increasing so quickly (Feb 20 1800). By mid-1803 it has “become necessary to establish some regulation” regarding the new accounts: Directors must either personally vouch for the new accounts before the Court, or they must bring a written testimony from the individual recommending the new account, which document will be kept on file (May 19 1803).

Discount accounts were also forbidden to certain categories of individuals. In December 1801, sworn brokers – or specialists in the trade of securities on the Stock Exchange – were prohibited from holding discount accounts (December 10 1801). On February 16, 1809 discount accounts are forbidden to foreigners except those who are associated with British subjects in partnership or who are naturalized or made free denizens. Notably the latter resolution is adopted after a committee reports that there is no legal obstacle to permitting foreigners to hold accounts at the Bank – thus this resolution may indicate a distrust of foreigners amongst the majority of directors. While some foreigners would be admitted to discount three years after the war ended (September 10 1818), this resolution was not rescinded until 1828 (September 4 1828).

Growth of discounts: A monetary problem

The dramatic growth of discounts that accompanied the restriction did not just create a back office problem for the Bank, but also a monetary problem. Over time more and more of the paper discounted by the Bank was accommodation paper and the Court of Directors struggled to deal with a monetary system that was slowly but steadily being transformed into a system based on personal credit. The transformation was first evidenced by the growth of promissory notes relative to bills, then by a dramatic increase in unpaid notes, then by an increase in bankers’ acceptances.

[11] Note that this policy likely represents an important step in the development of a banking system: in order for bills drawn on London to be discountable, the acceptor must have a bank account in London.

In the meanwhile, the Court of Directors was divided. Some directors wanted strict constraints on discounts in order to avoid a costly crash. Other directors took a sanguine approach to the dramatic increase in credit provided by the Bank. At the start of 1810, the directorship of the Bank was deadlocked, even as the value of discounts outstanding began to grow almost exponentially. This detailed examination of the Bank's approach to discount policy adds a great deal of color to the standard account of the Bullion Controversy, in which the Governor's and Deputy Governor's testimony to the Bullion Committee is treated as descriptive of Bank policy (Laidler 2000).[12]

In the 1810 environment, I argue that the Bullion Committee was called by members of Parliament with a broad range of macroeconomic experience, who saw clear signs that the problem of accommodation paper was on the cusp of spiraling out of control. By setting off a very public debate over the desirability of a prompt return to a convertible Bank note, the Bullion Committee reset public expectations about the future value of the Bank note and in doing so popped the bubble. The drop in prices was accompanied by a reduced demand for discounts at the Bank and over time by an extraordinary number of failures of London discounters. Not only did this new environment lend support to the view that too permissive an approach to credit fostered boom and bust, but with the reduction in demand for credit at the Bank's discount window, it was much easier to put in place policies restricting discounts. In the years leading up to the 1810 crisis, however, none of this was obvious.

[12] In fact, as their testimony makes clear, the motivation for the approach taken by the two Bank officials is directly comparable to the motivation that underlay US regulators' approach to 2008 crisis (see below and Wessel 2014).

The excessive growth of notes is addressed with utmost caution

On December 22, 1803 the promissory notes discounted "amounted to £1,105,749 … besides those rejected," resulting in "a dispatch of business inconsistent with the care and circumspection formerly bestowed by the Members of the Wednesday's Committees" (Feb 2 1804, 123-24). This figure was a full 10% of the average of bills and notes under discount for the quarter ending December 31, 1803.[13] On that same day, the Court for the first time appointed a committee to examine the present state of the discounts.

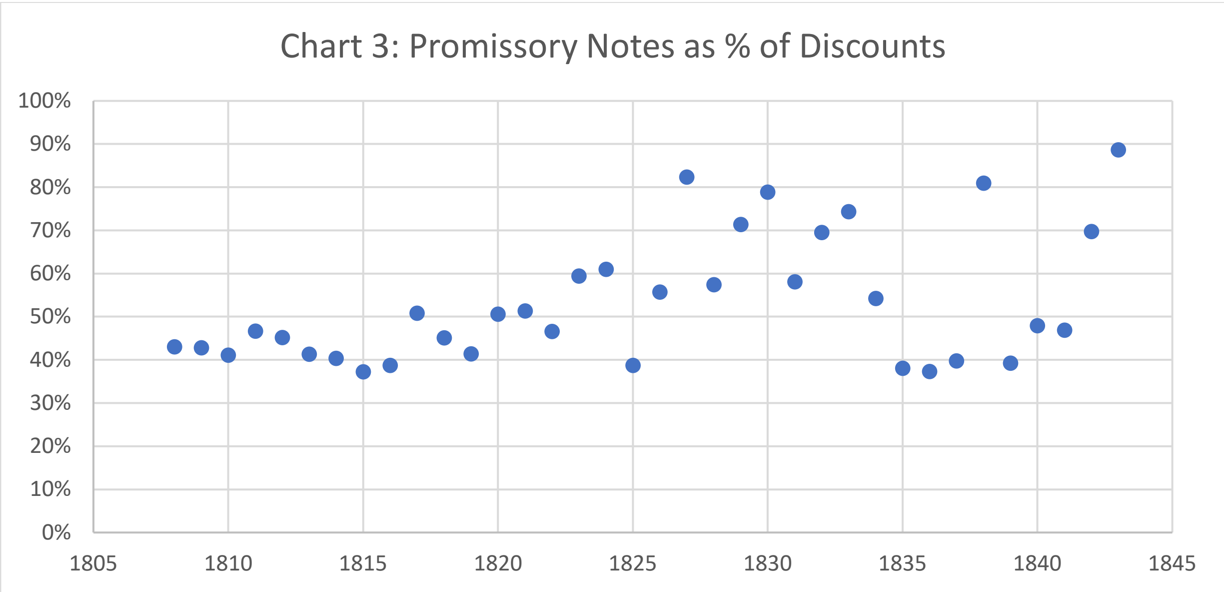
The Committee found that the excessive growth of promissory notes was an underlying cause of the ever-increasing discounts. Later analysis of the data confirms this view: at the turn of the century promissory notes comprised only about 17% of discounts, but in December 1803 they made up 37% of them (Duffy 1982: 71; Clapham 1945: I, 204-05). To address the situation, the Committee proposes, first, separating the account-keeping for promissory notes from that for bills; second, a system by which large discount accounts will be tracked; and, third, maximum levels for the accounts, with £30,000 as a general cap, and £60,000 for bankers and merchants (Feb 2 1804). The first recording-keeping proposal is adopted by the Court, but in lieu of tracking large accounts, the Court plans every six months to appoint a Committee to look into the situation. In fact, however, the next appointment of a discount committee takes place in 1809. Indeed, it is clear that there is not a voting majority on the Court in favor of putting a cap on the amount of discount credit made available to the various discount accounts. The policy of limiting the size of accounts that has been proposed is amended and weakened. While the Court agrees that the credit granted "in discount" to "any one House ought generally not to exceed thirty thousand pounds," it also adds that "if a Committee shall think it may be proper to exceed that sum on any particular occasion, such Committee shall have liberty to do so; and in such case must report their proceedings with their reasons to the next Court." Furthermore, and this is emphasized by underlining "*the Committees in Waiting are desired to be very cautious in their endeavours to bring down any of the Accounts to this limit. This ought to be done very gradually, and their proceedings reported weekly to the Court*" (Feb 2 1804, 134-35).

When setting a policy to limit the growth of promissory notes, the Court of Directors carefully draws a distinction between credit granted to a House as a discounter, the accounts "with," and the credit granted against the acceptances of a House, the accounts "upon". Observe that a bill is a liability of the acceptor and a contingent liability of the discounter (that is, a liability only in the event the acceptor does not pay). Thus, each bill will appear both in the accounts "with" and the accounts "upon."

The Court resolves that in addition to the (weak) £30,000 limit on bills discounted, the limit for bills accepted "ought not to exceed the sum of £60,000 *on* each House; yet, as there may be particular cases and circumstances the Court is willing to allow their Committees to extend the limit as far as £70,000 if upon deliberation they shall be of opinion such advance may be useful and proper and that the Committees do report weekly to the Court their exercise of such discretion" (Feb 16 1804, emphasis in original). In short, the Court

[13] Based on data from 1832 Report from Committee of Secrecy on the Bank of England Charter, App. 58.

imposes caps on the discount accounts, but with so much room for discretion that it is not at all surprising that this policy fails to constrain the growth of discounts.



While Duffy (1982: 70) reports that promissory notes discounted dropped down for a few years after this 1804 report of the discount committee, by 1808 both the number and the share of promissory notes discounted had increased again. After 1808, promissory notes never fall below 37% of discounts, and indeed after 1820 they comprise, more often than not, more than 50% of discounts (see Charts 2 and 3).

Promissory notes were distinguished from bills because they were simple IOUs with no acceptor. Thus, they were a natural vehicle for accommodation paper, loans without an underlying real transaction. As a result, the growth of promissory notes was associated with the growth of accommodation paper (Clapham 1945: 31;

Duffy 1982: 71).[14] Overall, in 1804 concern over the growth of accommodation paper was raised, but only minimal action was taken to control that growth and we may conclude that there was a conservative contingent amongst the Bank Directors that sought to restrict the growth of accommodation paper but they did not comprise a majority, and there was another contingent that was more willing to lend on demand to those who had been approved as discounters.

Unpaid bills start to become a problem

Another indicator of the changes brought on by the growth of discounts was the formation in 1802 of a new standing committee, the Committee for Lawsuits (June 24 1802, 217). Initially it was created "for the purpose of managing prosecutions in future; and giving such directions as to the retaining of counsel, and preferring indictments as they may judge expedient; and to report from time to time to the Court." The Committee's key tasks included protecting the Bank's interests in bankruptcy court, getting judgments against those who have not made payments on their bills, and pursuing collections after judgment.

Then in 1808 a special committee was formed to "examine the account of overdue and unpaid discount bills" and to give an opinion on what portion of these accounts should be written off. The 1808 report indicates that the last time a write off had been taken on unpaid bills was in 1796 (March 24 1808). After reviewing the accounts this special committee recommends that going forward a committee be appointed to perform the same analysis biannually prior to the declaration of dividends (March 24 1808, 233). This function is then transferred to the Committee for Lawsuits.[15]

Observe that in order for a bill to be unpaid, it must be the case that the acceptor refuses to pay it and that the discounter who brought it to the Bank was unable to pay it. That is, first a bill is sent for collection to the acceptor. If the acceptor refuses to pay it (in an action that is directly comparable to a bank refusing payment on a check, e.g. due to insufficient funds), the bill is "noted" and the discounter is asked to make it good.[16] Thus, unpaid bills are a subset of "noted" bills, and unpaid bills reflect discount accounts that have stopped payment. Unpaid bills also may reflect broader commercial distress since the discounter is not the primary individual liable on the bill.

Combining the January 1809 unpaid bills report with the 1809 discount committee report we find that unpaid bills and notes from 1788 through 1804 are £119,093, averaging £7006 per year. This implies that a reasonable

[14] In 1805 there was an unsuccessful effort to adopt restrictions on a category of notes that was almost certainly accommodation paper, when it was moved and seconded that promissory notes issued by tea dealers and accepted by tea brokers should be rejected. This resolution was, however, set aside without a vote (March 14 1805).
[15] Note that the Committee for Lawsuits was first tasked with evaluating "the state of unpaid bills and notes" in 1805 (April 11, 4).
[16] Observe that the process for a domestic bill is different from the process for an international bill of exchange. A domestic bill need only be "noted," whereas an international bill must be formally "protested."

estimate of the fraction of the total bills and notes discounted from 1788 to 1804 that went unpaid is 0.026%.[17] By contrast the estimate for the period from 1805 to 1808 is 0.047%.[18]

Losses on promissory notes, in particular, are the focus of the discount committee's attention. They report that from 1805 through 1808, 26 bills totaling £13,526 were not paid when due and that £5,912 has since been recovered on those bills leaving an outstanding balance of £7,614. By contrast, over the same four-year period 224 promissory notes totaling £125,876 were not paid, and £40,014 has been recovered, leaving £85,862 outstanding. In short, even though promissory notes made up less than half of the discounts over the four years in question, they accounted for more than 90% of the losses on discount (February 9 1809).

The committee observes that these losses are not of much importance – indeed the loss rate on notes, though comparatively high, is only 0.1%.[19] The losses are of concern instead because they indicate that large accommodation is being granted "to persons hitherto unaccustomed to such extensive concerns." In an environment where prices have risen but will in time fall back to their natural level and inexperienced individuals are handling large leveraged positions, failures are sure to follow, and the Bank's policies may be subject to criticism (February 9 1809).

Under the circumstances, the committee proposes substantial reforms of the Wednesday's Notes Committee. Policies which are adopted include: a Director when putting someone up for a discount account is required to submit in addition an appropriate credit limit for that individual. The Notes Committee is then to be provided with books that will make easy for them to track the credit granted to each discounter alongside the discounter's recommended line of credit. All accounts with combined discounts and acceptances (that is, the sum of accounts "with" and "upon") in excess of £100,000 are to be reported to the Court each week. The record-keeping and process followed by the Notes Committee are also reformed, including a fine for directors who fail to attend (March 23 1809).

The Committee also proposes a system of "private marks" by which each discounter is classified by the size of discount the Bank is willing to grant him, with discretion given to the Committee in Waiting to exceed the mark and report doing so at the next Court (Feb 9 1809). This system is, however, not adopted by the Court, so the existing, loosely followed £30,000 universal limit is kept, and individualized limits are only to be applied to new accounts. In fact, strict credit limits would not be adopted until the war was over.

---

[17] The Bank earned £3.85 million in income from 1788 to 1804. The interest rate charged on discounts was five percent and the maximum length of a bill was two months. Thus, the income implies that a minimum of £3.85 * 12/2 *1/0.05 = £462 million in bills and notes were discounted over this period. £119,093 is 0.026% of £462 million. This estimate will tend to be a high estimate, because the average length of bills discounted was almost certainly lower than two months.

[18] The Bank earned £2.45 million in income from 1805 to 1808. This income implies that a minimum of £2.45 * 12/2 *1/0.05 = £294 million in bills and notes were discounted over this period. The £139,402 in unpaid bills and notes are 0.047% of £294 million.

[19] The committee reports that 43% of discounts were notes in 1808. If we can assume that this fraction is representative of the whole period from 1805 to 1808 then approximately 0.008% of bills discounted went unpaid over the course of these four years, whereas 0.1% of notes discounted went unpaid.

The uncontrolled growth of bankers' acceptances

One apparent consequence of the attention paid to promissory notes by the Bank's Directors was that accommodation paper began to show up in the bills that were discounted as well (Clapham, 1945: 31). In mid-1807 the Court of Directors discusses the problem that certain discounters appear to also be partners of the country firms that issue the bills being discounted. This has the effect of reducing the security on the bill because, instead of having three guarantees of payment – the issuer, the acceptor, and the discounter – there are only two, the issuer and the discounter being the same firm. Furthermore, "there is great reason to suspect that many such Bills were not drawn at the places where they are dated, but fabricated by the resident partner in London, and as these practices may lead to consequences injurious to the Bank, and ought not to be encouraged" (June 25 1807). A proposal is considered to require "three distinct securities, viz. drawer [i.e. issuer], acceptor and discounter." But this does not pass. The policy that passes states: "That no Bill of Exchange ought to be Discounted where there is good ground to suspect that it was not actually drawn at the place where it was dated." It seems likely that the busy clerks in the Discount Office will have difficulty finding "good ground to suspect" that a bill was fictitiously drawn outside London based on paper presented to them.

The growth of bankers' acceptances is also in excess of what can be explained by genuine transactions and is therefore associated with accommodation paper. When the 1809 Discount Committee reports, it is clear that the recommended maxima that had been set for discount accounts in 1804 are being breached – due in large part to the growth of bankers' acceptances. On January 1 1804 bankers' acceptances accounted for only 11% of total discounts. By January 1 1809 they accounted for 21% of total discounts – and for 82% of the increase in discounts over the five year period. Thus, this committee draws attention to bankers' accounts that are consistently in excess of £100,000 "with and upon," that is, to those accounts for which the sum of the discounts (or accounts "with," nominally limited to £30,000) and of the acceptances (or accounts "upon," nominally limited to £60,000) in fact typically exceed £100,000 (Feb 9, 1809).

A year later bankers' acceptances have grown by £1 million or 32%, and a motion to limit any one banker's acceptances to £150,000 fails to pass (Feb 15 1810, 220). Over the following six months they grow another 15% to the highest figure that would be reported, on July 1, 1810 (Feb 28 1811). After the crisis the bankers' acceptances decline. On July 1, 1811, they have fallen from the high 12 months earlier by more than one third or £1.5 million, and the Discount Committee reports that "of 65 bankers named in the list, the Bank did not hold any of the acceptances of 32. 30 had under £100,000 each, 2 had under £130,000 each, and 1 had under £205,000" (Feb 20 1812).[20] After presenting the data the 1812 Committee reproves the Court that "it could never have been the intention of the Bank by means of discount to furnish a permanent capital to any House,"

[20] Note that the total bankers' acceptances for July 1 1811 are not reported, so the figures for decline are actually from July 1 1810 to January 1 1811 as reported by the 1811 Discount. It is almost certainly the case that these figures had fallen even further by July 1, as the decline from January 1, 1811 to January 1, 1812 was again by one-third or almost £1 million.

so it is necessary to reduce the accounts which are constantly high “as much as they prudently can.” (February 20 1812).

Over all it is very clear that in the years and months preceding the 1810 crisis, there was a dramatic divergence of opinion among the various members of the Bank’s Court of Directors. While some directors advocated policies that would restrain the growth of credit and in particular of instruments that could be classified as accommodation paper, there were enough directors who did not see the need for credit to be constrained that only very minor constraints on credit were in fact adopted.

Growing Awareness of the Monetary Problem

Further signs of division among the directors who make up the Court are clear in the discussion of the 1809 discount committee report. In general, it was common for a committee to have its recommendations either accepted by the whole Court without further comment or accepted after allowing two weeks “for consideration.” The recommendations offered by the discount committee on February 9 1809 are made, then left for consideration a fortnight hence, and reviewed by the Court in detail on March 16. We see the significantly amended resolutions on March 23 when they are adopted. The delay and the amendments are clear signs that it was not an easy task to draft recommendations that were designed both to slow the growth of the discount credit provided by the Bank and also to pass when a vote of the Court was taken.

Over the course of 1809 this division between different factions on the Court is repeatedly made clear. On July 13, when discounts are at their highest ever and rising, a motion to have a committee consider the state of the discounts was made, seconded, and then rejected on the basis that a report had recently been made and regulations adopted. On November 30, a motion was made and seconded to “limit the amount of any Promissory Note between two parties for Discount, to the sum of £10,000.” But the motion did not pass, even though the 1809 discount committee report indicated that the average value of a promissory note discounted at the Bank was about £600.

The text of the discount committee reports make it clear that this division is closely related to the classic central banker’s question of whether or not it is time to start taking away the punchbowl – with one important difference: the prior question of whether the Bank had any business managing the punchbowl at all had to be addressed. Thus, we see in the discount committee reports of 1809 and 1810 and, more generally in the debate as reflected the minutes, motivating explanations for why the Bank would have responsibilities to the public.

The 1809 discount committee, after reviewing the data on the dramatic increase in discounting at the Bank and exploring in great detail the changes in the discounts allocated to the different segments of the economy, introduces this issue of public responsibility in its February Report:

> it cannot escape the observation of your Committee that in the present state of the Commerce of the Country many articles are driven greatly above their ordinary value, but it must be expected that in the course of time, trade will return to its natural level; and … your Committee cannot avoid expressing their opinion that large

> accommodation afforded to persons hitherto unaccustomed to such extensive concerns … must in the end prove injurious to some individuals and may give the public cause to lament the too great liberality and indulgence of the Bank. (Feb 9 1809, 447-48)

This is followed by seven recommendations for controlling the credit provided by the Bank to the private sector, and then the report concludes:

> Your Committee … being themselves impressed with the importance of the subject, as it concerns the welfare of the Bank, as it concerns the prosperity and good regulation of the Trade of the Country, and as it concerns the character of the individuals entrusted with the direction of this great and opulent Corporation, they take the liberty of recommending an annual revision of the matter now brought before the Court, by a special committee for considering the Discounts. (Feb 9 1809 450-51)

While the responsibility of the Bank to the public is not stated directly in this early example, it is very clearly implied. Observe that this report simply presumes the Bullionist position that any devaluation of the Bank's notes is necessarily temporary: the Discount Committee finds that inflation is clearly observable and expresses certainty that prices have to fall, a presumption that makes sense only if the Bank Note will not be devalued relative to its value in 1797. At the same time, the report critiques the Bank's handling of its (undisputed) responsibilities with respect to real bills: it attributes the cause of the inflation to the "accommodation" offered by the Bank to individuals who were not accustomed to managing large leveraged positions, and its' recommendations are designed to restrict the growth of accommodation paper by setting and enforcing *ex ante* credit limits for every discount account.

Over the course of 1809 a public debate takes place outside the Bank over inflation and the necessity of a prompt resumption of Bank note convertibility. This debate was set off by David Ricardo's August publication of an article in the *Morning Chronicle* in favor of resumption. It is therefore unsurprising that we find in the 1810 discount committee report a much clearer discussion of the public responsibilities of the Bank.[21]

The 1810 committee opens by finding a 20% increase from 1808 to 1809 in total discounts over the course of the year. In addition, from January 1809 to January 1810, the committee finds a 32% year to year increase in the outstanding amounts of banker's acceptances discounted, and a 37% increase in discounts outstanding on January 1. The committee then attributes the remarkable growth in the discounts to the growth of accommodation paper, finding that:

> [in the trade with foreign merchants] the Parties who required the largest accommodation are for the most part newly established Houses, that the Notes sent in are frequently between two Importers, or between two large wholesale Dealers, which has the appearance of mutual consent to support the price of an Article, to the prejudice of the Public, whereas the regular course of trade would be for the Commodities to pass from the Importer to the middle man or Manufacturer.

[21] Note that the recommendation of the 1809 discount committee that a discount committee be appointed every year was not embraced in a resolution by the Court, and that the appointment of the 1810 committee was an independent decision.

> The same remark applies to the Home Trade likewise, and Notes are frequently seen between two warehousemen of the same class, which affords ground for suspicion that if a Sale should actually have taken place, the Transaction is for the purpose of speculation upon an expected rise in the article purchased such as Cotton Goods, Woollens or other Manufactures, to the injury of the Consumer. (January 25 1810, 202-03)

The 1810 Committee makes it clear that the Bank's support of accommodation paper is of concern because it has the effect of raising prices "to the prejudice of the public" and "the injury of the consumer." In short, real-bills-based constraints on bank lending are presented as motivated by the Bank's responsibility to the public to avoid inflation. The Report continues to state the Bank's broad public responsibility explicitly:

> Your Committee have pointed out the above particulars, not only as they concern the Bank, respecting the sufficiency of the Parties, but also upon a more extended view of the subject, with regard to the Community.
>
> The Charter which the Legislature has granted to the Bank, was no doubt given for the general Benefit, and those who are entrusted with the Direction of such extraordinary privileges, ought to keep in view the good of the community as well as the Profits of the Corporation. If these sentiments of your Committee be just they cannot refrain from expressing their doubts of the propriety of discounting so largely for Individuals or of advancing to an unlimited extent upon the acceptances of London Bankers. (January 25 1810, 203-04)

The 1810 Committee argues directly that the Bank has an obligation to look beyond its own profits and to take the public welfare into account. Indeed, the last paragraph reads as if the authors are pre-empting an argument that they expect to hear: that the Bank's only duty is to its own profits and to its shareholders.

When it comes to recommendations the 1810 report observes that the resolutions adopted subsequent to the 1809 report are not in fact being followed, in particular, "the check endeavored to be put upon too indiscriminate liberality in Discount as well as upon the acceptances of Bankers by reporting the high accounts weekly to the Court has fallen into disuse," and reproves the Court that if a resolution is impractical for a reason such as the press of business, it should be amended rather than simply ignored (January 25 1810, 204-05). The report concludes by reiterating the recommendation of the previous discount committee:

> Your Committee will not enlarge further on the subject, but earnestly recommend the adoption of an annual Committee to enquire into the state of the Discounts, whereby a Comparison may be made with preceding years, and the Notice of the Directors may be periodically drawn to the consideration of this important Branch of the Bank's affairs – tending it is hoped to the benefit of the Establishment, and the good of the Public. (January 25 1810, 205)

Discussion of the report is postponed for a fortnight, which is a fairly common event. What is not common is that the minutes state that "the debate" rather than "consideration of the report" is being postponed (January 25 1810, 206).

When the report is discussed it becomes clear that one segment of the Court of Directors is not just opposed to the discount committees' interpretation of real bills-based Bank governance, but is successful in preventing the committees' policies from being implemented. The most generous explanation for their approach is that they believed it to be the Bank's duty to support commercial activity by discounting liberally upon demand, and this is discussed in detail below based on the testimony of the Governor and Deputy Governor to the Bullion Committee in 1810. Note, however, that less charitable explanations may apply to some of the directors: some may have been focused on the profitable lending business the Bank was running by discounting the commercial paper that was being brought to the Bank without a very critical analysis of its quality, leaving the big picture take care of itself; and some perhaps were not disinterested, but in fact profiting personally from the boom and the easy terms of credit provided by the Bank.[22]

Immediately after the decision to postpone debate on the report, it is moved and seconded "that it is the opinion of this Court that the amount of the discounts which has for some time past been progressively, but rapidly increasing ought to be reduced with the least possible inconvenience or embarrassment to the Public or Individuals." The motion does not pass (January 25 1810, 206).

When the report is considered on February 15, elements of the debate are recorded in the minutes. It opens with a salvo from the directors who want to control inflation and restrict the discount of accommodation paper. They put forward a motion to refuse to discount all promissory notes that do not state the transaction for which the note was drawn. This motion is answered with a lengthy "amendment" which opens with some data citing the recent seasonal fall in the discounts and the previous years' decline in the discount of government paper to rebut the positions taken by the Discount Committee on the state of the discounts. The "amendment" concludes:

> That altho' the Discount Accounts of some individual Houses may appear upon comparison to be unusually high, it does not seem expedient to have recourse to any extraordinary measures to reduce the total amount of Discounts. That the Acceptances of Bankers have much increased of late years, and that it be recommended to the Committee of Waiting to pay particular attention to the state of those accounts. That this Corporation, being particularly interested in the Prosperity of the Commerce of this Country, is peculiarly called upon to give every possible assistance and Support to the Commerce and Credit of the City of London. (February 15 1810, 219)

Both the amendment and the original motion fail to pass. There follows a motion that no banker's acceptances should total more than £150,000 and "that the Committee of Daily Waiting be instructed to reduce gradually all accounts above such sums." This too fails to pass (February 15 1809, 220). The session closes with two resolutions: that a committee be appointed annually to inspect the discounts and that the Court proffers its thanks to the directors who prepared the report.

What is remarkable about this debate is that the Directors appear to have agreed on the key underlying question: both sides accept that the Bank has a responsibility to the public, and both sides are framing their arguments in terms of this responsibility. This consensus that the Bank has public duties and that the question

[22] See the discussion of the discount committee report of 1812 below.

for the Court is how best to meet those responsibilities underlies the discount committee reports and the related discussions for the next two decades.[23]

The side that wants to restrain the Bank's discounts is arguing based on a real bills framework that the excessive finance of accommodation paper is causing inflation and that the Bank's discount policy must be adjusted. The side that stymies the discount committees' recommendations is given voice in the testimony of Governor Whitmore and Deputy Governor Pearse to the Bullion Committee. For example, Governor Whitmore makes it clear in the following dialogue that an important motivation for discounting liberally is to serve the public:

> Question: Supposing the Bank to be now paying in cash [i.e. gold], and to experience [a drain of gold], would they [i.e. the Bank Directors] not be disposed under such circumstances to reduce in some degree their discounts to merchants and their loans to Government?
> Whitmore: Most unquestionably they would, if considered only with reference to the Bank; but that would be attended with great injury to public credit.
> Question: By taking public credit into your consideration in such an emergency, do you mean only the accommodation of government, or do you include besides that, the accommodation of the mercantile world?
> Whitmore: I would include both considerations. (H.C. 1810, 89)

The motivation for this approach is made clear in later testimony. Governor Whitmore explains that the lesson he draws from the Bank's experience of restricting discounts in 1796 and 1797 – which ended in the Restriction – was that if the Bank "had persisted in diminishing their discounts to a greater degree than they did, they would have brought on ruin to the mercantile part of the community" and that "many of the Bank Directors repented of the measure" (H.C. 1810, 110). Indeed, the combination of both a standard internal drain generated by country bank failures and elevated demand for gold due to fear of invasion forced the Bank over these months to reduce discounts even though it was clear that the support of commerce called for a more liberal policy: both Bank officials manifestly understand the monetary forces that were at play and find that the Bank by allowing the outstanding notes to shrink with the Bank's gold reserve caused "much of the public and commercial distress which arose" during this period (H.C. 1810, 110). It is Deputy Governor Pearse who draws from this the clearest lessons: "From our experience, and in my view of it, I can see no positive inconvenience likely to result from [the Restriction becoming] a permanent measure." It is only because "the feelings of the public would not be satisfied, unless it had in expectation" the lifting of the Restriction, that Pearse recognizes the necessity of restoring convertibility (H.C. 1810, 112; see also 119-20). This view then leads Pearse to the immoderate and much criticized conclusion that there is virtually no risk of inappropriate liquidity provision by the Bank:

[23] This conclusion stands in stark contrast to that of Frank Fetter (1965: 58-60) for reasons that are unclear. Presumably these early discount committee reports did not draw Fetter's attention.

> though the balance [of bank notes] might be slightly and transiently disturbed, no considerable or permanent over issue could possibly take place, as from the nature of things the amount of Bank notes in circulation must always find its level in the public wants. (H.C. 1810, 127)[24]

In short, the Bank directors in 1810 were facing the conundrum inherent in the concept of a lender of last resort: a lender that provides abundant liquidity in crises, but doesn't lose sight of the long-run incentives being generated. After all we see the same division in the discussion of the Federal Reserve's actions in 2008: at the extreme of one side experts with significant experience managing crises argue that it is never a mistake to provide liquidity to stressed financial institutions (Geithner Interview, Wessel 2014; see also Mankiw 2018), and at the other extreme experts find that it is the excessive provision of liquidity to troubled financial institutions that generates instability (Taylor 2010). The evidence indicates that it was this same debate that was taking place among the directors of the Bank of England in 1810.

In 1810, however, both contingents of Bank directors framed their arguments in terms of real bills-based banking. Those who sought to restrict lending defined specific categories of bills, determined that they were made up of inflationary accommodation paper, and therefore concluded that they should not be discounted by the Bank. Those who supported liberal lending focused on the dangers of causing a recession or worse by tightening credit standards and imposing a shock on the commercial community – and argued that very few bills were clearly accommodation paper.

Another way of framing this debate between Bank of England directors is to place it within the context of the state of the English law around 1800. The issue was whether the Bank should follow the rule that had governed credit through much of the 18th century by limiting the discount of bills that had not *originated* in a real transaction, as was argued by the directors who sought to constrain discounts. The alternate view was that the Bank should base its policy on the current law and discount any bill as long as there was reason to believe that the *discounter* had given value for it. This was the position of the directors who preferred a more liberal approach. Independent of how one chooses to frame the directors' views, the Bank's liberal policies with respect to accommodation paper undoubtedly played a role in its growth.

The Bullion Committee Report

Given that the lack of consensus at the Bank precluded any ability to act decisively, the timing of the Government's Bullion Committee Report in relation to the policy debate within the Bank is very interesting. The discount committee gave its report on January 25 and, as was clear on that day, it was going to be hard if not impossible to come to a consensus about the report. On February 1 Francis Horner, an MP with economic

[24] While Pearse's statement is in response to a question regarding the issue of country bank notes, this statement does a good job of encapsulating the approach to Bank notes as well. See also p. 112 ("From the manner in which the issue of Bank notes is controlled, the public will never call for more than is absolutely necessary for their wants."); Whitmore p. 97 ("I have already stated that we never forced a Bank note into circulation, and the criterion by which I judge of the exact proportion to be maintained is, by avoiding as much as possible to discount what does not appear to be legitimate mercantile paper. The Bank notes would revert to us if there was a redundancy in circulation, so no one would pay interest for a bank note that he did not want to make use of.")

expertise, presented a motion in Parliament to investigate "the present state of the circulating medium and the bullion trade." While it is not obvious that Horner himself would have had knowledge of the dysfunction in the Bank's directorship, there were at least two MPs who were also Bank Directors present at the January 25 meeting of the Court, William Manning and Samuel Thornton. Furthermore, Henry Thornton, the brother of Samuel, was also an MP and a prominent economic theorist. And Alexander Baring was both an MP and Bank director. In short, several members of Parliament were almost certainly aware that the Bank directors who sought to put strict limits on the accommodation paper discounted at the Bank were losing the internal policy debate. At the February 15 meeting when the Court of Directors' failure to restrict discounts was finalized, William Manning, Samuel Thornton, and Alexander Baring all attended. And then on February 19 the Bullion Committee was appointed. William Manning, Alexander Baring, and Henry Thornton were all appointed to the Committee, although of the three only Thornton had a hand in drafting the final report (Cannan 1919: xxi-xxii, xlii).

This timing and the fact that the report came out too late for Parliament to vote on its recommended policy makes it clear that the purpose of the Bullion Committee was to affect the outcome of the Bank's internal struggle by taking the policy debate public – and not coincidentally by altering the public's expectations of the date of resumption. Indeed, the Bullion Committee is perhaps the only occasion where a government investigation into the mismanagement of the financial system precedes rather than follows a crisis.

Most likely such dramatic action was taken because credit growth was clearly accelerating (see Chart 1), and there were several MPs who had the expertise to understand that the Bank of England note faced the genuine risk of going the way of the *assignat* if preventive action were not taken. Four MPs who were appointed to the Committee, Thornton, Parnell, Huskisson, and Horner, had between them witnessed the collapse of the *assignats* and its social consequences in France, the fall and recovery of the Irish currency, and the vicissitudes of country banking in England. Three of them had written extensively on the topic of managing the currency.[25] In short, Parliament in 1810 had a remarkable measure of macroeconomic expertise upon which to draw. Under the circumstances it was unlikely to be a coincidence that the public debate set off by the publication of the Bullion Committee's report reset public expectations regarding the likelihood of Resumption and was almost immediately followed by a fall in prices and in the demand for discounts at the Bank, making it much easier and less internally controversial for the Bank to adopt controls on credit.

[25] Sussman (1997) discusses Huskisson's role on the Committee. Arnon (2007) presents a very nuanced view of Henry Thornton's approach to the Bank and establishes that Thornton was in general in favor of the Restriction and of its continuation until the end of the war (a position typically called "anti-bullionist"), was a supporter of Bank discretion and in general of the Bank Directors, but by 1810 had begun to criticize publicly the views of the Governor and the Deputy Governor as expressed in their testimony to the Bullion Committee.

Within the Bank the policy debate had centered on the correct interpretation of the real bills approach to banking, and there were many areas of agreement: both sides recognized that the Bank had a duty to support commercial activity through its discount policy, both sides agreed that discount policy should favor real bills, both sides agreed that some paper should be rejected at the discount window. The whole of the Bank's internal debate was over where to draw the line between real bills and accommodation paper.

The Bullion Committee had an excellent understanding of this problem and their report describes the real bills approach advocated by the Governor and Deputy Governor as "possessing no distinct and certain rule to guide their discretion in controlling the amount of their circulation" (H.C. 1810: 57). The Report explains that when the gold standard was in effect the approach advocated by the Governor and Deputy Governor before the Committee was completely appropriate, and exonerates them:

> [After the restriction] it was very natural for them to pursue as before … the same liberal and prudent system of commercial advances from which the prosperity of their own establishment had resulted, as well as in a great degree the commercial prosperity of the whole Country. It was natural for the Bank Directors to believe, that nothing but benefit could accrue to the public at large, while they saw the growth of Bank profits go hand in hand with the accommodations granted to the Merchants. (H.C. 1810: 54)

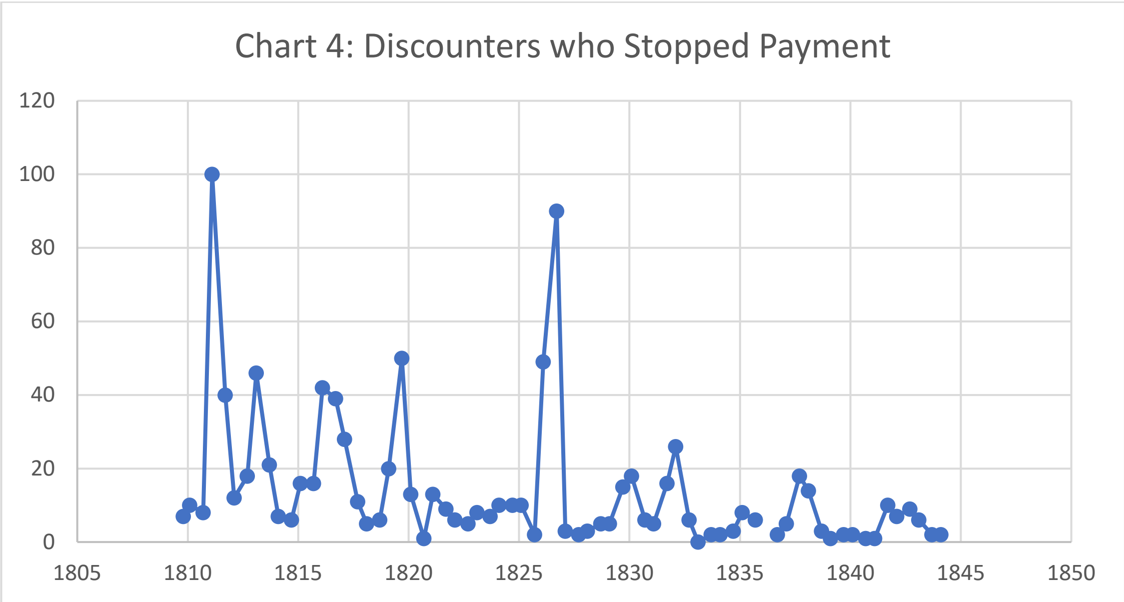
Even so, the Report explains that subsequent to the restriction, the policy advocated by the Governor and Deputy Governor "with utmost confidence" is built upon a fallacy, because they fail to realize that, in the absence of convertibility, every discount becomes an addition to the supply of money which causes prices to rise, which in turn increases the demand for discounts, etc., setting off a vicious cycle of inflation that may progress indefinitely (H.C. 1810: 55-56). Thus, despite the fact that the Bank is not blameworthy for its actions, "Your Committee cannot hesitate to say, that these opinions of the Bank must be regarded as in a great measure the operative cause of the continuance of the present state of things [i.e. the domestic inflation]"[26] (H.C. 1810: 59).

The Report ends by unequivocally advocating for an eventual repeal of the law suspending payments, while at the same time concluding that the delicacy of the operation means that "the particular mode of gradually effecting the resumption of cash payments ought therefore, in the opinion of Your Committee, to be left to a great measure to the discretion of the Bank" (H.C. 1810: 76). The Report appears to have had a persuasive effect on the Bank directorship who began ever so slowly to constrain the growth of discounts: Just six weeks after the Report's publication, two requests for discount accounts are rejected by the Court (July 26 1810), and a month later the Court declines to renew an account (August 23 1810).

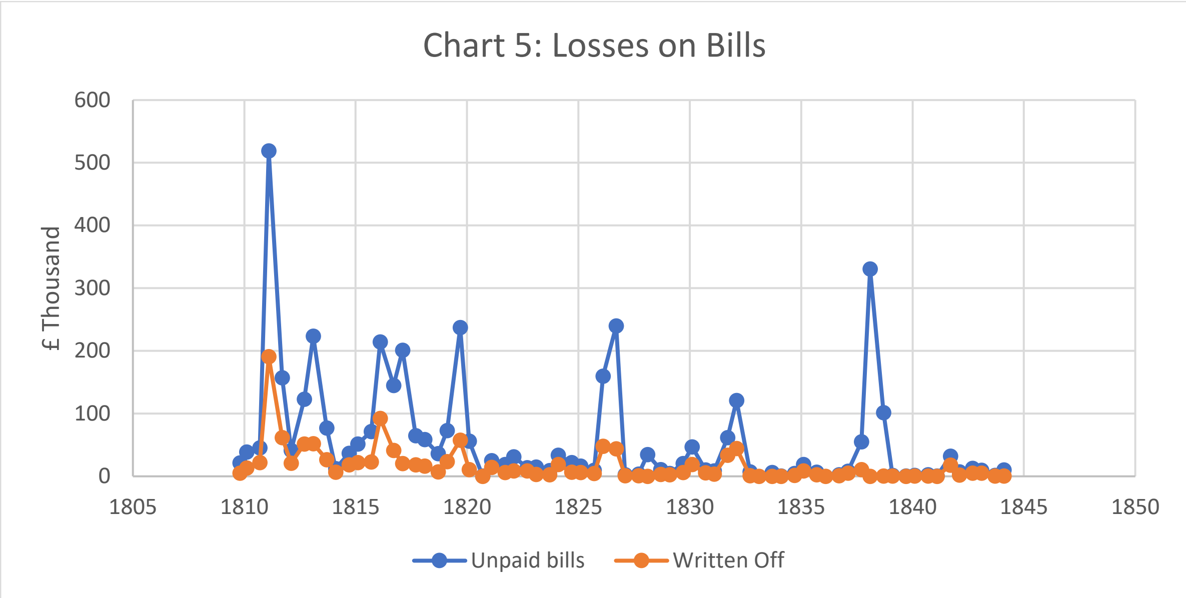
The Crisis of 1810 and its aftermath

[26] The testimony of the Bank of England directors who defended the pre-1810 run up in credit before the Parliamentary Committee has gone down in history as "answers that have become almost classical by their nonsense" (Bagehot 1873: 86).

Almost certainly the most significant effect on the Bank of the Bullion Report – and of the public debate subsequent to its publication – was indirect and followed from its effect on public expectations regarding the future value of the Bank note (see Clapham 1945: 29). Prices fell, and given the extended state of credit that had been built on elevated prices, a crisis followed. Discounts outstanding had reached their all time high of £22.5 million on July 5 1810; by January 1 1811, they had fallen by more than 20% (February 28 1811).[27] In fact, in the fiscal year after the Bullion Committee Report's mid-1810 publication, the Bank saw more discounters suspend payments and incurred greater losses on discounts than it had in any prior year or would in any subsequent year (see Charts 4 and 5). Calculating a rate of loss on the discounts for the fiscal year from August 1810 through July 1811, we find 0.6% of discounts became unpaid bills over the course of the year. After seven years of slowly gathering payment on these bills the total write offs that the Bank would take on the bills amounted to 0.23% of the fiscal year's discounts.[28] When this figure is compared with the 0.047% average losses from a few years earlier or with the 0.026% average losses of the previous decade, it is clear that the 1810 lender of last resort operation was associated with higher costs to the Bank, in contrast to the findings of Bignon et al. (2011) for a later period.



[27] Discounts over the course of the year 1810 totaled more than £138 million. This also would be an all time high.
[28] The Bank earned £914,000 in discount income over the course of the year. This income implies that a minimum of £0.914 * 12/2 *1/0.05 = £109.7 million in bills and notes were discounted over this period. £667,465 in unpaid bills and notes are 0.6% of £109.7 million. £252,813 in write offs are 0.23% of £109.7 million.



The consequences of the crisis are detailed in the 1812 Discount Committee Report which compares the data on unpaid bills for the years 1809 to 1811 to the same data for the years 1805 to 1808 that had been presented by the 1809 Discount Committee. The default rate on bills, which had been less than 7 bills per year, increased by 15 to 22 times depending on whether one evaluates the number or the value (respectively). Furthermore, the rate of recovery on them fell from 44% to 31%. Unpaid promissory notes, which already had a default rate of over 50 per year in the earlier period, quadruple, and the value of unpaid promissory notes increases more than sevenfold. Recoveries on notes rise from 32% to 36%. The net effect is that notes from 1809 to 1811 comprise 75% of unpaid securities and 74% once recoveries are taken into account.

The authors of the report conclude that the crisis "unhappily verif[ies] the apprehensions expressed by your committee in 1809, 'that large accommodation afforded to persons unaccustomed to extensive concerns was likely to cause speculations which must in the end prove injurious.'" The Committee explains the proportionate increase in losses due to bills (as compared to promissory notes) by observing that when, subsequent to the 1809 report raising the alarm over unpaid notes, some discounters found their notes rejected, they apparently had "bills drawn, or purporting to be drawn in the Country by servants, and other persons who were not possessed of any real property" (Feb 20 1812, 268-69).

Crisis-driven policy innovation: Account closures and emergency lending

Because annual losses on discounts before 1808 had typically been less than £10,000 per annum, prior to that date, as was discussed above, no method had been put in place to track the losses regularly. The Bank also apparently did not have formal policies to deal with those who failed to make payments. This changed in 1810. In September the Bank announced that "the Discount Account at the Bank of England of all persons who shall have suspended their payments shall be considered as closed" (September 27 1810). In January the rule was extended to apply to acceptors, issuers and endorsers who failed to pay within 30 days of being called upon to do so by the Bank.[29] Furthermore, until the obligation was paid such firms could not re-open their accounts and, even then, the firm would have to apply again for an account (January 31 1811). In 1815 the Court addresses some instances in which the acceptor has purported to make a bill payable at a bank where the acceptor has no account. The policy adopted is to give the discounter one warning of the fraud and in the event the discounter discounts such paper with the Bank again to consider closing his accounts (February 16 1815).

The Bank also put into place policies designed to limit the number of new discounts granted. Remarking on the numerous applications in recent years "from persons whose responsibility cannot be known to the Directors," in 1812 the Court establishes a minimum requirement of two years in wholesale trade for new accounts, carefully excluding existing accounts from falling under the new rule (March 19 1812). Several months later the Court resolves that a Director must attest based on his own knowledge to the solidity and respectability of an individual before a new discount account may be opened (December 17 1812). In addition, bill brokers are not permitted to be discounters (February 20 1812). As a result of these policies, the number of discount accounts at the Bank declined fairly steadily for 15 years after the peak in January 1810.

The 1810 crisis, in addition to promoting policy innovation designed to close the Bank's discount window to imprudent discounters, also fostered policy innovation for the support of prudent, but endangered, discounters. The 1811 Discount Committee was assigned the task of designing a regulation for "special loans" to individuals. These loans provide a non-discount-based form of emergency lending that bolsters the money market by supporting those whose debt trades on it. The object is "to support the credit of such as are found to have sufficient effects, but whose assets by the calamities of war or other circumstances may be for a time placed out of their reach, and not to enable Houses who have failed to compromise or settle with their creditors" (February 28 1811).

The basic structure created by this regulation would govern extraordinary emergency lending for decades. Firms that have stopped payment are ineligible "unless upon very special occasion." For any firm that seeks such a loan two or more inspectors who are "respectable persons, not Directors of the Bank, nor creditors or debtors to the Estate" must (i) supervise the drawing up of the firm's accounts for presentation to the Bank, (ii) agree to act as securities for part of the Bank loan, and (iii) certify that the size of the loan is adequate to enable the firm to settle its affairs and satisfy all creditors. Security (i.e. personal guarantees and/or collateral) must be given for the whole of the loan, before any of it is released. Finally, in the unlikely event that the firm fails despite the Bank loan "the securities are to understand that they will be called upon to take up their notes, the object of the loan being defeated." To ensure that there is no confusion over the securities' role, the regulation is to be distributed to the securities so that they understand the conditions to which they are agreeing.

[29] On August 12 1812 the minutes observe explicitly that two discounters' accounts are closed when an acceptor fails and they cannot pay up.

Observe that a basic principle of emergency lending was set forth from its earliest days. All such loans must be fully secured. Security, however, typically referred not to collateral, but to a third party's obligation to make the payment in lieu of the borrower in the event of default. In modern terms, this means that the Bank is effectively a contingent creditor on the loans and the securities bear losses before the Bank. From the description above it is clear that the Bank used this subordination to align incentives: the same individuals who certified the borrower's solvency were required to take a first loss position on the Bank loan. Observe also that this emergency lending structure is not dissimilar to the Federal Reserve's 2008 Maiden Lane conduits in which the Fed provided a senior loan that was protected by an equity investment or subordinated loan (provided by the borrower, its affiliate, or its purchaser see http://www.newyorkfed.org/markets/maidenlane.html). Whether despite these precautions, or perhaps due to loans made before these precautions were implemented, the Bank did in some cases lose money on its emergency lending for the 1810 crisis (February 24 1814, 224).

There is also a hint that lending before and during the crisis might have been affected by self-interested behavior on the part of a few directors. While the tone of the 1811 Discount Committee, reporting in the midst of the crisis, was very different from the alarm-raising tone of the two previous reports and focuses on the significant declines that have occurred in the discount of bills, notes, and bankers' acceptances, the 1812 Discount Committee is once more advocating for policy changes. The 1812 report raises the concern that a quarter of the "notes are done by a single Director with the assistance of the Head of the Discount Office," and proposes changes to the process for evaluating notes that will ensure that three directors are always present when notes are being evaluated (February 20 1812).

Nascent monetary policy

The Bullion Report observed that the Restriction created a novel situation for the Bank by entrusting the Bank "with the regulation and control of the whole circulating medium of the Country" (H.C. 1810: 47). As we have seen the response within the Bank to this trust was for the Bank directors to acknowledge internally a duty to support mercantile credit via its discount policy. While the goal of discount policy was well-defined, the means of achieving the goal was not: the real bills framework, as has been noted, provided no simple rule that could be followed when implementing policy in an environment where accommodation paper was unexceptional.

Even so, in the Bullion Report it is implicitly assumed that the real bills framework will be effective again once the Restriction is ended. In fact, however, even at the time that the Report was written, the monetary system had been sufficiently transformed that there was no turning back. The monetary system that existed prior to the Restriction had been founded on transaction-based credit. A consequence of the Restriction and of the Bank's liberal discount policy up through the 1810 crisis was that the use of accommodation paper had become so common that the close connection between the money supply and real transactions was severed. Instead the money supply was being determined by the extent of personal credit available through the discount market. This transformation would force the Bank to develop new means of regulating the growth of credit – and thereby of controlling the money supply.

The first step in developing tools of monetary control was the proposal of both the 1809 and 1810 discount committees to have an annual investigation of the state of the discounts, because of "the importance of the subject, as it concerns the welfare of the Bank, [and] as it concerns the prosperity and good regulation of the Trade of the Country" (February 9 1809). Adopted by the Court in 1810, these reviews served as yearly evaluations of Bank's monetary policy, providing a regular opportunity for proposals to improve the system to be made.

Another important guide to action was recommended by the Bullion Committee: foreign exchange rates should be watched with care. When they all rise together and the effect persists, there is strong evidence that a domestic inflation is taking place and that controls on monetary growth should be implemented.[30] This lesson would help govern the Bank's behavior even after convertibility had been resumed.

Even though there was no constituency – or at least only a paucity of votes – in favor of turning back the clock and trying to reform the Bank's discount policy so that only real bills were discounted, there was – after the 1810 crisis – a willingness to put controls on paper that is clearly accommodation paper. This effort, not to prevent the use of accommodation paper, but to limit its use so that it does not grow beyond acceptable bounds, I will call the "real bills principle." Advocates of the real bills principle use the language of "legitimate paper" and "accommodation paper" to distinguish between "good" and "bad" discounted paper. At the same time these individuals recognize that attempts to extirpate accommodation paper entirely are both impractical and inadvisable. Thus, proponents of the real bills principle, favor real bills, without attempting to squash out the existence of accommodation bills.

Evidence of such a real bills principle is seen frequently after the crisis. The 1811 Report brings to the Court's attention two concerns that have already been raised by other committees. First, it warns the Court against the discount of paper that is clearly accommodation paper because it is "between two Importers, wholesale dealers or warehousemen in the same line of business." This same concern is stated repeatedly in subsequent discount committee reports (February 20 1812, March 18 1813, February 9 1815).

Second, high accounts – especially those that stay high from month to month – are another indicator that the accountholder is relying on accommodation paper and using the discount market to access personal credit. The 1811 report criticizes "the total disuse of the regulation requiring the Committee in waiting to make a weekly report to the Court of the high accounts, which regulation acted in some degree as a check to their increase"

[30] Several papers have sought to evaluate empirically the claims made in the Bullion Report that domestic inflation was being caused by the growth of the money supply. Due to data limitations, however they typically evaluate a period that goes well beyond 1810. As is shown below, the Bank's behavior changed dramatically after the Report and the 1810 crisis, so it is unsurprising that empirical evaluations that average across very different monetary policy regimes tend to find results that contradict each other and are not robust to different formulations of the question. (Finding that money supply growth did not cause inflation: Nachane and Hatekar 1995, Officer 2000; finding the reverse: Hendrickson forthcoming.)

(February 28 1811). The 1812 Committee also recommends reviving a regulation requiring Chief of the Discount Office to report on a weekly basis which notes he believes are being renewed. Because transaction-based credit tends to be paid off upon the sale of goods, the renewal of notes is another indication of accommodation paper.

In fact, a new method of keeping the books is adopted to help "distinguish the kind of paper brought in for discount and particularly that of accommodation bills." The discount or "with" accounts and the "upon" accounts are to be kept in separate books, but each entry is to include the maturity date and to cross-reference the other parties. (July 18 1812). Thus the careful record-keeping, found by Flandreau and Ugolini (2013), that gave the Bank fairly comprehensive knowledge of the discount market originated in an 1812 policy designed to distinguish legitimate paper from accommodation bills.

The growth of accommodation paper reflected a shift in the mercantile community's understanding of what paper could legitimately be circulated on the money market. In an environment where the legal boundaries defining "good" bills were being stretched and shifted, it unsurprising that some of the more adventurous traders pushed those boundaries too far. The Bank's response was to start to police the boundaries of acceptable behavior by prosecuting certain cases of fraud (June 11 1812). Very early however in these endeavors, it becomes clear that it is all but impossible to draw a bright line dividing legitimate behavior from fraudulent behavior.

In May 1813 the Court votes to prosecute Joseph Nash, who discounted bills drawn by fictitious individuals. This case makes it clear that the easy availability of accommodation paper had created an environment where some tradesmen simply did not understand that using the discount market to raise funds by signing the name of a fictitious person is a hanging crime – even if one genuinely intends to pay up on the loan.

When Joseph Nash was unable to promptly pay a bill that had come to the Bank, the forgery was discovered and he was prosecuted and found guilty. At trial it was apparently shown that he had gone to the Bank a few days late to pay the bill, but payment was refused. As a result, the jury that finds him guilty recommends mercy. When the case is discussed by the Court on June 10, the Court concurs with the jury. Thus, the Governor and Deputy Governor spend a day calling on the Home Secretary and the Attorney General in order to plead for a Royal pardon. The Governor also sends a letter to the chief judge on the case. Subsequent to these efforts, a Royal pardon is in fact granted (May 13 1813, June 10 1813, June 17 1813, July 29 1813, Newgate Calendar). At the conclusion of this incident, the Bank publicizes the case for the express purpose of putting "the Public on their Guard as to the Law respecting this species of Forgery."

It appears that these reforms of the Bank's lending policies were effective. By 1814 the Discount Committees are remarking on the significant decline in unpaid bills and "are of opinion that the quality of the paper discounts of late has much improved as to its solidity and legitimate origins" (February 24 1814, 222-23. See also February 9 1815).

Conclusion

Britain's remarkable ability to issue debt has long been recognized by historians as one of the most important factors in its successful campaign against Napoleon. This focus on government debt, however, completely underestimates the revolutionary nature of the transformation of the British financial system during the war years. I argue here that the shift from a transaction-based monetary system to a monetary system based on personal credit is a fundamental change that can help explain Britain's extraordinary robust economic performance through the war years.

Over the course of the war the use of accommodation paper became the norm in Britain. The Bank of England facilitated this transition, up until 1810 by putting few if any constraints on the discount of accommodation paper and after 1810 by targeting only specific categories of accommodation paper as particularly dangerous and in need of control. As the circulation in the money market of this paper based on personal credit became acceptable, Britain – accidentally – developed a completely new kind of monetary system. In the final years of the war, the Bank was in the earliest stages of first recognizing that this new system required active control, and then of taking the first steps in developing a system of control. Over the decades following the end of the war the Bank would learn – largely through trial and error – how to manage a monetary system based on personal credit.

References

Arnon, Arie (2007). The early round of the bullionist debate 1800-1802: Boyd, Baring, and Thornton's innovative ideas. (Monaster Center for Economic Research, Ben-Gurion University Discussion Paper no 07-14.)

Bagehot, Walter (1873). Lombard Street: A Description of the Money Market. New York: Wiley (1999 reprint).

Vincent Bignon, Marc Flandreau, & Stefano Ugolini, Bagehot for beginners: the making of lender-of-last-resort operations in the mid-nineteenth century, 65 Econ. Hist. Rev. 580 (2012).

Cannan, Edwin (1919). The paper pound of 1797-1821 Introduction. London: PS King & Son.

Chalmers, M.D. (1896). A Digest of the Law of Bills of Exchange. London: Stevens and Sons, Ltd.

Clapham, John (1945). The Bank of England: A History, vol II. Cambridge U Press: Cambridge.

Duffy, I. (1982). The Discount Policy of the Bank of England during the Suspension of Cash Payments, 1797-1821. *Economic History Review*, **35**, pp. 67-82.

Barry Eichengreen (1996). Globalizing Capital A History of the International Monetary System. Princeton University Press.

Fetter, Frank (1965). Development of British Monetary Orthodoxy 1797-1875. Cambridge, MA: Harvard University Press.

Marc Flandreau and Stefano Ugolini (2013). “Where It All Began: Lending of Last Resort and Bank of England Monitoring during the Overend-Gurney Panic of 1866”, in Michael Bordo and William Roberds ed. A Return to Jekyll Island: The Origins, History, and Future of the Federal Reserve 113-165.

Hendrickson, Joshua (forthcoming). The bullionist controversy: Theory and new evidence. Journal of money, credit and banking.

H.C. (1810). Report from the Select Committee on the High Price of Gold Bullion.

H.C. (1832). Report from Committee of Secrecy on the Bank of England Charter.

Geoffrey Ingham (2004). Nature of Money. Polity Press: Cambridge.

David Laidler, 2000. "Highlights of the Bullionist Controversy," UWO Department of Economics Working Papers 20002, University of Western Ontario, Department of Economics.

Mankiw, Gregory (2018). Learning the Right Lessons from the Financial Crisis, NY Times, July 27 2018, https://www.nytimes.com/2018/07/27/business/lessons-from-the-financial-crisis.html

Nachane, D. and Hatekar, N. (1995). The bullionist controversy: An empirical reappraisal. The Manchester School 63:4, 412-25.

Newgate Calendar (Date?). John Drew May.

O’Brien, Patrick & Nuno Palma (2016). Danger to the Old Lady of Threadneedle Street? The Bank Restriction Act and the regime shift to paper money, 1797-1821. (EHES Working Papers in Economic History No. 100).

Officer, Lawrence (2000). The bullionist controversy: A time series analysis. International Journal of Finance and Economics, 5, 197-209.

Rogers, J. (1995). Early History of the Law of Bills and Notes. Cambridge: Cambridge University Press.

Sissoko, Carolyn (2018a). The Origins of the International Monetary System: A Revisionist History. (SSRN Working Paper).

Sissoko, Carolyn (2018b). How British monetary transformation financed the 1814 campaign against Napoleon. (SSRN Working Paper).

Sussman, Nathan (1997). William Huskisson and the bullion controversy, 1810. European Journal of the History of Economic Thought 4:2, 237-57.

Taylor, John (2010). Getting back on track: Macroeconomic lessons from the financial crisis. Federal Reserve Bank of St. Louis Review, May/June, 165-76.

Thornton, Henry (1802). An Enquiry into the Nature and Effects of the Paper Credit of Great Britain. New York: Kelley (1965 reprint).

Turner, John (2014). Banking in Crisis. Cambridge: Cambridge University Press.

Wessel, David (2014). Timothy Geithner: After the Financial Crisis. Wall Street Journal. June 4 2014.

Recent UWE Economics Papers

See https://www1.uwe.ac.uk/bl/research/bcef/publications.aspx for a full list.

<u>2019</u>

1906 **The Monetary Foundations of Britain's Early 19th Century Ascendency**
Carolyn Sissoko

1905 **Not Just Arms and Legs: The Impact of Student Working on Local Labour Markets**
Damian Whittard
Hilary Drew
Felix Ritchie

1904 **Runners, Repeaters, Strangers and Aliens: Operationalising efficient output disclosure control**
Kyle Alves
Felix Ritchie

1903 **Artificial Intelligence and the UK Labour Market: Questions, Methods and a Call for a Systematic Approach to Information Gathering.**
Tim Hinks

1902 **Robots and Life Satisfaction**
Tim Hinks

1901 **Education and the Geography of Brexit**
Robert Calvert Jump and Jo Michell

2018

1807 **Learning, Heterogeneity, and Complexity in the New Keynesian Model**
Robert Calvert Jump, Cars Hommes, and Paul Levine

1806 **DSGE Models and the Lucas Critique. A Historical Appraisal**
Francesco Sergi

1805 **A new approach to estimating interregional output multipliers using input-output data for South Korean regions**
Malte Jahn, Anthony T. Flegg and Timo Tohmo

1804 **Urban food security in the context of inequality and dietary change: a study of school children in Accra**
Sara Stevano, Deborah Johnston and Emmanuel Codjoe

1803 **The use of differential weighting and discounting in degree algorithms and their impact on classification inflation and equity: A further analysis**
David O. Allen

1802 **Unambiguous inference in sign-restricted VAR models**
Robert Calvert Jump

1801 **Degree algorithms, grade inflation and equity: the UK higher education sector**
David O. Allen

2017

1706 **Internal rationality, heterogeneity and complexity in the new Keynesian model**
Cars Hommes, Robert Calvert Jump and Paul Levine

1705 **The regionalization of national input–output tables: a study of South Korean regions**
Anthony T. Flegg and Timo Tohmo

1704 **The impact of quantitative easing on aggregate mutual fund flows in the UK**
Iris Biefang-Frisancho Mariscal

1703 **Where are the female CFOs?**
Gail Webber, Don J Webber, Dominic Page and Tim Hinks

1702 **Mental health and employment transitions: a slippery slope**
Don J Webber, Dominic Page and Michail Veliziotis

1701 **SMEs access to formal finance in post-communist economies: do institutional structure and political connectedness matter?**
Kobil Ruziev and Don J Webber

2016

1611 **Curriculum reform in UK economics: a critique**
Andrew Mearman, Sebastian Berger and Danielle Guizzo

1610 **Can indeterminacy and self-fulfilling expectations help explain international business cycles?**
Stephen McKnight and Laura Povoledo

1609 **Pricing behaviour and the role of trade openness in the transmission of monetary shocks**
Laura Povoledo

1608 M**easuring compliance with minimum wages**
Felix Ritchie, Michail Veliziotis, Hilary Drew and Damian Whittard

1607 **Can a change in attitudes improve effective access to administrative data for research?**
Felix Ritchie

1606 **Application of ethical concerns for the natural environment into business design: a novel business model framework**
Peter Bradley, Glenn Parry and Nicholas O'Regan

1605 **Refining the application of the FLQ Formula for estimating regional input coefficients: an empirical study for South Korean regions**
Anthony T. Flegg and Timo Tohmo

1604 **Higher education in Uzbekistan: reforms and the changing landscape since independence**
Kobil Ruziev and Davron Rustamov

1603 **Circular economy**

Peter Bradley

1602 **Do shadow banks create money? 'Financialisation' and the monetary circuit**
Jo Michell

1601 **Five Safes: designing data access for research**
Tanvi Desai, Felix Ritchie and Richard Welpton

2015

1509 **Debt cycles, instability and fiscal rules: a Godley-Minsky model**
Yannis Dafermos

1508 **Evaluating the FLQ and AFLQ formulae for estimating regional input coefficients: empirical evidence for the province of Córdoba, Argentina**
Anthony T. Flegg, Leonardo J. Mastronardi and Carlos A. Romero

1507 **Effects of preferential trade agreements in the presence of zero trade flows: the cases of China and India**
Rahul Sen, Sadhana Srivastava and Don J Webber