The London School of Economics and Political Science

"Different 'golden dreams': bank business models in the early Industrial Revolution (Part I: 1775-1797)"

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1. Summary, approach, and contributions

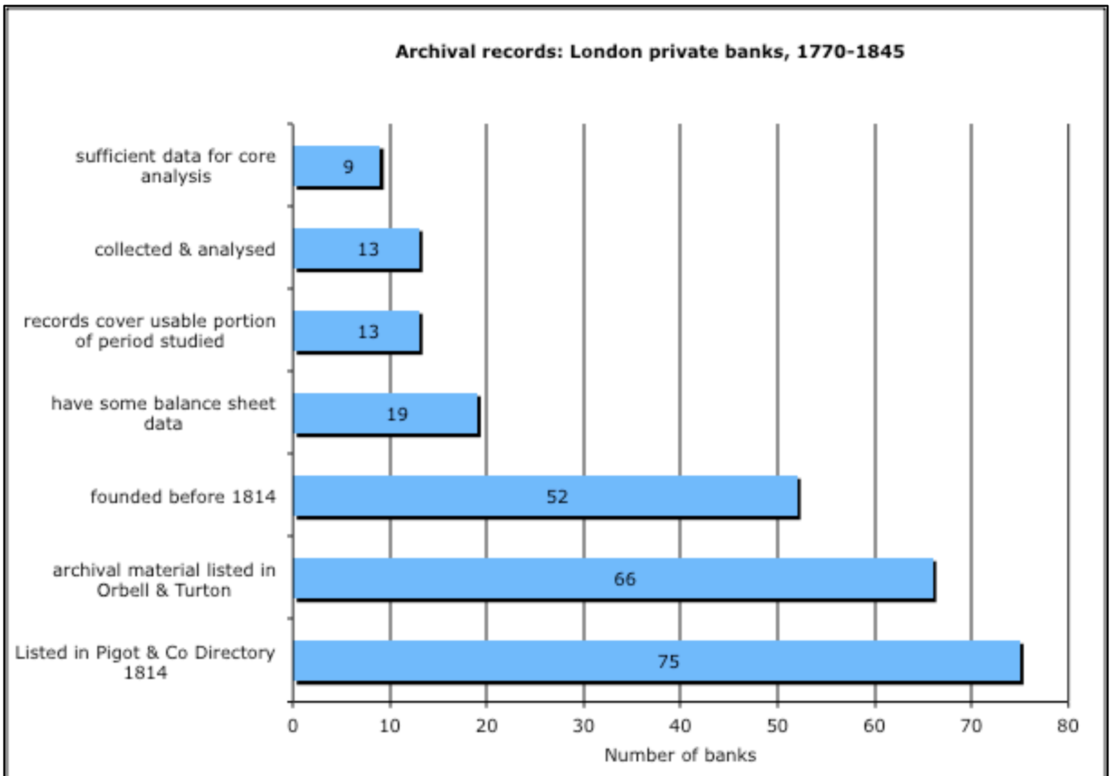
Using newly collected data points from British financial records for the period 1780 to 1832, this paper examines the emergence of two competing London bank business models during the early stages of the Industrial Revolution in last quarter of the eighteenth-century. I extract a taxonomy of bank balance sheets from a core sample of nine London banks, and infer a typology of two business models that I label the "Goldsmith" and the "Discounter". To the best of our knowledge this is the first time such forensic accounting analysis has been done for continuous years across a complete sample of London banks with surviving records. This paper points to some of the ways in which Britain's decision to come off the gold standard in 1797 (the "Restriction") could be expected to have a differentiated impact upon each of them, but this subject is developed fully in a second forthcoming paper.

The findings stand in contrast to the previous understanding of what was the typical London bank in this period. This paper can be viewed both a sequel to Temin and Voth's (2013) account of the emergence of the goldsmith banks during the early eighteenth-century, and a refutation of Temin and Voth (2005) that proposed the goldsmith bank business model as the appropriate one for evaluating the micro-economic evidence of the role of banking and credit in the early Industrial Revolution. The findings have a bearing upon the debates over credit rationing and the "crowding out" of private sector investment during the Napoleonic Wars, as well as the intellectual history of the early development of monetary theory as it evolved out of the classical writings of Hume and Smith (both these topics are the subject of further papers).

Data contribution

Our understanding to date of the micro-economic practice of banking has been dominated by early eighteenth-century story of the goldsmith banks recounted by Temin & Voth (2013) based on the surviving data for five London banks (Childs, Goslings, Freame & Gould, Hoares, and Duncombe & Kent) which relied "heavily on the continuous record of Hoare's Bank [...] as it is by far the best we have."[1] By focusing on the later period usually associated with the early Industrial Revolution, I was able to identify a broader set of bank business models by analysing balance sheets reconstructed from over 10,000 newly collected data points for all thirteen London banks with surviving records.

Exhibit 1 – Summary of surviving archival records of London banks, 1770-1845



Source: : Author's synthesis of relevant records listed in Orbell & Turton (2001), amended as necessary following archival enquiries.

Exhibit 1 summarises the available records of London bank balance sheets for the period under investigation. The investigation would have been impossible in the time available without the invaluable work of Orbell & Turton (2001), sponsored by the Business Archives Council, which (as Pressnell puts it in the Foreword) lists the "scant documentation […] of long defunct banks [as well as a most welcome] brief histories which ease the often bewildering path through numerous name changes" (2001: foreword). From their vademecum I extracted a list of surviving records for 66 London banks

[1] Temin and Voth (2013: 47)

for all periods, 14 of which were formed after 1814 and therefore excluded. Of the 52 banks operating in 1814 or earlier, records for 19 contain some balance sheet records. Upon inspection, only 13 of those proved sufficient to allow some comparative analysis relevant to the Restriction period. Of these, 9 banks have sufficient continuous data to form the basis of my core analysis. The sample is clearly not stratified, but below I show how triangulation with Bank of England sub-ledgers indicates it is highly likely to be a robust sample.

I collected data for four of the five same goldsmith banks analysed by Temin and Voth (2013), extending it (where available) to the period 1775-1845: Goslings (founded est. 1650), Child's (est. 1661), Hoares (est. 1672), and Barclays Bevan Tritton (the descendant of Freame & Gould, 1690). I also collected the data for four additional goldsmith banks: Willis Percival (1677), Coutts (1692), Drummonds (1712), and Barnett, Hoare, Hill & Barnett (1728). Furthermore, I collected data for six London banks with *no* goldsmith roots because founded later in second half of the eighteen-century: Cocks & Biddulph's (1757), Prescotts (founded 1766), Herries Farquhar (1770), Curries (1773) and Ranson Bouviere (1786).

This paper does not claim that the sample of banks is a fully stratified sample of the 70 London banks that existed in 1797. It only claims to be the first analysis of the complete sample of balance sheets remaining in the archives and that, supported by triangulation with archival material from the Bank of England (see separate paper), the sample is sufficiently robust to allow us to infer the main business model types.

Approach

In recent years, the term "business model" has become ubiquitous in the everyday language of business practitioners, as the supply-side logic of the industrial era has given way to the more complex value propositions demanded by a world of greater consumer choice (Teece, 2010). Gradually, the academic study of business models has also gained ground as an area of research in its own right within the wider body of strategy management and practice research (for a comprehensive review of the latest developments, see the Baden-Fuller and Mangematin, 2015).

The paper poses "large questions in small places" (Joiner (1999) in Vaara and Lamberg (2014: 20)) by analysing the banks' financial records from the technical and material perspective in the manner adopted by both economic historians and business model scholars working within strategy management and practice research. The analytical methodology is the longitudinal historical case study of the eight London banks for which we have sufficient data for the period prior to and during the

Restriction of 1797. The longitudinal case-study methodology is well known to economic and financial historians, but it also has paradigm status when designing modern research concerning managerial activities where the aim is to provide descriptive inferences and generate hypotheses in an insufficiently researched area (Regnér, 2003: 60-1). Criticism has been levelled at strategic management research that it "has lacked historical comprehension and sensitivity" (Vaara and Lamberg, 2016: 3-4). By employing this approach in the context of economic history research, I place the historical embeddedness of strategy practices at the very forefront of the research design, pursuing analytically structured history, defined by Rowlinson and Hassard (2014) as an approach that "uses analytic constructs […] to search archival sources, enabling the construction of a narrative of structures and events that may not even have been perceived as such by actors at the time [and] driven by concepts, events, and causation."

The pre-analytic approach was guided by my archival research and the simple intuition that our understanding of the behaviour of the British money supply at the end of the eighteenth-century could be improved by a micro-historical analysis of bank balance sheets. It was only during the collection of the broader archival data that important differences in balance sheet composition emerged, suggesting the presence of different business models. When conceptualizing business models, Furnari (2015: 5) distinguishes between a system of activities that firms use to create and capture value (e.g. Zott and Amit, 2010; Casadesus-Masanell and Ricart, 2010), and a separate perspective that sees the business model as a cognitive instrument that represents those activities (Baden-Fuller and Mangematin, 2013; Baden-Fuller and Haefliger, 2013). In this paper I adopt mainly a material-technical, activity-based financial accounting perspective of the bank business models in order to identify the different mechanisms for value creation and capture. I analyse the London business models in the terms of well-researched concepts such as: barriers to entry (e.g. eighteen-century banks being limited by law to private partnerships of no more than 6 partners), product differentiation (secured lending versus bill discounting), pricing (e.g. mortgage interest versus the implied interest rate on bill discounting), relative average and marginal cost (e.g. costs structure of high-frequency bill discounting versus low-turnover mortgage lending). Clear patterns and clusters were inferred from these empirical differences. Following Regnér (2003: 64), the subsequent analysis "involved an iterative approach of moving back and forth between data, relevant literature and [strategy management and business model] theory. Theoretical propositions were not constructed prior to the research. They were developed through careful within-case analysis". Following Bates (1999: 13-7), I immerse the reader in many of the case studies so as to construct analytical narratives that are "logically persuasive and empirically valid accounts that explain how and why events occurred" and in doing so, like all analytical narrators, I "blur the conventional distinction between deduction and induction" and "stop iterating when we run out of testable implications." By making explicit the interpretation of the narrative that emerges from

these eight case studies, and recasting it into a formal set of business model types, I put the explanations at risk and expose them to the reader's judgement.

Summary

I find bank balance sheet composition can be arranged into a taxonomy clustered around two generic business models that form separate 'strategic groups' at the intermediate level of aggregation between the firm and the industry, in the tradition of Hunt (1972) and McGee and Thomas (1986). Following Baden-Fuller and Morgan (2010: 162), I arrange the eight case studies of individual London bank micro-histories into an empirical *taxonomy* of the two main business models inferred from their balance sheet composition, using financial analysis. I label these the "Goldsmith" and the "Discounter", and provide evidence of a *typology* from the business model clusters (see Exhibit 7).

The data reveals the London banks used two main business models. The better-known "Goldsmith" model, typified by Hoares, was used by some (but not all) banks with older roots dating back to the goldsmith businesses established at the turn of the seventeenth-century. They focused on the direct gathering of deposits from wealthy individuals (amongst which many nobles and politicians) and lending these out secured against collateral, mostly longer-dated mortgages against real assets. It was a low transaction-frequency, low gross margin, lower unit cost business model whose principal concern was the management of liquidity risk. By contrast, the typical "Discounter" bank dated back only a generation (or less) and staked out a competitive position by meeting the growing demand for the discounting of bills of exchange, i.e. short-term commercial paper with maturities under 6 months. It was a high transaction-frequency, high gross margin, high unit cost business model whose principal concern was the management of credit risk.

The growing use of bills was fuelled by the increasing role of small Country banks in the intermediation of financial flows outside London, where most of the government wartime expenditures were made. The Discounter provided 'wholesale' correspondent banking services to this growing number of banknote-issuing Country banks located more than 65 miles outside London, acting as their paying agent in London, collecting or making payment against bills sent to London for settlement, or 'accepting' them en route to being discounted at the Bank of England. As a result, the Discounter's liabilities typically show a larger proportion of 'wholesale' deposits coming from its correspondent banks, and collectively these banks were more highly correlated to British nominal GDP. The more recent start-ups would look somewhat different in the early years as they felt their way towards their preferred sustainable balance sheet structure, but I show how these can be viewed as transition stages, with most finally adopting the full-bloodied 'Discounter' business model (typified by Prescotts)

following the Restriction Act. The analysis of the profitability of the two bank business models suggests they had different gross revenue and unit cost dynamics, but that in the final two decades of the eighteen-century they had reached an approximate equivalence in returns to shareholders, net of loan losses (although perhaps not on a risk-adjusted basis, measured in the narrow sense of numerical volatility).

As such, the Goldsmith banker and the Discounter banker had different golden dreams. The Goldsmith banker operated in a risk-averse low-turnover world where he was the careful custodian of his customers' pieces of gold, within an *ancient regime* monetary system regulated by the flows of specie with intrinsic value as a commodity, parsimoniously lending these out to equally reputable private borrowers. By contrast, the Discounter operated within the newer, fast-turnover world using paper-based instruments of 'circulating individual credit' (Heywood, 1812; 77-96) that carried only a nominal extrinsic face value, and employed in the financing of a wider range of 'projectors' (entrepreneurs) who, as Smith (1776:396) had warned "no doubt, had in their golden dreams the most distinct vision of this great profit. Upon their awakening, however, either at the end of their projects, or when they were no longer able to carry them on, they very seldom, I believe, had the good fortune to find it."

In a subsequent paper I explore how the decision by Britain in 1797 to suspend the 80-year-old convertibility on demand of Bank of England banknotes into gold coin - known as the Restriction – led to credit boom fuelled in part by increases in Bank of England discounting of private sector bills and notes that disrupted the status quo and had different consequences for the two business models and elicited different responses from bank owners.

2. Historiography and historical context

The period 1780-1832 in British monetary history has attracted the intellectual interest of many strands of scholarship, and yet a comprehensive quantification of the financial records of the London banks and their relationship with Country correspondents has remained a *lacuna*.

Over the past century, historians of economics led by the seminal work of Viner (1937) have been drawn to the British Restriction (1797-1821) - and the attendant monetary debates ignited amongst political economists responding to the unusual behaviour of money they observed - in search for the scientific genesis of the policy debates of their respective times. The empirical corroboration they offered, if any, has been based on the more easily accessible Bank of England data and the number of Country banks (e.g. Silberling (1924), Acworth (1925), Hayek (1929), Feaveryear (1931), Humphrey

(1993), Laidler (1999), Arnon (2007, 2010), Courbois (1994), Denis (2015), Goodhart and Jensen (2015)). Historians of banking during the Restriction, led by the seminal work of Pressnell (1956) have studied Country banks, or banks in a particular city (e.g. Cave, 1899), or individual banking families (e.g. Leighton-Boyce, 1958), or the Bank of England (Clapham, 1970), or focused on an older London bank business model (Temin and Voth, 2013) that I will show was no longer dominant. Historians of banking as it relates to money have had to contend with the paucity of data that became the accepted assumption as it was passed down by each scholar in turn, and have struggled to build upon Cameron's (1967) heroic estimates of the total circulating media and the related income-based velocity of specie for 1775, 1800, 1811, 1821 and 1831. Finally, economic historians studying the impact of government debt have long debated - but never fully resolved - whether the British government expenditure during the Napoleonic Wars encouraged investment by increasing demand for semi-manufactured goods or its financing contributed to Britain's victory, but crowded out the financing needed for private sector capital formation (e.g. Heim and Mirowski (1987), Black and Gilmore (1990), Mokyr (1990), Bordo and White (1993)). Our findings have a bearing on many aspects of these debates.

At the time Hume was writing *Of Money* (1752) the British banking system largely mirrored the way it was conceptualised. His lucid account of the classical quantity theory of money was centred upon the price-specie-flow mechanism and viewed gold (specie) as the sole *vix mediatrix* by which the monetary and economic system responded to exogenous shocks, leading all relative prices to revert to their 'natural' long-term average factor costs of production. In the strong form classical theory there is no separate role for changes in the availability of bank credit, and no endogenous capacity for the monetary system to create or destroy the supply of broad money. Hume's mechanism assumed that, in the medium- to long-run (over a vaguely defined full production cycle), both the demand for transaction balances in gold coin was stable and that the public's long-term marginal rate of substitution of paper banknotes for gold was zero. In Hume (1752: 35-6) 'money' is only specie; banknotes are "counterfeit money". To Hume, the best kind of bank was the bank that "locked up all the money it received, and never augmented the circulating coin, as is usual, by returning part of its treasure into commerce" via the extending of credit. A strict reading of this passage would have Hume saying that the best form of bank was a bank that acted a mere purveyor of safe-deposit boxes, and not an institution conducting financial intermediation between lenders and borrowers. It was tantamount to recommending the end of all fractional banking and a return to the early goldsmiths that acted as mere custodians of people's valuables.

In the middle of the eighteenth century this 'model' was a reasonable reductive stylization of a monetary system dominated by the Bank of England (balance sheet assets totalling £6 million) operating with a target asset gearing to bullion reserves of just two; where its non-bullion assets were

predominantly government securities, with little or no private sector lending; where its Banknotes circulated only in denominations of a value equivalent to over £500 today; where it is estimated there were only twenty to thirty banks operating in London (Clapham, 1970: Vol. I, 158), that were capital constrained due to being limited to the private partnership corporate form with a maximum of six partners, and almost all of which originated from goldsmith businesses that followed conservative balance sheet practices, emphasising multi-year lending secured on real assets, with low transaction frequency and low asset gearing to cash reserves (Temin and Voth, 2013: 46); and finally, outside London where banks were allowed to issue their own banknotes, scholars have often quoted Edmund Burke's estimate that no more than a dozen such 'bankers' shops' existed there (Clapham, 1970: 157). This slow financial deepening in Britain (Scotland excepted) during the first two-thirds of the eighteenth-century (Cameron, 1967; Parnell, 1827: 25-37) also made the banking system akin to its conceptual description within classical monetary theory, namely a passive intermediary of real resources, with no endogenous capacity to 'manufacture' circulating additional nominal circulating media created through the granting of credit.

From the 1770s the banking landscape began to change (see Exhibit 2 for highlights). There was rapid growth in the number of banks, especially in the 'fringe banking' sector outside London, and within London newer or recently re-articled banks were adopting a different business model. At the end of the eighteen-century it is estimated that there were 70 banks in London, 9 of which had roots in the London goldsmiths of a century earlier. The Bank of England acted as a quasi-central bank, not by clarity of mandate, but by the nature of its relative size (by 1795 its balance sheet had grown to £22.5 million) and operating privileges (monopoly of banknote issuance within a 65-mile radius of London; and the only joint-stock bank in London). Nearly half of its liabilities were now banknotes in circulation and on the asset side it now held only one-quarter in bullion reserves, albeit with the rest still mostly in government debt securities (Mitchell and Deane, 1962: 441-3). In London, the number of banks grew from some 50 to 69 in 1797. The largest London bank balance sheets were still those of the older goldsmith banks, which reached approximately £1 million (Child & Co, Coutts & Co, and Drummonds), but there was a faster growing set of newer banks with a different business model whose typical size was reaching quarter to half a million. Outside London, with the exception of Scotland (where the two royal-charter banks, the Bank of Scotland and the Royal Bank of Scotland, were permitted to use the joint-stock corporate form and had balance sheets of approximately £2 million, supported by £0.75 million of equity, and funded for an other £1 million by issuing their own banknotes (Saville, 1996)), only a few of the largest Country banks reached half a million in balance sheet, such as the Old Bank, Bristol and Heywood & Sons, Liverpool (Gent, 2017). Nevertheless, Country banks had grown hugely in number to 276, with most estimated to have had assets of less than £100,000, supported by equity capital of £10,000 or less (Pressnell, 1956).

Exhibit 2 – The British banking system in 1752, 1776, and 1809-10

Monetary system	Hume 1752 gold standard	Smith 1776 gold standard	Bosanquet / Huskisson-Ricardo 1809-10 paper-based
Bank of England			
Bank of England total liabilities	£7m	£8m	£42m
as % of real GDP (at 1700 prices)	6% - 7%	7% - 9%	20% - 23%
BoE discounting of private sector bills (assets)	£1m	£2m	£22m
Bank of England banknotes in circulation (liabilities)	£2m	£6m	£27m
Minimum denomination of Banknotes	£5	£5	£1
BoE gearing to bullion reserves	2:1	3:1	7:1
London banks			
No of London banks	30	50	68
Total London bank liabilities	£10m	£15m	£47m
Typical London bank business model	lender on 1-7yr mortgage	lender on 1-7yr mortgage	discounter of 1-3mth bills
Typical London bank gearing to cash	2:1	3:1	5:1
Country banks			
No. of Country banks	12	96	714
Total Country bank liabilities	£1m	£8m	£56m
Banknotes of Country banks, as % liabilities	(?)	20%	45%
nominal GDP	£90m	£120m	£375m

Sources: Broadberry et al (2015) for GDP; Mitchell & Deane (1962) for BoE; Clapham (1970) and Temin & Voth (2015) for No. of London banks; Pressnell (1956) and Dawes & Ward-Perkins (2000) for No. of Country banks; Gent (2017 forthcoming) for estimates of total liabilities and gearing.

Subsequent to the Restriction Act, between 1797 and 1814 the average London bank nearly doubled in size, and the number of Country banks tripled again to an estimated peak of 740 in 1810, many growing their assets rapidly. Banks following the Discounter business model were beneficiaries of this growth in Country bank balances through their offering of correspondent banking services, which also gave them access to a regular flow of (inland) bills of exchange which they could re-discount at the fast expanding Bank of England discount window. Consequently, by 1810 the Discounter banks had emerged as the dominant bank business model – with consequences for the banking system and the supply of credit (Exhibit 2).

3. Bank accounting practices at the end of the eighteenth-century

Prior to 1821, there was no statutory obligation to publish balance sheets or profit and loss statements and as banks were private partnerships limited to no ore than six shareholders, there was also little incentive to do so.

This was an era when the partners managed the business, typically taking it in turns to be present in "the shop" to supervise daily activity and, as often as not, find polite and not so polite ways to say no to new requests for loans (but also regularly dispensing small charitable gifts to supplicants turning up at the door). Sometimes communications with clients were in writing, with a secretarial clerk transcribing a copy by hand to be kept in the files, and sometimes *a viva voce*, with a short note of the conversation written into a log book ["the Daily Book"] by the partner in charge on the day, thereby allowing other partners to be informed of previous client discussions. Hence, partners were usually well acquainted with the essential state of affairs of the bank – at least those in charge of the London banks that survived the period under review, which almost all did. The daily correspondence books and note books of Hoare & Co, Child & Co, Barclays Bevan Triton are a testimony to how bankers saw as their chief task that of prudently lending out these deposits on good security or by discounting quality bills at interest rates that exceeded their (marginal) costs of funds. These books show them resisting requests for new loans; verifying the quality of the references received on individuals to whom they did lend; devising ever more elaborate ways to reign in the spendthrift or disingenuous nobility who were late with their repayments; or finally attempting to secure title and control over the collateral of bankrupt borrowers through the courts.

As a result, where high-level annual (and sometimes semi-annual) balance sheet summaries exist, they appear to have been a form of ceremonial offering to the partners produced by the chief clerk or cashier as a testimony to his (it was always a he) honesty, skill and diligence – and as justification for his annual salary, typically £180-200, or about ten times that of the junior clerks and thirty times the £7 offered at the time to men who would enlist to fight Napoleon. These summary balance sheets were often reproduced and collated in a separate book [most grandly named by Hoare & Co as the "Anno Domini" book]. The latter were written with the tidiest and most ornate handwriting, in contrast to that found in the detailed sub-ledgers that the historian must usually analyse in order to unpick the complete picture of the business.

The high-level summary would be presented at the partners' annual sign-off event, the chief purpose of which was for the partners to officially accept the division of the profit previously agreed over lengthy backroom discussions (we sometimes get a glimpse of those backroom discussions hidden in the

voluminous legal language with which new partnership agreements are drawn up). The sign-off also served to record the partners' joint and several responsibility over the contents of the balance sheet, including any bad debts or fraud, both known and as yet to be discovered (forcing a revision of past accounts). Only a few banks have such tidy balance sheet summaries; many did not, or if they did, these do not survive. Some banks left a treasure-hunt, where the key ledger totals have to be hunted down across multiple pages filled with many different entries that mix client balances with securities holdings, and which then had to be cross-checked against surviving draft summaries and/or for equality between total assets and total liabilities. In some cases years of crisis such as 1797 and 1825 left a visual representation in the form of a marked dishevelment of the accounting – and, no doubt, of the accountant – when compared to the previous year.

All banks broadly followed the same system of double-entry bookkeeping and cash-based accounting, although each bank had its own idiosyncratic style for laying out its balance sheet in conformity to the main thrust of its business or what its partners saw as the best way to represent the key drivers of it. The typical balance sheet books begin with the liabilities ("Debits"), usually a list of the outstanding deposit balance for the individual clients, often arranged in sub-groups, sometimes ordered alphabetically, but sometimes with less transparent logic, although Discounters usually identify a "Country ledger" listing deposit balances from the Country correspondents. On the asset side (called "Contra") the accounts list the secured loans, mortgages and overdrafts of each client, or the outstanding bills discounted, finishing with the balance held in securities and in cash. In a page placed between the Debit and Contra pages we normally find a summary page with the total assets and liabilities, the profit for the year, the partners' shares in the distribution, and sometimes the paid-up equity capital.

For analytical purposes, if there is a difference in the accounting principles between banks, it is in the representation of the annual profit and/or the paid up capital of the partnership. In some cases theses are shown as part of the liabilities, with the corresponding amount included in cash on the asset side; but sometimes either the annual profit and/or the paid-up capital is shown separately or not at all. For example, Hoare & Co. balance books do not show the paid-up capital, but do show the annual profit; in the case of Child & Co, the capital is not identified separately, and the annual profit is included in the total liabilities until 1786, but shown separately thereafter. Different again were the balance books of Coutts & Co and Barclays Bevan Tritton which clearly indicate the paid-up capital for the whole period 1774 to 1845, but do not clearly separate out the annual profit.

These different accounting practices restrict our ability to make confident comparisons of profitability for all the banks in the sample, but nevertheless allow some pair-wise comparisons when two banks

both provide sufficient detail. Furthermore, these differences do not prevent the compilation of robust standardised balance sheets. We can safely assume that any paid-up capital was included in the total liabilities, and then adjust the balance sheet totals to account for whether they were drawn up before or after dividend distributions. Of particular interest is the tendency for Goldsmith banks to fully distribute the profits out to the partners, while Discounter banks tended to systematically reserve a portion against expected future (credit) losses. However, as net profits in most years represent only 2-3% of total liabilities, for analytical purposes these differences in accounting practice can be corrected for when analysing the balance sheets, and any small errors introduced via differences between banks in the method are almost always immaterial (at least for these surviving London banks). By contrast, when comparing profitability more care is needed, and where it has not been possible to clearly establish comparability, I show the reader more than one measure.

4. The Goldsmith banks – a taxonomy

During the eighteen-century, a number of goldsmiths had made the successful transition to what we would recognise as a bank. Temin and Voth (2013) estimate that this sector had experienced no new entrants after the 1730s and regular net exits during the whole century, with the result that of the 43 goldsmith "banks" that existed in London in 1700, only nine remained by 1770. Our core sample of nine London banks contains four banks with goldsmith roots.

A century earlier the goldsmiths had produced jewellery from bullion, acted as custodians for people's precious effects, and lent bullion to individuals and to the sovereign. In a touching reminder of their roots, the partners of Childs in 1770 still reported in the annual summary statement a separate entry for a few hundred pounds of 'Plate' – referring to gold and silver artefacts – even when this represented less than 0.05% of the total assets. This nostalgic accounting practice was finally discontinued in 1826.

By the 1790s those few that remained had learned how to migrate the business to that of a financial intermediary that adopted a conservative balance sheet policy based on the secured lending model such as that 'invented' by Richard Hoare: "Richard Hoare did not introduce a new spinning device, but he turned a relatively new idea – lending to private individuals financed by deposits – into a successful business." (Temin and Voth, 2013: 43). We label this the "Goldsmith" business model.

Note, however, that by the final two decades of the eighteenth-century not every bank with goldsmith roots was still employing the Goldsmith business model (e.g. Barclays Bevan Tritton and Barnett Hoare Hill & Barnett had become Discounters by the late 1770s - see below).

The "Goldsmith" model is best illustrated by **Hoares** balance sheet because of their unwavering focus on secured lending and the near-total absence of any involvement in bill discounting. The history of Hoares is fully recounted in Temin and Voth (2013); here we focus on their balance sheet structure on the eve of the Restriction and thereafter, as benchmark for identifying the cluster of banks utilizing the same business model - see Exhibit 7.

Of the eight banks with historic goldsmith roots in our sample, **Drummonds** and **Childs** also closely followed the Hoares balance sheet structure on the eve of the Restriction. All three banks were part of the "£1 million club", having balance sheets that had already surpassed that figure every year (bar one) during the 1790s, although both Childs and Drummonds dipped quite severely below that figure during the tight monetary conditions of 1796. **Goslings'** balance sheet, although it was half the size of the other three banks and had followed a different path before the Restriction Act, by 1796 it also closely matched the Goldsmith model.

Childs traced its roots to the goldsmith shop of William Wheeler and Robert Blanchard in the Strand, and before the Restriction its balance sheet was somewhat larger than Hoares. Like Hoares, it had a large aristocratic customer base, and attracted many others from the legal profession. In its ledgers it goes a step further than Hoares by distinguishing between deposits from "Nobles" and the rest of its deposits. "Noble" deposits had been a growing proportion of total liabilities, reaching 20% on the eve of the Restriction, and remained there throughout. Childs had issued its first printed note in 1729 and the first printed cheque in 1762, and anecdotal evidence suggests they used these more than Hoares. It was generally understood that the 1717 Act prohibited banks in London other than the Bank of England from issuing their own banknotes, but the details of the law had been disputed; however, by the 1780s most London banks seem to have largely stopped the practice. Childs separates out its notes and cheques in circulation in the summary accounts, but the accounting method changes in the mid-1780s and again in the early years of the new century; however, we can approximately estimate these accounted for 10-15% of total liabilities both before and during the Restriction.

The balance sheet structure of **Drummonds** was the closest match to that of Hoares, showing all the same cautious approach, with little to no discounting of bills, although implemented with a more diverse and colourful client base. In confirmation of this, in material found by Drummonds' biographers there are letters exchanged with the bank's broker Messrs Smith & Payne during the 1825 crisis in which John Drummond states that they had never sought to discount paper directly with the Bank of England and "that the only assistance the House had ever had was about 30 years ago when they borrowed of the Bank [through Smith, Payne & Co] £50,000" (Bolitho and Peel, 1967: 155).

Drummonds was founded in 1712 by the Scotsman Andrew Drummond who traded as a goldsmith in the Angel Court area of Charing Cross in London, until recently still the home of venerable banking houses such as JP Morgan, but now site of one of London's latest spectacular mixed-used skyscrapers. The entertaining biography by Bolitho and Peel (1967: 155) of the Drummonds records how Andrew Drummond was initially seen with suspicion in some quarters of London despite there being little evidence that he shared his brother William's "ardent Jacobite sympathies". His brother had been "among the first to join the standard of the Old Pretender in the Jacobite rising of 1715" and again under Price Charles Edward's ill-fated attempt to install a Stuart king over Great Britain in 1745, dying in the battle of Culloden. Soon after Sir Thomas Winnington, Paymaster-General of the Forces had a warrant issued for the seizure of the bank's papers for the purpose of finding evidence that the bank had supplied funds to the revolt. But Andrew Drummond fought back and he was eventually fully exonerated by the Cabinet[2]. By 1765 the bank's clients included "six Dukes, forty-three Peers and forty-two other titled persons [amongst] the 1290 separate accounts in the books"[3], and there are connections with the Royal household dating back to 1784, which eventually bloomed into King George III transferring his account from Coutts in 1802.[4] The bank also had extensive links with artisans and craftsmen (similar to Ranson Bouviere & Co) including Sir William Chambers, who designed Somerset House in London and Dundas House in Edinburgh; John Christian Bach, the son of Johann Sebastian; Thomas Gainsborough; and Josiah Wedgwood, the master potter[5]. Later clients included John Frederick Sackville, 3rd Duke of Dorset and patron of the game of cricket; the Duke of Wellington and his father; Pasquale Paoli, the Corsican patriot who was paid a £2,000 annual pension by Pitt's government as a reward for making himself a nuisance to the French; and Henry Addington, later Viscount Sidmouth. After the founder died in 1769 the business was split between three branches of the family and the banking side continued to thrive under the stewardship of William's two sons, Robert and Henry. This was in part due to Henry Drummond and Richard Cox being appointed Joint Paymasters of the Royal Artillery in 1766, in what must have seemed the ultimate example of having the last laugh when contrasted to events only a generation earlier. The appointment brought Treasury contracts for the payment of British troops in North America involving sums upwards of £200,000 (as well the private accounts of numerous officers)[6]. The latter explains the abnormally large drop of £274,180 (29%) in the size of the balance sheet in the two years following the 1781 year-end, the year the American War of Independence came to an end.

2 Bolitho and Peel (1967: 40-1)
3 Ibid, p.70
4 Ibid, p.80-7
5 Ibid, p.70-1
6 Ibid p. 54-57

Goslings is included amongst the Goldsmith group of banks because on the eve of the Restriction, in 1796 that is the business model to which its balance sheet fits best, albeit of a smaller total size (at £416,201) than the other names above. Although it was to later follow an extremely risk-averse course, during the 1780s Goslings' had been the Goldsmith bank most tempted into diversifying its business into the new field of bill discounting – without fully adopting the Discounter model. However, by 1796 that had been largely reversed, although it still had a larger discounting activity than other Goldsmiths and (consequently) tended to run a lower cash reserve compared to its peer group.

On the liability side the notional equity of £48,000 would have constituted 11.5% of total liabilities in 1796, but it had not been called. The notes to the "Heads of Articles of Partnership" suggest that the partners had not "brought in the said sums" and that – as with many other banks at that time - the notional capital was used primarily to establish the relative stakes in any profits (and the relative exposure to losses) of each partner in order to "obviate any demand by the Executors or Administrators" in the event of the death of one of the partners. However, the partners made deposits with the firm that reached a peak of 3.9% of the liabilities in 1797; this proportion was seen only once again in 1804, after which it went into steady decline, settling at 1% or less in 1840s.

Goslings was established in the middle of C17 by the goldsmith banker Henry Pinckney based in Fleet Street, London, where its sign still hangs today just a few doors down from Hoare & Co. Like the other banks in this group, Goslings had a distinguished list of clients including the aristocracy and other leading political figures. In 1779 Goslings was the most conservative of Goldsmith banks: its secured lending accounted for a third of its assets (33%), and almost half (46%) was held as cash reserves, most of which was deposited with the Bank of England. Its involvement with discounting bills was small - what it called "notes discounting" (i.e. promissory notes and drafts), later changed to "notes and bills discounted" in 1789 and finally to just "bills discounted" from 1803. From 1778 Robert and Francis Gosling ran the bank and under their direction it appears to have taken a more aggressive path, rapidly expanding into notes and bills discounting which rose from 7% of the balance sheet to a peak of 49% by 1791. Cash reserves fell to a low of 16% - a level not seen again until near the peak in private sector monetary accommodation in 1808. After 1791, this change of business model was then put into reverse. In 1786 the bank had welcomed William Gosling as partner with a 2/16 share, and in 1794 he and Francis took over as joint senior partners, each with a 22/48 stake, with Benjamin Sharpe joining on a 4/48 stake. It seems that William and Francis decided they did not have the same taste or informational capacity to stay the course on becoming a fully-fledged Discounter, and in the following decade they steered the bank back to operating a Goldsmith business model. A decade later, in 1796, half of Goslings' assets were again devoted to secured lending on mortgage or bond or other collateral. On the eve of the Restriction, although Goslings still had a larger activity in bill discounting than the

other Goldsmith banks, matched by a more prominent share of its deposits attributable to its country correspondents, its discounting had fallen back to just 18% of assets. Consistent with the presence of some bill discounting, a small 2-3% of Goslings' funding came in deposits from its Country correspondents (see Discounter business model below). Furthermore, Goslings continued to shun the discounting business during the boom in this business subsequent to the Restriction, and its involvement continued to decline such that by 1805-6 it was as small a part of its balance sheet (9%) as it had been in 1778. What is most different about Goslings is the way the partners chose to direct the business towards a low-risk low-return model during the Restriction after 1797, moving a majority of the assets into government securities until the bank resembled more a government bond fund.

5. The Goldsmith business model – a typology

During the generation preceding the Restriction of 1797, the Goldsmith business model consisted of taking deposits from a relatively small circle of aristocrats, landed gentry and wealthy merchants (sometimes in their name, sometimes in the name of their firm), and making secured loans to other individuals from the same strata of society. Often clients on either side of the ledgers were Members of Parliament and the cabinet. Committed, *paid-up* equity was usually small, no more than 5% of total liabilities. However, partners often supplemented this low capitalisation level with additional deposits (on which interest was paid); and these firms were legally structured as unlimited partnerships, so the *notional* equity at risk for each partner was the partners' entire wealth.

On the asset side, gearing was very low by modern standards, with total lending little more than 2 to 2.5 times the cash reserve. What direct lending did take place was secured on collateral. Mortgages would account for the bulk of total secured lending. Loans were mostly secured by mortgages on houses, landed estates, or guaranteed by pledges from third parties (often relatives), in turn based on similar property. Lending on traded securities – almost exclusively consisting of government bonds - accounted for perhaps one tenth (this type of lending – which we might call 'lombard loans' – should not be confused with lending on 'personal securities', a term used by some banks at that time to refer to more conventional mortgages and guarantees). When lending was secured on (government) securities, the borrower (or guarantor) was required to issue a power of attorney in favour of the bank allowing it to sell the securities in the event of non-payment (or the market value falling below the amount of the debt outstanding).

Prior to the Restriction, money was mostly specie, and deposits of it would have seemed mostly cyclical around a slow-growing long run trend (probably perceived in relation to the approximate picture of

Britain's status in international trade). As a result, the older Goldsmith bankers indeed acted mostly as reluctant lenders as described by Temin and Voth (2005). The large archival evidence of daily correspondence books of Hoares and Childs are a testimony to how bankers saw the extending of credit as a sellers' market: demand exceeded supply. They saw as their chief task that of prudently lending out specie deposits on good security at interest rates that exceeded their (marginal) costs of funds. These books show them regularly resisting requests for new loans; verifying the quality of the references received on individuals to whom they did lend; devising ever more elaborate ways to reign in the spendthrift or disingenuous nobility who were late with their repayments; or finally attempting to secure title and control over the collateral of bankrupt borrowers through the courts. One of the many typical examples from Hoares' Letter Book reads as follows:

"We have received the Honour of your Lordship's letter and lament exceedingly the Impossibility of complying with your Request, but your Lordship must be sensible that we have hitherto exceeded the Rules of Business by the payment of your Annuities in Advance which we must trust will prove the Attention we have wished to shew to your Lordship's Accommodation. Your Lordship's account is now overdrawn six hundred and one Pound 8[s.] 4[d], the replacing of which will much oblige."[7]

An example from Childs' Letter Book of what might be called a 'final request' letter to a Mr. John Marriot, resident at Braintree, shows how the language could be less referential to non-aristocrats:
" Sir, We gave you notice to pay off the principal due to us on mortgage (being 7,000) the 26 June 1795 not hearing from you since that further on the subject we must desire the principal & interest due thereon be paid us on the 17th May next and in failure thereof we must take such steps to compel the payment as will be very disagreeable to your as to [us]."[8] [A note to the letter specifies that the interest due is £350, corresponding to the usury cap of 5% p.a.].

London Goldsmith banks did not pay interest on private deposits, suggesting that clients saw sufficient value creation in the banks' services of safekeeping and settlement of payments. Similarly, with usury laws capping loan interest at 5%, the Goldsmiths banks in particular were dependent on such 'idle balances' for their profitability as the marginal cost of raising additional funds - by selling down their stock of government bills and bonds – would frequently exceed 5%. Hence the bank-client relationship entailed an assumption that even an aristocratic client who borrowed from the bank (for longer periods, on mortgage) would run his idle 'everyday' balances through the same bank - in the same way as the Discounters expected from their Country bank correspondents and was made more

[7] Hoares Private Letter Book 1795-1815 [p.52]: letter addressed to Lord Arundell, dated 4th June 1795
[8] Childs Letter Book 1762-1835: letter dated 21st March 1796 [RBS Archive ref: CH/229]

explicit in their bank-to-bank agreements. A letter from Childs to the Duke of Portland makes this clear:

"Sir, As His Grace the Duke of Portland withdrew the management of his money affairs from our House without discharging the two sums of £8300 & £7700 due to us on Mortgage, we feel it necessary to apprise His Grace and His Trustees through your means that we expect the Principal & Interest due on those two Mortgages to be repaid at the Expiration of six months from this date."[9]

This delicate balancing act became an acute challenge at times of monetary stringency. A letter from Childs to a Mr. George Beauchamp, resident at Thetford, explains the bankers' awareness of the government bill rate as the effective 'shadow cost of funds', but also shows bankers were sensitive to exercising their right to sell such collateral posted by clients, thus forcing clients to crystalize unrealised losses on their bond portfolio:

"Sir, Mr. Walker some days since informed us of your wish to borrow a further sum of £1,000. When the former sum [£2,000 – see below] was lent it was on a transfer [to the bank's collateral account] of Stock [government bonds] & on condition it should be repaid by sale of that Stock at the expiration of three moths.

For a considerable time past we have lent no Money for a Longer time than three months & and then on the transfer of Government Securities with an order for sale at the expiration of that period – Bankers can have no Money to lend in the present unpleasant situation of public affairs. Navy Bills now afford a purchaser from 8 to 9 per Cent Int[erest] & you will readily believe they cannot with propriety sell Government Securities at a great discount to lend the produce at 5 per Cent.

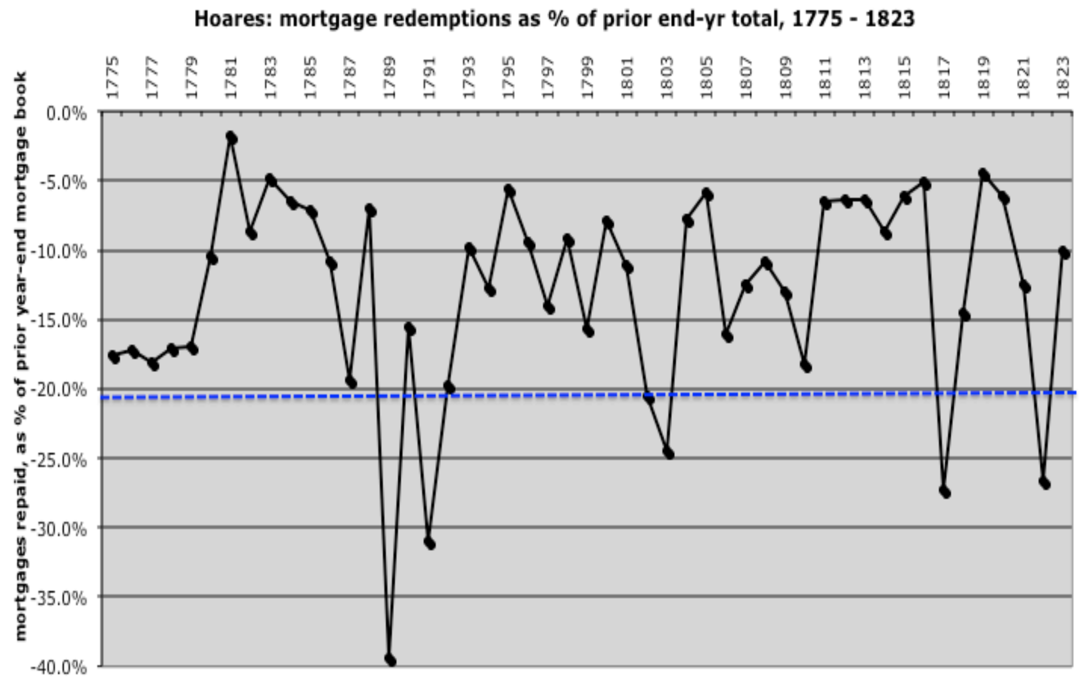
Your trustees I understand are enabled to satisfy you with £5,000, you will therefore allow us to request you will apply to them for the assistance you want on your own account as well as to discharge the £2,000 due to us. We have an order, you will recollect to sell Stock for that purpose, under the idea of its being repaid before this time[;] we have hitherto declined selling it."[10]

The Goldsmith bank's turnover in mortgage lending would be small. Taking Hoares as example (Exhibit 3), usually 5% to 15% of the mortgage balances at the start of the year would be repaid during the following twelve months, and rarely exceeded 20% (with the exception of 1789, when nearly 40%

[9] Childs Letter Book 1762-1835: letter dated 15th August 1796 to John Heaton (trustee) [RBS Archive ref: CH/229]. Navy Bills were undated bills issued by the relevant government war department, but traded as short-term securities.
[10] Childs Letter Book 1762-1835: letter dated 15th March 1796 [archive ref: CH/229].

of Hoare's mortgages were repaid). This average turnover is misleading because mortgage loans were composed of some, often larger, loans made to quality (noble) borrowers who were impeccable in their regular payment of the contractual interest, and were therefore allowed to keep their mortgage loan outstanding for many years, sometimes decades; and other, often smaller, loans that would remain on the books for just one or two years.

Exhibit 3 – The turnover in Hoare's mortgage book, 1775-1823



Source: Computed from Hoares archival data: "Money lent on Mortgage" ledgers from the Anno Domini book 1773-83 and onwards. Chart shows mortgage redemptions ("Contra paid off") for each fiscal year to end-Sept, divided by the starting balance.

For example, Hoare's lent £20,000 on mortgage to the Duke of Northumberland in 1794 at the rate of 4%, payable semi-annually.[11] The rate was particularly favourable, being 1% below the maximum allowed under the cap of 5% imposed by the usury laws, *and* below the average yield on government bonds (4.5%) that same year. Perhaps as a result, the Duke always paid on time; and so the rate was lowered to a most favourable 3.6% in April 1804 at a time when the market base rate was still 5% (Bank of England, 2016) and average government bond yields were even higher at 5.3% (Mitchell and Deane, 1962: 455). The interest rate was eventually raised back to 4% in October 1816. Once the 1825 crisis had passed, during 1827-8 a further £53,000 was lent on bond to the Duke; this was done using three tranches that would be familiar to a modern banker: the blended rate was still 4%, but the smallest tranche of £13,000 carried a higher rate of 4.86% and was, not surprisingly, repaid within a

[11] Hoares Anno Domini book 1794-1805 (p.141) and then onwards, following the client's account through subsequent books.

year. The remaining total loan of £50,000 was still on Hoare's books in 1843, fifty years after the lending relationship first began.

What distinguished the Goldsmith business model was the near complete absence on the asset side of the balance sheet of the discounting of bills of exchange. Similarly, overdrafts were discouraged and often consisted mainly of allowing the partners to draw in anticipation of the annual dividend. By the eve of the Restriction in 1796, for banks following the Goldsmith model, bill discounting had typically shrunk to even lower relative importance than two decades earlier. For Hoare's it was a negligible 1% of total assets (its placeholder appears somewhat exaggerated in the stylized chart above) and Goslings had also reversed its experiment with greater bill discounting.

In summary, for the Goldsmith bank-type, total secured lending accounted for 50-60% of total assets, the rest being made up of holdings of tradable securities (15-20%) and cash reserves (25-35%), with a very small residue of overdrafts and bills discounted accounting for 10% or less. For our purposes, the only two slight differences in the balance sheets of the Goldsmith banks were that Childs and Drummonds ran somewhat higher cash reserve ratios than Hoare's, and that Child's does not record any bill discounting at all. Child's held the highest cash reserves, (35-45%). Securities holdings in the Goldsmith model would consist mostly of short-dated Exchequer bills – or their undated equivalent, Navy and Ordinance bills issued directly by one of the governmental agencies. There were also holdings in some longer-term government bonds (usually perpetual, irredeemable annuities called 'Consols'). The bonds of the East India Co also made an appearance amongst the securities holdings prior to the Restriction.

6. The 'Discounter' banks – a taxonomy

The alternative 'Discounter' business model focused on discounting various forms of short-dated commercial paper. In contrast to the Goldsmith's focus on medium-term secured lending, the Discounter lent on an unsecured basis, over shorter periods, by buying at a discount to their face value various bills of exchange and promissory notes prior to their final maturity date, which would be mostly within one to three months, but occasionally up to six months hence [Exhibit 5]. Many of these paper IOUs were sent from the rest of Great Britain for settlement in London. Hence, the Discounter was more connected to the network of Country banks compared to the Goldsmiths' little or no involvement with the Country banks. The Discounter provided the Country banks with correspondent banking services, and its funding typically evidenced a greater reliance on inter-bank wholesale deposits

stemming from those correspondent banks being required to maintain a positive net balance with the London bank. Consequently, the Discounter intermediated financial flows that were different from those to which the Goldsmith was exposed: more wholesale banking, more driven by trade and commerce, and more geographically dispersed. It should be expected, therefore, that the two business models would experience differently the changes brought about by the Restriction.

The alternative 'Discounter' business model is best contrasted by **Prescotts** balance sheet – see Exhibit 7. Prescotts' business was as single-mindedly dedicated to the discounting of bills of exchange and promissory notes, as Hoares was to secured medium-term lending. The Discounter business model was followed in different degrees by banks set up in the second half of C18, in contrast to the older goldsmith banks: the younger a bank was, the more it adopted a lower-risk version of the Discounter model. Then, during the Restriction period, all Discounters converged onto the full Prescotts model. Three other banks in the sample operated with a balance sheet that was a de-risked version of the Discounter business model and were to subsequently transition to the same Prescotts model during the Restriction: **Barnett, Hoare, Hill & Barnett** (BHBB); **Barclays Bevan Tritton;** and **Herries Farquhar.**

Prescott's was founded in 1765 as (George) Prescott, (Andrew) Grote, (William) Culverden & (John) Hollingsworth and opened its doors on the 1st January the following year at No. 57, Threadneedle Street. It later bought new premises at Sun Court, No. 62 Threadneedle Street. On the 1st January 1773 George William Prescott and Joseph Grote were also admitted into the partnership, taking the number of partners up to the legal limit of six. Following a practice used by many private banks, younger family members would be brought in as junior partners upon the death of an older partner, or earlier if time - and the father's faith in at least one of his progenity - allowed for better succession planning. As junior partners spent more time with the business their profit share would be increased each time a partner "quitted the business" or died. Prescott's had a particularly difficult three years between 1787 and 1790 when Andrew Grote, John Hollingsworth and George Prescott all died (Hollingsworth was replaced by his son, also called John). However, unlike the business model changes induced by changes in the partnerships at Goslings and at Coutts, these difficult years did not induce a change at Prescott, which maintained its focus on the discounting business throughout the 65-year period analysed.

On the asset side of Prescotts balance sheet, two-thirds was tied up in bills discounted and an additional 5% was accounted for by overdrafts[12], the latter mostly generated by its Country

[12] There was also a small 'sundry ledger' the contents of which is not visible in the Prescott records and may have contained some (government) securities, but more likely represented overdrafts granted to correspondents and partners. This 'sundry ledger' was immaterial in the early 1780s but had grown to account for 5-10% of the balance sheet on the eve of the Restriction.

correspondents. The rest was mostly the cash held in reserve, typically a lower proportion than that held by the Goldsmith bank and accounting for 15% - 25% of total assets. The Discounter's assets being mostly bills and notes, its balance sheet was naturally more liquid (i.e. more easily turned into ready cash) compared to the Goldsmith balance sheet: it therefore needed to hold lower average cash reserves. If the Discounter took less liquidity risk, this was offset by the greater credit risk that it had to take on because its lending was unsecured and involved a wider set of borrowers which engendered higher information costs in order to continuously assess their respective creditworthiness.

Prior to the Restriction, as with the Goldsmith model, the balance sheet size of a London-based Discounter was driven by the ability to grow its deposits. The difference was that the Discounter had a larger part of its liabilities composed of wholesale deposits. On the liability side, the Discounter model relied more on a correspondent banking structure, whereby Country banks would agree to maintain a certain level of deposit balances in return for the London bank agreeing to the ready purchases of bills and payment of drafts drawn on it by the Country bank's clients. This means we would expect the balance sheet of any single Discounter to be more partially correlated to the state of business in the regional markets where its correspondent banks were located, and less correlated to the average deposit growth of all London banks. Furthermore, theoretically a Discounter could expand its balance sheet faster than the average London bank by building correspondent relationships with more Country Banks. Most importantly in the light of subsequent events, unlike London banks, a Country bank was allowed to issue its own banknotes and hence 'manufacture' its own balance sheet growth independently of the growth of its deposits. Hence a Country bank with a sound reputation and operating in a prospering region with an expanding loan demand could meet that demand by growing its banknote issuance, thereby creating a greater flow of bills and notes presented for discount at the offices of its London correspondent. If the latter chose to meet that greater flow and/or was able to easily re-discount those bills and notes within the London money market, that London Discounter could grow faster than the average deposit base.

Barclays Bevan Tritton traced its roots to John Freame, a Quaker goldsmith who traded in Lombard Street, London. By 1698 the business was known as Freame & Gould, one of the five studied by Temin and Voth (2013). [The latter scholars collected data for Freame up to 1750; given my different focus, thanks to the kind offices of the Barclays Bank archive I have been able to collect Barclays data for the century running from 1772 to 1879, a remarkable series which the archivist believes has never been compiled in full]. James Barclay, Freame's son-in-law, entered the partnership in1736 and the first member of the Bevan family joined in 1767, shortly after which the Freame family withdrew. Hence, *de facto* the bank was re-formed in 1767, placing it among the younger banks that followed a Discounter business model. After John Henton Tritton became partner in 1783, he and Robert Barclay together

held the controlling stake for the next thirty years and the bank was styled Barclays Bevan Tritton & Co more or less continuously until 1865, except for the six years just before the Restriction during which John Barclay replaced Silvanus Bevan, who had withdrawn in 1791 to join the family brewing business; David Bevan then replaced John Barclay in 1797.

The differences in the balance sheet of the de-risked Discounters when compared to that of Prescotts lie on the asset composition. Firstly, prior to the Restriction, Barclays held higher cash reserves in all but one year, averaging a reserve ratio of 31% from 1780-1796 compared to Prescott's 23% (as we shall see, this changed after 1797). Secondly, the holdings of discounted bills, which had risen in importance during the 1780s, never exceeded 50% of total assets; they averaged little more than one-third prior to the Restriction, compared to Prescott's holdings of bills discounted which were never lower than half the assets and averaged two-thirds. Lastly, in addition to these discounted bills, Barclays typically held a large portion of its assets in traded securities.

The Barclays operating model appears to have anticipated a practice gradually adopted by many banks during and especially after the Restriction Act of 1797: the bank used government and non-government securities as a substitute for cash reserves. With the exception of 1783, when the records show a large holding in "bank stock", there was a small core holding of non-government securities of between £10,000 and £20,000, but the total holding varied considerably from year to year. In contrast to the proportion of the assets held in discounted bills (which was quite stable after 1790), the proportion held in securities varied from 44% in 1780 to a low of 3% in 1788, rising back to 28% on the eve of the Restriction. The proportion held in government bills and bonds was used for liquidity management purposes, their yearly variation appearing to absorb the majority of the annual changes in the balance sheet – consistent with a business driven by changes on the deposit side prior to the Restriction.

Barnett, Hoare, Hill & Barnett (BHBB) traced its roots to John Bland, a goldsmith in Lombard Street, London. It began trading under the BHBB name in 1790, dropping the first Barnett in 1800 after the then senior partner Benjamin Barnett exited the business, to be replaced by George H Barnett as junior partner in 1802. By 1808, it became known as Hoare, Barnett, Hoare & Co after the second most senior partner, John Hill exited the business, replaced by Henry Hill with a junior stake, and Samuel Hoare the younger had joined his father. Samuel Hoare Senior had become senior partner after Benjamin's departure and remained so until 1812, when James Barnett was raised to the same level. Finally the bank's name changed to Barnett, Hoare & Co from 1826 following Samuel Hoare Senior's first retirement (it appears from the records that Hoare Senior was brought back in 1833, perhaps to help steady the ship after the 1832 banking crisis). The bank was eventually to merge with another Lombard Street Bank in 1864 and end its days in the Lloyds Bank group.

The available data for the full BHBB balance sheet begins in 1798, so we use that year to compare the balance sheet to that of Prescott's and Barclays' in 1796. Even before the Restriction, both banks had lively correspondent banking relations with country banks, although nowhere near to the same degree as Coutts' relationships in Scotland. However, in contrast to Coutts' correspondent banking relationships which were mostly in net overdraft, those of Barclays Bevan Tritton and BHBB were a net source of deposits: deposit balances from the country exceeded the bank's exposure to the country banks on the asset side. The net balance was typically the equivalent of 10% of the balance sheet, but could be higher at some year-ends.

Like Barclays', BHBB held one-quarter of its assets in reserve in the form of cash, and used approximately one-third of the balance sheet to discount bills, with a further 10% as overdrafts, including those of Country banks (including holdings of their notes). Where BHBB differs from Barclays' is in their securities holdings. BHBB only recorded a small holding of Exchequer Bills and government bonds on their own books. However, BHBB also show a regular and large balance with Goldsmid's & Son; as the latter was the pre-eminent government bond underwriter and broker, it seems likely that the account represents BHBB's custody account for trading in (government) securities or possibly short-term lending secured against Goldsmid's inventory of such securities.

In 1796 **Herries Farquhar** was the youngest bank in our sample, and a symbol of how the banking sector has always fostered innovation in financial instruments and practices. The bank was in transition towards the full Discounter model, gradually building up the degree of operating risk in a manner similar to Barclays, albeit with an idiosyncratic product mix. During the Restriction it would experience the second fastest growth rate amongst our sample banks.

Robert Herries formed the bank in the mid-1770s in the West End of London. Orbell & Turton report the date as "about 1770", but it seems more likely to have been after 1776, the year Herries' partnership contract expired with Forbes, Hunter & Co, a bank based in Edinburgh. When James and Thomas Coutts took over the reigns of Campbell & Coutts in London in 1761 they resigned from the Edinburgh-based Coutts Bros. & Co, leaving their brothers John and Patrick to run it. It appears that Patrick was not terribly interested, so John did much of the running and brought in Robert Herries on a fixed term contract to help him. Herries was an experienced businessman who had worked for the prestigious Amsterdam bankers Hope & Co, and at the age of 23 had already set up his own business in Barcelona. When John Coutts died in 1761 the Edinburgh bank was largely left in the hands of its two most senior staff: William Forbes and James Hunter. Like many who find themselves inheriting a far greater wealth than they perhaps ever imagined, the two operating partners appear to have been

particularly risk-averse: by 1776, having already agreed to extend his contract once, Herries had grown tired of having his partners constrain his more exuberant trading style and resigned,[13] whereupon he was hired by the *London-based* Coutts to lead their City of London brokerage business under the name Herries, Cochrane & Co (Orbell and Turton, 2001: 269). This in itself is a good indication that Herries' skills and interests lay in high frequency trading of short-term instruments; his subsequent innovation also supports this view.

Herries is credited with the innovation of the Circular Note, considered the first traveller's cheque. This innovative product began slowly, and until 1813 Herries' business model was much the same as the emerging Discounters like Barclays, running a lower risk profile than that of the fully matured Discounter: 90% of his liabilities were non-interest bearing deposits (which he called by their French name "lodgements"), and these supported assets typically allocated 10% to client overdrafts, 20-25% to bills discounted, 20-25% to government securities, 5% to the premises and 25-35% in cash (in his case this included banknotes).

Using his experience of banking on the Continent, Herries developed the Circular Note as a modified letter of credit which was payable 'anywhere' rather than in just one place, allowing those travelling outside Britain to change their itinerary at will and draw cash in flexible amounts. Later he added the Transferable Note, which could be endorsed rather like a bank cheque. Herries would make money on the free cash balances remaining with him between the date of issue of the Circular Note and the date it was returned to him by the foreign correspondent. The client would deposit cash with Herries and receive a Circular Note payable at any of Herries' network of correspondents which he set up across the continent; when the client presented the note to one of these correspondents, the latter would pay out cash (in the currency of denomination of the note) and then return it to Herries for settlement. The free cash balances would be invested mainly in Exchequer Bills and other government bonds.

Herries appears to have taken these ideas to the London-based Coutts brothers who found them wanting, whereupon he set up his own bank, apparently with some (tacit) support of his previous Edinburgh partners (Rait, 1930). By 1798 the young bank was still not fully on solid ground, with a balance sheet barely reaching £100,000. In response to the heightened challenges posed by the Restriction, Herries appears to have wanted to bolster the firm's standing and capital, and brought in Thomas Harvie Farquhar as senior partner with a two-thirds share in the new capital of £24,000. The Restriction ultimately proved beneficial for Herries' business: Herries recorded the number of accounts opened and closed each year, and these show that his bank added net new clients every year from 1800

[13] For a full and entertaining, but poorly referenced account see Rait (1930), especially Chapter 4.

to 1847 with the sole exception of the financial crisis year of 1825. The bank operated until 1893, when Lloyds Bank acquired it.

Herries persevered with his idea of the Circular Note, but the accounts show that it took until the temporary peace of 1801-2 for it to really take off, only to then be hit by the resumption of war. Initially booked as "Foreign Notes" in the accounts, Herries only begins using the term Circular Notes in 1811. Outstanding balances at year-end were still under £7,000 in 1799-1800, barely 5% of total liabilities. But following peace with France these jumped to almost £27,000 in 1802 (14% of liabilities) thanks to a rush of visitors to the continent (captured in William Wordsworth's poem "Calais, Auguste, 1802".) After war broke out again, Napoleon's order in May 1803, that all adult Englishmen under the age of sixty were to be regarded as prisoners of war, naturally killed off continental tourism, and the Berlin and Milan decrees further hampered any commercial travel, causing Herries' balances of Foreign Notes to decline back below £10,000 for the next decade. As Napoleon's hegemony waned after 1813, Herries Circular Notes business once again took off, reaching balances of over £100,000 by 1828.

With travel to the continent resuming after 1815, there is evidence that the success of Circular Notes was becoming a threat to the client relationships of the established Goldsmith-style banks who had hitherto shunned the instrument. In 1817 Thomas Coutts – having reject the product 30 years previously - writes to the Bank of Scotland:

"on the subject of Foreign Credits and Circular Notes – These last have never been issued by the Houses of Child, Drummond or Hoare [note: the implicit peer group is of the eminent Goldsmiths] and we have felt a reluctance in taking up as it was a new Concern, but I think we should be wrong in persisting in this – in some situations they are certainly convenient to Travellers – Whether they may be generally considered so seems doubtful, but many of our Friends [i.e. clients] particularly of late have thought they are, and it is always our wish they should be accommodated – We do not expect any profit should result from the plan – what we rather aim at is the feeling that other Houses should not be able to afford to their Friends more facilities than we can do to ours – and besides I hope it will save us some trouble in the use of Letters of Credit which are attended with an immense detail of correspondence…"[14]

One of many examples of how financial innovations either fail or finally become widely adopted by the mainstream banks, for two reasons: either reluctantly, for defensive reasons, to avoid losing clients; or more enthusiastically, because the mainstream recognises how the new product is able to save costs or otherwise increase profits.

[14] Coutts Special Letter Book: letter to Samuel Anderson Esq, Edinburgh dated 27 Aug 1817

7. The Discounter business model – a typology

Prescott's business model was one followed to different degrees by banks that were set up in the later part of the eighteenth-century, in contrast to the older goldsmith banks, or by banks that had recently undergone a significant change in the ownership structure and in the families involved. Furthermore, it appears that the younger a bank was, the more it adopted a lower-risk version of the Discounter model, holding less bills and more government securities, indicating that the Discounter model was perceived by bankers at the time as newer, less tested, and therefore riskier. This dichotomy in the services provided by the two ideal-types of banks, and the cognitive image of Discounting as a quite different business conducted by the younger upstarts, was to endure well beyond the Restriction period. As late as 1833 Coutts bank, under pressure from the Bank of Scotland to pay better interest rates on idle balances sitting on its account at Coutts, proposes to act as the Scottish bank's agent in setting up a relationship with Smith, Payne & Co, a full bloodied Discounter where it could employ that idle cash more remuneratively. Coutts justify themselves by explaining that: "Houses in the City have greater facilities in knowing when the common Transactions of the Country afford openness for discounts and short Loans, than the established Houses at this end of Town."[15]

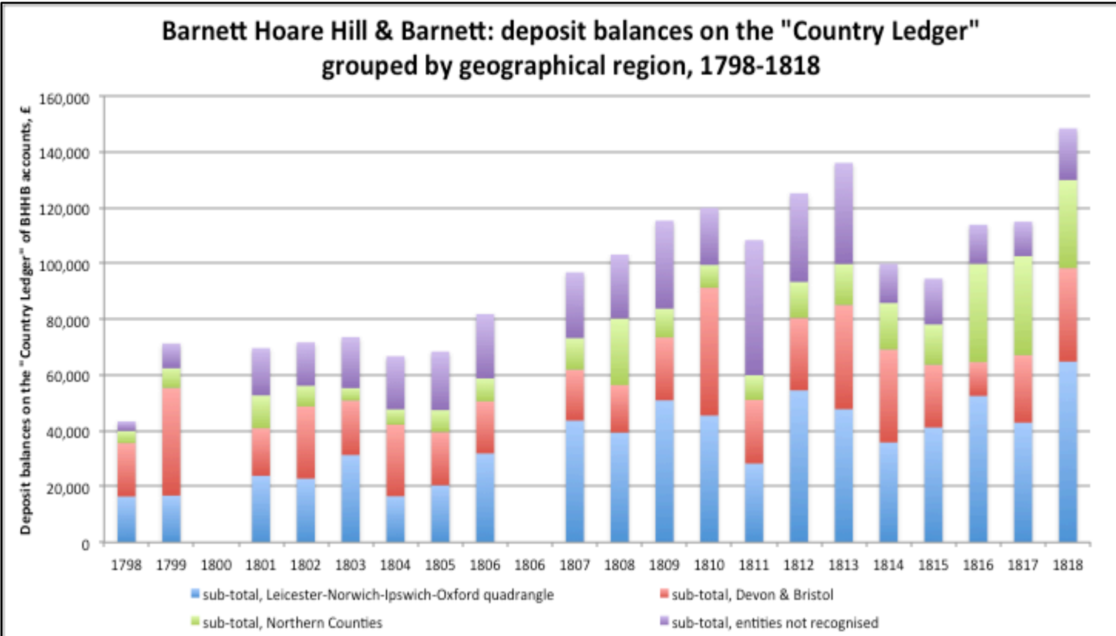
On the liability side of our ideal-type Discounter, the balance sheet was driven by the ability to grow its deposits, similarly to the Goldsmith model, but with the difference that the Discounter had a larger part of its liabilities composed of wholesale deposits. The Discounter model relied more on a correspondent banking structure for sourcing its deposits, whereby Country banks would agree to maintain a certain level of (minimum) deposit balances in order to finance the London bank's ready purchases of bills and payment of drafts drawn on it by the Country bank's clients. In principle a Discounter could expand its balance sheet faster than the average London bank by adding correspondent banking relationships with more Country Banks, or because the balance sheets of its Country correspondents were growing faster than London balance sheets.

Unlike London banks, even before the Restriction, a Country bank was permitted to issue its own banknotes and hence, within the contingent limits imposed by convertibility, it could 'manufacture' its own balance sheet growth independently of the growth of its deposits, subject to the (local) community accepting its notes as means of exchange. A Country bank with a sound reputation and operating in a prospering region with an expanding loan demand could meet that demand by growing its banknote issuance, thereby creating a greater flow of bills and notes presented for discount at the offices of its London correspondent. If the latter chose to meet that greater flow and/or was able to easily re-

[15] Coutts Special letter Book: letter to Archibald Bennet at the Bank of Scotland dated 11 July 1833

discount those bills and notes within the London money market, that London Discounter could grow faster than the average deposit base – a process best typified by BHHB (see below) and by the influence the Bank of Scotland's correspondent business had on Coutts' balance sheet (see separate paper). All this means we should expect the total balance sheet (assets and liabilities) of any single Discounter to be more correlated to the state of business in the regional markets where its correspondent banks were located, and less correlated to the average deposit growth of all London banks. We would also expect the Discounters as a group to be more correlated to nominal GDP – which is indeed what we find (see below).

Exhibit 4 – BHHB: Country Ledger deposits, by location of depositor 1798-1818



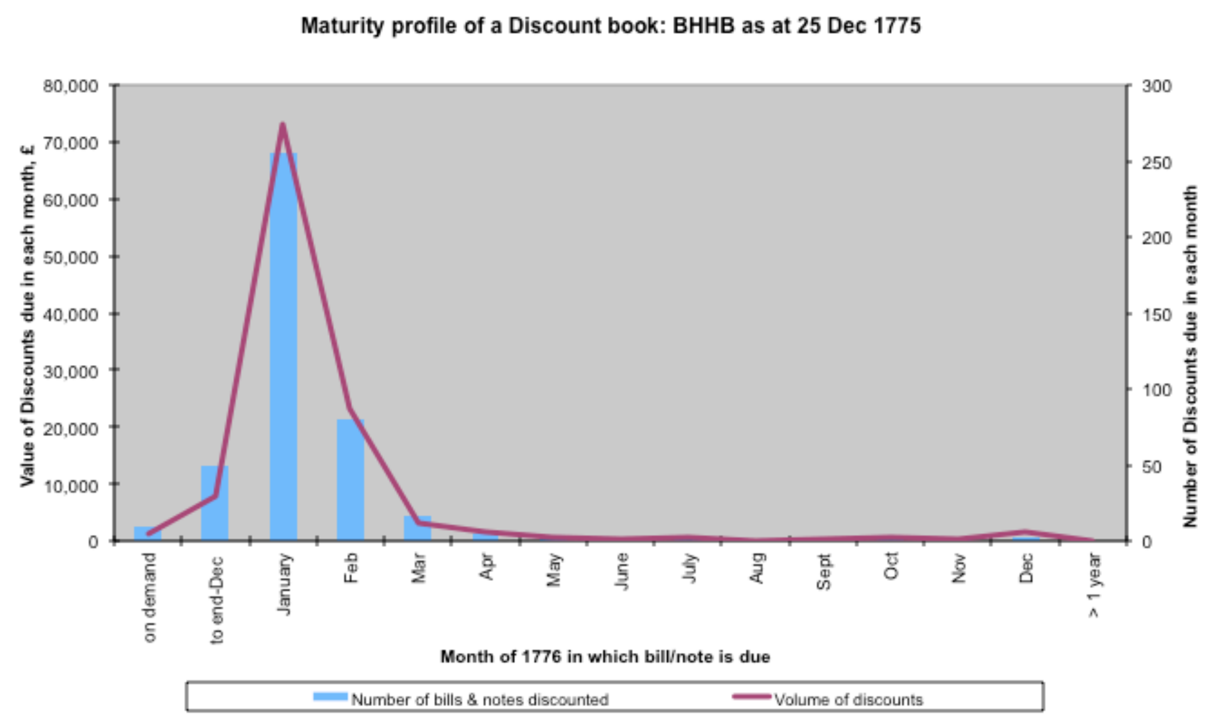
*Source: BHHB archival records, Lloyds Bank archive, London, ref: series A/12/** (especially 1133-1210) plus A/12/1/b/2-3. The author collected the fiscal year-end balances recored in the deposit ledgers against all counterparties known to banks, drawing on Orbell and Turton (2001), and then segmented by geographical place of operation.*

Even before the Restriction, all three Discounter banks had lively correspondent banking relations with Country banks. These were a net source of deposits: deposit balances from the Country banks exceeded the bank's exposure to them on the asset side. Before the Restriction, the net balance from the Country was typically 9% to 13% of the balance sheet, but could be lower in years of monetary and economic stress when, as observed for Prescott and Barclays, many Country banks were forced to seek liquidity support from the London money market and run up their overdraft balances. During the subsequent years of the Restriction this source of net funding for the London Discounters became a more important part of their total funding, reflecting the growth in the number of new Country banks as well as the flow of excess liquidity back into the London money market from the Country (Bosanquet, 1809). In the case of BHHB, net funding from the Country banks peaked at 24% of total liabilities in 1812.

BHHB's more consistently organised accounting of the Country ledger allows us to observe that the number of Country correspondent relationships it handled rose from 11 in 1798 to a peak of 28 in 1813. Relying on Orbell and Turton (2001), it is possible to recognise the entities named in the Country ledger accounting for approximately three-quarters of the total balances. From this analysis two aspects of the correspondent banking business emerge (Exhibit 4). Firstly, BHHB did business with a geographically diverse set of correspondent banks. If there were any economies of scale in communication and transport costs, these were overshadowed by the judgement as to the reputation and general standing of the Country bank partners. During the years 1798 to 1818, one third to one half of the balances from recognised entities came from banks in the Leicester-Norwich-Ipswich-Oxford quadrangle, but a further one-quarter to one-third came from Devon and Bristol, and 10-20% from the northern counties of Yorkshire, Lincolnshire, Pembrokeshire, Shropshire and Cumbria. Secondly, in each of these three broad regions BHHB had a core of one or two main correspondents with whom it was already doing business at the start of the Restriction and who continue to do so throughout the following twenty years; these core Country client relationships had been formed mostly in the 1780s. As the Restriction progressed, in each of these broad regions BHHB built up new relationships with newly created banks.

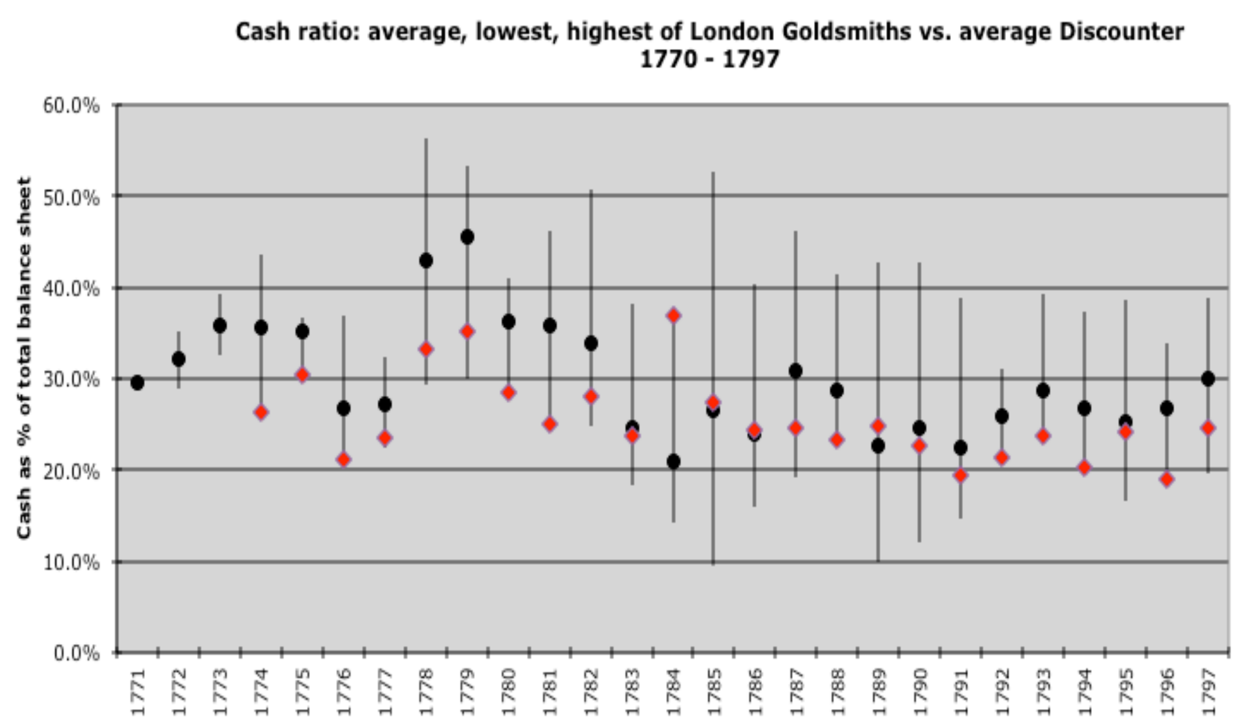
The Discounter took *greater credit risk* than the Goldsmith because its lending was unsecured and involved a wider set of borrowers which engendered higher information costs in order to continuously assess their respective creditworthiness. In contrast, the Discounter took less *liquidity risk* because its assets were mostly short-dated bills and notes, the majority of which reached their due date within the following month. In a typical example, on Christmas day 1775 the discount book of BHHB consisted of 431 separate bills and notes with a median value of £125 and totalling £114,776: of that volume, 1% was on demand, 7% was due in the final week of the year, and 64% were due by the end of January (Exhibit 5). This meant that in the hypothetical case that BHHB stopped discounting that same day, over the following five weeks 72% of its discount book would roll off and be paid up in cash, at no loss of interest income. With the typical Discounter employing at least 60% of its balance sheets in discounts, this would mean that over 40% of the balance sheet could be turned into cash within five weeks. Adding this to the typical cash reserves of 20% of total assets, this means that at least 60% of the balance sheet of Discounters was essentially 'liquid'. This was a liquidity profile that was quite different from that of the Goldsmith, where some 60% of the assets would be illiquid over a 12-month horizon.

Exhibit 5 – Maturity profile of a Discounter's discount book, Dec 1775



Source: BHHB archival records, "Discounted Bills" ledgers for 1775, Lloyds Bank archive, London, ref: A/12/1/b/1 – 2. The author collected the amount and maturity date of each of the 431 and segmented the data by maturity month. Chart shows the bills on the books of BHHB as at 25.12.1775 reaching maturity each month in 1776, by number (blue columns, RHS) and by value (red line, LHS).

Exhibit 6 – Cash reserves of Discounters and Goldsmiths compared, 1771 - 1797



Source: The chart shows the average (black dot) and high & low (linked by the black line) ratio of the "cash" balance as % of total assets for banks following the Goldsmith model (that are available each year). The red markers show the average ratio amongst banks following the Discounter model (that are available in the same year). Goldsmiths are: Goslings, Hoares, Drummonds, and Childs. The Discounters are: Barclays, Prescotts and Coutts [BHHB data begins only in 1799].

The Discounter's balance sheet was intrinsically more liquid: it could be more easily turned into ready cash simply by cutting back on the daily volume of bills accepted for discount whilst allowing those previously discounted to mature. We should therefore expect the typical Discounter to hold lower average cash reserves, and this is indeed what we observe. In almost every year from 1774 until the Restriction Act, the average percentage cash reserve held by the Discounters in our sample was lower than the average percentage held by the Goldsmith banks in our sample (Exhibit 6). In most years the average Discounter's ratio was at or near the lowest reserve ratio observed amongst the Goldsmiths. The outlier is 1784, which appears to be an outlier caused by an exceptionally high level of cash recorded at year-end by both Coutts (44% of total assets) and Barclays (40.6%), but not Prescotts (26.1%). Coutts is an outlier because its cash ratio was 10% the previous year, 20% the following year, and averaged 21% for the 25 years prior to the Restriction; and never exceed 32% during that time except in 1784. The aberration appears to have resulted from a particular confluence in the timing of repayments on its loans secured on pledges; important liquidation of securities; and an increase in paid-up capital – all occurring near the 1784 fiscal year-end. The most likely cause was the large rise in bond yields. That year government bond yields averaged 5.4%, the highest seen since the early eighteen-century (and a level not seen again until World War 1 (Mitchell and Deane, 1962: 455)), which would have pushed banks holding medium term securities to sell them and hold more cash instead. The hypothesis is supported by Barclays selling down nearly £40,000 of Bank [of England] stock that it had bought the previous year, equivalent to 17% of its total assets; this was unusually large sale, as in no other year during 1780-1822 did Barclays change its non-government securities holdings by more 9% of total assets, and changes were usually in the range of 0% to 3% of total assets equivalent (Mitchell and Deane, 1962: 455). The hypothesis is also supported by the fact that we do not see the same change in Prescotts, which did not hold medium-term securities.

We can attribute the greater liquidity of the Discounter's balance sheet merely to the shorter average maturity profile of its assets, even before we consider the additional option available to the Discounter of seeking to re-discount some of its holdings with the Bank of England. However, before the Restriction, the Bank's discount window was not large and only a small portion of the London bank's holdings would have been of sufficient perceived quality to be eligible for discount at the Bank.[16] As scholars of the Bank of England have long pointed out, at the time the Bank had no formal role as lender of last resort and was often criticised for operating solely as a privately owned commercial enterprise. Furthermore, given the Bank' obligation to redeem its banknotes into specie upon demand, its ability to expand the volume of discounts (both of private and public sector paper) was constrained. That the Bank did not see it role as lender of last resort is indicated in a letter dated 28th February 1797,

[16] This triage process is reminiscent of central bank asset purchase programmes undertaken since the most recent financial crisis of 2008.

at the peak of the liquidity shortages and the day before Parliament suspended the gold standard. Sent from a partner at Hoares to Richard Stone, almost certainly one of the partners of another substantial London bank, Stone & Co (which later became Martin's Bank Ltd), in reply to what must have been a request for assistance, the letter states:

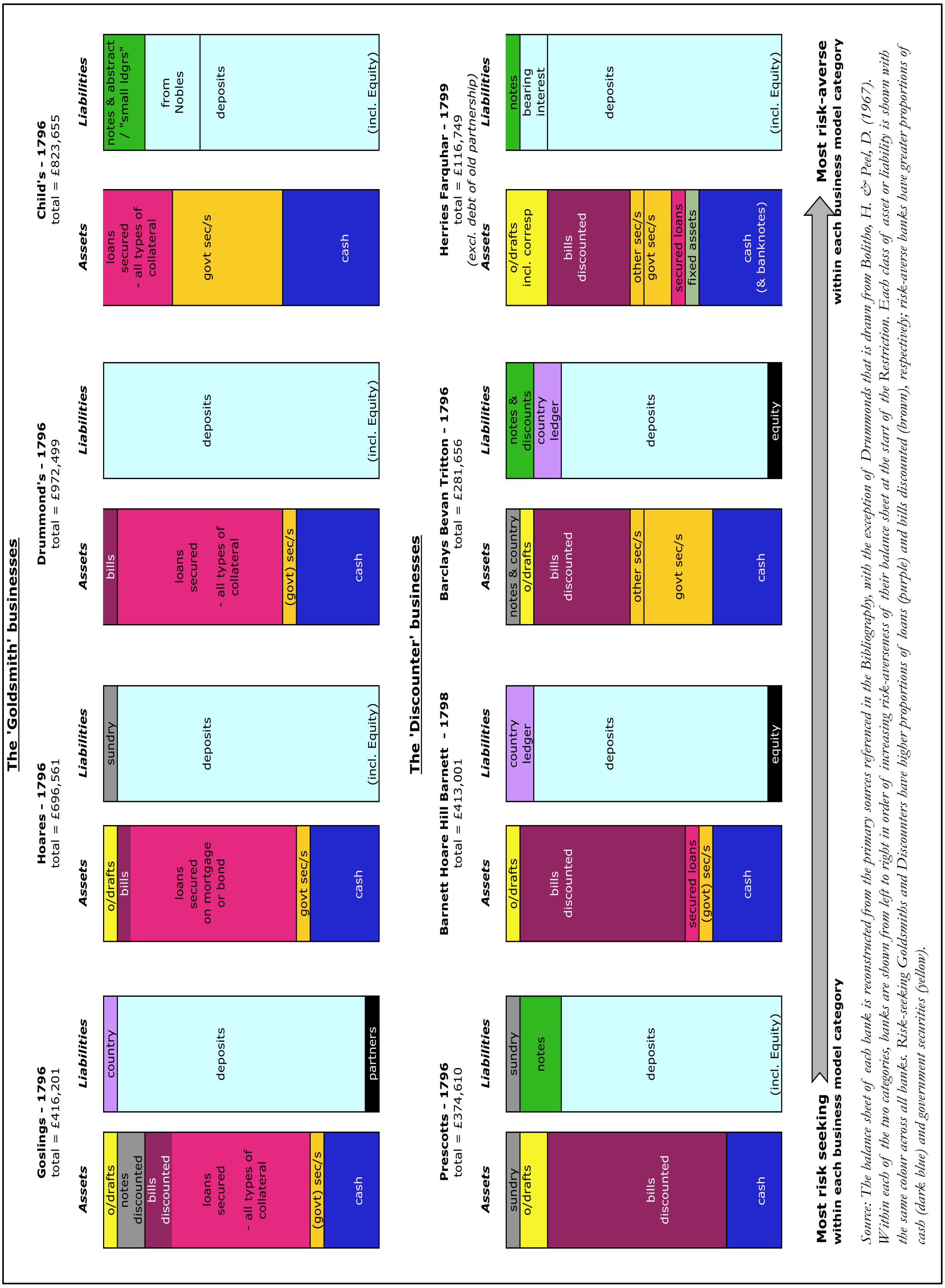
"Your Letter gives me real concern and the more so as I fear it is not in my power to extricate you from the difficulty under which you labour, there is nothing that I would not do within my Compass to effect, for your House, who are all of them my old & particular Friends […] probably arose from our having lately had a much larger Demand for Gold than usual, consequently were obliged to replenish more frequently […] The Demand is now so great from all [Quarters] that it is impossible to calculate what Inventions People will have recourse to for procuring small Sums the effect of which we feel already and upon an application made by our House this Day to the Bank, requesting to know whether under the existing Circumstances they were authorised to assist Bankers with a Sum sufficient to pay the necessary Fractions, *they answered certainly not*, nor did they know when, if ever, they should be permitted to supply [?] it as heretofore."[17] [*my italics*]

Hence, prior to the Restriction period, we would expect the Bank's discounting (as source of liquidity) to have been a less important influence in the Discounter's decisions on how to manage the liquidity risk of his bank, and to view the Bank of England at best as a contingent backstop in case of an emergency. This would change radically after 1797.

What we observe (not shown) is that, in respect to private sector discounts before the Restriction, the Bank of England's balance sheet moved in a way that was the contrary of what would have been expected from a bank assuming the role of lender of last resort. The Bank tended to have raised levels of discounting in the same years that the Discounters had high cash reserves, and vice versa: between 1778 and 1797, I find a 25% positive correlation between the proportion of the Bank of England's assets employed in discounting private sector paper and the average cash reserves held by Discounters (also as a percentage of total assets). The implication is that the Bank of England reacted independently to what it perceived as opportunities to safely and profitably increase its discounting activity in certain years, and this would leave less paper to be held by the rest of the London market, leaving Discounters with cash unemployed and the percentage of their cash reserves to rise.

[17] Hoares Private Letter Book 1795-1815, pp. 76-7: letter to R. Stone, dated 28th Feb 1797

Exhibit 7 – Balance sheets of the 4 Goldsmiths and 4 Discounters in 1796-9



Source: The balance sheet of each bank is reconstructed from the primary sources referenced in the Bibliography, with the exception of Drummonds that is drawn from Bolitho, H. & Peel, D. (1967). Within each of the two categories, banks are shown from left to right in order of increasing risk-averseness of their balance sheet at the start of the Restriction. Each class of asset or liability is shown with the same colour across all banks. Risk-seeking Goldsmiths and Discounters have higher proportions of loans (purple) and bills discounted (brown), respectively; risk-averse banks have greater proportions of cash (dark blue) and government securities (yellow).

8. Profitability

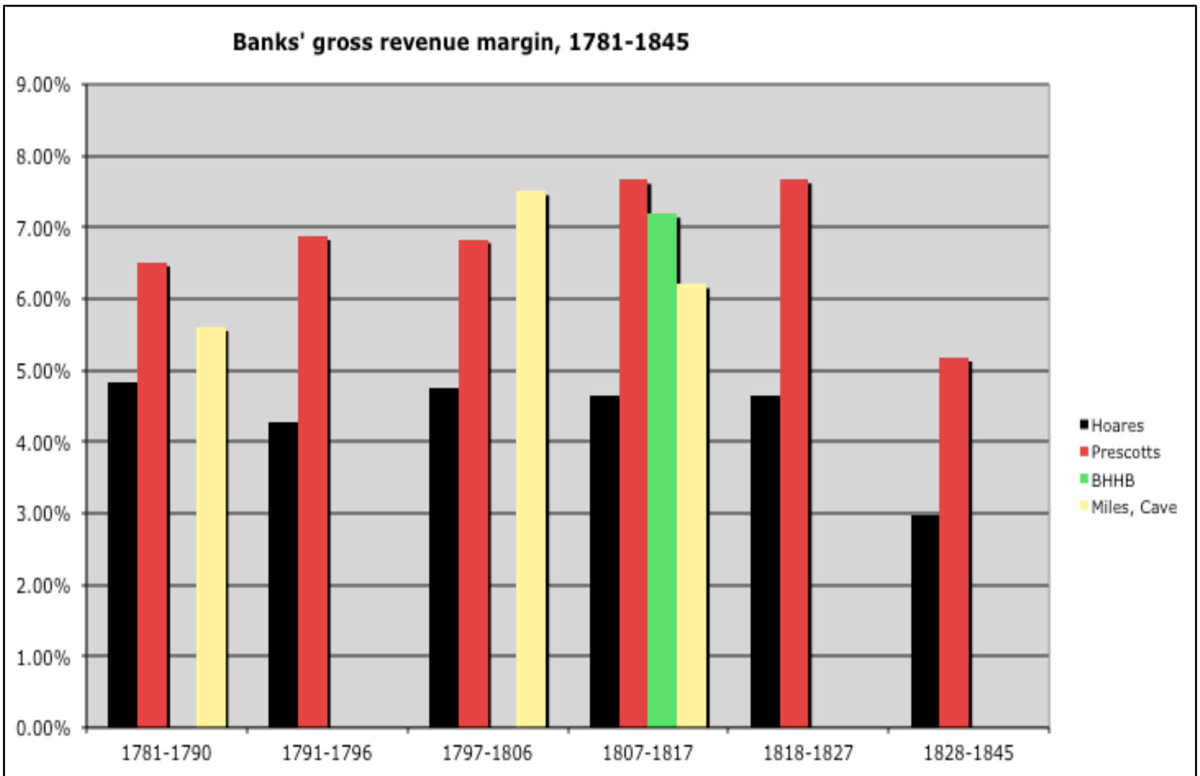
In this section I investigate and compare the profit and loss account of the ideal-type Goldsmith business model (using Hoares data) and the ideal-type Discounter business model (using Prescott) in the run up to and during the Restriction. In the previous sections, understanding the balance sheet policies of the two business models has brought out their relative exposure to credit and liquidity risk; in this section, understanding the profit dynamic of the two business models helps to investigate the relative interest rate incentives. Together, these two aspects of the business models will explain the differentiated impact upon the London banks of the Restriction Act and the related expansion in the Bank of England discount window.

I find that, prior to the Restriction, the London banking business had plausibly settled into an approximate state of equivalence in the net return on assets between the two business models. After the initial marketplace disruption caused by the entry of numerous Discounters during the 1770s and 1780s, London bank numbers had stabilized at around 70 banks, and bankers had seemingly learnt to judge the credit and liquidity risks present in their respective business models when operating under the gold standard. The Goldsmith typically held higher non-interest bearing cash reserves to manage the liquidity risk; the Discounter typically held lower cash reserves, but invested part of the interest-bearing assets in government securities in order to reduce the credit risk, and was more likely to reserve a portion of annual profits against unexpected future losses. It is therefore possible to argue that bankers, whichever of the two business models they pursued, actively calibrated their balance sheet strategies in order to aim at a net return on assets of approximately 3% p.a. Accounting practices for these private partnerships with unlimited liability do not reveal the true equity in the business, but if we treat Thomas Coutts' capital strategy (regularly adjusting the paid-up capital, not letting it fall below 5% of assets, and then topping it up to 10%) as indicating the true capital perceived as being at risk, then we can infer that implicit equity-at-risk ratios averaged 7.5% of total assets; which meant the target return on equity was approximately 40% per annum. This state of affairs was then disrupted by the systemic changes to that environment ushered in by the Restriction.

The Goldsmith bank charged borrowers between 4% and 5% p.a., the latter being the maximum permitted under the usury laws. Interest was usually debited annually or semi-annually, but sometimes it was a mixture (even for the same loan) and in yet other cases there were no fixed payment dates at all. The bank did not appear to have levied late payment charges, nor did it calculate compound interest in cases when interest was paid at the end of, say, two years. Consequent to these practices, the average gross interest effectively earned on mortgages would be around 4.5% p.a. The gross interest earned on securities holdings, by contrast, would be closer to 5% and sometimes even exceed this level. This was

because the available yields in the secondary market for government bonds often exceeded 5% in the period up to the end of the Napoleonic Wars in 1815, and the usury laws only applied to the nominal coupon rate. Many banks were also active traders of these securities, moving in and out of the same security, arbitraging between different long bonds, and between bonds and Exchequer bills. Exhibit 9 shows an example of how, during 1797, Childs successfully traded a total turnover of £187,415 in Exchequer Bills, beginning and ending with no net position, with a weighted average entry price of 99.39 and exit price of 102.14, earning an annualized total return on average capital employed equivalent to 6.85%.

Exhibit 8 – Gross margin on non-cash assets of Goldsmith and Discounter



Source: Total revenues are computed from archival records and then expressed as % of the average of the total reported interest-bearing assets at the start and end of the accounting year. The gross margin of each bank is shown as the average over each 10-year period. Mile Cave is the alternative name for Old Bank, Bristol.

When combined, the average gross interest margin on all interest bearing assets averaged 4.6% before the Restriction. It continued at that level until 1815, after which it went into steady decline averaging less than 3% after 1830. Little or no interest was paid on deposits: this was the main mechanism by which Goldsmiths were able to capture the value added they created. We must infer that, in a world where the price level was taken to remain flat in the long run, depositors were willing to forego the opportunity cost of a 5% real return or more on government securities in exchange for the combination of various services: the secure physical custody of their gold money; the convenience of writing bills and drafts against those deposits, as well as having the bank act as its agent for the execution of other daily monetary transactions; as well as obtaining contingent access to loans when

and if the need arose. This was how London banks – especially Goldsmiths – created value and captured that value.

Exhibit 9 - Example of bank trading in Exchequer Bills: Childs, fiscal year 1796-7

Example of London bank trading in Exchequer Bills: Childs, fiscal year Oct 1796 to Oct 1797

SELLS				BUYS		
face value		*cash* **£**		*face value*		*cash* **£**
				75,000	To cash, ExB dated "to this day" @ 5% Disc	74,812
				8,000	To cash, dated 11 Mar @ 3 1/2 % Disc	7,722
12,000	By cash, dated 24 Jan @ 1/4 Disc	12,136				
8,000	By cash, dated 24 Jan @ Disc ?	8,094				
10,000	By cash, dated 24 Jan @ 1/8 Disc	10,134				
13,000	By cash, dated 24 Jan @ Par	13,244				
				10,000	To cash, dated 31 July @ 1 1/4 % Disc	9,895
10,000	By cash, dated 24 Jan @ 1 Disc	10,289				
8,000	By cash, dated 11 Mar @ par	8,198				
7,000	By cash, dated 24 Jan @ Par	7,217				
15,000	By cash, dated 24 Jan @ Par	15,540				
10,000	By cash, dated 24 Jan @ Par	10,134				
				Balance carried to P&L		2,555
	Total cash in since last Oct	**94,986**	**0**	*Total cash out since last Oct*		**94,986**

weighted average entry date (numeric)	654931
weighted average exit date (numeric)	655081
av hold period (days)	150.24
proportion of 1 yr	0.41162
simple int rt	**2.76%**
annualised int rt	**6.85%**
average entry price	**99.39**
average exit price	**-102.14**

Source: Child "P&L Ledger, 1783-1798", RBS archive, ref: CH/203/6 [microfilm]. example of how, during 1797, Childs traded a total turnover of £187,415 with no net change in the position; weighted average entry price was 99.39 and exit price 102.14, with an average holding period of 150 days, giving an annualized total return equivalent to 6.85%.

Operating expenses (staff and the banking hall) for the Goldsmith were low, taking out just 15% of that gross interest earned (compared to today's typical bank's ratio of staff costs to total revenues of 60%). Finally, losses, including errors and sundry deductions would vary considerably from year to year, but take out no more than a further 10% of the net interest income. Taking these components together, some three-quarters of the gross interest margin was retained as net profit, leaving a typical net margin on lending assets of 4.6%. This translated into a net return on total assets (henceforth

"RoA") of 2.5% per annum once non-interest bearing cash reserves are taken into account. RoA rose to 3% during the Restriction years, after which it gradually declined to 2% per annum where it stayed for the rest of the century. Data from other Goldsmiths (Drummonds, Childs) and BHHB, the more conservative Discounter, closely match these levels and their pattern of change; by contrast, the more risk-seeking Discounter (Prescott) operated with consistently lower RoA after the Restriction Act – see Exhibit 11.

The profitability of the 'Discounter' business model prior to the Restriction (based on Prescotts' data) was similar to, or somewhat lower than that of the Goldsmith model after all costs are taken into account. After the Restriction Act some Discounters such as Prescott suffered much lower returns net of loan loss reserves.

The top-line gross interest margin earned by the Discounter on its discounting of bills was a more attractive 6.5% p.a. compared to the 4.6% p.a. earned on average by the Goldsmith bank on its mortgage lending and government securities. By way of comparison, I estimate that at this time the gross margin earned by the Bank of England on its discounting activity averaged 4.6% on average balances,[18] suggesting that the better quality paper tended to be offered for discount at the Bank. Although not legally *pari passu*, the Bank of England was counting on discounters of bills giving it *de facto* status of senior lender because of the dire consequences of being seen to default to the Bank.

The gross interest margin of the Discounters grew to exceed 7% during the Restriction and remained high until the banking crisis of 1825. The estimates from Prescotts are consistent with the more detailed numbers we have for BHHB for the shorter period 1807-1817. By contrast, the gross margin of the Goldsmith (Hoares) remained steady at around 4.6% throughout the period until the 1825 crisis (Exhibit 8).

Although usury laws capped interest rates at 5%, the practice of discounting the face value of a bill, combined with its short-date maturity, made the effective interest rate charged less visible because, as with the mortgage interest arrangements of the Goldsmith, there were no adjustments for compound interest effects. If the interest rate charged on bill discounting was computed as 5% p.a. pro rated arithmetically over the relevant life of the bill, then a stable volume of discounting of, say, 1-month bills would have produced a full-year effective gross lending margin of 6.1% p.a. (on the assumption that interest income was re-invested in the business throughout the year). Furthermore, we know that the Bank of England, when discounting bills, would oblige the seller to relinquish the whole interest over the full term of the bill: hence it is possible that the Discounter banks at times practiced the same

[18] Figures available for 1800-1819: Bank of England archives, ref: C36/6 & C36/14.

method. Finally, as shown in Coutts' letters and corroborated by the more detailed revenue records of BHHB (which begin in 1803), Discounters usually earned fees from Country correspondents in addition to the net interest margin. These fees were charged either as percentages (varying from 1/16% to ¼%) of the paying agency volumes handled and/or for providing what amounted to a revolving credit facility – a practice already in use in Scotland since some years previously (as described by Adam Smith). However, these fees do not seem to have become a material amount of revenues until after the start of the Restriction.

While the Discounter enjoyed these higher gross margins than the Goldsmith, it also had to bear a number of offsetting higher costs.

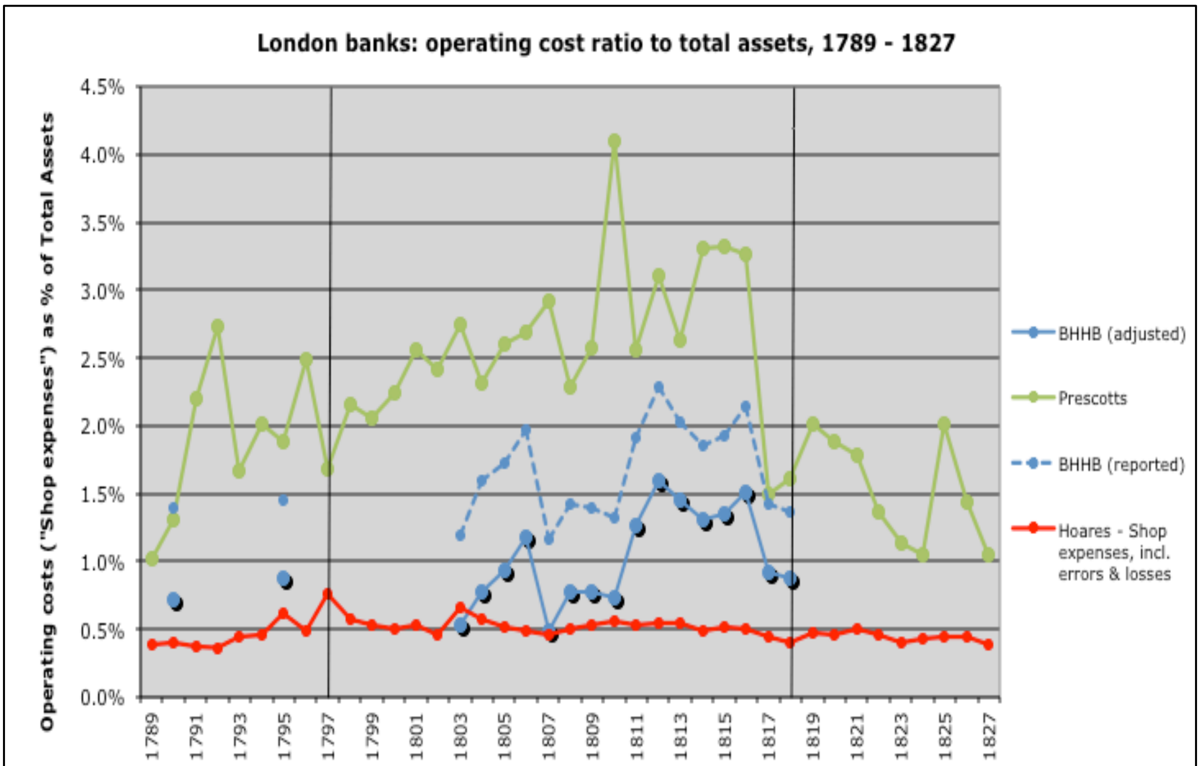
Firstly, the Discounter suffered from the lower gross margins available on the wholesale correspondent banking business where, being an agency business not involving principal risk, fees were lower and overdraft interest rates negotiated in bulk. The costs side of the Prescott accounts shows an item entitled "Expense and interest", suggesting the Discounter paid *some* interest on the wholesale deposits or drafts that composed its liabilities. Unfortunately the Prescott records only break this out for five years after 1817:[19] for those years the interest costs varied between 0.8% and 1.3% of total liabilities, and averaged 1%. The latter is corroborated by the interest rate of 4% p.a. that Coutts assumed in its correspondence with the Bank of Scotland that the latter *could* have earned on its positive overnight balances during 1813-15 had it been using a London bank that paid interest on such balances. If we assume that the Discounter paid the same interest costs before 1817 as it did afterwards, then we can deduct 1.0% from that headline margin to reach a comparable gross margin of 5.5% for the Discounter – still a full 0.9% greater than that of the 'Goldsmith'. But there were other costs for the Discounter.

Secondly, the records reveal that the Discounter business model engendered higher operating costs. The operating expenses of the Discounter absorbed around 25% of the net interest revenues compared to 15% for the Goldsmith. This difference eroded a further 0.2% from the net margin of the Discounter model, pushing it down to 5.3%. This was to be expected given the more labour-intensive work of handling the higher turnover rate of the bill discounting activity. The typical bill of exchange was issued for maturities of one to three months: hence we would have expected the lending assets of the Discounter to turn over at least 500% during a year, compared to the average turnover of mortgages of just 10%. Although the documentation costs per transaction were higher for mortgages, this did not offset the difference in the frequency of transactions. The Discounter's operating costs appear to have been between two and five times greater than the Goldsmith per £1 of assets, depending on the precise asset composition. Comparable continuous figures for 1799-1827 show that

[19] For the years 1817-19 and again in 1835-1845

in the years before the Restriction, Hoares (full Goldsmith) had average annual operating costs of 0.44% of total assets, while Prescotts, already a full Discounter, had a cost ratio averaging 1.91% of assets. In 1803 BHHB, whose business was still in the process of moving towards the fully-fledged Discounter, was still operating with a cost ratio similar to Hoares (0.53%). As BHHB moved its balance sheet composition more towards that of a full Discounter during the Restriction (see Exhibit 7), the cost ratio doubled to an average of 1.09% over the following twelve years, even when excluding interest paid to partners and the annuity paid to Mrs. Barnett (the cost ratio averaged 1.75% with those expenses). Similarly, over the same twelve years, Prescotts' cost ratio deteriorated further to an average of 2.90% - six times that of Hoares, whose cost ratio barely changed, averaging 0.52% (Exhibit 10).

Exhibit 10 – London banks: operating costs as percentage of total assets, 1789-1827



Source: Operating costs are drawn from archival records, and then expressed as % of the average of the total reported assets at the start and end of the accounting year. For consistency with the other two banks, Hoares costs are "Shop expenses" plus the samll amount of errors & losses in years when they occur. BHHB costs are shown both reported and adjusted by removing the pre-distribution fixed dividends and annuities to stakeholders.

During the credit boom of the Restriction, the Goldsmith model typically did better than the Discounter model in terms of net operating profits because its cost dynamic was less sensitive to balance sheet growth during the monetary expansion (Abundance phase) of the Restriction. The Discounter's high-frequency transactional model was generating incrementally higher costs, including higher stamp duties, while the typical Goldsmith reinvested the increased deposits into government securities (Chapter 11, 12) that entailed lower unit costs compared to executing longer-term secured loans to individuals. Furthermore, this meant that as the Restriction's monetary expansion progressed,

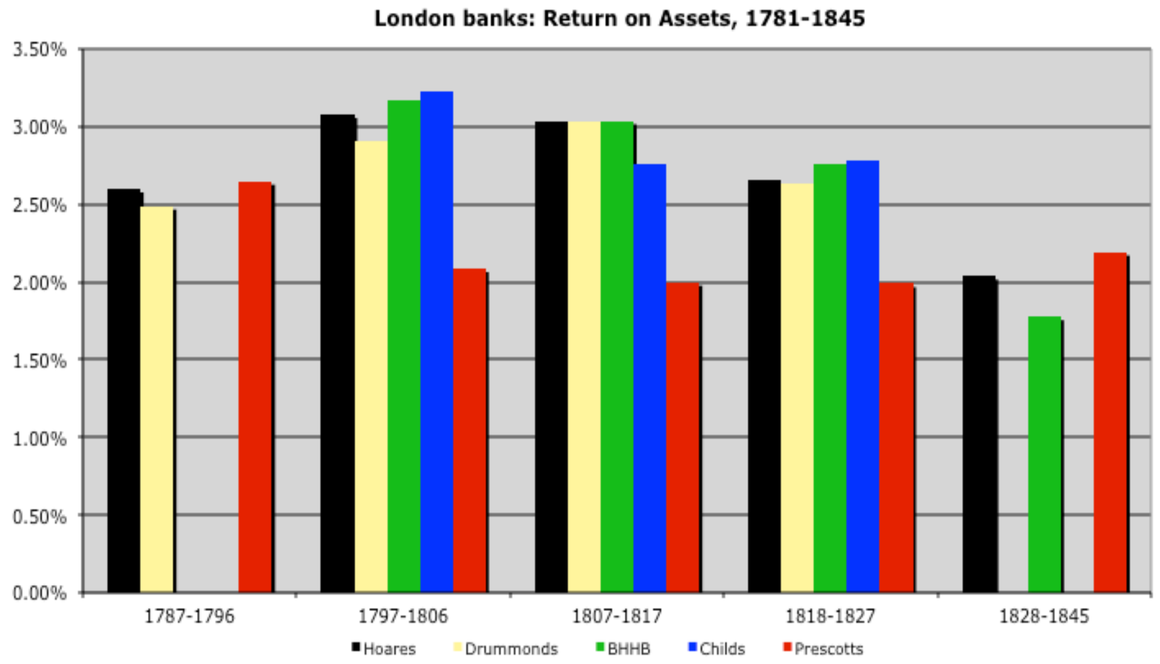
the Discounter was taking on more credit risk to a wider set of counterparties, while the Goldsmith was taking less credit risk on average, per pound of assets.

Against a backdrop of total "shop expenses" at Hoares that were nearly unchanged between 1803 and 1818, both Discounters saw large costs increases coinciding with the timing of when they embraced the boom in discounting – and before they took steps to correct their business model when faced with deteriorating returns. Prescott embraced the expansion immediately upon the Restriction being imposed and grew its balance sheet at 10% p.a. after 1803 until it peaked in 1809 at just below £1million; during that period its costs more than doubled. By comparison, over the same six years, Hoares was able to grow its balance sheet at 5.6% per annum with no increase in costs. Over the period 1803-1818, the Discounter BHHB's balance sheet grew by a relatively sedate 2.1% per annum, half the rate of growth managed by Hoares, and yet by 1813 BHHB's costs were three times greater than they had been a decade earlier.

Lastly, the Discounter suffered higher loan loss write-offs. In this regard, Discounters adopted a different accounting method to Goldsmiths: both Prescott's and BHHB did not distribute the entire annual profit, instead opting to book a (variable) portion to reserves. We interpret this as indicating that the managing partners of the Discounter accepted *ex ante* that the Discounter business model would generate a certain amount of credit losses each year. There is further evidence of on-going adaptive behaviour in adjusting these reserves to the loan loss experience. Loan losses would rise considerably after 1797, but for the two decades prior to the Restriction they had averaged a modest 0.6% of loan assets. [This loan loss rate can be compared to the 2.8% average rate experienced by the UK banking sector over the past 25 years[20].] Loss write-offs prior to the Restriction reduced the Discounter's comparable net margin to approximately the same as that of the Goldsmith. Arguably, the Discounter should have turned this net margin on interest-bearing assets into a higher net RoA - a premium for the higher volatility of earnings compared to a Goldsmith model – by being able to hold a smaller idle cash balances as reserve, justifying this on the basis that the Discounter's main asset - bills of exchange – enjoyed greater liquidity relative to longer-term mortgage loans. However, this effect was marginal as Discounters on average held only 4-5% less of their balance sheets in cash compared to Goldsmiths. As a result, the net RoAs of the two business models were similar, approximately 2.5% p.a. (Exhibit 10).

[20] Standard & Poors report in Dunkley (2015).

Exhibit 11 – Return on Assets of London banks, 1781-1845

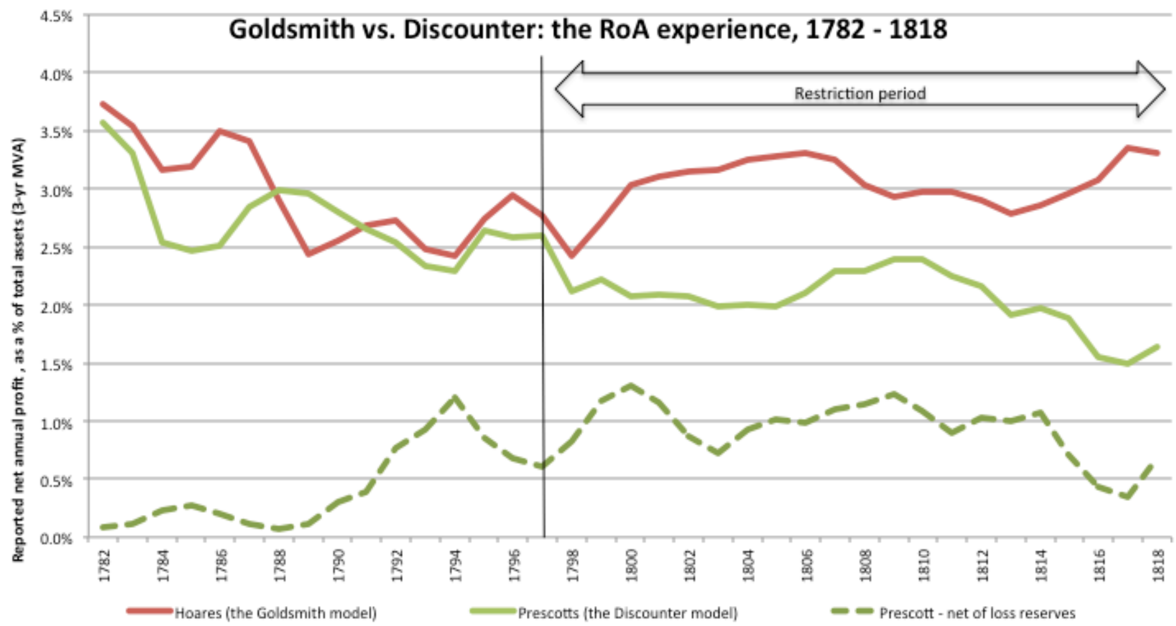


Source: Profits are computed from archival records, after costs and realised losses, but before any allocation to reserves, and then expressed as % of the average of the total reported assets at the start and end of the accounting year. The RoA of each banks is shown as the average over each 10-year period.

During the Restriction, RoAs improved for the Goldsmith bank, but more selectively for the Discounter: Goldsmiths achieving over 3%, but for the Discounter it depended on avoiding increased loan losses. In our sample, it seems BHHB succeeded; by contrast, for Prescotts' the Restriction Act marked the beginning of deteriorating loan loss experience and its RoA fell to 2% (Exhibit 11 and 12).

In conclusion, to the degree of approximation permitted by the historical records, I find something like the expected equivalence in the profitability of the two bank business models in the decade prior to the Restriction. Although the Discounter obtained higher top-line margins on its lending activity, the *net* margin was similar to that of the Goldsmith after accounting for the higher operating expenses required to handle the higher-frequency transactional business; the greater loan loss experience involved in taking on unsecured credit risk from a wider range of counterparties; and the higher costs of wholesale funding and/or lower margins earned on temporary net overdrafts run by wholesale counterparties. After proper adjustment, before the Restriction, both the Discounter and the Goldsmith business models had net operating margins on their interest-bearing assets of approximately 4.5%; a return on total assets of approximately 2.5%, and an estimated return on capital at risk of 30-35%.

Exhibit 12 – Goldsmith vs. Discounter: Return on Assets, before and after the Restriction



Source: The RoA is computed by the author using the archival sources for the two banks, as listed in the Bibliography: Hoares (red line) as the ideal-type Goldsmith model, Prescotts (green line) as the ideal-type Discounter model. Each line shows the 3-year moving average of reported profits after all costs, including errors and losses, divided by the total assets. The dotted line shows Prescotts' distributed profit after allocation to loan loss reserves.

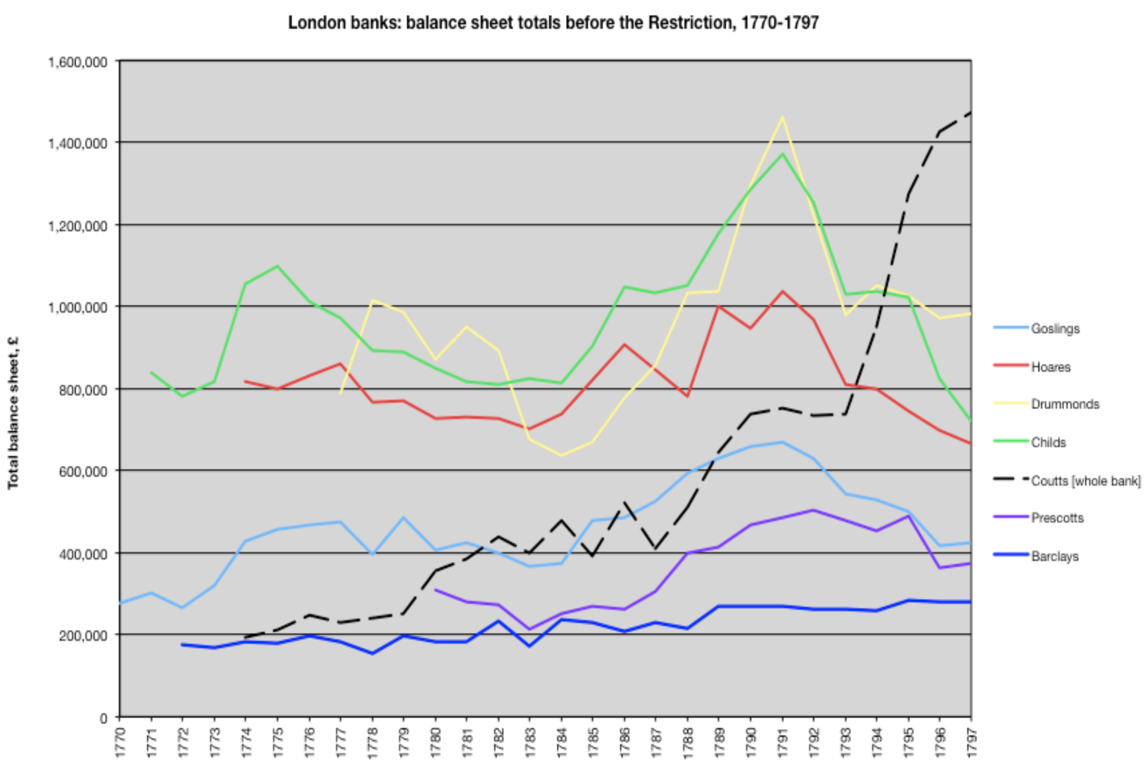
During the easier monetary conditions after the Restriction Act, many banks experienced an improvement in return on assets to 3% p.a., but to achieve it the Discounters had to keep a lid on the escalating costs of supporting the growing high-frequency transaction activity in bill discounting, as well as avoid unexpected loan losses. Perhaps not surprisingly, the Discounter with the slowest rate of balance sheet growth (BHHB) succeeded, while the Discounter with the fastest growth failed to do so.

For any given bank directorate, the choice between the two business models appears to have lain partly on when they were founded, and hence where the founders could see the profitable opportunity. Under a gold standard regime the demand for medium-term loans secured against the existing slow-growing stock of specie was already well catered for by the older banks that had pursued the Goldsmith model; a younger bank was more likely to seek a competitive space by serving the new and faster-growing instruments such as the bill of exchange. Or, as in the case of Herries, seek competitive space by developing an entirely new instrument. However, the choice of business model also depended on the temperament of the partners and the nature of the daily activity they enjoyed, and more importantly on their perceived informational and marketing capacity as well as the cognitive frame of money that they had built up from their previous experiences. As was the case for Barclays Bevan Tritton and for Goslings, a significant change in the principal partners could lead to equally significant changes in capabilities and appetites for handling the new instruments, and hence in the business model pursued. After the Restriction Act, Discounters also had to choose how aggressively they would embrace the easier monetary conditions in order to expand the balance sheet.

9. Balance sheet growth and business model clusters

In the decade prior to the Restriction of 1797, London bank balance sheet totals on aggregate were growing at 2.1% per annum, in line with that of the Bank of England (1.8% p.a.) and no more than keeping pace with the growth of real GDP (1.9% p.a.) (Exhibit 14). However, analysis of Coutts' balance sheet shows that most of this growth in deposits was attributable to Scotland, which at the time was experiencing better economic conditions than England (discussed in a separate paper). The latter makes a significant difference to aggregate London deposits. After the gold standard was suspended, for the next fifteen years until 1811, during the phase of the Bank of England's expansion of its discounting of private sector bills and notes, the London bank balance sheets grew more than twice as fast (3.9% p.a.) and, unsurprisingly, all the Discounters (with the exception of Coutts) grew faster than the Goldsmiths. Individual bank growth rates, having been highly idiosyncratic before the Restriction, subsequently converged.

Exhibit 13 – London banks: balance sheet totals before the Restriction, 1770-1797



Source: Chart shows the total assets for each bank at its respective fiscal year-end as reported in the archival records (see Bibliography for full references). For all Discounters fiscal year-end is end-Dec; for Goldsmiths: Goslings & Drummond are end-Dec; Hoares and Childs are end-Sept. Coutts year-end is end-June, and is shown inclusive of its Bank of Scotland correspondent business.

Exhibit 14 – Bank balance sheet growth rates, by business model ideal-type, before the Restriction Act, and for the period thereafter coinciding with the expansion in Bank of England's discounting.

Compound annual growth rates of the bank's balance sheet total - by type of business		*decade prior to the Restriction* **1786-1797**		*during main expansion of BoE discounting* **1796-1811**	
Bank of England		**1.8%**		**5.0%**	
			average		*average*
Discounters					
Barclays Bevan Tritton		**1.8%**		**7.4%**	
Prescott & Co		**3.3%**		**5.9%**	
Herries Farquhar	*from 1799*			**4.5%**	
Barnett, Hill & Barnett				**4.2%**	
Smith Payne & Smith	*1797-1813*			**3.6%**	
Ranson Bouviere	*from 1796*			**3.5%**	
Coutts & Co [whole bank]	*from 1798*	**11.0%**		**3.0%**	
			5.4%		4.6%
Goldsmiths					
Hoares & Co		**-2.8%**		**3.2%**	
Coutts & Co [ex-Bk of Scot.]		5.7%		3.1%	
Goslings & Co		**-1.2%**		**2.9%**	
Child & Co		**-3.3%**		**2.4%**	
Cocks & Biddulph		**2.3%**			
Drummond & Co		**2.1%**		**2.2%**	
			-0.6% (*)		2.7% (*)
average, all London banks		**1.7%**		**3.9%**	
variance		0.20%		0.02%	
GDP - real		1.9%		4.5%	
GDP - nominal		3.3%		3.0%	

Source: Bank balance sheet totals are those reported in the respective archival records, or reconstructed by the author from the same - see Bibliography for full references. Bank of England balance sheet totals were derived from Mitchell and Deane (1962:442). GDP growth rates were derived from Broadberry, S. et al. (2015). (*) Averages include Coutts as whole bank and exclude Coutts ex-BoS

Prior to the Restriction, the four Goldsmith banks dominated by balance sheet size and that total London bank deposits had barely grown (0.3% p.a. between 1780 and 1796), if judged by this sample of banks and if Coutts' correspondent banking business with Scotland is excluded (Exhibit 13 and 14). All four Goldsmiths (Hoares', Childs', Goslings', Drummonds') had balance sheets in 1797 that were no larger than twenty years previously. An earlier period of expansion in the 1780s was completely reversed during the troubled years of the 1790s. By contrast, the Discounter (Prescott's) did a little better, being smaller and younger. The reversal in the balance sheet expansion observable across all banks after the 1791 crisis unravels with a different pattern in our model Discounter (Prescotts') when

compared to that of our model Goldsmith (Hoare's) as a result of the numerous succession issues described above. The only exception was Coutts, whose balance sheet shows no cyclical decline in either the 1770s or the 1790s. Coutts' balance sheet was responding to the Bank of Scotland consolidating its entire large correspondent banking needs from other London banks towards Coutts, and this was occurring after the 1772 Ayr Bank crisis described by Smith, when Scotland's economy was experiencing more favourable economic growth and a greater expansion of credit funded by a greater circulation of paper banknotes compared to England (see separate paper). If we include Coutts' business with the Bank of Scotland, then the hybrid-model Coutts had overtaken all banks by 1795.

Unable to issue banknotes, London banks could not 'manufacture' balance sheet growth like modern banks, but had to rely on growing their share of a slow-growing total deposit base. For Discounters with active correspondent banking services, growth of their deposits was significantly affected by the ebbs and flows of activity of individual Country banks for which each London bank happened to act as correspondent. Theses ebbs and flows would reflect the relative fortunes of the different economic regions where each London bank's correspondents happened to be located, and their different industries – most notably in the case of Coutts and its large exposure to Scotland's agricultural economy.

Business model clustering

Despite these idiosyncratic differences, if we take the additional step of dividing the banks into two groups based on their predominant business model the evidence points to the younger Discounters already showing greater buoyancy than the group of Goldsmith banks prior to the Restriction. These two strategic groups defined by their different business models also demonstrate greater within-group correlations than inter-group correlations in their annual balance sheet change, and the Discounter group is noticeably more correlated to changes in nominal GDP.

Between 1786 and 1797, for the Discounters for which we have records, Barclays (1.8% p.a.), Prescott's (3.3% p.a.), as well as our hybrid Coutts, with its Bank of Scotland correspondent business included (11.0% p.a.), all matched or exceeded the Bank of England growth rate. By comparison, the three most established Goldsmith banks of Hoares' (-2.8% p.a.), Child's (-3.3% p.a.) and Goslings (-1.2% p.a.) all experienced shrinking balance sheets during that decade. Only Drummonds (2.1% p.a.) and Cocks & Biddulph (2.3% p.a.) showed balance sheet growth. After the Restriction Act came into force, growing the deposit base came to mean different things to the Goldsmith and the Discounter. During the period of rapid expansion in the Bank of England's discounting of private sector paper, the Discounter gained additional tools for responding to changes in the demand for money, resulting in the

Discounters growing (on average) at the same rate (4.7% p.a.) as the Bank (5.0%) while the Goldsmith on average managed little more than half that rate (2.7%).

Exhibit 15 – Annual balance sheet growth patterns and the business model clusters

Correlations in annual balance sheets

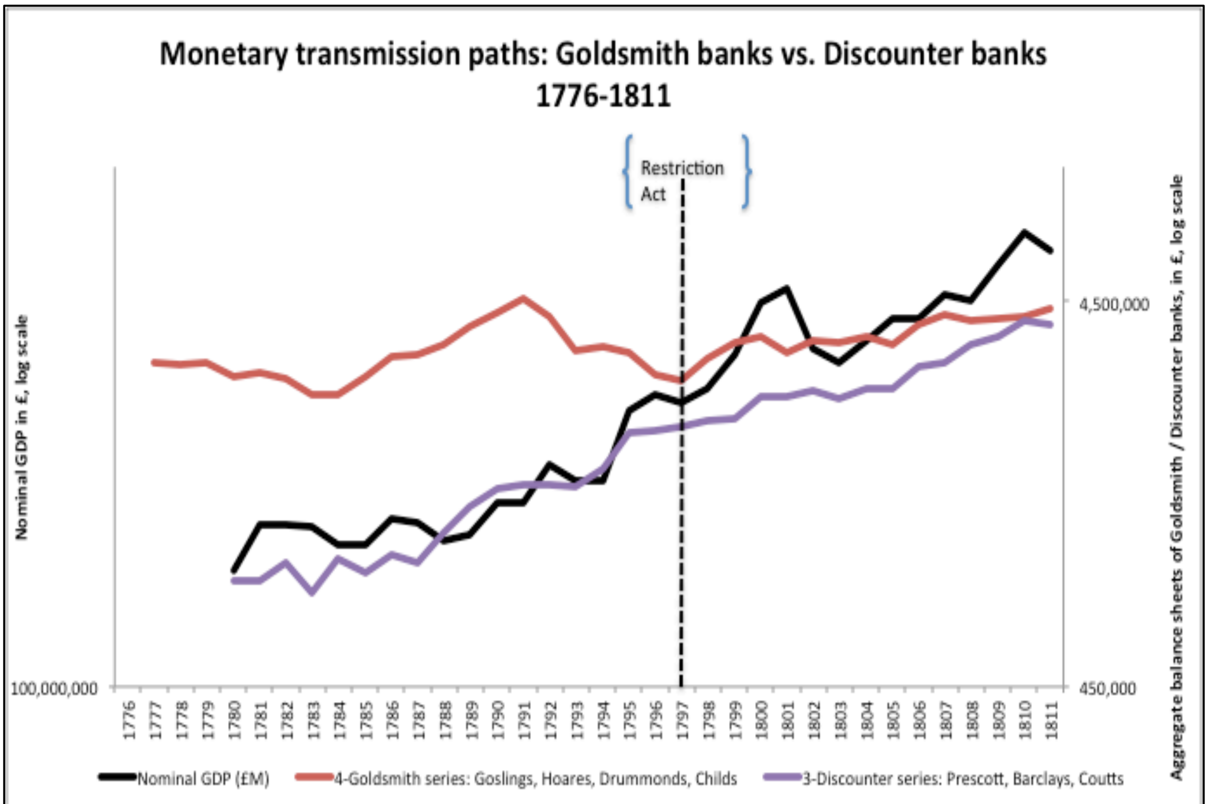
	Goldsmith banks				Discounter banks			
	Hoares	**Goslings**	**Drummond**	**Child & co**	**Prescott's**	**Barclays Bevan Tritton**	**Cocks & Biddulph [from 1785]**	**Coutts**
Hoares		0.86	0.64	0.92	0.52	0.42	0.15	-0.01
Goslings	0.86		0.82	0.96	0.79	0.55	0.34	0.20
Drummond	0.64	0.82		0.82	0.84	0.57	0.43	0.42
Child & co	0.92	0.96	0.82		0.76	0.54	0.43	0.21
Prescott's						0.76	0.85	0.61
Barclays Bevan Tritton					0.76		0.86	0.77
Cocks & Biddulph [from 1785]					0.85	0.86		0.65
Coutts					0.61	0.77	0.65	

	Goldsmiths only	Discounters only	Goldsmith v Discounters
Average correlation between:	0.84	0.77	0.45
Average correlation with Coutts:	0.21	0.68	-

Source: The chart shows the bilateral pair-wise correlations in the year-to-year changes in the total balance sheet of the banks in the sample. Balance sheet totals are those reported in, or reconstructed from the archival records - see Bibliography for full references.

When viewed in the aggregate, these ebbs and flows of Country bank paper flowing into the London money market, to be discounted or simply settled, created strong enough forces to generate differences in the yearly growth patterns of the Discounters and the Goldsmiths respectively. Already before the Restriction the idiosyncratic differences point to a clustering around the two ideal-type business models, and this is confirmed by the correlation analysis shown in Exhibit 14 above. Between 1780 and 1796 the average correlation in the yearly changes in the balance sheets of just the Goldsmiths and just the Discounters was 0.84 and 0.77 respectively, while the average correlation between Goldsmiths and Discounters was only 0.45. On this evidence, Coutts is confirmed as belonging to the cluster of banks behaving most like the ideal-type Discounter model: its yearly balance sheet changes are three times more strongly correlated with other Discounters (0.68) than with the Goldsmiths (0.21).

Exhibit 16 – London Bank liabilities and nominal GDP: Goldsmiths vs. Discounters



Source: The Goldsmith series (red) and Discounter series (purple) show the aggregate balance sheet totals for the banks listed in the legend above, both RH scale. The nominal GDP series (black, LH scale) is derived from Broadberry, S. et al. (2015).

If the higher average growth rate of the Discounters' balance sheets, and their clustering around a similar pattern of year-on-year changes, was due to their stronger and more direct links with the note-issuing Country banks, then we would expect Discounter balance sheets to be more highly correlated to monetary conditions in the rest of the Country, and hence to the year-on-year changes in nominal GDP. During the gold standard period of the eighteenth-century, there had been little noticeable difference in the medium term growth path of nominal and real GDP (see Introduction), and even the Bullionists believed that the Real Bills Doctrine was a somewhat effective constraint on Country bank note issuance under a regime where banknotes were convertible back to specie. Hence, if Country assets - bank lending and balances with London – were growing faster than the stock of specie thanks to their ability to 'manufacture' new paper money, then prior to 1797 we would expect the year-on-year growth in those assets to be dependent on the year-to-year growth of nominal GDP; and hence for the year-on-year changes in Discounters' balance sheets to be more highly correlated to year-on-year changes in nominal GDP.

Consistent with this hypothesis, prior to the Restriction the ebbs and flows from the Country banks into London caused the balance sheets of the Discounters to be (on average) six times more highly correlated with nominal GDP (0.68) compared to the balance sheets of the Goldsmiths (0.11). Exhibit

15 shows how, prior to 1797, the 3-Discounter balance sheet total traced out the growth in nominal GDP in ways that the 4-Goldsmith series clearly did not. This result strengthens the support for the existence of two separate business model clusters, and that already before 1797 the flows of specie and the flows of paper-based quasi-money instruments has begun to follow different monetary pathways and were subject to different velocity characteristics.

10. Conclusion

The core banking system in 1770 constituted of long-standing larger banks (in London) operating established business models (the Goldsmith model), practices (no bill discounting) and products (secured medium-term lending) within a more regulated arena (issuance of banknotes not permitted to all banks). By contrast, the smaller "fringe" banking companies typically operated newer and more experimental business models (various forms of London Discounter, plus the Country banks) at the periphery of the more regulated arena (in the latter case, literally outside the 65-mile London perimeter where the issuance of banknotes was permitted) and were early adopters of new practices (lower gearing to cash reserves; rediscounting at the Bank of England) and products (correspondent banking services; Herries' Circular Notes; and, after 1797, banknotes for denominations under £5).

The London Goldsmith banks had succeeded because of the careful and persistent exploitation of a well-rehearsed business model framed by an understanding of the monetary and banking environment that had solidified after half a century of exploitation under the *ancient regime* of the gold standard, in place since 1717. The Goldsmith operated a low frequency, lower gross margin, and low unit cost transactional model involving mostly real assets. The Goldsmith saw the primary value proposition as the organised safekeeping of specie deposited by the wealthiest individuals in Britain, combined with paying agent services to meet the day-to-day expenditures of these depositors and, more selectively, creating liquidity for customers' extensive land and real estate assets by lending out -over longer terms and secured on those real assets - that part of the bank's stock of specie not required for everyday payments to and on behalf of depositors. The Goldsmith bank took on limited exposure to credit risk, with low loan loss experience, and managed its liquidity risk by maintaining high cash reserves typically amounting to a third of its balance sheet. The Goldsmith's inflows and outflows were conducted almost exclusively in cash or high-denomination Bank of England banknotes convertible into gold at the bearer's option, this daily physical and tactile experience acting to reinforce their cognitive bias towards viewing money as a commodity both in its physical and functional aspects.

By contrast, the typical "Discounter" bank dated back only a generation and had staked out a competitive position by meeting the faster growing demand for the discounting of bills of exchange, i.e.

short-term commercial paper with maturities mostly under one month. This was a high-frequency, high-gross margin, but higher unit cost business model focused on lending unsecured via transactions in paper-based monetary instruments, and partially funded with interest-bearing wholesale deposits from correspondent banks outside London that were issuing their own banknotes. The Discounter was exposed to relatively low levels of liquidity risk, which encouraged somewhat higher levels of asset gearing to cash reserves, and managed its credit risk through diversification and by distributing only a part of its net profits, reserving a portion against losses. The more recent start-ups reveal lower-risk balance sheet configurations as they felt their way towards their preferred sustainable balance sheet structure, but I have shown how these can be viewed as transition stages.

It should come as no surprise that when the Restriction Act of 1797 removed the constraint imposed by the contingent requirement to meet deposit withdrawals and banknote redemptions with disbursals in specie, these two different types of bank and banker reacted quite differently.

As a result, to view the role of banking in the early Industrial Revolution solely through the prism of the Goldsmith banks is comparable to future historians attempting to understand the impact of the 1986 "Big Bang" on the British banking sector through the sole prism of the balance sheets of the mutualised building society banks of the 1980s.

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