(De)Regulating automation: the rise of credit scoring and market-led banking in the UK and Germany

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Abstract

AI and other forms of automation are causing a shift into a more capital-intensive form of capitalism. Many scholars have suggested that we can best understand this process as the cost-efficient substitution of labour by capital in routine tasks based on relative factor costs. However, this model, which has cast firms as endlessly chasing the productivity frontier, has not paid sufficient attention to cross-national divergences in technological changes. This paper builds a comparative historical case study tracing the divergent introduction of credit scoring in British and German bank branches to argue that the introduction of credit scoring was a result of a policy-led process in both countries. Increased liberalisation of financial market institutions benefitted the rise of market-led banking which fundamentally changed the business model of banks resulting in a devaluation of the services provided by branch managers. This case suggests we need to think about the role of politics and policy within our, often deterministic, models of labour-saving technological change.

Keywords: Credit-scoring, comparative political economy, market-led banking, automation

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Introduction

In light of a rising tide of populism, scholars are increasingly turning their attention to the adverse effects of labour-saving technological change (Mokyr *et al* 2015; Acemoglu and Restrepo 2018). However, while the idea of technological roots of political unrest is gaining traction (Kurer and Gallego 2022), the political and institutional origins of such biased innovation have not enjoyed the same level of consideration. The existing literature on distributive consequences of technological change has mostly cast this dimension as playing second fiddle, only mediating the speed of adoption and/or the severity of distributive outcomes (Parolin 2019). This underappreciation of a potentially deeper and more structural role for politics and institutions is surprising given the strong tradition of scholars stressing the importance of domestic institutions on innovation and production in advanced capitalist democracies (Hall & Soskice 2001) as well as some clear empirical puzzles.

This paper contributes to this debate by analysing one such 'puzzling' case of cross-national variation; the introduction of credit scoring by British and German banks. Credit scoring allows banks to use algorithms, as opposed to employees, to determine when to extend credit and at what price to do so. The adoption of credit scoring has been widespread since the 1980s in Europe. However, not all firms implemented this technology in quite the same way. While British banks were quick to use credit scoring to substitute for labour, their German counterparts initially used it to complement their staff's skills. Two decades later German banks also increasingly automated their branches, in a staggered manner, with commercial banks leading the charge and the public and cooperative pillar following a more conservative approach.

How can we explain this striking between and within-case variation? I argue that the substitution of bank branch managers' lending tasks in Britain and Germany was a function of financial market deregulation opening the door for a new model of 'market-led' banking, rather than mere technological progress, which has severely devalued manager's traditional tasks. In a world where banks increasingly focus on 'high-end' financial services and secondary markets, the model of the traditional intermediary, epitomised by branch managers, has been eroded. Reliance on international markets also invited sharper short-term commercial pressures, announcing ever leaner operations. Contrary to most assumptions, this process did not simply substitute capital for labour in *a priori* automatable tasks but involved large-scale routinisation of complex activities. To build this argument, I present a comparative historical case study drawing on internal bank documents, interviews, balance sheet analysis, reports by central banks, as well as secondary literature to trace the restructuring of bank branches in the face of vast institutional changes in Britain and Germany from the eighties to early 2000s.

This paper makes two key contributions. Firstly, it argues we need to rethink the role of politics in the dominant model of automation. Rather than casting firms as the prime actors inevitably chasing the technological productivity frontier, I argue that politics and institutions have an important role in shaping markets in which some equilibria between capital and labour are more probable than others. In this case, I contend that financial liberalisation made the difference between credit scoring as a technology complementary to labour or one challenging workers. Secondly, this paper lends some micro-level empirical support to the contributions of Hardie *et al.* (2013), who have argued the traditional distinction between 'patient' bank-based financial models and short-termist capital market models has eroded, by describing the strategic shift away from branches in both Germany and the UK.

In what follows I will first give a short account of some of the developments in retail banking from the 1980s to the early 2000s. I will then give an overview of the literature on this topic to subsequently trace the process of financial market liberalisation in the UK (1980s) and Germany (1990s-2000s) to demonstrate its impact on credit scoring in bank branches.

Branch managers and the advent of credit scoring

In order to get at the seemingly puzzling story of branch managers' demise, we first need to understand their traditional role within the banking sector. In their simplest form, banks are nothing more than financial intermediaries who pool savings and reactivate that capital in the form of loans or other financial products. Today many, if not all, of these actions can quite easily be performed within seconds on an app. This has of course not always been the case. In a pre-digital era, deposit-taking banks relied heavily on vast networks of bank branches. These brick-and-mortar locations were crucial components in their strategy to attract savings and subsequently service clients.

As the name suggests, branch managers are the agents responsible for the running of these branches. In both Germany and Britain this job had two main components. On the one hand, managers were administrators responsible for the traditional day-to-day backroom activities required to keep branches operational. On the other hand, and more importantly, branch managers were a key conduit in the process of intermediation. That is, they were responsible for attracting savings and providing financial services, most notably issuing loans, at the local level (Hughes 1992, 32). In light of the present comparison, I will focus on this second aspect which is more strictly financial.

Firstly, managers were tasked with reaching out to new customers and as such acted as the primary agent responsible for business development in their local area. In many ways, they served as local brand ambassadors. German and British banks expected managers to be visible members of the community to uphold the institution's name. Lloyds Bank training programme, for example, actively encouraged to participate in community life. More often than not this meant engagement in local business roundtables and membership of the local networking organisations like Rotary and golf clubs. Such strategies were generally aimed at attracting local small and medium-sized enterprises (SMEs) and high net-worth individuals (Fraser 2014). German banks were similarly renowned for their active community engagement and close business ties, with branch managers taking up a very active role in local business life (Deeg 1992).

This strong social position, in turn, aided managers in another core task; issuing credit. Apart from getting business through the door, these individuals were personally responsible for the sale of services in their respective branches. It is important to see that managers traditionally had considerable agency in this domain. In many cases, British and German managers lacked formal guidelines with regards to lending as head offices generally opted to judge performance on the overall profitability of their branches (Fletcher 1995). It is well-known in political economy literature on German finance, that cultivating strong community ties was key to gathering important information which could later be used in credit decisions (Hughes 1992). What is often underappreciated is that this was true for Germany as well as the UK during the 1970s. Not only was this mechanism used to acquire insider information on a firm's performance but, especially in the UK, credit decisions were also strongly influenced by subjective social parameters (Hughes 1992; Pollard & Leyshon 2000). In fact, in the case of a new client, managers would at times base part of their credit decisions on whoever made introductions. In this model of banking, social status directly reflected on perceived solvency (Hughes 1992).

Despite some small differences in overall branch management such as the skill-profiles and responsibilities of clerical support staff (Baetghe & Oberbeck 1986), managers in both Germany and Britain on all accounts had very similar jobs. Banks' credit-issuing process, in both countries, was highly non-routine, requiring managers to perform complex interpersonal, analytical and decision-making tasks, building their cases on economic fundamentals *as well as* holistic social information. Moreover, banks in both countries relied on a model of stable personnel management inspired by loyalty and caution in which branch managers were skilled employees who enjoyed broad vocational training and moved up the ladder of the internal labour market. The prerequisite of becoming a branch manager in the UK depended on the completion of formal training at sector-specific institutions such as the Institute of Bankers (Cressey & Scott 1992; Quack *et al.* 1995). German branch managers, meanwhile, usually followed a similar trajectory typically starting with apprenticeships. Put together branches and their managers in both countries where, as Pollard and Leyshon (2000) put it the "foundation stone for retail banking, gathering of intelligence on local markets and costumers, processing and settling the days business and serving as a gateway for accessing services". Still, these similarities came to an abrupt during the 1980s as the profession was coming under pressure by technology in Britain, while similar disruptions remained conspicuously absent in Germany, until much later.

The changing world of retail banking

Defined by Batt and Fowkes (1972, 191 quoted in Leyshon and Thrift 1999) as 'statistically based management tools for forecasting the outcome of extending credit to individuals', credit scoring models credit risk and automates credit decisions through multivariate analysis. It is important to note that this technology has been around since 1956, when William Fair and Earl Isaac launched the first credit scoring consultancy, initially leveraging the idea to discriminate between 'good' and 'bad' customers in the mail-ordering business (Marron 2006). This risk-management technique subsequently matured in the US (Yates 1993) before really taking off (and landing on European shores), when the rise in availability *and* power of personal computing made the introduction at scale viable during the eighties.

In light of these advances (as well as financial deregulation, as I will show later on) British banks returned to the drawing board to reorganise their services, fundamentally altering the position of branch managers. Firstly, the introduction of computerised credit scoring required a rationalised, standardised and streamlined process of credit issuance for the retail sector. Rather than relying on a highly informal process, spearheaded by managers, issuance of financial products such as personal loans and mortgages was increasingly boiled down to key statistical indicators while product offerings were standardised. Taking the 'thinking' out of this process allowed banks to transition to lower-paid clerical staff feeding algorithms with the help of computer terminals. This reduced the delivery of the products to a routine computerised box-ticking exercise in which the actual decision-making was digitalised. Lloyds, for example, announced the introduction of 'videotext terminals' in its branches to automate loan approvals in 1985 with a further £1 billion investment in ICT following in 1990. Midlands, meanwhile, installed some 3500 IBM computers in its branches by 1989 in an explicit effort to create a new model of 'automated branches' in cooperation with Fitch & Co consultants. Barclays, meanwhile, opened its "electronic bank branch" in Cheshire (Financial Times 1982) in 1982, proudly referring to the branch Apple computer as the "automated bank manager".

The digitalisation of retail services also went hand in hand with a push to segment retail from commercial services. Whereas local branches used to double-up as a hub for household *and* SME banking, branch managers' commercial responsibilities were now uploaded to newly created regional offices. Barclays heavily restructured its branch network in 1987 as it shifted this responsibility onto 24 regional offices. Midlands, similarly, reduced its delivery costs by opening Midlands Enterprise Centres. While these regional offices at times offered refuge to former branch managers, they more heavily relied on younger graduate-level profiles (Ackrill & Hannah 1996, 224). This split of retail and commercial activities was part of the strategy by head offices to separate standardised product offerings and routiniseable tasks in retail banking from the more complex commercial side.

Unsurprisingly, branch networks shrunk as their responsibilities were increasingly hollowed out (see figure 1). At the end of that decade, some 2000 already closed and by 2012 Britain experienced a net loss of nearly 7500 branches. (French *et al* 2013) Lloyds alone, leveraged its heavy ICT investments to cluster branches in groups of 8 to 10 under the supervision of a single manager responsible for operational issues (Storey *et al* 1999, 141), costing some 2000 managers' their jobs.

Branch managers were therefore the undeniable ‘losers’ of this transition in which high street banks centralised, standardised and automated their activities. As Hughes (1992, 42) put it: “the stereotypical manager appeared to be disappearing”.

Figure 1.
Number of bank branches in the UK
(about here)

While retail credit in the UK was now increasingly automated, German banking continued to act as a model of stability (Baetghe *et al* 1999). That is not to say German banks branches did not digitise to the same extent. Rather, these innovations *complemented* rather than *substituted* the work that was done by managers during the 1980s and 1990. Indeed, Quack and Lane (2001) found that the construction of credit risk in German branches continued to rely on both quantitative and important qualitative information. This finding is backed up by Mason *et al* (2000) who surveyed offices in the UK, US and Germany during the 1990s, concluding that senior management experience, previous banking records and more general information were more important in German banks relative to their Anglo-Saxon counterparts. Tacit knowledge and holistic appraisals were still the rule in Germany. Crucially, levels of computerisation were broadly consistent in all three countries. Yet, in contrast to their UK counterparts, German branch managers remained relatively autonomous agents, working *alongside* computers (Haipeter and Wagner 2008).

Still, the face of German banking, too, slowly started to change around the turn of the millennium (Oberbeck and D’Alessio 1997) as German banks, began to restructure their branch networks after decades of uninterrupted growth (Baetghe, D’Alessio and Oberbeck 1999). Like in the UK, this was a double process. On the one hand, restructuring involved the closure of some branches. As can be observed in figure *2,* German commercial banks were among the first movers in this regard, with public and cooperative banks following later and more gradually. However, such closures were just the long shadow of a broader redesign of retail banking strategies towards more standardised and capital-intensive service provision in which financial firms increasingly automated service delivery by introducing ATMs and credit scoring. The range of services provided in branches was cut substantially, with remaining branches becoming a local sales hub for standardised products and branch managers being turned into sales managers (Haipeter and Wagner 2008). Credit decisions, meanwhile, have been substantially automated in light of centralised risk management policies.

Figure 2.
Number of bank branches in Germany per sector
(about here)

All in all, this presents us with an interesting puzzle revolving around surprising within- and between case variation. While German and British branch managers performed similar tasks and had equivalent skills profiles, the introduction of technology in both countries, at least initially, resulted in different innovation strategies. In the UK, managers were confronted with mass lay-offs during the 1980s while German banks initially employed the technologies to augment managers' skills. In fact, bank branches were only closed down or automated in Germany during the 2000s. This difference is even more interesting when accounting for the similar levels of ICT investment in both countries. What is more, within Germany commercial banks (like Deutsche Bank) made this transition much quicker than any other institution. In what follows I will discuss some of the key literature on this topic and outline the answer to this puzzle proposed in this paper.

Literature

In recent years, literature on technical change and automation has converged on the theory of routine-biased technological change (RBTC) (Autor and Dorn 2009; Acemoglu and Restrepo

2018). The main insight here is quite straightforward. RBTC proposes that technology is limited in its capability to carry out human tasks. While it struggles to compete with humans on complex and tacit activities it is more efficient at executing routine or 'rules-based' tasks (Autor and Dorn 2009). In the RBTC framework, then, firms seek to substitute routine tasks as long as they are not too intertwined with other non-routine tasks, and the costs of using capital outweigh that of labour (Acemoglu and Autor 2011, 1076). This framework has therefore been particularly useful to explain several puzzling trends. Not only has RBTC been able to offer an explanation for rising labour market polarisation (Goos and Manning 2007; Goos, Manning, and Salomons 2009), but it has also offered compelling evidence suggesting routine-biased technological change might be a key driver behind the precipitous drop in the labour-share (Karabarbounis and Neiman 2013; Kehrig and Vincent 2018).

As with many theories of technical change, the task approach is fairly deterministic, leaving little scope to explain diverging models of adoption. In the case of credit scoring in bank branches, it is particularly clear that models relying on task content have little analytical leverage to explain the differences between the adoption trajectories given the similarities between the UK and German branch management. What is worse, bank branch managers hardly had a `routine' job. If anything, their job description was packed with interpersonal, analytical and above all non-routine tasks. To understand what drove these differences, then, we need more granular theories of technological change

One candidate are arguments about differences in labour power in the UK and Germany. Sigurt Vitols (2004), for example, argued that labour protection and co-determination rights significantly prolonged the lives of German bank branches. The idea here being that German banks simply did not have the degrees of freedom to pursue the same strategies their colleagues across the Channel had. This is a plausible explanation and one that offers scope for cross-national variation at that. There is ample evidence to suggest that substitution by automation tends to be dampened by unionisation (Parolin 2020) or strong employment protection legislation (De Stefano 2018; Manera and Uccioli 2021). However, if labour power truly explained the different trajectories of credit scoring adoption in the UK and Germany it is not clear what changed and why credit scoring started to be used in an automating way in Germany when it did. Moreover, this argument offers little scope to explain the big differences in timing observed between different types of bank branches within Germany. While institutional arguments on power resources seem to account for the initial *between case* variation (i.e. UK and Germany), they fall short of explaining the *within case* evolutions in Germany.

To get at this puzzling evolution I will also zoom in on institutions. But rather than merely focusing on the importance of power resources, my argument will highlight the importance of financial market institutions to condition bank strategies and the use of credit scoring within them. In particular, I will rely on the notion of market-led banking (Hardie *et al* 2013) to argue that financial market liberalisation changed the role of banks within the economy and therefore also the place of bank branches more broadly.

Political economy of bank branch restructuring

Key to understanding the diverging trajectories of British and German retail banking is an appreciation of the sector within the broader political economic growth model. The classic dichotomy of financial markets has traditionally cast Britain and Germany as diametrically opposed financial models (Zysman 1983; Hall and Soskice 2001). Ever since Zysman (1983), the former has been dubbed as a capital market model in which firms pursue an equity financing strategy while the latter is designated as a bank-credit led model where banks provide long-term business loans, or patient capital, to firms. Within this model, banks are understood to be relatively one-dimensional intermediaries that finance themselves by pooling savings and issuing credit to make profits on the back of interest rate spreads. Here, loans were expected to remain on balance sheets until maturity.

The relative prevalence of bank credit in Germany vis-à-vis equity finance in the UK, then, explained different structural corporate governance incentives (Franks and Mayer 1997; Vitols 2001). As far as competition allowed, banks in this picture were insulated price-setters and relatively unburdened by international pressures.

Most indicators suggest this institutional divergence held for much of the post-war era. Yet, the notion of market-led banking (Hardie *et al* 2013) has challenged this dichotomy following the post-crisis realisation that pursue more complex, and perhaps less innocuous, strategies. Even in Germany, banks are no longer traditional intermediaries coordinating savings and investment at the local level. Instead, they have become increasingly complex financial actors embedded within global markets. Basic operations now include refinancing on wholesale markets, hedging and securitising, which has ultimately rendered them price-takers on international markets (see figure 3). Hardie *et al* (2013) therefore argue that the distinction between short-term horizons associated with capital markets and long-term horizons related to 'traditional' bank financing no longer holds. Since deposit-taking banks have themselves become beholden to global financial markets, their degrees of freedom to manoeuvre, irrespective of short-term pressures, have diminished.

In what follows, I will first trace the influence of this development in Britain and then move on to events in Germany to explain how this trend has affected bank branches. I will particularly emphasise how the rise of wholesale and secondary markets undercut branch managers, first in the UK and later in Germany as well.

Figure 3.
Evolution of the relative importance of securities, deposits and loans on British (left panel) and German (right panel) bank balance sheets
(about here)

The United Kingdom during the 1980s

While the United Kingdom has traditionally been cast as a capital market-led model (Deeg 1992; Soskice and Hall 2001), it is important to realise it was not always the liberal financial hub recognised by Zysman (1983). Not only were big British banks used to playing an active role in credit markets, but in many ways, the current paradigm is a function of financial reform during the 1980s, aimed at breathing new life into a 'stale' financial system. In this section, I will outline some key developments that took place during this time to argue that institutional changes laid the foundations of bank branch restructuring in Britain.

During the eighties, several policy changes consolidated a previously segmented market for financial services in Britain. As Story and Walter (1997, 245) argued, British financial markets most resembled an 'archipelago of cartelised islands' during the 1970s, a series of legislative barriers created a high level of sectoral segmentation and cartelisation among in which traditional banks, building societies and insurers. These barriers perpetuated an oligopolistic system failing to adequately service the market. High prices, massive unmet demand for mortgages and a lack of investment into domestic manufacturing all incentivised Harold Wilson's Labour government in 1976 to tackle financial reform (Moore 1981). Surprisingly, political interest in breaking up these cartels came from either side of the house, with Labour lamenting the lack of the cartels' accountability and the Conservatives complaining about a lack of competition (Gough and Taylor 1979; Stephens 2007). The nature of the models' shortcomings equally fostered a desire for reform within the electorate, perhaps most notably among aspiring homeowners and SMEs. The rise of this relatively broad political coalition culminated in a series of reforms enacted by the Conservative government starting in 1979.

The first important policy was the abolition of capital controls in 1979 which had two immediate consequences. Firstly, it opened up British markets for foreign players such as Citibank and Chase Manhattan to set up their operations in London, shaking up the banking cartel substantially

(BiS 1999). Soon thereafter, the Bank of England (at the time still under political control) abolished the supplementary special deposit scheme (SSD or corset) which restricted credit creation and had affected banks' room to manoeuvre in mortgage markets (BoE 1983). This change went hand in hand with the abolition of credit controls as banks could in practice evade the SSD through overseas subsidiaries. In many ways ending capital and credit restrictions signalled to start of finance as we know it today. British banks could now massively expand their balance sheets, compete internationally and enter burgeoning international wholesale markets as an external source of refinancing.

Another set of policy changes involved a re-alignment of the fiscal regime separating building societies and clearing banks. Previously, building societies had benefitted from a composite tax system (BoE 1990; Stephens 1993) that corralled savers towards their services. To further the cause of competition the Thatcher government, here too, levelled the playing field by extending the fiscal regime to deposit-taking banks, before abolishing it altogether in 1991. Finally, in the face of this regulatory challenge, building societies launched a lobbying campaign to expand their commercial rights and remain competitive. Ultimately these efforts resulted in the Building Society Act of 1986 which gave them the freedom to diversify their services and offered the option of demutualisation, famously pursued by Abbey National and Halifax.

Aside from breaking up the cartels in credit markets, the Conservative government famously took aim at the, then, 'clubby' the London Stock Exchange (LSE). The LSE had become known for its restrictive practices which included fixed minimum commissions, the strict rules separating 'brokers' and 'jobbers' (i.e. the agent buying and selling on behalf of a client and the market-maker facilitating the transactions on behalf of brokers) as well as the exclusion of foreigners from LSE membership. From the viewpoint of the Exchequer, these 'archaic' rules had left the LSE under-capitalised. According to Nigel Lawson, then chancellor, they made London a 'backwater' for securities trading, a market which was thought needed to be developed if the City was to remain a global centre of finance (Lawson 2006). The government, in cooperation with reform-minded LSE Chairman Goodison, therefore overhauled this system in the (in)famous 1986 *big bang*.

Put together these regulatory paradigm changes amounted to a strong institutional shift in British financial markets in which sectoral cartels and a clubby LSE were exchanged for a 'liberalised' system that pitted financial corporations against each other and integrated them into the rapidly developing global markets. For better or for worse, transforming the 'oligopolistic archipelago' into a financial Pangea created a more dynamic market, oriented towards performance and market-driven banking (Morisson 1988; Howcraft 1988).

For bank branches, the liberalisation of markets had at least two important consequences. Firstly, it put banks under increased cost pressure while on the other hand reducing their need for sprawling branch networks. In tearing down regulatory barriers, the reform package succeeded in the Wilson committee's goal to push down prices for financial services (BiS 1999). The introduction of the 'free-if-in-credit' (FIC) model initiated by Midlands Bank in 1984, promising free services for customers with outstanding debts, is case and point. However, the flip side of this trend was that banks' profits came under pressure. Between 1981 and 1991 the interest rate spread, at the time the single largest source of revenue, of the big four banks (Barclays, Midlands, Lloyds and NatWest) halved (see figure 5 and BiS 1999). As a result of falling profitability, banks pursued cost-cutting strategies anchored around strategic investments into ICT (Storey *et al* 1999). All major banks outlined these changes in their annual reports, which subsequently manifested themselves on their balance sheets in, at least, two ways (see figure 4 for reference). Banks started to push down cost ratio's during the 1980s by, first, divesting substantial parts of their real estate holdings while, secondly, steadily expanding the ratio of equipment as part of their capital stock. Taken together this constituted a structural shift towards a more automated *and* limited branch network.

Besides stimulating competition and allowing banks to seek new sources of refinancing, these institutional changes also challenged the traditional model of "price-setting intermediaries" by altering banks' approach to the asset-side of their balance sheets. It is during this decade that British banks start to engage heavily with wholesale markets and that the first Asset-Backed Security (ABS) is issued. Tellingly, building societies were able to negotiate their rights to issue Mortgage-Backed Securities (MBS) as part of the 1986 Building Society Act. By the end of the decade, ABS markets would grow to roughly 2.5 billion pounds, demonstrating the success of the "originate and distribute" model of finance in which these assets became tradeable assets as opposed to instruments of patient capital.

Figure 4.
Evolution key balance sheet items for British 'Big Four' banks
(about here)

If we think of bank branches as the building block of a bank's intermediation process, we can start to see how the advent of market-based banking eroded the importance of tasks performed by branches and their managers. Firstly, growing activity on wholesale markets reduced British banking's reliance on household savings, against a backdrop of increased disintermediation in which households increasingly invested savings in equity markets. Whereas banks traditionally relied on savers to provide liquidity via local bank branches, the growth *of* and access *to* wholesale markets provided banks with new sources of liquidity. What is more, the growth of secondary markets offered banks an exit mechanism to sell off bad debt and perhaps even conjured up perverse incentives to create credit, especially in the absence of the SSD. Looking back at the FIC-model, banks primary goal became issuing large amounts of credit. This is a particularly important development to understand the decline of branch managers, considering the essence of their job revolved around issuing sound credit to local markets. In fact, the competitive advantage of human decision-making vis-à-vis standardised credit scoring relied on the ability of managers, using a broader set of qualitative information and tacit knowledge, to issue safer assets. However, as the cost of issuing bad credit decreased and the incentives to originate and distribute grew, the value of these tasks and skills plummeted.

From a corporate standpoint, then, restructuring branches, both through the closure and significant automation (think of Barclays' 1982 electronic bank branch in Cheshire), started to make sense given the intense competitive pressure at play during the 1980s. Substitution of branch managers by credit scoring was not simply caused by technological change capable of eating away at routine tasks. Rather, it should also be understood as the result of a process of institutional change, in product markets, depressing the overall value of branches and the tasks performed by managers within them. The upshot of these developments was the surprising decline of a highly interpersonal and deeply non-routine job, as branch managers in Britain started to lose their foothold in financial services.

Germany during the 1980s

In order to appreciate the extent to which this market-led banking model influenced bank branch automation let us compare events in Britain with those in Germany. German banks were, like their British counterparts, quick to recognise the value in credit scoring during the eighties. However, unlike in Britain, its implementation did not initially lead to structural substitution. German banks continued to rely on managers' know-how and tacit skills while augmenting their judgement with credit scoring (Baethge 1999; Quack and Lane 2001). This employee-centred strategy, which lasted until the turn of the millennium, only slowly started to give way for a labour-saving one (Oberbeck and D'Alessio 1997). I will argue we can best understand these initial cross-country differences and subsequent staggered convergence by German banks as a function of the same institutional changes observed in the UK. That is, longer than in Britain, German financial markets remained domestically oriented and reliant on smaller banks acting as more traditional intermediaries. It was only when this model started to erode, first with the commercial banking pillar, that banks restructured their branch networks. I will first explain how three particular aspects of Germany's model safeguarded branch managers in the 1980s to then trace how institutional changes undermined this system.

What is striking about German finance during the 1980s and early 1990s, is the absence of strong capital markets (see *figure 2*). The 'coordinated' German post-war model (Hall and Soskice 2001) relied on an export-oriented manufacturing sector, anchored on stable labour relations, a skilled workforce, co-determination *and* long-term investment strategies. At the heart of this growth model, was Germany's credit-led bank-based financial system. (Zysman 1983; Hall and Soskice 2001). Here, 'patient' capital provided by banks was thought to allow firms to retain a concentrated ownership structure and pursue long-term strategies (Vitols 2001). Given this important link between bank lending and corporate governance for the German growth-producing sectors, this system essentially curbed the growth of strong capital markets *and* empowered bank managers for much of the 20th century. Several institutions, key to the country's growth model, stand out in this regard.

Firstly, corporate law favoured discretion and insiders as opposed to providing transparency for outsiders, as was the case in the Anglo-Saxon system. One example of such institutionalised opaqueness was accounting practices which, among others, allowed for management to calculate profits and losses over long periods (Fülbier and Klein 2015; Lütz 2000). These rules guaranteed shareholders stable dividends and ensured durable relationships, but 'failed' to transmit short-term business information to outsiders. Capital market development was further disincentivised by high capital gains taxes, curbing active markets for domestic equities. In short, German corporate governance institutions were not geared towards strong capital markets. This is obvious from the low levels of market capitalisation but also spilt over into a slower development of secondary markets and wholesale banking, already booming in the Anglo-Saxon world.

The flipside of this system was a well-developed system of bank lending built on branches and branch managers. The dominance of commercial lending in Germany is observable in the structure of banks' loan portfolios. Whereas British banks primarily held private debt on their books, their German counterparts were more active in commercial credit markets. This difference is of importance to the story of branch managers for the simple reason that the stakes are, on average, higher in commercial credit markets. In the traditional model of banking where loans (as assets) are held until maturity, the nature of commercial loans presents a strategic challenge to banks. Not only are they, generally speaking, bigger and riskier but their size means banks get to issue fewer of them, leaving them with fewer degrees of freedom for failure. Banks tackle this problem in two ways. Firstly, a holistic ex-ante loan-appraisal process taking into account solvency, corporate governance *and* the destination of capital (i.e. what are they investing in). This is a more idiosyncratic process that requires deeper information and expertise and is, therefore, harder to automate than traditional household lending. Secondly, German banks have traditionally cultivated long-term relations, so-called 'relational banking' (Franks and Mayer 1997; Vitols 2001) with clients to reduce the risk of managerial failure, and ultimately default, down the line. To facilitate both strategies, German banks have tried to lower informational costs by taking equity stakes and board positions in firms. Local branch managers, play(ed) a crucial role in this process as banks relied on their expertise and tacit skills to manage risk in commercial markets while at the same time entrusting them with the day-to-day aspects of 'relational banking'.

Finally, pillarisation of the German banking market into a commercial, public and cooperative pillar, reduced pressure for direct profitability. Whereas British markets in the eighties were subject to intense competition among commercial enterprises, their German counterparts (e.g. Deutsche Bank) shared the market with strong public and cooperative players. Within this set-up, large commercial banks traditionally focussed on Germany's multinationals (MNEs) while the public and cooperative pillar historically had strong stakes in the regionalised markets for small and medium-sized enterprises (SMEs) (Deeg 1992; Ziegler 2000). These last two pillars in particular did not face particularly strong competitive pressures for much of the post-war era. Not only is neither type of institution traded, but their incentive structure is less profit-oriented. To be sure, both types of institution are expected to be profitable, but they are above all expected to provide good services to stakeholders (Vitols 2004). This public goods goal is particularly strong for public banks. Owned by *Länder,* municipalities and districts, *Landesbanken and Sparkassen* are a staple of Germany's state-market nexus by playing a key role in Germany's *Mittelstandpolitik*[1] and regional industrial policy more broadly (Deeg 1996; Hackental 2004, 74). Far from putting profitability at the heart of their objectives, the central strategic goal of these public institutions is to internalise costs, both transaction and information, for consumers and businesses to facilitate long-term growth. Again, managers and 'relational banking' practices play a crucial part in this, with government organisations leaning on deep localised information held by banks to facilitate government loan provision, often in co-financing arrangements with the public banking pillar.

However, aside from empowering local branch managers at a time when British banks were restructuring, German finance further promoted branches through competitive insulation of banks. Indeed, the regional nature of cooperative and public banks perpetuates a geographically segmented financial market, preventing institutions from competing with each other (Siebert 2004). Much of this segmentation is driven by public banks which are guaranteed at the regional and local level, ruling out consolidation from taking place (Deeg 2014). Finally, this guarantee, historically, obligated the state to keep public banks afloat and refinance them if necessary.[2] This, to the great irritation of their commercial counterparts, put the public pillar in a privileged market position.

In short, German bank branch managers were isolated from events transpiring in Britain during the eighties. Compared to their UK counterparts, German branch managers retained an integral role in their country's growth regime by acting as a key conduit in its bank-led financial model. What

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[1] policy supporting industrial SMEs

[2] *Anstaltlast* is an obligation to keep public-sector institutions solvent. *Gewährträgershaftung* a guarantee making the state liable for all the banks' debts in case of insolvency.

is more, for a large segment of the German financial market, pillarisation provided substantial insulation to the market pressures raging across the pond.

Institutional change in Germany

By now it should be clear that Germany's model of banking differed substantially from the increasingly market-led banking practised in Britain during the eighties. However, the German political economy underwent several changes over the last decades (Streeck and Thelen 2005; Hardie *et al* 2013; Röper 2018). I will emphasise how a mix of domestic and international pressures has led to an increasingly market-led model, resulting in a staggered convergence on bank branch restructuring.

To start understanding this shift, it is important to realise the growth of financial markets in the Anglo-Saxon world did not go unnoticed on the continent. For German commercial banks, in particular, developments across the pond presented both challenges *and* a source of inspiration. For one, domestic firms increasingly turned to Wall Street and the City, instead of players like Deutsche or Commerzbank, to access high-end financial services (Haipeter and Wagner 2008). During the nineties, globalisation pressures pushed large multinationals towards pursuing equity-financing to compete internationally. However, high prices offered by domestic banks and an unaccommodating institutional environment led these firms abroad. Tellingly, Daimler-Benz switched to American accounting standards (GAAP) in 1993 as a prerequisite to be listed on the New York Stock Exchange. At the same time, German banks were also facing low interest rates, which chipped away at their core source of revenue. Commercial banks, with their large stake in MNE financing, therefore started to pursue a strategy of expanding fee-paying services to offset their loss of revenue. In an attempt to expand these capacities, Deutsche Bank and Dresdner Bank each acquired British investment banks, Morgan Grenfell and Kleinwort Benson respectively. On the domestic front, meanwhile, commercial banks lobbied the government to expand financial markets to align the regulations more closely to their international ambitions. As Vitols (2004, 5) noted, the German government was not unsympathetic to this idea. Not only did it see the potential of fuelling job growth in an internationally competitive sector, but several painful corporate failures (e.g. Metallgesellschaft, Balsam and Bremer Vulcan) fuelled public debates on the modernisation of corporate governance structures in Germany.

As a consequence, the 1990s witnessed a domestic policy shift to strengthen Germany's position as a financial centre. This, almost inevitably, implied moving towards the Anglo-Saxon paradigm (Deeg 2005; Röper 2018). Throughout the decade several initiatives were taken to accomplish this project of *Finanzplatz Deutschland* (Dore 2000). Crucial in this regard were the Financial Market Promotion Laws enacted between 1990 and 2002. These reforms launched new markets in options and futures, whilst also creating a more liberal regulatory and disclosure environment. Equally important, was the introduction of a federal securities trading supervisor *Bundesaufsichtamt für den Wertpapierhandel* (BAWe) replacing the patchwork of regulation done at the level of the *länder* (Lütz 1996; Detzer and Herr 2014).[3] Finally, the KapAEG and KonTraG internationalised accounting standards and liberalised corporate governance, while Schröder surprised many by abolishing capital gains taxes in 1999 (Voss 2021).

Aside from substantial domestic reform, some consequential changes came from the side of the European Union. Crucially, the advent of the internal market and the monetary union increased competition within the banking sector throughout the continent. Indeed, the nineties witnessed waves of bank consolidation (BiS 2001) as firms adjusted to an increasingly, though far from entirely, Europeanised financial landscape. Within this context, European competition authorities scrutinised the insulated German system. The commission particularly took aim at the practice of public guarantees for the public banking pillar in Germany in light of European State

[3] BAWe would in 2002 merge with the banking supervisor *Bundesanstalt für das Kreditwesen* (BAKred) to form the *Bundesanstalt für Finanzdienstleistungsaufsicht*

aid rules, leading to an agreement in 2002 to reform the system into a relationship “not different from a commercial owner”. Under this arrangement, the automatic and unlimited nature of guarantees was banned (EC 2001), putting banks across the pillars on a more even playing field.[4]

Put together, German finance significantly internationalised during the early 2000s, with German banks finding themselves in a more market-based financial model at the end of it. Chancellor Schröder captured the sentiment well by stating “We want to create a new shareowning culture. I belong to those who are happy when the Dax goes up” (Financial Times 2000). Crucially to the story of branch automation, this transition happened first for commercial banks. Not only had institutions such as Deutsche Bank and Commerzbank always been most directly affected by competitive pressures, even before reforms, but they expressly moved towards a more investment banking-oriented model during the nineties to compete Wall Street and the City. Public and cooperative banks, meanwhile, remained more insulated. Still, public banks were equally put under serious pressure once their guarantee was pulled in the early 2000s. This is not to say these institutions forgot about ‘the public good’, but regulators had transformed profitability from a luxury into a necessity.

Quantitatively, these trends are visible as well. Throughout the 1990s the number of initial public offerings (IPOs) soared with overall market capitalisation following suit while secondary markets started to see strong growth as well. German wholesale and securities markets have not caught up with the UK, but their development throughout the 1990s and 2000s is nonetheless remarkable. Public sector banks also partook in these activities during the early 2000s, savings banks first started to shift loans off their own balance sheets and pool them within their group and then moved on to selling uncollectable loans on secondary markets (Blum and Martens 2008). Note how the public banking sector (accounting for half of all German assets) entered the

[4] It would continue to operate for assets created before 2001 while the garuantee would lapse in 2015 for newer assets

market for debt securities later, and to a more limited degree than their commercial counterpart (figure 5). Still, this action was large to generate significant entanglement of *Landesbanken* in the subprime mortgage crisis in 2008, with some institutions having to stomach billion-dollar losses (Senkarcin 2015).

Figure 5.
Debt securities issued by German
public and private banks
(about here)

Bearing in mind developments in Britain, the cascading introduction of market-led banking across different pillars explains the pattern of bank restructuring in Germany surprisingly well. As one would expect, the enthusiastic move towards wholesale and secondary markets by commercial banks was followed by a strong decline in bank branches in the 2000s *and* increased automation of remaining locations in the sector. Deutsche Bank is perhaps the best example of a German bank shifting its focus from retail and commercial markets to investment banking. Tellingly, Deutsche Bank opened its 'branch of the future' prototype in Berlin in the early 2000s.

Public and cooperative banks, meanwhile, took slightly longer to rethink their branch networks because they simply did not face the same commercial reality. However, from the late-2000s onwards these institutions, too, found themselves restructuring parts of their branch network as a reaction to financial liberalisation and the loss of their public guarantee. What is perhaps most interesting about this evolution is how German banks, and in particular savings banks, pursued a strategy of customer segmentation and branch dualisation (Haipeter and Wagner 2008). Many institutions have followed the UK in the realisation that value inherent in traditional services of branches have dwindled for traditional retail services due to rising costs and competition. In spite of a definite turn towards restructuring of branch networks (WDR 2021; ZEB 2020), centred on the standardisation of retail products *and* credit scoring, public sector banks are continuing to play their role within the *Mittelstandpolitik,* increasingly focusing on non-financial services, most notably advisory, to SMEs. For example, part of the restructuring process in the Hannover Sparkasse involves an 'upgrade' of remaining branches to 'advisory centres'. NRW Bank, meanwhile, has also strongly focused on these services as well, boasting an all-time high 30.000 advisory sessions in 2019 (NRW Bank 2019). This suggests we might expect bank branches to remain a key feature of German banking to the extent the public pillar remains a key player in industrial policy. Indeed, as the COVID-crisis has shown, strong local ties between businesses and banks were a key feature of the government's roll-out of financial aid (Hancké *et al* 2021). For branch managers, this means there are opportunities to upskill, but the job they performed for a long time has ultimately changed in Germany as well.

Figure 6.
Non-interest income as part of total revenue for
German public and cooperative
(about here)

Conclusions

This paper started with a puzzle. Why, if the structure of bank branches during the early eighties was so similar in Britain and Germany, was the implementation of credit scoring in both countries so different? Existing accounts would suggest we need to look at either the tasks structure of occupations within retail banking or the power of labour to understand how this automation unfolded. This paper, on the other hand, has argued that to get at this question we need to understand how changes in financial institutions have impacted the place of banks in the economy. More particularly, I argue that the rise of market-led banking has undermined the role of bank branches and their managers traditionally played in the process of financial intermediation, resulting in a labour-saving adoption of credit scoring.

Far from being inevitable, the staggered implementation of credit scoring as automation presented here was the, perhaps unintended, result of deliberate policy moves towards more liberal and globalised financial markets dominated by debt securitisation and interbank lending. Interestingly for the debate on routine-biased change, this case has offered us an example of how a priori non-routine occupation ended up automated against the (theoretical) odds. Rather than calling to double down on the importance of tasks, this suggests that branch managers' demise should be understood as the interplay between technological innovation on the one hand and institutional 'innovation' on the other. For arguments about labour power, then, this means that institutions do matter, but in a slightly more complex way than portrayed by the literature. Institutions, it seems, do not just put the brakes on management when trying to implement a given technology, but instead, they co-determine firm strategy in the broadest sense and therefore influence which technologies are adopted and how. In this case, institutional differences led to the adoption of credit scoring as a labour-saving innovation in the UK while it was initially used to augment workers in Germany.

Put together, this suggests a need to guard against technological determinism. As the different adoption strategies of credit scoring during the eighties highlight, there is no single pre-determined scenario driving technological change in advanced capitalist democracies. German and British retail banks have, of course, converged in their use of credit scoring but, as I discussed, this is the consequence of converging institutional practices in capitalist democracies rather than of technological necessity. For political science and political economy, this means that understanding the direction of innovation and the impact of automation on our society will require a closer analysis of the interaction between institutions, growth and technological change.

There are some limitations to this argument. For one, this story of bank branch managers is a narrow case study, meaning we should guard against over-generalisation. Importantly also, the evolution of financial markets in the last thirty years is intertwined with ICT innovations in ways that are more complex than I have portrayed in this paper. The causal arrow between financialisation and innovation inevitably runs both ways in a mutually reinforcing process. There is also a good question about to what extent it is possible to separate out the effects of financial liberalisation from a potential weakening of labour power in Germany. Indeed, these trends have definitely gone hand in hand, and I do recognise the importance of Vitols' (2004) argument related to industrial relations and union power. However, I believe my analysis of the *functional* relationship between credit scoring and evolving models of banking exemplifies this was likely not the most important driver of change in Germany

In conclusion, this paper offers some interesting conclusions for political economy scholars. Firstly, it lends support to the argument laid out by Hardie *et al* (2013) by laying bare the process of an increasingly market-led banking system at the branch level. In doing so, this analysis also makes the case that there is no single way in which innovation *has to be* implemented and that the way in which it *does* cannot be understood in isolation from broader growth models. With regards to automation, this case suggests labour substitution is about much more than the *a priori* substitutability of discrete tasks. Finally, the story of branch managers highlights the complex interplay between innovation, business and the state in a sector which is currently undergoing rapid changes. As the differential developments in the UK and Germany suggest, it is worthwhile to remember none of these changes is as unprecedented, let alone inevitable as some seem to think (Susskind 2020).

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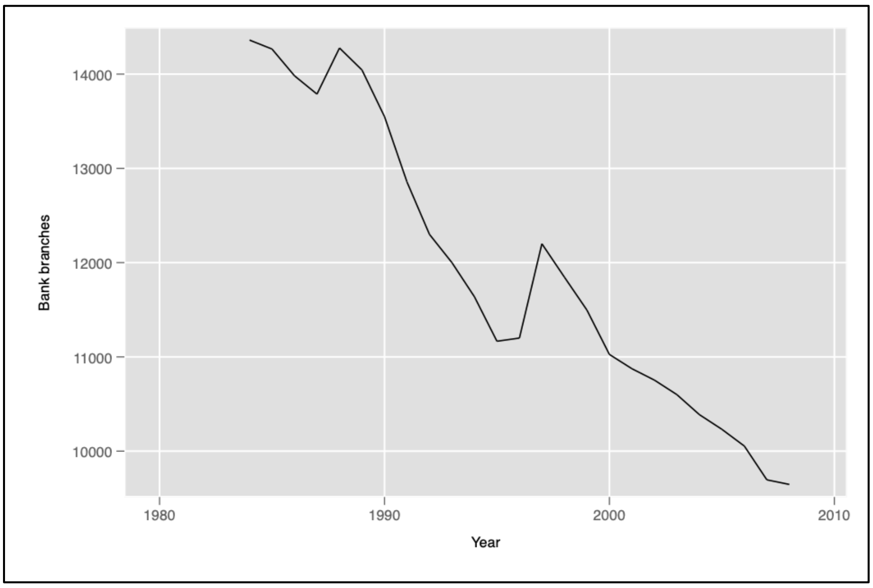
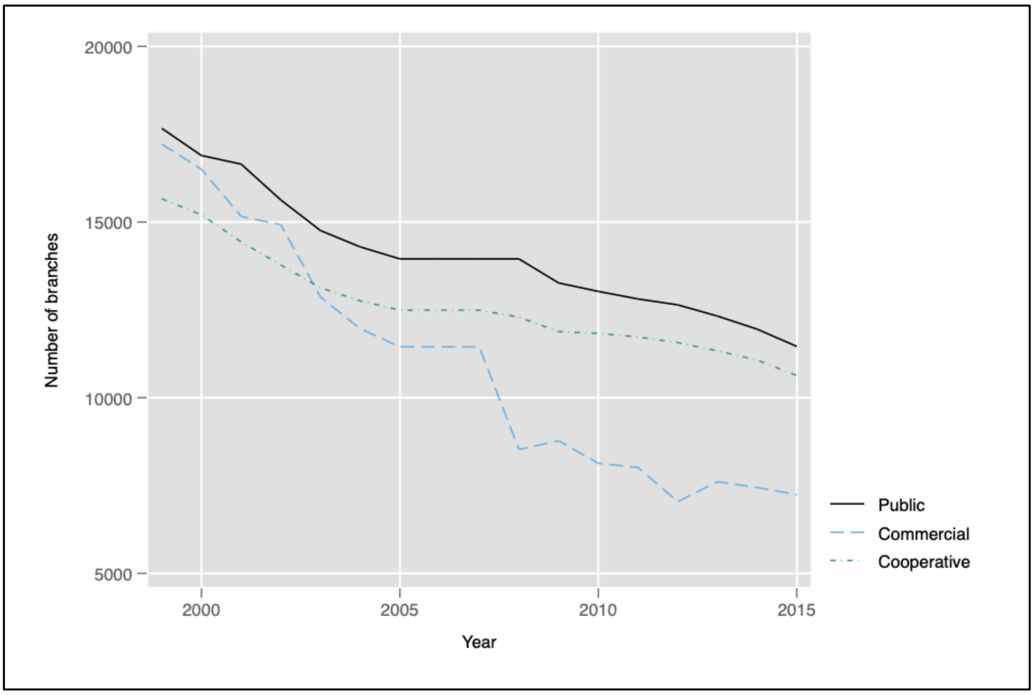
Annex

Figure 1.
Number of bank branches in the UK



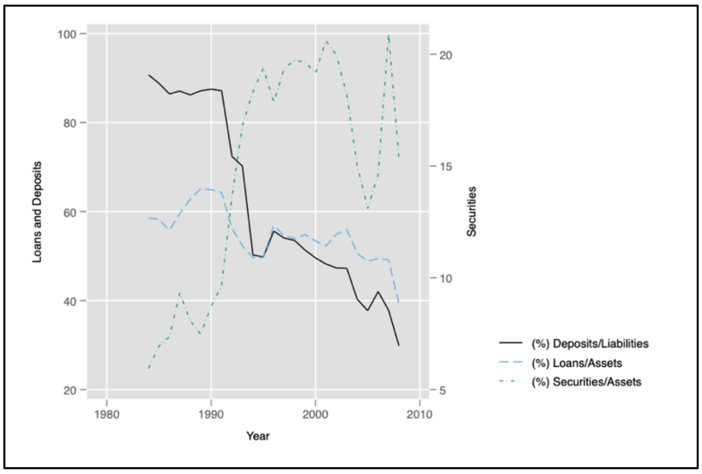
Source: British Bankers Association

Figure 2.
Number of bank branches in Germany per sector



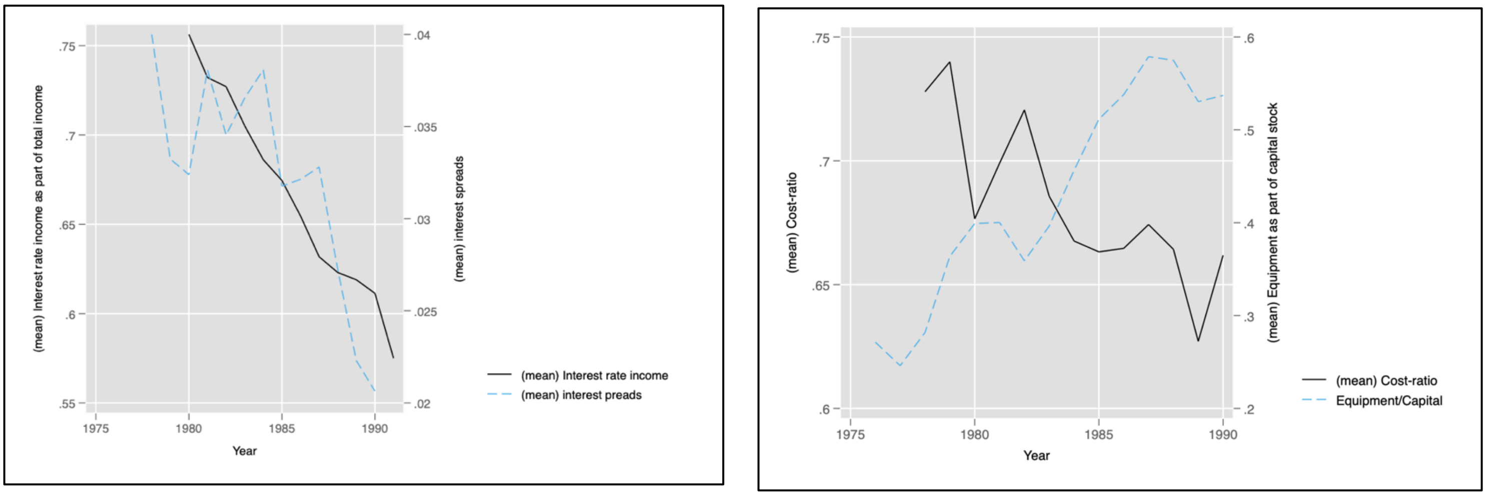
Source: Bundesbank (Bankstellenstatistik)

Figure 3.
Evolution of the relative importance of securities, deposits and loans on British (left panel) and German (right panel) bank balance sheets



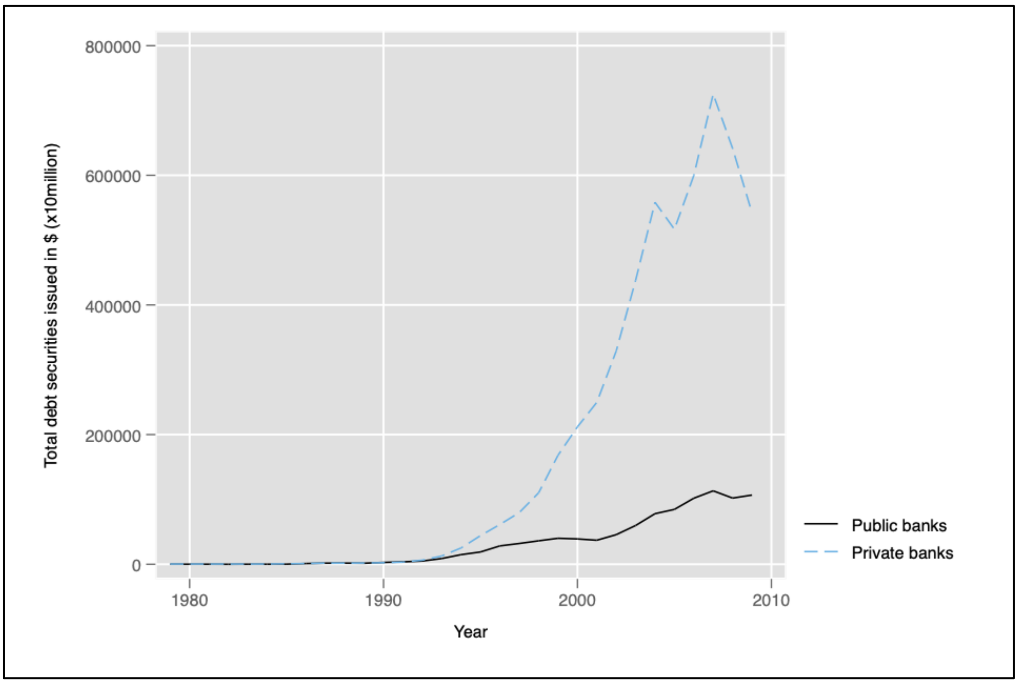
Source: OECD 'Bank Profitability'

Figure 4.
Evolution key balance sheet items for British 'Big Four' banks



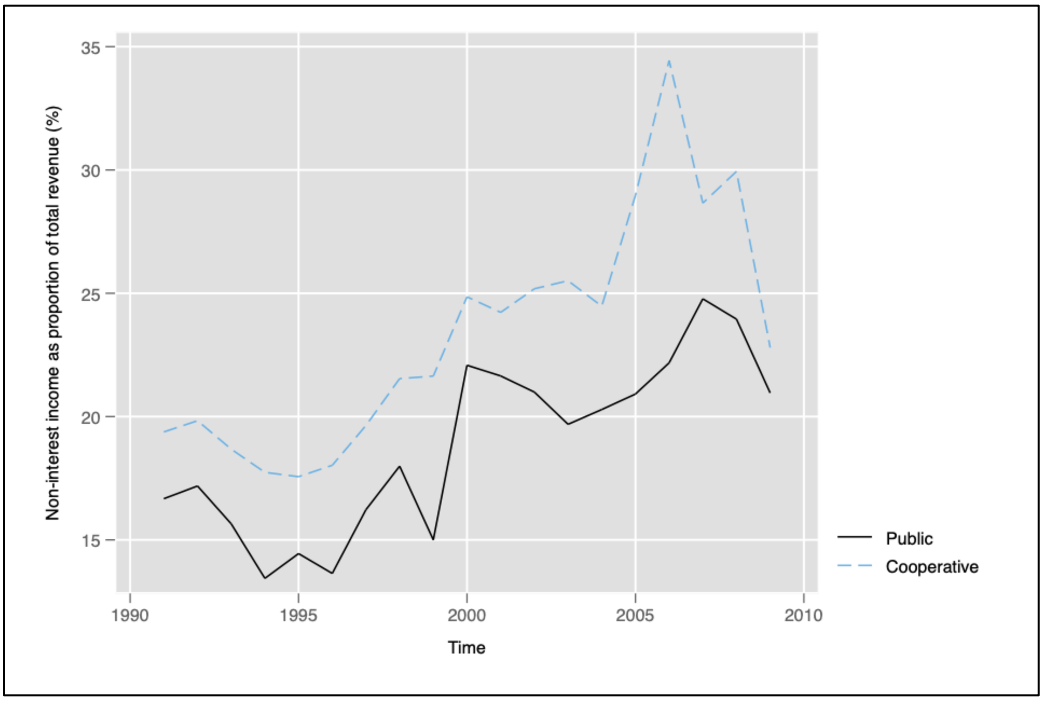
Source: Own calculations based **on annual reports Barclays, Midlands, Lloyds & NatWest**

Figure 5.
Volume of debt securities issued by German
public and private banks



Source: Bank for International Settlement

Figure 6.
Volume of debt securities issued by German public and cooperative banks



Source: Bank for International Settlement

Table 1. List interviewees

Name	Function	Date	Type
Interviewee 1	Corporate Historian Barclays Bank	25/01/2019	In person
Interviewee 2	Head of Archive and Museums Lloyds bank	08/03/2019	In person
Interviewee 3	Former employee Deutsche Bank and Dresdner Bank	18/11/2019	Phone interview
Interviewee 4	Former branch manager UK	5/12/2019	Phone interview
Interviewee 5	Former senior employee Barclays bank	10/12/2019	Phone interview
Interviewee 6	Senior official public affairs of Landesbanken consortium *and* former branch manager	15/12/2019	In person