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(Economic History Working Papers)

Financial Development, Overbanking, and Bank Failures  
During the Great Depression: New Evidence from Italy

Marco Molteni

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# Financial Development, Overbanking, and Bank Failures During the Great Depression: New Evidence from Italy

Marco Molteni\*

## Abstract

This paper employs quantitative and qualitative methods to examine the link between overbanking, banking competition, and financial distress during the interwar period in Europe, focusing on Italy as a case study. Econometric analysis on bank balance sheet data and a systematic review of contemporary printed sources show that banks experiencing distress had opened many branches and were operating in areas with harsher competition. Poor managerial choices had led banks to face higher operational costs, pushing them towards more remunerative but riskier activities. The 1920s saw a profound transformation of the Italian banking system, with extensive branch expansion and cut-throat competition for deposits. This work argues that such changes in the banking system's structure made it more fragile, exposing it more to the negative effects of the international crisis following the New York Stock Exchange crash in 1929. Available evidence on other European countries suggests that Italy was not an isolated case. The study contributes to the literature on banking crises during the Great Depression and on the relationship between banking competition and financial stability.

**JEL Classification:** N14, N24, G01, G21, G32

**Keywords:** overbanking, banking competition, banking crises, Great Depression, branch banking, Italy, interwar period

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## 1. Introduction<sup>1</sup>

Financial distress and its determinants in the interwar period are widely studied topics in economics and economic history. Existing research on the issue has highlighted four sets of causes: domestic macroeconomic performance and policy responses, lender-of-last-resort interventions, the problems of universal banking, and the structure of the commercial banking systems (Grossman, 1994; Feinstein, 1995; Feinstein et al., 2010). While the differences in banking structure and how these affected competition dynamics received substantial attention concerning the US context, scholarship on European countries mainly focuses on macroeconomic aspects, lender-of-last-resort interventions, and universal banking. Italy features prominently in this literature for the failure and secret rescue of its large universal banks in the early 1930s (Toniolo, 1995; Battilossi, 2009), but banking distress was not limited to these banks, and the problems of the rest of the banking system have been overlooked (Molteni, 2021a). Coeval observers maintained that the structure of the Italian banking system had many flaws and this was the consequence of the extraordinary expansion it experienced in the 1920s, which led to a condition of ‘overbanking’.

Most financial historians and economists are familiar with the expression ‘overbanking’; however, academic research on this issue is wanting despite its policy-relevance<sup>3</sup>. ‘Overbanking’ is frequently used concerning the European banking system today – often to explain its low profitability (Bertay and Huizinga, 2019). According to Andrea Enria, Chair of the Supervisory Board of the European Central Bank, the relationship between welfare and banking system size is not linear but is inversely U-shaped. If there are too many banks, but fierce competition does not push out of the market the surplus, “non-viable banks have the incentive to price aggressively and take on high risk in gambling for resurrection”, thus posing a threat to financial stability (Enria, 2019). Indeed, ‘overbanking’ is closely linked to the economics and finance literature on whether competition in banking is detrimental or beneficial for financial stability.

The Italian banking system's structure underwent a profound transformation in the early 1920s and experienced severe distress in the late 1920s and early 1930s (Molteni, 2023). In a buoying economy under rapid financial development, many new banks entered the market and started expanding their branch network to chase idle deposits outside major centres. As a result, between 1920 and 1926, the number of joint-stock banks and bank offices increased from 249 to 416 and 6,012 to 11,444, respectively. This impressive expansion stopped in 1926 as a new banking law made opening new banks and branches subject to Ministerial approval. Coeval

<sup>1</sup> I am especially grateful to my DPhil supervisor Brian A’Hearn, and to my DPhil examiners Paolo di Martino and Eric Monnet for invaluable feedback on this work. I also would like to thank Federico Barbiellini-Amidei, Dario Pellegrino, Alba Rosa Piacenti and one anonymous referee for their comments, and the participants of 2021 EHS Conference at Warwick, Uppsala University Workshop in Business and Financial History, LSE Graduate Seminar in Economic History, UB-UC3M-UV: WEBINAR in Economic History, PSE Faculty Seminar in Financial History, Oxford Graduate Seminars in Economic and Social History, and Utrecht University Financial History Seminar for their suggestions. The author acknowledges generous funding from the Economic History Society Student Bursary, Pembroke College (Oxford), the Einaudi Foundation in Turin, and ERC (European Union’s Horizon 2020 Grant Agreement No 883758).

<sup>3</sup> The IDEAS/RePEc repository reports only 12 results for ‘overbanking’ and 16 for ‘overbanked’ (Accessed on 12<sup>th</sup> February 2023). In the 1<sup>st</sup> ed. of the *Oxford handbook of banking* (Berger et al. 2010) neither of the two words is ever reported.

observers lamented that banks engaged in cut-throating competition for deposits with dreadful consequences on financial stability. Thus, the research question of this paper is: ‘Did branch expansion and competition for deposits in the 1920s play a role in banking distress during the Great Depression? Was Italy ‘overbanked’?’ This paper finds banks experiencing distress opened scores of branches, had higher expenses, engaged in riskier activities, and operated in areas where competition was harsher. In this respect, the answer is positive.

I use regression analysis to answer this research question, but I combine it with qualitative research in a way that is not usual in economic history research. Qualitative evidence is often employed anecdotally in quantitative studies to reinforce the econometric analysis. By contrast, in this paper, I use qualitative research systematically to formulate testable hypotheses. Firstly, I extensively researched coeval printed sources to understand how contemporaries perceived Italy's expansion in the 1920s. Secondly, I formulate testable hypotheses based on what contemporaries considered weaknesses. I then test these hypotheses using regression analysis on bank balance sheets and indicators of local banking structure. This methodological approach has two merits. Firstly, it helps to contextualise the regressions, making them historically significant and not disconnected from the historical debate. Secondly, it provides the historian with a critical check on coeval voices, as these are likely to be affected by political or cognitive biases and driven by vested interests. In this way, this approach aims to address the opposite methodological critiques that are often advanced to economic historians by historians and historical economists.

This paper contributes to different strands of literature. Firstly, it relates to the economics and finance literature on the effects of banking competition on financial stability in historical context (Carlson and Mitchener, 2009; Carlson et al., 2022). Secondly, it contributes to Italian economic history, advancing a new interpretation of a critical period of Italian financial history (Di Martino, 2004; Battilossi, 2009; Barbiellini-Amidei and Giordano, 2015; Toniolo, 2022). While current literature has exclusively focused on the problems of large universal banks, this research provides the first analysis of the causes of distress of the rest of the banking system. In doing so, it gives a much-needed qualification to the context in which the interwar banking reform, with its anti-competition features, took place. The last and possibly most important contribution of this paper is the one to the literature on banking crises during the interwar period, a topic that has received renewed attention from economic historians (Accominotti, 2012; Accominotti and Eichengreen, 2016; Adalet 2009a, 2009b; Baubeau et al., 2021; Bonhoure et al., 2021; Colvin et al., 2015; Colvin, 2017; Jorge-Sotelo, 2020; Lönnborg et al., 2011; Macher, 2019; Monnet et al., 2021). I argue that we should pay more attention to how European banking systems developed in the 1920s (and during WWI). The case of Italy suggests that banking systems that underwent significant expansion and structural changes in this period were more fragile when the international crisis hit. Italian banks that developed an extensive branch network in the 1920s experienced severe distress in the late 1920s - early 1930s. In this respect, it contributes to the issue of bank branches as elements of stability during the Great Depression (Friedman and Schwartz, 1963; Bordo, 1985; Grossman, 1994, 2010; Calomiris, 2000). Although several micro-studies have challenged the idea that branch networks make banks more stable (Calomiris and Mason, 2003; Carlson, 2004; Colvin et al., 2015; Grodecka-Messi et al., 2021), this is still highly influential among many economic historians. In assessing the link between domestic branch networks and distress, existing analysis usually takes the existing banking structure as a given without examining how it evolved in the previous years. This is unfortunate because recent research on France and Italy

found that in the 1920s the banking systems experienced a substantial expansion in bank offices, followed by distress and significant consolidation in the 1930s (Bonhoure et al., 2021; Molteni, 2023). Studies by the League of Nations (1931, 1934) highlighted that other European banking systems underwent similar deep transformations during WWI and in the 1920s.

Nevertheless, we lack studies linking financial instability in the interwar period with previous changes in the structure of European domestic banking systems. One hypothesis is that in those banking systems that developed an extensive network of bank offices in the 1920s, competition dynamics to conquer market shares made banks more fragile when the international crisis hit. Therefore, this paper's interpretation for Italy could also be valid for other European countries. Still, this interpretation is currently absent in the existing scholarship on interwar banking crises. This research advances this interpretation and fills this gap for Italy.

The rest of this paper is organised as follows. Section II surveys the literature on the relationship between the structure of the banking system and financial stability, particularly regarding bank branches during the Great Depression. Section III provides a historical context on banking in interwar Italy and the expansion of branch networks in Europe during WWI and the 1920s. Section IV presents the qualitative research conducted on coeval sources and spells out the hypotheses to test in the following section. Section V presents the data and the regression analysis. Section VI summarises the paper and concludes.

## **2. Literature review**

The condition in which the supply of banking services exceeds the demand is often referred to as over-banking, a situation determined by too many banks taking aggressive competitive behaviour. Despite being a significant policy issue in Europe today (ESRB Advisory Scientific Committee, 2014; Langfield and Pagano, 2016; Enria, 2019; Gardó and Klaus, 2019), overbanking is relatively overlooked in finance and economics literature. To the best of my knowledge, no research provides a theoretical explanation of why countries become overbanked or gives a precise measure of the part in excess<sup>4</sup>. As Schenk (2006, p.1) observes, “it seems that the existence of over-banking is mainly only determined in hindsight”. In recent scholarship, particularly highlighted by Gardó and Klaus (2019), the notion of "overbanking" or "overcapacity" within the banking sector is identified as a multifaceted and even elusive concept. It is recognized to encompass a variety of issues ranging from competitive intensity and the scale of banking infrastructure—like branches and personnel—to the overall magnitude of the banking system and the size of specific banks. The phenomenon can manifest in several ways: it might be seen in the form of heightened competition, an over-expanded infrastructure (such as an excessive number of bank branches relative to population or disproportionate deposits per branch), or in the oversized nature of the banking system relative to the nation's GDP. In the context of this paper, I refer to overbanking especially regarding the issue of ‘over-branching’.

<sup>4</sup> In fact, papers attempting to determine whether countries are ‘overbanked’ usually do so empirically by comparing these countries/states with other benchmark countries (e.g., Romania, Petria, 2017; Texas, Kilgo, 2008; larger sample of OECD vs transition counties, Jaffee and Levonian, 2001).



The issues of overbanking, concentration, and competition have received the attention of economic historians regarding the 1920s in the USA (Wheelock, 1993; Walter, 2005; Davison and Ramirez, 2014). In particular, Davison and Ramirez (2014) find that states with many banks were more likely to have a banking run in the 1920s, whereas states with higher assets per bank were less likely to have one. Walter (2005) interprets banking failures in the USA as a 'great shakeout', where these were the natural outcome of the previous expansion in a context of rapid structural change and 'survival of the fittest' competition.

Regarding European countries, little evidence exists on the link between competition and financial stability. It is thus essential to review the theoretical and empirical contributions on the issue to provide guidance in understanding the phenomena in question. Two distinct but intertwined sets of literature are relevant to understanding the Italian case of the interwar period, that of competition and that on branch banking; i.e. the literature on the link of how banking structure affects competition and, in turn, financial stability and that on how branching allows banks to diversify but also poses managerial and monitoring challenges. Finally, these two literatures have intertwined in the literature on unit banking vs branching and their effect on financial stability during the Great Depression – especially regarding the USA.

An extensive debate exists on how the banking system's structure enhances or worsens financial stability<sup>5</sup>. The theoretical literature has no consensus on whether bank competition increases or decreases financial stability. Empirical evidence also presents conflicting results: a first set of studies showed that more concentrated banking systems are less likely to experience crises (e.g. Beck et al. 2006). Still, once alternative measures of competition rather than concentration were used, more competitive banking systems appeared more stable (e.g. Schaeck et al. 2009). Berger et al. (2017) divide this vast literature into two opposite views: the 'competition-fragility view' and the 'competition-stability view'. In the competition-fragility view, competition negatively affects financial stability: by lowering franchise value and squeezing bank profit margins, competition creates incentives to engage in riskier lending. If banks compete for borrowers, they have lower incentives to screen them appropriately. If banks are shielded from competition, they can use extra profits to accumulate cushions to be used in the event of an adverse shock. Hellmann et al. (2000) show that limiting competition on deposits can have significant gains in terms of financial stability. By contrast, the competition-stability view stresses opposite effects: competitive banking systems are more efficient and thus more stable. If competition pushes banks to charge lower interest rates, borrowers' incentives to take on riskier projects are less (Boyd and De Nicolò, 2005). In systems with very few and large banks, this can create incentives to adopt moral hazard behaviours if public authorities hint that too-big-to-fail policies might be implemented (Mishkin, 1999). However, the relationship between competition and financial stability is not necessarily linear but can be U-shaped. Martinez-Miera and Repullo (2010) build a theoretical model where banking competition increases financial stability if there are few banks, while it decreases it if more banks enter an already saturated market.

Banks can pursue diversification through geographical expansion thanks to branching (Goetz et al., 2016). As highlighted by Winton (1999), different strands of the literature present different views on whether and why banks should diversify. The financial intermediation literature is inclined to say that banks should diversify (Diamond, 1984; Boyd and Prescott,

<sup>5</sup> The literature review presented here is by no means exhaustive. For a complete picture see Carletti and Hartmann (2003) and Berger et al. (2017).

1986)<sup>6</sup>. However, the corporate finance literature's advice is the opposite, as specialisation is the best way to minimise agency problems and maximise management skills (Denis et al., 1997). The classic argument of textbook portfolio theory is that branches allow greater diversification and thus make banks more resilient to shocks (Koumou, 2020). But, diversification can also harm financial stability because it entails higher operational risks (Acharya et al. 2006). There might be incentives for bankers to push the geographical development of the banks they control for private reasons, even though this comes at the cost of more bank fragility. Furthermore, expanding through branches imposes monitoring costs due to the distance, and the headquarters could struggle to supervise the subsidiaries properly (Berger et al., 2005). If so, these can mismanage risk and fail to rightly evaluate the quality of assets, with negative consequences for the bank's stability (Winton, 1999).

The issue of branching vs unit banking occupies a particular place in the literature on banking stability during the Great Depression (Bordo, 1985; Calomiris, 2000; Grossman, 1994, 2010), especially in the US context. Empirical historical studies present a paradox. In analyses conducted at an aggregated level – i.e. cross-country or cross-state – countries with an extensive branching system appear to be less likely to experience banking crises<sup>7</sup>. By contrast, in analyses conducted at the micro level – i.e. using bank balance sheet data to predict individual banks' distress – the opposite is true: banks with branches were more likely to experience distress<sup>8</sup>. Carlson and Mitchener (2006, 2009) study the case of California in the 1920s/30s to provide an answer to this paradox. While they find no evidence that diversification improved banks' survival, they show that 'competition externalities' derived from the exposure to branches of larger banks in the 1920s made local banks more efficient and stable. In this sense, however, the interpretation of branches could be reversed: banking systems that allowed branches were not more resilient because they were more diversified than others. They were resilient because they were concentrated and grasping the positive externalities of competition on stability. However, the results of this paper suggest that we should be cautious about generalising the case of California to European countries. Carlson and Mitchener (2009) explain that the Californian branch expansion took place in the context of increasing consolidation, whereas the Italian branch expansion took place in the context of decreasing consolidation. The two cases are not contradictory, as they both fit well within Martinez-Miera and Repullo's (2010) model. It should be noted that in the Californian case, most new branches were added to the networks of large banks by acquiring existing local banks. By contrast, in the Italian case, the vast majority of new branches were opened ex-novo; thus, building on the managerial skills of previous employees and their understanding of the local market would not be an option.

### 3. Historical context

Figure A 1 presents a summarised timeline of the leading Italian events in the interwar period. Italy experienced strong inflation during and after WWI, as military expenditure soared and the government had to resort to money printing to finance the deficit. However, a side effect

<sup>6</sup> Theory predicts that diversification makes banks more credible in the eyes of depositors in their role as screeners of borrowers, thus lowering banks' costs.

<sup>7</sup> For Europe see Adalet (2009a), on the USA see Wheelock (1995) and Mitchener (2005).

<sup>8</sup> Adalet (2009b) finds that German banks with branches were more likely to experience distress. Colvin et al. (2015) find that in the 1920s crisis branched banks were more likely to experience distress. For the USA, see Calomiris and Mason (2003) and Carlson (2004).

of inflation was that banknotes started circulating much more widely and reached social classes that had previously never been very acquainted with their use (de Cecco, 1986). The Italian economy had a boom and bust dynamic from 1920 to 1921, and the GDP returned to pre-war levels only in 1922, an infamous year in Italian history. At the end of October 1922, the fascists marched on Rome, and King Vittorio Emanuele III appointed Benito Mussolini as Head of the Government instead. After a 'liberal' period, the fascist regime consolidated in 1925-26, and the country "witnessed possibly the most sudden and complete 180-degree turnaround of economic policy in Italian history" (cit. Toniolo, 2013, pp.18-19). The government introduced new tariffs and adopted a deflationary policy to return to the Gold Standard at the overvalued rate of 92.5 Lire per £ Pound (*Quota 90*). The new shift paused the sustained GDP growth, which then resumed in 1928-29 before the international crisis hit Italy in 1930. When the crisis hit, GDP contracted and bankruptcies and companies' insolvencies skyrocketed (Di Martino and Vasta, 2010). The prolonged depression that followed was due to deflationary measures imposed by stubborn adherence to the Gold Standard. Deflationary policies and Gold Parity were reversed only in the context of military expansion due to the invasion of Ethiopia in 1935.

Significant reforms took place in the field of banking during this period. In the autumn of 1926, for the first time in its history, Italy enacted a regulation on commercial banks, which entailed an authorisation system for opening new banks and branches, capital requirements, and it introduced a system of banking supervision (Molteni and Pellegrino, 2022)<sup>9</sup>. At the same time, the Bank of Italy was given the monopoly of issue and its organisational structure was reformed. The final transformation of the Bank of Italy into a modern central bank took place only in 1936-38 when a new set of reforms was introduced and commercial banking activities were discontinued (Toniolo, 2022). Among these reforms, the new banking law enacted in 1936 introduced much tighter controls than the 1926 law, which was rather 'light-touch' (Guarino, 1993). The institutional framework that emerged in the late 1930s remained in place until the 1990s. The impact of the international crisis on the large Italian universal banks and the institutional changes it forced were possibly no less important and long-lasting. Extensive literature exists on the failure and rescue of the big four large universal banks in the early 1930s<sup>10</sup>. Both illiquid and insolvent due to their large holdings of industrial shares, a set of decrees issued between 1930 and 1934 provided liquidity injections, nationalised the banks, and transferred their industrial portfolios to Istituto di Ricostruzione Industriale. Initially conceived as a temporary mechanism, this public financial holding was made permanent in 1937, marking the advent of the Italian entrepreneurial state. Remarkably, the interventions were secret, and the public became aware only after the rescues had been completed. As a result, there was no general banking run like in Germany or Austria.

Banking distress, however, was not limited to large universal banks. Small and medium banks experienced severe distress, which was resolved mainly behind doors (Molteni, 2021a). To a large extent, the causes of their distress remained unexplored. De Bonis et al. (2018) document

<sup>9</sup> Before 1926 commercial banks were only subject to Code of Commerce rules like any other ordinary joint-stock companies. The 1926 law introduced the first definition of bank, referring to all institutions that collected deposits from the public. An institution that did not collect deposits but gave loans would not be formally considered a bank after 1926. Before 1926, there was no formal definition of bank.

<sup>10</sup> *Inter alia*: Battilossi (2009); Brambilla (2012); Ciocca and Toniolo (1976, 1984); Confalonieri (1994, 1997); Saraceno (1978, 1981); Toniolo (1978, 1980). The Big Four are Banca Commerciale Italiana, Credito Italiano, Banco di Roma, and Banca Nazionale di Credito.

that the 1920s were an incredibly dynamic period for Italian banks; different measures of competition show that this reached a historical peak in the 1920s. Various indexes on the structure of the Italian banking system show deep transformations after WWI. As Figure 1 shows, the credit-to-GDP ratio increased substantially during the 1920s and went hand in hand with an increase in real deposits per capita, showing a marked process of financial development through both financial deepening and financial access (Molteni, 2023). The number of ordinary joint-stock banks increased sharply, which decreased the concentration level of the banking system, measured by total assets. The most impressive feature of this period was the growth of bank offices per capita, which more than doubled from 1920 to 1926<sup>11</sup>. These figures are so remarkable that they question the sustainability of the expansion. Perhaps not surprisingly, the trend of the three latter indicators reversed when the international crisis hit Italy. The number of bank offices and ordinary joint-stock banks contracted, while the Herfindahl–Hirschman index on total assets confirms a consolidation trend. The educated guess, therefore, is that Italy went through a process of financial development that made the banking system 'over-branched'; when the international crisis hit, banks more engaged in this process were more fragile and failed. The following two sections show that qualitative and quantitative evidence widely confirm this hypothesis. But does this explanation have external validity outside Italy? In other words, does this pattern help explain banking distress in other countries? Bonhoure et al. (2021) document that France experienced an impressive expansion of branches at the same time that Italy did. They do not go as far as claiming a link between this and financial instability, but France did have severe distress in the early 1930s, especially among small and medium banks. Detailed studies on bank branch expansion are currently limited to France and Italy.

Historical data on bank offices (including branches) are scarce, making it very difficult to provide a consistent all-embracing picture of the evolution of bank branching in the 1920s. Table 1 presents some tentative figures showing a remarkable growth of commercial bank offices from before WWI to the eve of the Great Depression. The publication by the League of Nations (1934) provides us with some additional figures. Overall, the League of Nations (1934) points out that in continental Europe the development of the branching system had started in the years immediately preceding WWI but gained momentum during the war and especially during the post-war inflationary years. In Belgium, a country that experienced banking distress in the 1930s, the number of commercial bank branches went from around 250-300 in 1913 to approximately 1250 in June 1926. The German branching system was already quite developed before 1913, but large banks' networks were comparatively less developed<sup>12</sup>. The number of branches of the large Berlin banks rose from 150 at the end of 1913 to ca 900 at the end of 1923. In Finland, it grew substantially from 1913 to 1929: 148 bank offices before WWI became 329 in 1919 and 611 in 1929. The League of Nations (1934) considered the network of bank offices in pre-WWI Sweden 'unusually large', having 555 bank offices in 1913. Nonetheless, this number more than doubled to 1,369 in 1920 and contracted to 1,015 by 1929. The increase thus seemed to have happened during WWI, and Sweden did experience banking distress in the early 1920s. Precise figures are not available for the

<sup>11</sup> Figure 1 shows that the expansion halted in 1926/27, as the Bank of Italy and the Ministry of Finance used the new authorisation system to prevent banks from expanding their network further. In 1928, the Ministry of Finance introduced a moratorium on all new branches, which were allowed only in exceptional conditions.

<sup>12</sup> In 1913 there were roughly 11,700 saving bank offices and 4,300 private bank offices, which by 1930 had risen to 12,600 and 5,300 respectively.

Netherlands. Still, the League of Nations' publication confirms that the seven largest banks did not have an extended network before WWI, but increased their network subsequently. Colvin et al. (2015) find that banks with branches were more likely to experience distress during the early 1920s. One country that seemed to be spared from both banking distress and the branching expansion was Portugal. According to Reis (1995), the development of an extensive branch network took place after WWII rather than in the interwar period, and the branches of the major joint-stock banks grew from 13 in 1920 to only thirty in 1939.

The view presented in this section is rather 'impressionistic', and it falls short of providing definitive evidence on the external validity of the Italian case. Nevertheless, it still shows that the Italian case was anything but unique. Therefore, the origins of the surge in bank offices and the possible link with financial instability should be understood from a European perspective.

#### **4. The view of coeval observers**

The expansion of banking facilities displayed in Figure 1 could hardly go unnoticed at the time: the number of bank offices per capita doubled in less than six years. Analysing what contemporaries thought of this phenomenon is important for two reasons. First, it improves our understanding of this historical period, i.e. to understand to which extent the regulatory interventions that limited competition introduced in the 1920s and 1930s were unanimously regarded as justified solutions to real problems or considered controversial. Did contemporaries mostly see this expansion in a positive light? Or did they associate it with the banking distress that followed? If the latter, what were the flaws? Secondly, it provides a valuable tool to support and complement the econometric analysis. This is true in two aspects. On the one hand, it can guide the formulation of testable hypotheses when theory and existing empirical research do not provide clear-cut guidance, as we saw it is the case for the relationship between competition and financial stability. On the other hand, employing qualitative and quantitative methods together allows an external check on the evidence these distinct approaches provide. If the two methods diverge, the author should critically review her methodology and understand why. Instead, if they reconcile, they mutually reinforce her interpretation. In the absence of available experiments allowing the researcher to establish causation formally, a bundle of different methodologies delivering a consistent interpretation is the closest she can get to understanding the determinants of the studied phenomenon. In other words, if the narrative is correct, the numbers should match and vice versa.

To better understand the determinants of bank distress and whether the 1920s expansion played a role, this section presents the results of a systematic literature research on coeval printed sources published in the 1920s and 1930s. From a methodological point of view, the scope of this research was to survey all contributions published in the period that discussed the banking expansion in Italy in the 1920s<sup>13</sup>. To make sure that the survey was as complete as possible, I checked the books on the topic mentioned in the bibliographic review sections of *Giornale degli Economisti* and *Riforma Sociale*, two prominent academic journals of the time and *Rivista Bancaria*, the official journal of the Italian Banking Association, established in 1920. All articles on the topic published in these journals are also considered. In total, 45

<sup>13</sup> I must acknowledge that despite my best efforts, I cannot be sure I have included every single contribution published on the topic in the period in question. Nevertheless, the methodology employed and the sample size should reassure the reader of the representativity of my survey.

contributions are considered in this analysis, and a complete list is given in the Online Appendix (B). Generalist media and newspapers are not included. Instead, all contributions are from policymakers, banking and/or economics professors, and professional reports. The choice to circumscribe the survey to the opinions of coeval 'experts' has two main motivations. Firstly, given the dictatorial nature of the fascist regime, the role of propaganda, and the censorship it applied, the cognitive (and political) biases and vested interests of people who directly engaged with the general public were likely to be more substantial than those of experts<sup>14</sup>. Secondly, including newspapers would dramatically increase the number of contributions to consider, making the burden of this research unbearable without implementing text analysis algorithms<sup>15</sup>.

From the research conducted, there is a large consensus that the war and monetary and credit inflation had triggered the banking expansion. According to the director of the *Rivista Bancaria* Cabiati and the Governor of the Bank of Italy, Stringher:

"Inflation allowed the improvisation of new bankers and banks, tradesmen and trades, industries and firms. There was a need that all this seasonal fruit fell on the ground."

(Cabiati, 1929, p. 255)

"The ease with which it was possible to receive deposits at a time of monetary inflation had driven many banks that either did not have a sufficient supply of real capital or that lacked capable management to take shape. It had also induced both old and new banks to expand recklessly in all directions, creating costly branches with the object of collecting money in the form of banknotes, even by offering high rates of interest [...]. Thus, in many places, large sums of money flowed to banks and bankers, which ventured into speculation and tied-up capital, often causing serious trouble and losses to people who placed faith in them."

(Stringher, 1929, quoted in Gigliobianco and Giordano, 2012, p. 39)

How did it work? In the early 1920s, there was a positive shift in both the demand and supply of banking services. According to the calculations of a very young Piero Sraffa<sup>16</sup>, Italy was the country where the monetary circulation of banknotes had expanded the most in relative terms and pointed out that Italian prices took longer than the USA and the UK to adapt to the increase in circulation – thus with a possible real effect in the very short term (de Cecco, 1986). Plus, the rescue of *Banca Italiana di Sconto* and *Banco di Roma* required additional liquidity injection to the system from the government through the banks of issue, which allowed the banks of issue to maintain an expansionary and lenient discounting policy even in a context of reduction of the circulation<sup>17</sup> (Einaudi, 1963a, 1963b). Finally, one cannot exclude the hypothesis that the increased use of financial saving services such as bank deposits or stock investment accounts can be seen as a rational response to the (mild) inflation that characterised most of the period 1920-26. As cash was losing value, Italians who previously used to 'keep

<sup>14</sup> This does not mean that experts were immune from biases and vested interest; however, the fact the quantitative evidence reconciles with these views attenuates the concern. A history of economic thought on banking regulation in this period would be a distinct piece of research.

<sup>15</sup> A text analysis was not attempted, because it would have required a critical assessment of each newspaper, which was beyond the scope of this article.

<sup>16</sup> Sraffa's dissertation: published as Sraffa (1994) and translated in English in Harcourt and Sardoni (1994).

<sup>17</sup> As Einaudi explains, the rescue was paid by Italian taxpayers through a partial fiscal exemption on the tax paid by the banks of issues on the extraordinary circulation. In addition, the government left the remaining funds originated from the taxation at the banks of issues, which could use them to expand the discounts while reducing the circulation.

idle banknotes under the mattress' had an incentive to look for yields in bank deposits or buying stocks. Increased availability of banknotes, followed by expansionary monetary policy, and the fast-growing economy of the early 1920s, in the context of mild inflation, increased the demand for banking services.

However, this expansionary trend did not occur for all banks simultaneously, but it had been anticipated by the big four and certain important saving banks in Northern Italy<sup>18</sup> (Polsi, 2000). In particular, the big four had already developed a branch network in the main provincial capitals before WWI, and this trend accelerated after 1915 (Bava, 1926; Segre, 1926; Tridente, 1936). Interestingly, Segre notes that whereas the expansion before 1915 was mainly circumscribed to northern and central regions, it also extended to the South during the war. Contemporaries explained the expansion in 1915-18 as an attempt to mop up local savings and invest them in the industries engaged in the war effort, which needed to expand their production rapidly in the context of very profitable public war procurements. In addition, banks were active in the remunerative business of underwriting and placing war bonds to the public, hence the need for a large network of banking facilities to reach even the economic periphery where savings lay idle<sup>19</sup>. Banks were willing to lend their clients the money required to buy the securities, which were then used as collateral. In fact, they knew that these securities could, in turn, be used as collateral to obtain advances by the banks of issues. Large banks began to expand during the war; after 1918, even smaller banks followed suit:

"Some of these [smaller banks], trying to mimic large banks or just to save themselves, engaged in crazy speculations, especially during the inflationary period, when the abundance of paper money had recreated [...] the illusion of wealth."

(di Castelnuovo, 1933, p. 43)

"[in 1920] the developing smaller institutions are trying to take back what the large banks had taken them away in previous years. We shouldn't forget the psychological factor that is gaining momentum and partly explains this phenomenon."

(Segre, 1926, p. 51)

The costly post-war industrial reconversion and banks' overexposure towards industries led to the collapse of the Banca di Sconto in 1921 and imposed the rescue of Banco di Roma in 1923. All four large universal banks adopted a more conservative stance. Banca Commerciale Italiana and Credito Italiano halted their expansion, while Banco di Roma and Banca di Italiana di Sconto sharply reduced their networks. This created a void that small and medium commercial banks could fill, especially in Central and Southern Italy, where the Banca Italiana di Sconto had been a prominent player. According to Segre, smaller banks did not stop their expansion, seizing this opportunity, because – leaving aside some minor distressed closures directly linked to Banca di Sconto – smaller banks were less affected by the Banca Italiana di

<sup>18</sup> Whereas the big four expanded outside the province/region of their headquarter, saving banks like that of Milan, Turin, and Florence expanded mainly within the region where they were headquartered. According to Polsi (2000), between 1906 and 1913 the number of bank offices had increased by 25% from 2072 to 2567. The increase taking place after the war was mostly due to commercial banks. Saving banks expanded their network mainly in 1913-23.

<sup>19</sup> Like other countries, banks started an advertisement campaign through posters and propaganda postcards to promote the subscription of war bonds at their offices. On the mechanisms that incentivised the underwriting of war bonds by banks and their placing to the public see Sraffa's dissertation (Sraffa, 1994) translated in Harcourt and Sardonì (1994).

Sconto's crisis. Arias, whose thought is reported in Gigliobianco and Giordano (2012), maintained that the collapse of the Banca di Sconto shifted the preferences of depositors away from large national banks, pushing them to opt for smaller and local institutions. The shock of the war, which prompted the expansion of large banks and their reining in following the 1921 crisis, indirectly triggered the expansion of local banks, thus increasing the supply of banking services.

Thus, there was an upward shift in both the supply and demand of banking services, and the equilibrium was a strong expansion of banking facilities in the 1920s. When deflationary measures due to restore the Gold convertibility and the international crisis of the 1930s brought down the demand for banking services, the oversupply of banking services was stickier to adapt to the new equilibrium, and banks that had expanded too much were left with the burden of costly facilities and credit relations which were no longer viable.

The expansion of banking offices in the 1920s did not go unnoticed by coeval observers, who regarded it with scepticism as an unsustainable phenomenon even before the international crisis hit. In an English publication aimed at foreigners to promote the new course of Italian economic policy after 1926/27, the Governor of the Bank of Italy, Stringher, and the Ministry of Finance, Volpi, described this movement as follows:

"There has been too much ease in creating new banks, large and small, and in multiplying their branches even in very small centres in order to collect deposits. The result has been that such deposits have not always been used wisely nor often invested in the communities where gathered."  
(Volpi and Stringher, 1927, p. 83)

The economic intelligence publication *Movimento Economico dell'Italia* by Banca Commerciale Italiana, the most important Italian bank, expressed a similar judgement:

"In the aftermath of the war, banks were established that were incapable of sustaining the expansion they wanted to pursue, after the return to convertibility [1927] several had to restrict or suspend their business."

(Banca Commerciale Italiana, 1932, p. 24)

In the 1920/30s, all commentaries of the new regulation that introduced government mandatory licenses for new banks and branches agreed that limiting free banking expansion was the justified response to avoid a repetition of the poor management decisions of the previous period (Cajani, 1928, 1938; Garrone, 1930; Miraulo, 1927; Pallini, 1934; Setti, 1937). Similarly, in commenting on the situation retrospectively after one year of banking supervision, Stringher reiterated the concept and denounced that much of these savings ended up invested in risky business:

"the complete lack of any banking regulation allowed the establishment of a multitude of banks with little or trifling capitals, and their mushrooming in small and large cities through improvised networks of branches, with the specific aim of collecting deposits that often ended up in dreadful speculations."

(Stringher in Banca d'Italia, 1928, p.56)



Not only did coeval observers consider this expansion excessive, but they also thought it was carried out with unsounded and even fraudulent practices. According to Tridente, professor of banking:

"The activity of banks was to collect these savings and direct them towards productive use. But this pumping of savings could not take place but through opening new branches and absorbing local banks. This hoarding of deposits [was] carried out with uneconomic practices, often with amoral expedients, in cut-throat competition [...]."

(Tridente, 1936, p. 10)

And again,

"Local banks mushroomed everywhere, capturing available capital and lending to risky businesses to cover their costs, which tend to increase due to excessive competition. When the ascending phase ends and reaches its peak, distrust triggers the monetisation of investments, and less healthy organisms die."

(Tridente, 1936, p. 10)

Tridente was not the only one denouncing the damages of cut-throat competition. Another professor of banking, Mazzantini, considered the issue of branching closely related to that of competition:

"Talking about banks, it is always repeated that there are too many; that there is excessive competition, which damages both banks and clients, these ending up paying higher interests and fees; that banks have too many branches, even in smallest municipalities and localities."

(Mazzantini, 1928, p. 772)

The argument that high costs in Italian banking due to taxation and general expenses – i.e. personnel and administrative costs due to excessive expansion – pushed banks towards riskier business was also reported by *The Economist*:

"A great outcry is sometimes raised against high banking charges. [...] High taxation and heavy general expenses justified, in the eyes of optimistic directors, the speculative policy which was the cause of many frozen assets."

(*The Economist*, 1933, p. 13)

The overall picture emerging from the contributions considered is that the expansion of the Italian banking system in the 1920s had been excessive, and too many banks were competing for a cake which was too small. However, a more subtle voice was that of Luigi Einaudi, a prominent liberal economist and future Governor of the Bank of Italy and President of the Italian Republic, who wrote a piece provocatively titled "Are these too many banks in Italy?". He argued that although the number of banks was undoubtedly high, a general critique that the expansion had been excessive and this was a problem per se was too simplistic: one could not judge the banking infrastructure as deficient or excessive without a precise and in-depth qualitative and functional assessment. He lamented a general approach favouring "rationalisation" and preference for concentration in large institutions, often driven on ideological premises rather than substantiated with facts and analysis. He indeed agreed that the disordered expansion of the early 1920s came with the flaws mentioned above, but that the

ultimate cause of distress was a bad management problem as during the boom years many actors entered the banking business without a real and sound preparation in banking: "If one analyses one by one in depth the failures of small bankers, one must acknowledge that greediness and ignorance were the true causes of their ruin." (cit. Einaudi, 1930, p. 822).

Interestingly, Einaudi lamented that ideological premises somewhat drove the prevailing chorus of opinion. This suggests we might want to take these views with a grain of salt, not necessarily at face value. For example, coeval observers might be affected by implicit cognitive biases, such as a preference for more corporatist and dirigiste solutions, which were becoming increasingly popular in the 1920s/30s, not only in Italy. These cognitive biases would push coeval observers to overstate the banking system's problems to justify increasing government intervention. Moreover, and more concerning, given the dictatorial nature of the fascist government, we cannot exclude that vested interests or political preferences drove these claims or were just lip service to the regime. Since the fascist regime pursued a banking regulation policy to limit competition, authors could be inclined to advance interpretations supporting the official policy.

To provide an additional check to the validity of the claims of coeval observers, we can rely on one remarkable source on Italian institutional history and Italian economy: the reports written in 1946 by the Economic Commission of the Ministry per the Constitution to provide the Constituent Assembly with the necessary knowledge and understanding of the country to draft the new Italian Constitution after fascist years. These were a set of reports written by committees of experts that collected information from academics, policymakers, entrepreneurs, and representatives of associations and institutional bodies on all aspects of the Italian economy<sup>20</sup>. The goal was to collect the broadest range of opinions, and on many topics, conflicting opinions emerged. Given the initiative's purpose and timing, one can safely rule out that these were paying lip service to the fascist regime banking policy. Unsurprisingly, one crucial matter discussed by the Economic Commission with his interviewees was the anti-competition measures introduced in the 1920s/30s and whether limits to free banking were justified and thus should be retained or abolished. Concerning the validity of the points made by coeval observers in the 1920s/30s, the conclusions of the Commission's enquiry and the interviews they conducted are reassuring<sup>21</sup>. The report says that the quasi-totality of the interviewees was in favour of maintaining the authorisation system for branches and new banks introduced in 1926 and that even people with notoriously liberal positions were openly in agreement<sup>22</sup>. They thus concluded:

"It wasn't a theoretical concept that pushed for the introduction of the supervision on opening new branches, but rather the experience of the dreadful consequences of the free expansion of banking facilities that took place between 1919 and 1926."

(Ministero per la Costituente, 1946, vol. I, pp. 178–179)

<sup>20</sup> Two volumes were dedicated to credit and insurance. The first volume summarised the main conclusions and recommendation of the committee while the second volume published a large selection of the questionnaires and the transcribed interviews used by the committee to elaborate its judgement.

<sup>21</sup> See the interviews to Ambrogio, Coppola d'Anna, Forcesi, Martini, Molteni, Goisis, Rossi, Pancera, and the answers to the questionnaires by Giannini, Ambrogio, Guadagnini, and Nicotra.

<sup>22</sup> One exception was Caprara, a Bocconi University professor who argued in favour of a complete free banking system.

To sum up, this selection of contributions from coeval observers suggests that the development that the Italian banking system experienced in the 1920s was disordered – to say the least – and had many flaws and weaknesses stemming from poor managerial choices. New banks were established, and extensive branch networks were developed. Banks engaged in a competitive race to attract deposits, which raised their funding costs and pushed them to look for yields in riskier businesses. When the macroeconomic scenario changed, first with the deflationary policy of *Quota 90* and then with the onset of the international crisis, the banking system's problems became unsustainable. Expansion and distress were directly linked in the eyes of contemporaries<sup>23</sup>. These claims were subsequently substantiated by the Economic Commission, which found an overwhelming consensus to retain the limits to competition introduced in 1926 and reinforced in 1936. If this removes potential political biases, we cannot dispel all doubts about possible cognitive biases. As we will see in the next section, however, quantitative evidence reconciles well with the coeval observers' opinion, suggesting that these biases were (at least) not too severe.

## 5. Empirical Analysis

The previous section highlighted several factors that contemporary observers believed contributed to bank distress, which can now be empirically tested. A key argument is that the Italian banking system suffered from structural issues stemming from poor managerial choices during the disordered expansion of the 1920s. Many new banks entered the market, and the number of branches surged as they vied for market shares (Mazzantini, 1928; Banca d'Italia, 1928; Tridente, 1936). This expansion was seen as a flawed managerial strategy (Banca d'Italia, 1929; Einaudi, 1930; Tridente, 1936), leading to unsound business practices such as engaging in riskier activities and compensating for high operational costs with more remunerative but risky investments (The Economist, 1933). In this analysis, however, it is essential to distinguish between ultimate and mediating factors and, thus, the more structural problems from their mechanisms. There are two clear, distinct hypotheses to test regarding the structural factors: whether (1) banks that opened (too) many branches were more likely to experience distress, and (2) banks that experienced distress operated in areas where competition was harsher. Both these factors then pushed banks into the vicious cycle of high costs and remunerative but risky activities. Thus, I test the hypotheses that distressed banks were those that (a) had engaged in riskier activities, (b) had higher expenses, (c) paid higher interest on deposits, and (d) had more illiquid and non-performing assets. To test these hypotheses formally, one needs three sets of data.

First, a precise account of which banks were distressed or not. It is important to stress that not all distressed banks considered in this study eventually failed. Italian authorities in this period had an active policy of resolving distressed banks to avoid their failure (Molteni, 2021a). Banks are considered distressed if they fail and are put into receivership; they are wound down but lose all their reserves and almost all of their capital in the process; they are merged with

<sup>23</sup> Of course, in a counterfactual scenario where deflationary policy were not implemented it is possible that fewer banks would end up in distress. In these respects, despite the reassuring comments from the Economic Committee, one cannot rule out that their own judgements were ultimately affected with hindsight by the shock of the Great Depression, and thus to some extent the Economic Committee and the interviewees had been influenced by the following events.

another bank to avoid a failure; they receive a capital injection from another bank or the government to avoid failure. Many of the banks considered distressed here could be identified as such only thanks to extensive archival research using classified banking supervision documents preserved in the archives of the Bank of Italy and the Ministry of Finance<sup>24</sup>. Therefore, the definition of distress adopted here includes banks that failed and banks that avoided failure only thanks to the interventions by other banks or the government.

Second, we need bank balance sheets of both distressed and non-distressed banks. Bank accounting data on Italian joint-stock banks are available from *Archivio Storico del Credito in Italia*, ASCI, (Natoli et al. 2016), a dataset of official bank balance sheets made available by the Bank of Italy. Unfortunately, ASCI does not have balance sheet data for all categories of banks. Only joint-stock banks and savings bank balance sheets are available for the period in question. Cooperative banks and private partnerships cannot be included. Saving banks are also not considered because, despite their relative importance in the share of total deposits in the banking system, none of these banks experienced distress in the period in question. However, joint-stock banks were the most important group in terms of total assets and deposits – 55% and 54% of total banking system in 1927 respectively.

Third, one needs measures of banking structure such as the number of branches per bank and indicators of market concentration. Reconstructing these variables is one of the contributions of this article. The entire bank branch network at the municipality level is reconstructed using *Dizionario delle Banche, dei Banchieri e delle Casse di Risparmio* (Gozzini, 1929) – a banking almanac listing all branches of Italian banks. This almanac was published in early 1929 and allowed me to reconstruct the branch network at December 1928. This source covers all categories of banks, including savings, cooperative joint-stock, mutual cooperatives, private partnerships, public law, and joint-stock banks. One of the shortcomings of this source is that it does not report the legal category of the bank. Therefore, this was obtained from alternative sources<sup>25</sup>.

Linking the newly constructed data on branches and information on distress allows a first visual inspection of the relationship between the number of branches and distress. Figure 2 presents histograms and the kernel densities of total branches (ln) by distress category and macroregional area. It is evident from this simple display that banks with more branches were more frequently distressed, and that this relationship seems to be a common pattern in all three macroregional areas.

I used the newly reconstructed data on branches in 1928 to construct a novel indicator for banking competition that effectively captures a bank's market power in the provinces where it operates. The primary measure used is the Herfindahl Index, a widely recognised tool for assessing market concentration, applied here to each Italian province's banking sector. I then obtain a bank-level indicator of market competition  $\overline{H}^\alpha$  'Competition I' where:

$N_{Pi}^\alpha$  : number of branches of bank  $\alpha$  in prov. Pi

$N_{Pi}$  : sum of all branches in prov. Pi

$MS_{Pi}^\alpha$  : market share of bank  $\alpha$  in prov. Pi

$$N_{Pi} = \sum_{\alpha} N_{Pi}^{\alpha}$$

$$MS_{Pi}^{\alpha} = \frac{N_{Pi}^{\alpha}}{N_{Pi}}$$

<sup>24</sup> For a description of the data see the Online Appendix (C) and Molteni (2021a, 2023).

<sup>25</sup> See Online Appendix (D).

$H_{Pi}$  : Herfindahl index of prov. Pi

$$H_{Pi} = \sum_{\alpha} (MS_{Pi}^{\alpha})^2$$

$\overline{H^{\alpha}}$  : mean of Herfindahl Index for bank  $\alpha$  weighted by  $N_{Pi}^{\alpha}$   $\overline{H^{\alpha}} = \frac{\sum_{Pi} H_{Pi} N_{Pi}^{\alpha}}{\sum_{Pi} N_{Pi}^{\alpha}}$

For each bank ( $\alpha$ ) in a given province ( $Pi$ ), I calculate the number of branches ( $N_{Pi}^{\alpha}$ ) and its market share ( $MS_{Pi}^{\alpha}$ ), which is the ratio of the bank's branches to the total branches in that province ( $N_{Pi}$ ). The Herfindahl Index for each province ( $H_{Pi}$ ) is then computed as the sum of the squared market shares of all banks in that province. The overall competition measure for each bank ( $\overline{H^{\alpha}}$ ) is the mean of these Herfindahl Indices across all provinces where the bank operates, weighted by the bank's branch presence in each province. However, this approach assumes uniformity across all provinces, which could have a heterogeneous demand for banking services and different levels of financial development. To address this problem and provide a more nuanced view of competition, I developed two additional indicators, 'Competition 2' and 'Competition 3'. Ideally, one wants to weight 'Competition 1' by provincial GDP, for which reliable estimates do not exist for the period in question. Therefore, I adopted the log of total industry and service sector employees, available from the Italian Industrial Census of 1927 (ISTAT 1928), as a proxy for GDP. This variable should capture the economic activity in the province well. I use this proxy to weigh the provincial Herfindahl Index, reflecting the economic significance of each province to the bank's operations. Furthermore, as an additional robustness check, I construct 'Competition 3', which uses total deposits per hundred people per province in 1929, this year being the first for which this information is available (Banca d'Italia, 1931)<sup>26</sup>. Deposits per capita capture the differences in the level of financial development between provinces and demand for banking services.

The empirical model employed is a logit model, which predicts the probability of distress between January 1929 and December 1936 based on a cross-section of bank balance sheets from December 1928, the year preceding the international crisis in Italy<sup>27</sup>. Distress is defined as a binary outcome, and the model includes variables representing the testable hypotheses alongside control variables relevant to the historical context<sup>28</sup>:

$$Distress_i = \alpha + \beta_1 X_i + \beta_2 C_i + \varepsilon_i$$

Distress is defined as a binomial variable that takes the value of 1 if bank  $i$  experienced distress and 0 otherwise.  $X$  is one or more variables of interest representing the hypotheses to test.  $C$  is a vector of bank-level characteristics employed as controls. Variables are included in  $C$  because banking history literature uses them and for their relevance in the specific historical context of interwar Italy. I include regional dummy indicators to ensure that one particular region does not drive results.  $\varepsilon_i$  is the error term, and it is clustered by region of headquarters. Table 2 shows descriptive statistics of the explanatory variables, divided into two groups: 'Variables of interest', and 'Bank level controls'. I consistently report the Average Marginal

<sup>26</sup> Population is from ISTAT (1933).

<sup>27</sup> A total of 301 banks are considered.

<sup>28</sup> All regressions in Tables 3 and 4 are robust when using Probit or Linear Probability Models. All estimates are also robust to the exclusion of observations with high values in Pearson residuals, deviance residuals, and leverage.

Effects (AMEs) in the regression tables; variables are standardised<sup>29</sup>. My sample covers over 85% of the relevant bank population, as 358 joint-stock banks existed in Italy in 1928. In designing the econometric models to test these hypotheses, it is essential to keep separate structural factors from mechanisms; otherwise, mixing them in the same regression would deliver biased results – for example, in case specific bank performance indicators used to pin down the mechanisms play a role in mediating the link between competition and over-branching and distress. For this reason, I estimate two sets of equations: the first tests the association between over-branching, competition, and distress, and the second tests the mechanisms associated with distress.

As stated above, the two main hypotheses to test are whether distress was associated with over-branching and competition. 'Over-branching' is the first explanatory variable to be investigated in the light of coeval observers' comments. It is calculated as the residuals of the following regression:  $\ln(\text{total branches})_i = a + \ln(\text{total assets})_i + \epsilon_i$ . Figure 3 displays a visual representation of this relationship. The intuition is that 'over-branching' should capture the situation where a bank opened many branches but did not manage to expand its business accordingly, i.e. a poor managerial strategy. A higher value of 'over-branching' should be associated with a higher probability of distress. Although over-branching is not a direct measure of market competition, it does indirectly signal aggressive market behaviour, as banks that over-expanded did so to gain market shares before competitors. In this sense, 'over-branching' is also considered a proxy for hostile competitive behaviour. Since banks competed for deposits, another way to capture the 'over-branching' effect is to divide total deposits by the total number of branches each bank had. Thus, I construct the variable 'Deposits per branch' as equal to  $\ln\left(\frac{\text{total deposits}}{\text{total branches}}\right)$ . If 'over-branching' was an issue, a lower value should be associated with higher distress. As additional robustness checks on the association between branches and distress, I consider the variable 'branch growth'  $\frac{\ln(\text{total branches in 1928} - \text{total branches after WWI})}{\text{years of activity after WWI}}$  and a variable 'branches' which is simply the  $\ln(\text{total branches})$ . Competition 1, Competition 2, and Competition 3 were already defined above and captured the level of market concentration in which each bank operated. A higher level of market concentration should be associated with lower competition and vice versa. If competition was a financial stability problem, as coeval observers suggested, a higher level of these indicators should be associated with a lower probability of distress.

Turning to the mechanisms, the main factor associated with distress, according to contemporaries, was higher risk-taking. Measuring bank risk is challenging, but ROA volatility and Z-Score are widely employed in the literature as proxies (Laeven and Levine, 2009). 'ROA Volatility 1' and 'ROA Volatility 2', are two measures that capture the ROA Volatility of banks during the 1920s. The first is the logged standard deviation of the bank's ROA in 1922-1928<sup>30</sup>. The second one is the Beta of the bank's ROA with respect to the mean

<sup>29</sup> i.e., I subtract the mean and divide by the standard deviation), so they can interpret as “one unit increase in standard deviation increase the probability of distress by”.

<sup>30</sup> Balance sheets in the 1920s are not available for all banks. Due to the different availability of balance sheet data for different years, when calculating the standard deviation of ROA, the sample changes depending on the year. To check that this does not affect the results, I test the null hypothesis that the mean of Distress in each sample is not statistically different from the mean of Distress of the population of banks in 1928 (which is equal to 0.47), and report both the mean and the p-value of the t-test in the bottom of the regression tables.

market ROA. The Z-Score is calculated as the  $\log\left(\frac{\text{Capitalisation} + \text{ROA}}{\sigma \text{ROA}_{1922-1928}}\right)$ . For both variables 'ROA Volatility 1' and 'ROA Volatility 2', a higher value indicates higher volatility and, thus, higher risk. Therefore, the coefficients should be positive and significant, while the opposite is true for Z-Score because a higher Z-Score indicates more stability and lower risk. Furthermore, contemporaries pointed out that distressed banks had higher costs. Thus, if true, the coefficients of 'Expenses' (total expenses normalised by total assets<sup>31</sup>) should be positive and significant. For a limited number of banks, ASCI has information on the interest rate paid on deposits by banks. I include this variable and expect banks that pay higher deposit rates to be more likely to fail<sup>32</sup>. ASCI can be used to construct additional variables to explore further the mechanisms through which banks experienced distress. The first variable is 'Private securities', the share of private securities on total assets, and is taken as a proxy of universal banking activity (Battilossi, 2009). This variable could capture speculative investments per se and shares initially pledged as collateral for subsequently defaulted credit lines. The variable 'NPLs' is constructed by adding the share of declared non-performing loans (*Sofferenze*) to the balance sheet item 'other credits' (*Crediti diversi*), where banks usually hide non-performing loans when not declared in official balance sheets. Usually used as a proxy for asset quality and poor lending decisions (Grodecka-Messi et al., 2021), a large share of 'NPLs' signals the existence of bad loans gone wrong, turning into immobilisations. 'Office and start-up costs' is another way to capture the over-expansion on banks' balance sheets. Banks wrote the new offices and furniture costs on balance sheets and amortised them over time. A larger share of these costs still to be amortised signal that banks had exceeded their expansion. Higher values in these three variables should be positively associated with distress. Finally, the last variable to consider is profits over total assets 'ROA', constructed as profits over total assets<sup>33</sup>. Following Battilossi (2009), this variable is a proxy for managerial skills, as higher returns on assets can be due to better management and a more efficient business model. Following Einaudi's interpretation, one should expect this variable to be inversely associated with distress.

The second group of variables is that of traditional bank characteristics employed as controls, and they are described and interpreted in the Online Appendix (E). These include variables such as size, leverage/capital, age, measures of liquidity, and exposure to foreign markets widely used in previous studies that use banks' balance sheets to predict bank distress at the individual level (Battilossi, 2009; Colvin et al., 2015; Postel-Vinay, 2016; Grodecka-Messi et al., 2021). In addition, to account for diversification and exposure to idiosyncratic local shocks, this group of variables includes a categorical variable 'Multiarea' if the bank operated (1) in one province, (2) in multiple provinces within the same region, and (3) in multiple regions. An additional dummy variable is included to account for whether the bank was part of the confederation of Catholic banks that experienced distress in 1928-32 (Toniolo, 2022).

Table 3 presents the results of the empirical analysis, which aims to test the hypotheses related to the association between branch expansion, competition, and bank distress. In column (1), I estimate the effect of 'Over-branching' on distress without controls, while controls are included in column (2). Both confirm a strong and statistically significant impact of 'Over-

<sup>31</sup> Data on total expenses is available only for 211 banks.

<sup>32</sup> Data on interest rates paid on deposits is available only for 110 banks.

<sup>33</sup> ROA and expenses are winsorised at 5% to mitigate the effect of potential outliers and typos. In doing this, I follow the approach adopted by De Bonis et al. (2018), and I use their same threshold.

branching' on distress. Column (3) shows that even with a different specification of over-branching, 'deposits per branch', the association is confirmed. Banks with more deposits per branch are less likely to experience distress. In column (4), the specification using 'Branch growth' shows that banks that opened more branches were more likely to experience distress. The same strong positive association is found with 'Branches' in column (5). Notably, the specifications in columns (4) and (5) also allow for control for 'Size', which is significant and has a negative sign, showing that smaller banks were more likely to experience distress. These results confirm the claim by coeval observers that banks that aggressively expanded their branch network without a sound managerial strategy were more likely to experience distress<sup>34</sup>.

In column (6), I include 'Competition 2' to test the hypothesis of an association between distress and competition dynamics. The coefficient is significant and with a negative sign, suggesting that banks that operated in more concentrated areas, and thus less subject to competition, were less likely to experience distress. In column (7), I include the interaction between 'Over-branching' and 'Competition 2' to test whether over-branching has different effects depending on the level of competition. The coefficient is positive and significant. In markets with higher concentration levels (less competition), the detrimental impact of over-branching on bank distress risk is accentuated. These results suggest that if a bank is over-branched, market concentration's positive (stabilising) effect is watered down. At the same time, when competition is low, and a few significant players dominate a market, over-branching can exacerbate the risk of bank distress. Using alternative the specifications of Competition 1 and 3 in columns (8) and (9) delivers similar results. Several robustness checks confirm the consistency of these findings and are reported in Table A 1 in the Online Appendix (F). Results are robust to using a probit or OLS model; exclusion of the big four from the sample; using macroregional indicators, including rediscounts over total assets as additional control variable; changing the Multiarea categorical variable with continuous variables counting the number of provinces and regions where the bank operates; including in the regression some of the mechanism variables such as NPL, ROA, and Private Securities; using a different specification of distress that includes all winded down banks irrespective of how much paid-in capital they reimbursed to investors; using lagged control variables at December 1925 and 1927. Furthermore, in Table A 2 in the Online Appendix (F), I explore whether different mixes of bank types present in the provinces affect the relationship between competition and distress. Assigning different weights to different legal categories of banks in constructing the Competition indexes changes the interpretation of Competition only marginally<sup>35</sup>.

Table 4 presents the results of the models testing for the mechanisms through which banks experienced distress<sup>36</sup>. All models are estimated with and without controls. In Columns (10)

<sup>34</sup> Interestingly, the relationship between these variables and distress appears to be linear, as attempts of including quadratic forms failed to deliver significant results.

<sup>35</sup> There is some evidence, however, that competition could be harsher regarding joint-stock banks and private bankers, but this evidence is not clear-cut.

<sup>36</sup> One problem of the models presented in Table 4 is that they are estimated on smaller samples, however, in all but one case, I can never reject the null hypothesis that the mean of distress of the samples employed are equal to the mean of distress in the bank population. Thus, the sample selection should not be a major concern. The only sample where non-distressed banks are overrepresented is that used to test the rate on deposits. However, the selection bias goes against my results, as one might expect that with distress banks underrepresented it is more difficult to obtain significant results. To the best of knowledge, it is the first time that historical micro data



to (13), I test whether ROA volatility in the 1920s, a proxy for higher risk-taking, is associated with distress. Both ROA volatility 1 and 2 are significant and positively associated with distress – although ROA volatility 1 is significant only when controls are included in the model. Columns (14) and (15) confirm the association between distress and higher risk using Zscore. As expected, the coefficient is negative, as a lower value of Zscore indicates less financial stability and higher risk-taking. These three indicators widely confirm the coeval observers' claim that banks that experienced distress were engaging in riskier activities the year before the crisis. Furthermore, the analysis reveals that higher expenses (columns 16 and 17) and deposit rates (columns 18 and 19) are positively related to bank distress. This suggests that banks with higher operational costs and those offering higher interest rates on deposits were more vulnerable, a scenario potentially reflecting competitive pressures and inefficient management, themes resonant in the works of contemporary observers. Finally, in columns 20 and 21, new variables such as private securities, NPLs, office and start-up costs, and ROA offer additional insights into the factors influencing bank distress. The positive and significant relationship of private securities in both models highlights the risks banks undertook by engaging in universal banking activities. The positive and significant effect of NPLs shows that banks with worse asset quality and larger immobilisations were more fragile. The impact of office and start-up costs, also positively correlated with bank distress in these models, confirms the previous evidence on the costs associated with banks' rapid expansion and new ventures. Finally, the negative and significant coefficient of ROA shows that banks that managed to balance expenses and revenues better were less likely to experience distress, confirming that more efficiently managed banks were more resilient to financial instability. Overall, these findings reinforce the narrative of a banking sector grappling with the consequences of aggressive growth strategies and risk-taking behaviours, shedding light on the intricate dynamics that led to the sector's vulnerability in the face of the impending economic crisis. Therefore, the claims advanced by coeval observers do not seem just the product of biases but have sound confirmation in available empirical evidence.

Both the qualitative and the quantitative evidence consulted point out that banking distress in interwar Italy was ultimately blamed on poor managerial choices, an argument already advanced by Battilossi (2009) who conducted a similar study regarding the large universal banks using a smaller sample of banks (40). Both studies concur that poor management led to excessive risk-taking, which was the ultimate cause of distress – an argument that resonates well with Einaudi's words. If anything, the main difference between the two interpretations is that Battilossi (2009) stressed the issue of governance failures, blaming moral hazard dynamics between private and state actors in particular. Instead, this research has blamed local market dynamics for the excessive expansion of branching. The two interpretations, however, are not mutually exclusive. Excessive risk-taking may stem from moral hazards for the largest banks operating at the national level while having more local roots for smaller banks.

## **6. Conclusions**

This paper delved into the relationship between banking competition, branch expansion, and financial distress during the interwar period, focusing on Italy. It argued that the 1920s marked a profound transformation of the Italian banking system, characterised by aggressive

on deposits interest rates are used in similar econometric exercises, and thus I prefer to display the results with this caveat rather than not.

expansion and intense competition for deposits, which contributed to its increased fragility during the international crisis. It presented the first analysis of bank distress beyond the large universal banks in the late 1920s and early 1930s. Distressed banks were those characterised by extensive branch expansion and operated in markets where competition was harsher. These poor managerial choices left banks with higher operational costs and pushed them towards riskier activities. When the international crisis hit, fundamentally weaker banks failed, unless Italian public authorities resolved their distress.

The contributions of this paper are also methodological and of data. The conclusions of this research were reached with a mixed methods approach, which is not usual in economic history, where research is often either based on qualitative or quantitative methods. Regarding data contributions, the entire network of Italian bank offices on the eve of the Great Depression was reconstructed for the first time using printed and archival sources. This data was used to construct new variables capturing the Italian banking system's structure. Regression analysis on bank balance sheets employed these variables to confirm and reinforce coeval observers' intuitions. A systematic review of coeval printed sources provided guidelines for a better understanding of the determinants of distress and helped formulate the hypotheses that empirical analysis tested. Concerning Italian institutional history, the qualitative research revealed an overwhelming consensus among contemporaries in favour of anti-competition measures – especially concerning limits to free branching. At least for the Italian case, one of the legacies of the crisis documented here was to shape the mindsets of the policymaking and entrepreneurial elites of the post-WWII period, with long-lasting consequences for the development of the Italian banking system.

This research suggests that the evolution of the domestic banking structure before the Great Depression matters in explaining the pattern of European banking failures once the international crisis hit. While in this respect the structure of local banking markets in the USA has received well-deserved attention, this factor has been considerably less studied in the context of European economies. More research on this issue is particularly welcome because recent contributions showed that the branch network in Italy and France experienced impressive growth in the 1920s. Both countries experienced severe banking distress in the 1930s, and available evidence on other countries suggests that these were not necessarily isolated cases.

The importance of this episode goes beyond its contribution to the economic history literature on banking crises during the Great Depression and, more generally, the interwar period. Economics and finance literature still have not reached a consensus on the issue of banking competition and financial stability, and this is a problem calling for attention by today's policymakers in contemporary European banking. Contributions from economic history to better understand this phenomenon are undoubtedly welcome. As often repeated, history is the only “laboratory” available to social scientists to test their theories. This paper provides historical empirical evidence of a negative relationship between competition and financial stability in the context of rapid financial development – thus supporting the ‘competition-fragility’ view. Regarding branching, it shows that the positive effects of investment diversification predicted by financial intermediation literature were superseded by the negative effects of monitoring costs and the problems of properly screening the quality of assets.

Finally, it is critical to remark that the point made here is not that these banks were necessarily doomed to fail but a subtler one – with policy relevance. Italy was going through a period of

rapid financial development, and this dynamic transition had elements of weaknesses that made it fragile. Without the shock of the Great Depression, it is not impossible to think that market forces would have absorbed and healed them over time. The argument advanced here is that rapid changes in domestic banking structures can make the banking system more fragile. If an external shock hits it during episodes of financial development, the consequences can be particularly dreadful.

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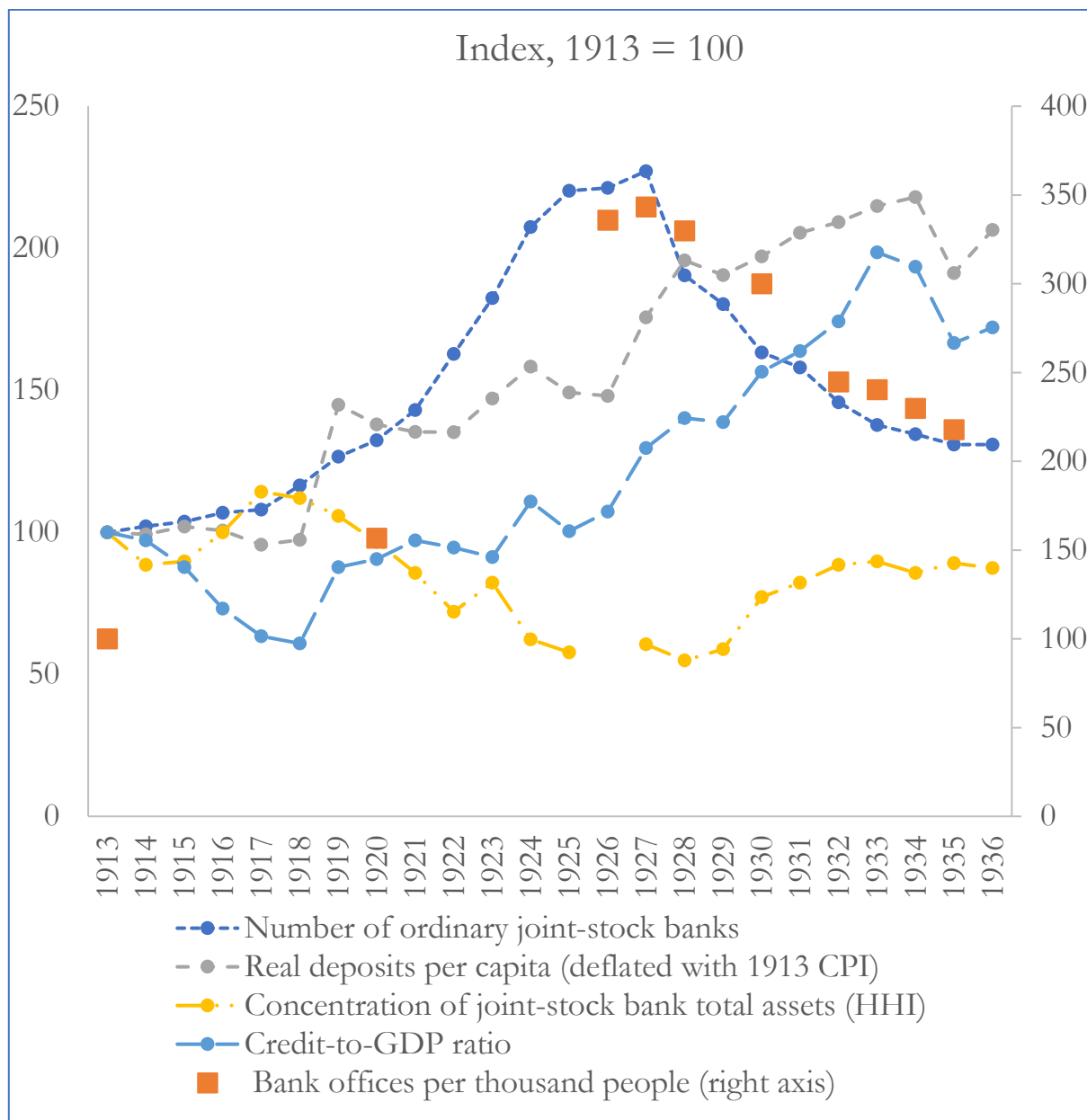
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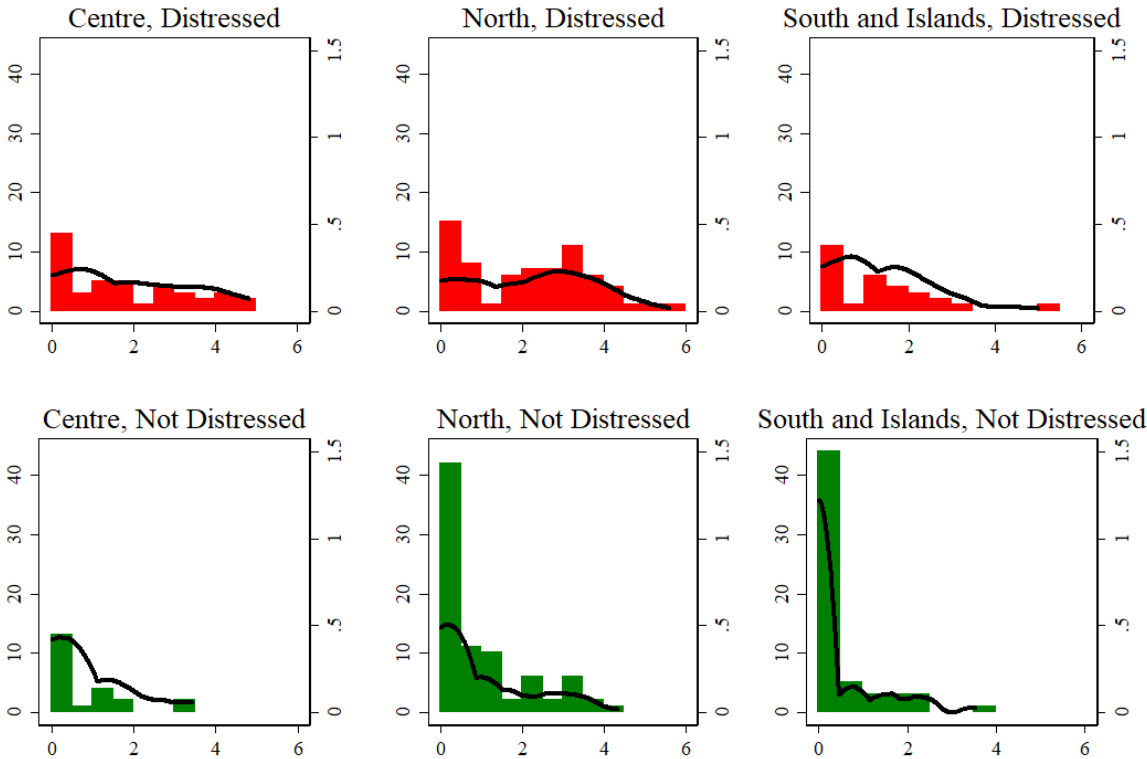
## **Figures and Tables**

**Figure 1: Structural changes in the Italian banking system (1913-1936)**



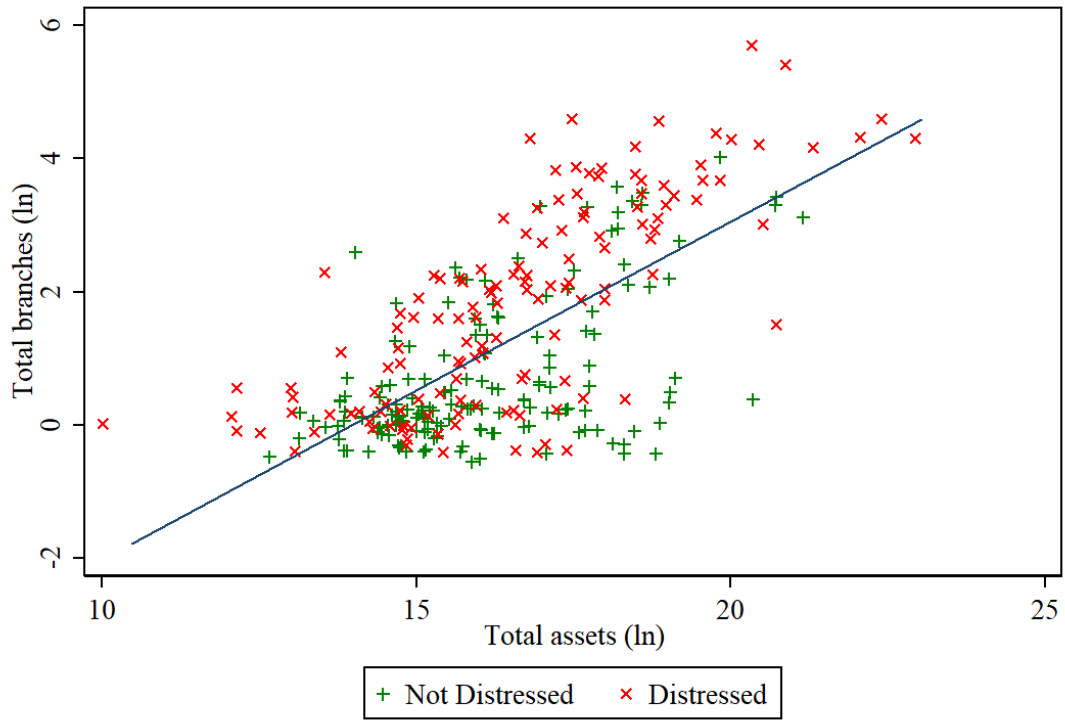
Source: Molteni (2023)

**Figure 2: Distribution of total branches by macro-regions and distress category**



Note: X-Axis, Branches = ln(total branches). Y-Axis left, Histogram frequency. Y-Axis right, Kernel density

**Figure 3: Relationship between total branches and assets of banks in the sample**



Note: Markers are jittered to avoid overlapping and improve readability. No bank has  $\ln(\text{total branches.}) < 0$

**Table 1: Increase in commercial bank offices in other European countries 1913-1929**

Country	1913-29 increase in bank offices (1913 = 100)	Bank offices 1913	Bank offices 1929	Source
Belgium	893	138	1,233	Bankers Almanac
Bulgaria	554	41	227	Bankers Almanac
Denmark	704	67	472	Bankers Almanac
Finland (I)	413	148	611	League of Nations
Finland (II)	393	136	535	Bankers Almanac
France (I)	237	1,837	4,347	Bankers Almanac
France (II)	283	4,212	11,933	Bonhoure et al (2021)
Germany	220	1,490	3,276	Bankers Almanac
Greece	466	77	359	Bankers Almanac
Netherlands	635	139	882	Bankers Almanac
Norway	282	68	192	Bankers Almanac
Portugal	357	53	189	Bankers Almanac
Romania	1,107	54	598	Bankers Almanac
Spain	528	203	1,071	Bankers Almanac
Sweden (I)	183	555	1,015	League of Nations
Sweden (II)	200	473	945	Bankers Almanac
Switzerland	255	321	819	Bankers Almanac

Note: These are approximate figures. Only branches of banks with a London correspondent or office are listed in the Bankers Almanac. However, comparisons with the figures for Sweden and Finland from the League of Nations, and France from Bonhoure et al. (2021) reassure that the increase is consistent.

Sources: *The banking almanac, directory, year book and diary* (1913). London: Groombridge & Sons; *The bankers' almanac and year book* (1929), London: Thomas Skinner; League of Nations (1934), *Commercial banks 1925-1933*. Geneva: League of Nations; League of Nations (1931), *Memorandum on commercial banks, 1913-1929*. Geneva: League of Nations; Bonhoure et al. (2021).



**Table 2: Descriptive statistics**

Variables	Full sample							Non-distressed		Distressed		
	Mean	Count	Std Dev	min	max	p25	Median	p75	Mean	Count	Mean	Count
Over-branching	-0.001	301	1.019	-2.615	3.162	-0.638	-0.086	0.714	0.459	138	-0.390	163
Branches	1.201	301	1.419	0.000	5.595	0.000	0.693	2.197	1.799	138	0.694	163
Branch growth	-2.037	299	2.238	-4.500	3.899	-4.382	-2.197	0.000	-0.951	137	-2.955	162
Deposits per branch	14.637	301	1.512	9.250	18.977	13.723	14.653	15.390	14.297	138	14.925	163
Competition 1	0.062	301	0.035	0.016	0.203	0.037	0.057	0.082	0.062	138	0.062	163
Competition 2	0.686	301	0.357	0.190	2.076	0.400	0.628	0.907	0.684	138	0.687	163
Competition 3	0.408	301	0.216	0.102	1.293	0.230	0.373	0.557	0.410	138	0.407	163
ROA volatility 1	-5.578	282	0.986	-8.838	-3.666	-6.164	-5.564	-4.846	-5.560	129	-5.593	153
ROA volatility 2	0.970	246	5.915	-34.691	25.344	-0.897	0.675	2.603	2.149	112	-0.016	134
Z-Score	3.527	282	1.002	0.356	6.993	2.943	3.544	4.183	3.428	129	3.610	153
Rate on deposits	4.166	113	0.699	2.880	7.000	3.750	4.000	4.500	4.387	41	4.040	72
Expenses	0.047	211	0.028	0.005	0.123	0.025	0.043	0.062	0.050	100	0.044	111
Leverage	0.831	301	0.141	0.206	0.982	0.776	0.873	0.932	0.834	138	0.828	163
NPLs	0.050	301	0.080	0.000	0.601	0.006	0.020	0.057	0.068	138	0.035	163
Private securities	0.033	301	0.076	0.000	0.898	0.000	0.001	0.034	0.047	138	0.021	163
ROA	0.009	301	0.011	-0.020	0.035	0.003	0.008	0.014	0.004	138	0.012	163
Office and start-up costs	0.016	301	0.028	0.000	0.320	0.001	0.007	0.020	0.023	138	0.010	163
Age	2.422	301	0.970	0.000	4.277	1.609	2.303	3.219	2.338	138	2.492	163
Liquidity 1 EHR2009	0.415	301	0.790	0.007	11.610	0.133	0.267	0.452	0.512	138	0.333	163
Liquidity 2 EHR2009	0.262	301	0.773	-2.226	8.736	-0.004	0.126	0.436	0.218	138	0.300	163
Foreign bills	0.003	301	0.014	0.000	0.168	0.000	0.000	0.000	0.004	138	0.002	163
Size	16.342	301	1.949	10.463	23.035	14.984	16.109	17.521	16.617	138	16.109	163
Catholic banks group	0.090	301	0.286	0.000	1.000	0.000	0.000	0.000	0.181	138	0.012	163
Single province	0.671	301	0.471	0.000	1.000	0.000	1.000	1.000	0.551	138	0.773	163
Multiple provinces, one region	0.150	301	0.357	0.000	1.000	0.000	0.000	0.000	0.174	138	0.129	163
Multiple regions	0.179	301	0.384	0.000	1.000	0.000	0.000	0.000	0.275	138	0.098	163

Variables of interest

Bank level controls

**Table 3: Branch expansion and competition**

	Logit AMEs								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Over-branching	0.193*** (0.022)	0.176*** (0.024)				0.203*** (0.022)	0.109** (0.044)	0.126*** (0.040)	0.118** (0.047)
Deposits per branch			-0.124*** (0.028)						
Branch growth				0.239*** (0.038)					
Branches					0.267*** (0.035)				
Competition 2						-0.080** (0.037)	-0.106*** (0.039)		
Interaction 2							0.122** (0.052)		
Competition 1								-0.105*** (0.039)	
Interaction 1								0.106** (0.048)	
Competition 3									-0.105*** (0.039)
Interaction 3									0.108** (0.052)
Size				-0.100*** (0.035)	-0.120*** (0.036)				
Leverage		0.006 (0.046)	0.038 (0.048)	-0.020 (0.048)	-0.010 (0.048)	0.015 (0.042)	0.012 (0.041)	0.014 (0.041)	0.013 (0.041)
Age		-0.050* (0.028)	-0.041 (0.025)	-0.003 (0.030)	-0.059** (0.025)	-0.049* (0.027)	-0.049* (0.027)	-0.048* (0.027)	-0.049* (0.027)
Liquid1 EHR2009		0.104 (0.070)	0.089 (0.066)	0.099 (0.068)	0.100 (0.066)	0.087 (0.075)	0.087 (0.074)	0.086 (0.073)	0.087 (0.075)
Liquid2 EHR2009		0.019 (0.019)	0.001 (0.026)	0.016 (0.021)	0.015 (0.019)	0.014 (0.022)	0.011 (0.025)	0.011 (0.025)	0.011 (0.025)
Foreign bills		0.058** (0.028)	0.055 (0.035)	0.043* (0.025)	0.056** (0.026)	0.055** (0.027)	0.060** (0.029)	0.060** (0.029)	0.060** (0.029)
Catholic banks group		0.400*** (0.130)	0.501*** (0.128)	0.358*** (0.115)	0.378*** (0.129)	0.384** (0.153)	0.390** (0.157)	0.390** (0.156)	0.389** (0.161)
Multiprovincial bank		-0.096* (0.055)	0.041 (0.063)	-0.141* (0.073)	-0.139** (0.056)	-0.086 (0.062)	-0.082 (0.066)	-0.085 (0.064)	-0.083 (0.066)
Multiregional bank		0.036 (0.107)	0.246** (0.097)	-0.016 (0.137)	-0.056 (0.120)	0.057 (0.108)	0.049 (0.109)	0.048 (0.109)	0.048 (0.106)
Observations	301	301	301	299	301	301	301	301	301
AUC	0.786	0.832	0.801	0.845	0.840	0.843	0.846	0.845	0.846
PseudoR2	0.196	0.272	0.226	0.290	0.279	0.290	0.297	0.295	0.297

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All models include regional dummies. Standard errors are clustered at the regional level.

**Table 4: Risk-taking and high costs**

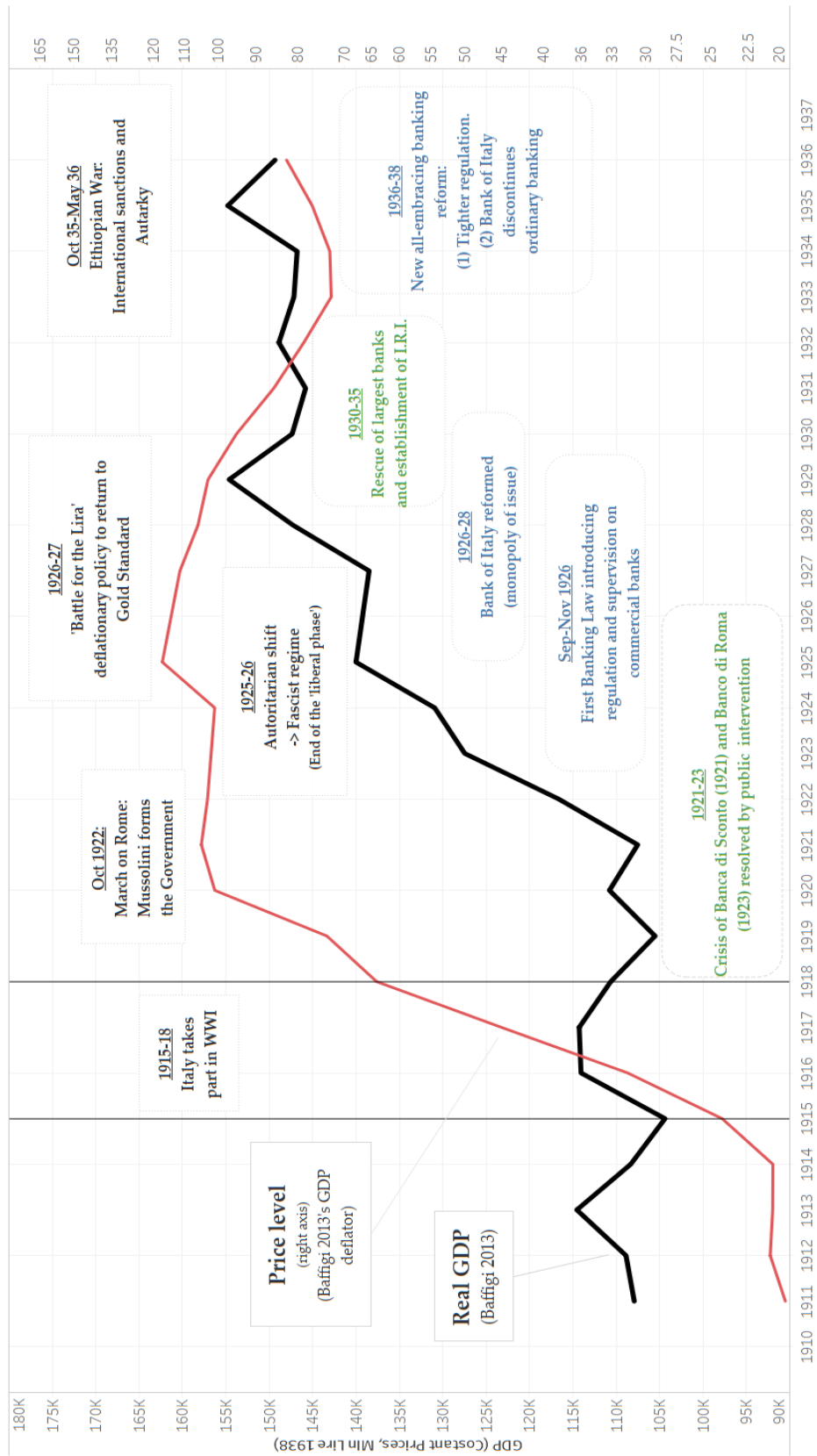
	Logit AMEs											
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
ROA volatility 1	0.023 (0.035)	0.075*** (0.027)										
ROA volatility 2			0.103*** (0.035)	0.075** (0.032)								
Z-Score					-0.048** (0.024)	-0.088*** (0.026)						
Expenses							0.053* (0.031)	0.055** (0.024)				
Rate on deposits									0.103*** (0.030)	0.082** (0.040)		
Private securities											0.083*** (0.024)	0.082*** (0.022)
NPLs											0.074*** (0.025)	0.096*** (0.028)
Office and start-up costs											0.133*** (0.042)	0.125*** (0.046)
ROA											-0.165*** (0.022)	-0.121*** (0.025)
Observations	282	282	246	246	282	282	211	211	110	106	301	301
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Mean Distress in sample	0.458	0.457	0.455	0.455	0.457	0.457	0.474	0.474	0.373	0.349	0.458	0.458
ttestDiffMean	0.689	0.673	0.644	0.644	0.673	0.673	0.909	0.909	0.0380	0.0107	0.689	0.689
AUC	0.638	0.776	0.692	0.803	0.639	0.778	0.699	0.817	0.754	0.874	0.808	0.855
PseudoR2	0.0565	0.193	0.100	0.232	0.0618	0.199	0.0963	0.269	0.152	0.364	0.240	0.327

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All models include regional dummies. Standard errors are clustered at the regional level. Mean Distress in the sample is the mean of distress in the sample considered, where the mean Distress of the population of joint stock banks in 1928 is 0.47. ttestDiffMean is the p-value of testing the null hypothesis that the mean of Distress in the sample is not statistically different from 0.47.

## **Appendix**

### A) Timeline of main events

Figure 4 A: Timeline of interwar Italy: macroeconomics, politics, and banking



## B) List of printed coeval sources consulted

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**Additional source:**

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### C) Distress data

In constructing the indicator of bank distress in Italy during the 1920s and 1930s, the approach adopted is operational and retrospective<sup>37</sup>. In this context, Distress is defined *ex-post* as a situation where a bank cannot fulfil its obligations to creditors and investors without external intervention, such as a resolution process. This definition encompasses scenarios of bankruptcy as well as instances where third-party intervention prevents bankruptcy. This broad definition allows for capturing both overt failures and covert distress resolutions orchestrated by Italian authorities. It should be made clear that distress does not simply mean that the bank was ‘in trouble’ but that it would have filed for bankruptcy without external interventions.

The dataset construction involved extensive archival research, utilising two primary sources: the *Archivio Storico della Banca d’Italia* (ASBI\_supervision)<sup>38</sup> and the *Archivio Centrale dello Stato* (ACS\_supervision)<sup>39</sup>. These archives house documents from the Bank of Italy and the Ministry of Finance, respectively, and include detailed records like inspection and accounting reports, along with decisional documents such as official correspondences and memoranda<sup>40</sup>. The dual nature of these sources ensured comprehensive coverage and verification of information related to bank distress.

The dataset's foundation is Cerrito’s (1996) reconstruction of the Italian banking population from 1890-1936. From this, I identified a list of joint-stock banks active between 1923 and 1936, meticulously matching them with individual bank folders from archival sources ASBI\_supervision and ACS\_supervision. These archives provided a wealth of information ranging from technical inspection reports to decision-making correspondences, allowing me to uncover whether banks were distressed. According to the final dataset, out of 381 joint-stock banks present in ASCI during 1927-1936, 184 were classified as distressed and 193 as non-distressed. However, not all these banks had a balance sheet at December 1928 available in ASCI. Therefore, the number of distressed banks considered in this study is only 138. Figure 2 A shows the share of joint-stock banks for which a balance sheet is present in ASCI over the total population of joint-stock banks.

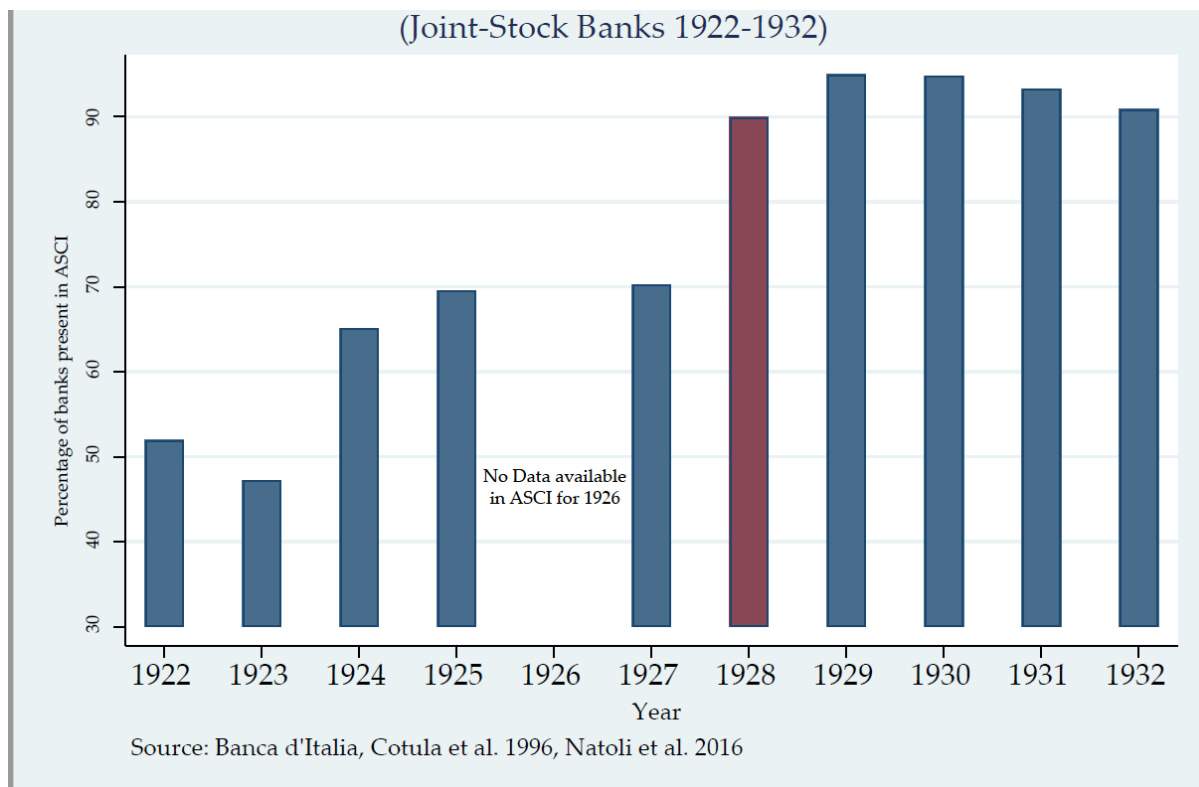
<sup>37</sup> More details on how the distress variable was reconstructed are available in Molteni (2021a, 2023).

<sup>38</sup> By ‘Historical Archives of the Bank of Italy’ (ASBI\_supervision) I mean: *Archivio Storico della Banca d’Italia, Banca d’Italia, Vigilanza sulle Aziende di Credito*, various folders.

<sup>39</sup> By ‘archives of the banking supervision office at the Ministry of the Finance, currently held at the Italian National Archives’ (ACS\_supervision) I mean: *Archivio Centrale dello Stato, Ministero del Tesoro, Direzione generale tesoro, Ispettorato generale per i servizi monetari, di vigilanza e controllo, Ufficio tutela del credito e del risparmio*, various folders.

<sup>40</sup> More details on the archival sources employed to reconstruct the distress variable are available in Molteni (2020, 2021b).

**Figure 5 A: Coverage of ASCI sample on the population of joint-stock banks**



Banks were classified as distressed based on various criteria, such as filing for bankruptcy, requiring public subsidies for loss write-off, mergers aided by public subsidies, and voluntary liquidations averted through external subsidies. The timing of distress was ascertained using different but certain markers, like the initiation of bankruptcy proceedings or the start of voluntary liquidation. The approach to determining the timing of distress, particularly in resolution interventions, is cautious and consistent, recording it as the date when the resolution became official.

The two most common ways of resolving distressed banks were to merge them with healthy institutions or split them up and assign their branch networks and connected assets to healthy banks already operating in the area. This was especially true for banks of noticeable dimensions. Italian public authorities were particularly concerned with allowing at least one local bank in each province. Therefore, if the last local bank was distressed, it was usually not let to file for bankruptcy, but resolution interventions were attempted. In several cases, the government provided some form of capital injection to alleviate the burden of the losses on the healthy banks; however, this was not the only way to recover losses over time. In the context of limits to branches, the disappearance of a competitor granted the absorbing healthy bank higher profits due to higher market power. Therefore, in many cases, healthy banks were willing to take over part of the losses of the distressed bank in exchange for higher profits in the near future. In these cases, implicit and explicit forbearance on capital requirements and losses write-off provisions were usually granted by banking regulators. A restructuring plan (*convenzione*) was agreed between the distressed and the healthy bank under the supervision and guidance of public authorities. Bank supervision would then closely follow the absorbing

bank's condition to ensure that the state of the health did not deteriorate – requiring *ad hoc* reports on its condition.

#### **D) Branch network data**

Data on bank offices in interwar Italy is reconstructed for the first time in this research. Total offices per bank in 1928 were hand-collected from *Dizionario delle Banche, Banchieri e Casse di Risparmio d'Italia* (Gozzini, 1929). This source was published in the Spring of 1929 and reflects the branch network at the end of 1928. Adjustments were made to remove banks that failed before December 1928 but still appear in the *Dizionario*<sup>41</sup>. Some banks were added because they were present in other sources but missing in *Dizionario*. Information on bank offices is also integrated with *Annuario delle Banche e dei Banchieri d'Italia*, published in December 1927 and September 1929 (Confederazione Generale Bancaria Fascista, 1927, 1929). These two are the well-known *Annuari ABI* (Associazione Bancaria Italiana). Still, they could not be used as the primary source for this reconstruction because one shortcoming of this source is that it does not include rural mutual cooperatives. Information on the legal categories of banks was not available in *Dizionario* and thus had to be retrieved manually from other *Annuari* or archival files from ASBI\_Supervision and ACS\_Supervision. To ensure the completeness of the network, all banks active in 1936 (when we had the first official list of existing banks) and active in 1926 were added to the list of banks present in *Dizionario*. All banks that, according to the ACS\_Supervision lists, were active during the period were added to the network<sup>42</sup>.

Total offices per bank at the end of WWI are taken from Faleri (2020), whose primary source is *Annuario delle Banche Italiane (Annuario Vogelsang, 1917)*. This variable is available only for banks present in ASCI, as the entire network was not reconstructed after WWI. The variable ‘branches at the end of WWI’ for a bank founded after 1918 takes a value of 1 in almost all cases. It does not equal 1 in a few instances where the new bank is founded, but it immediately takes over the branch network of a previously bankrupt bank (this usually happens following the newly established bank guaranteeing the *concordato preventivo* of the bank, and relinquishing all its assets – including branches). In this latter case, the variable ‘branches at the end of WWI’ equals the number of bank offices of the bankrupt bank. Missing banks are integrated with a later edition of *Annuario delle Banche Italiane (Annuario Vogelsang, 1920)* and archival sources from ASBI\_Supervision and ACS\_Supervision<sup>43</sup>.

<sup>41</sup> Due to the long lag between the collection of information and the publication, it is even possible to reconstruct the branch network around mid-1928, which is particularly relevant because it allows to account for the network before the beginning of the crisis of Catholic banks (Toniolo, 2022).

<sup>42</sup> The ACS\_Supervision lists are the archival files of the Official Register of Authorised Credit Institutions (*Albo delle Aziende di Credito*).

<sup>43</sup> A full list of these sources is presented and documented in Molteni (2021b).

## E) Control variables

The variable ‘leverage’ is the difference between total assets and capital, divided by total assets ( $\frac{Total\ assets - Capital}{Total\ assets}$ ). Coeval observers lamented that banks often operated with little capital and thus were highly leveraged. If leverage mattered, we expect this variable to be significant, large, and positively associated with the probability of distress. In Table 3, the coefficient of leverage is never significant and close to zero, confirming that excessive leverage was not a problem for Italian banks during this crisis (Battilossi, 2009; Molteni 2023).

‘Age’ is ln of the years the bank is in trade. It is crucial to control for age because coeval observers stressed that many newly created banks were unsound, and their management was inexperienced. In Table 3, the coefficient of ‘Age’ is negative and significant except for column 4, where ‘branch growth’ is normalised by the number of active trade since 1920, and thus captures part of the newly established bank effect.<sup>44</sup> Overall, this confirms the claims by coeval observers that younger banks, possibly with less experienced managers, were more likely to experience distress.

I employ two liquidity indicators derived from Battilossi (2009) to assess banks' vulnerability to liquidity risks. The first indicator, Liq1\_EHR2009, is the ratio of cash assets to total deposits. It gauges a bank's ability to respond to a decline in its usual funding sources by quickly converting assets into cash. It reflects a bank's liquidity risk, with lower values indicating higher risk. The second indicator, Liq2\_EHR2009, is the ratio of non-core liabilities minus short-term assets to long-term assets. This measure aims to capture a bank's risk from large deposit withdrawals by informed depositors. It assesses the bank's capacity to handle losses in non-core liabilities without liquidating long-term assets. Higher values of Liq2\_EHR2009 suggest increased risk, although this indicator's interpretation can be complex due to factors like the stability of captive deposits. For a detailed discussion on the construction and interpretation of these indicators, see Battilossi (2009). In Table 3, both indicators are positive but not significant. However, a bank liquid in 1928 was not necessarily liquid during the 1930s. Therefore, the very design of my model –estimated on a pre-crisis cross-section of balance sheets – is not appropriate to contribute to the ‘illiquid vs insolvent’ debate (Richardson, 2007).

The variable ‘Catholic Federation’ takes value 1 if the bank is part of the *Federazione Bancaria Italiana*, a confederation of banks with explicit Catholic vocation. Many of these banks experienced distress starting in 1928, and their resolution kept Italian Public Authorities busy until the early 1930s (Tonio, 1993; Robiony, 2018). I include this variable to ensure the results are not driven exclusively by this group of banks. Predictably, the sign of the coefficients in Table 3 is always positive and significant, confirming that banks that belonged to this group were more likely to experience distress.

‘Foreign bills’ is the share of foreign bills on total assets, and it should capture the bank's exposure to the contraction in foreign trade in the 1930s. In Table 3, the coefficient of this variable is positive and significant (except for column 3, p-value 0.113). Since foreign bills were usually held by banks engaging in international trade financing, this finding suggests that banks that were more involved in this business were hit harder following the contraction in international trade during the Great Depression.

<sup>44</sup> In column 3, the p-value is 0.103.

Banks operating in multiple areas could benefit from more diversification and were thus less exposed to local idiosyncratic shocks. To account for this effect, I include a categorical variable that takes value 0 if the bank operated in a single province, 1 if the bank operated in multiple provinces within the same region, and 2 if the bank operated in more than one region. In Table 3, the interpretation of this categorical variable is not straightforward. On the one hand, it seems that banks operating in more than one province within the same region were less likely to experience distress than banks operating in a single region. However, the coefficient is not always significant, especially when adding competition measures in the model. The coefficient of 'Multiregional bank' is significant and positive only in column 3. Overall, there is not enough evidence to provide clear-cut conclusions on this matter, but it is nonetheless important to keep this variable in the model to control for the effect of local idiosyncratic shocks.

Finally, 'Size' is the log of total assets and is used to control whether smaller banks are more prone to distress. However, the sign of this coefficient is not straightforward because, in a similar econometric test, Battilossi (2009) takes size as a proxy for moral hazard and finds that larger banks are more prone to distress. However, in Table 3, the sign of size is negative and significant (columns 4 and 5), confirming that smaller banks were more likely to experience distress. This result does not contradict Battilossi's point on moral hazard, as variables capturing branch network, which can be seen as another measure of size, are positive and significant. Indeed, from the point of view of financial stability and systemic risk, having a large branch network makes banks more systemic, and thus the government could be inclined to rescue banks with many branches.

## F) Robustness checks

Table 1 A reports several robustness checks performed on the model reported in column 7 of Table 3 to confirm the results on over-branching and competition. Columns 1A and 2A report the estimates using a probit and OLS models, respectively. Column 3A estimates the model excluding the big four. Column 4A uses macro regions (North, Centre, South & Islands) instead of regions as dummies and clustering standard errors. Column 5A controls for pre-crisis exposure to the Bank of Italy's rediscounting (Rediscounted bills / total assets), a proxy for resilience to changes in monetary policy. The rationale for this control is that some banks relied on the Bank of Italy's rediscounts more than others, and as the monetary policy tightened in the 1930s, they could be more vulnerable. Column 6A tries an alternative specification to control for exposure to local idiosyncratic shocks by substituting the categorical variable *multiarea* with the number of provinces and regions where the bank operates (both logged). Column 7A includes NPLs, ROA, and Private Securities in the model specification. Column 8A employs a different specification of the distress variable, including all banks that were put into liquidation and winded down regardless of how much capital they reimbursed to investors<sup>45</sup>. In columns 9A and 10A, I used lagged balance sheet control variables from ASCI in 1925 and 1927, respectively. Overall, all these alternative specifications confirm the robustness of the results. The coefficients of 'Over-branching' and 'Competition 2' are always large, with the expected sign and significant. The coefficient of 'Interaction 2' is consistent with the main results. Only in the OLS specification does its coefficient become insignificant, with a p-value of 0.119. However, I do not deem this result to alter the overall interpretation of my results.

Another robustness check is to assess whether different mixes of categories of banks change the relationship between the Competition indicator and distress. Different categories of Italian banks operated at the time, and their distribution among provinces was not necessarily homogeneous. These different groups of banks might have had different customer bases and thus competed in different ways. I distinguish three main groups of banks. The first group comprised joint-stock banks and private bankers, the classic profit-oriented commercial banks. The second group is that of savings and public banks; these were not profit-oriented institutions, were under the direct or indirect control of government and local institutions, and were usually more conservative and risk-averse in their lending strategies. The third group is that of cooperatives and rural mutual banks. This group, admittedly, brings together two distinct animals: the cooperative joint-stock banks, which were larger profit-oriented institutions with limited liability, and rural mutual cooperatives, which were tiny unit-branched institutions with unlimited liability. However, the rationale for taking these two groups of banks together is that they often had close ties, and usually, the rural mutual cooperatives reinvested the deposits they collected in the local joint-stock cooperative bank – especially in the institution with an explicit catholic vocation.

To test whether the different composition of banks affects the competition indicator, I rely on the following strategy: I estimate the same model three times, each time giving more weight (50% more) to the bank branches of one of the three groups when computing the provincial Herfindal index. I then compare the magnitude of the coefficient with the original one, where all branches are given the same weight. The intuition is that if competition pressure from a

<sup>45</sup> The main Distress variable considered banks put into liquidation as distressed only if more than 50% of paid-up capital was not reimbursed.

group of banks matters more than others, the competition coefficient should be larger when the branches of this group are given more weight. If banks from the group given more weight are irrelevant because, for example, they compete for different customers, the coefficient should be much weaker. Table 2 A presents the results of this test. All three specifications are consistent with the original one, which assigns equal weights to all branches<sup>46</sup>. The magnitude of the coefficients, when J.S. & Priv Banks are given more weight in constructing the Herfindal Index, is larger than the original coefficient, suggesting that competition pressure from these groups of banks was more relevant for the distress of banks in our sample – a result that makes sense since these are all joint-stock banks. However, when testing this difference formally, a Wald test cannot reject the null hypothesis that the coefficients of Over-branching, Competition 2, and the Interaction in 11A and 13A are equal, the p-value being 0.3501, 0.178, and 0.4108, respectively. At the same time, when the other two groups of banks are given more weight, the size of the coefficient is smaller than the original specification. The difference, however, is even smaller than for J.S. & Private Banks. This thus suggests that the presence of the other two categories of banks was indeed relevant for competition pressures and their effect on the probability of distress of the bank in the sample. Overall, even though there is some evidence that competition pressure from joint-stock banks and private bankers mattered more for financial stability for the banks in my sample, this evidence is not strong enough to conclude that these three groups of banks operated in different market segments and thus competed for different customers. This result is not puzzling: even though their lending strategies could be different, and therefore their borrowers could be different, the focus of coeval observers – and this paper – is competition for deposits, and all these banks collected deposits from the same pool of customers.

<sup>46</sup> The p-value of the interaction term is 0.14, not far from 0.10 level, and thus I do not interpret this coefficient to void the overall analysis. Especially since the coefficient of Competition and Over-branching are both significant.

**Table 1 A: Robustness check on over-branching and competition.**

	(1A)	(2A)	Logit AMEs							(9A)	(10A)
			(3A)	(4A)	(5A)	(6A)	(7A)	(8A)			
	Probit AMEs	OLS	No Big Four	Macroreg	Discounts	Area operation	Risk vars	Distress 2	1927	1925	
Over/branching	0.113** (0.046)	0.168** * (0.039)	0.096** (0.044)	0.119*** (0.022)	0.107** (0.044)	0.084* (0.046)	0.127*** (0.038)	0.115*** (0.042)	0.133** * (0.042)	0.160** * (0.051)	
Competition 2	-0.106*** (0.038)	- 0.092** (0.040)	-0.111*** (0.039)	-0.109*** (0.005)	-0.098** (0.038)	-0.112*** (0.039)	-0.085*** (0.031)	-0.092*** (0.030)	- 0.096** (0.041)	-0.071* (0.041)	
Interaction 2	0.117** (0.054)	0.065 (0.039)	0.138** (0.054)	0.112*** (0.012)	0.117** (0.051)	0.135*** (0.051)	0.075* (0.045)	0.093** (0.044)	0.091** (0.040)	0.096* (0.049)	
NPLs							0.111*** (0.028)				
Private securities							0.087*** (0.019)				
Italy = 2, North				-0.093*** (0.011)							
Italy = 3, South & Islands				-0.227*** (0.008)							
Rediscount					0.070** (0.029)						
Num provinces (ln)						-0.011 (0.057)					
Num regions (ln)						0.124** (0.052)					
ROA							-0.081*** (0.017)				
Observations	301	301	297	301	301	301	301	301	258	237	
Regional indicators	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	
AUC	0.845		0.845	0.839	0.852	0.850	0.888	0.824	0.848	0.853	
PseudoR2	0.296		0.296	0.272	0.313	0.302	0.398	0.261	0.300	0.304	

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All models include standard controls of the model in column (7) in Table 3, except for 6A, which does not include the categorical variable Multiarea.



**Table 2 A: Robustness checks for the heterogeneous composition of bank categories**

	Logit AMEs							
	(11A)	(12A)	(13A)	(14A)	(15A)	(16A)	(17A)	(18A)
Competition 2	-0.106*** (0.039)	-0.080** (0.037)						
Interaction 2	0.122** (0.052)							
Competition 2 J.S. & Private Banks			-0.124*** (0.044)	-0.095** (0.043)				
Interaction 2 J.s. & Private Banks			0.148*** (0.056)					
Competition 2 Saving & Public Banks					-0.093** (0.039)	-0.074** (0.035)		
Interaction 2 Saving & Public Banks					0.078 (0.054)			
Competition 2 Cooperative & Mutual Banks							-0.091** (0.035)	-0.067** (0.030)
Interaction 2 Cooperative & Mutual Banks							0.111* (0.057)	
Over-branching	0.109** (0.044)	0.203*** (0.022)	0.088** (0.044)	0.201*** (0.021)	0.143*** (0.050)	0.202*** (0.022)	0.114** (0.046)	0.199*** (0.022)
Leverage	0.012 (0.041)	0.015 (0.042)	0.011 (0.040)	0.014 (0.041)	0.015 (0.042)	0.016 (0.042)	0.011 (0.041)	0.013 (0.042)
Age	-0.049* (0.027)	-0.049* (0.027)	-0.052* (0.026)	-0.052* (0.027)	-0.048* (0.028)	-0.049* (0.027)	-0.047* (0.027)	-0.048* (0.027)
Liquidity 1 EHR2009	0.087 (0.074)	0.087 (0.075)	0.088 (0.072)	0.087 (0.075)	0.090 (0.075)	0.088 (0.075)	0.088 (0.074)	0.089 (0.073)
Liquidity 2 EHR2009	0.011 (0.025)	0.014 (0.022)	0.010 (0.023)	0.013 (0.021)	0.012 (0.025)	0.014 (0.022)	0.013 (0.026)	0.016 (0.021)
Foreign bills	0.060** (0.029)	0.055** (0.027)	0.061** (0.030)	0.055** (0.027)	0.059** (0.028)	0.056** (0.026)	0.060** (0.029)	0.056** (0.027)
Catholic banks group	0.390** (0.157)	0.384** (0.153)	0.401** (0.168)	0.394** (0.158)	0.385*** (0.148)	0.384*** (0.147)	0.388** (0.153)	0.382** (0.149)
Multiprovincial bank	-0.084 (0.071)	-0.088 (0.067)	-0.072 (0.075)	-0.077 (0.070)	-0.092 (0.068)	-0.096 (0.066)	-0.092 (0.068)	-0.091 (0.066)
Multiregional bank	0.048 (0.106)	0.056 (0.105)	0.061 (0.106)	0.068 (0.104)	0.047 (0.105)	0.052 (0.105)	0.037 (0.107)	0.047 (0.106)
Observations	301	301	301	301	301	301	301	301
AUC	0.846	0.843	0.848	0.845	0.844	0.844	0.845	0.841
PseudoR2	0.297	0.290	0.305	0.294	0.291	0.288	0.290	0.284

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All models include regional dummies. Standard errors are clustered at the regional level.

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