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## Explorations in Economic History

journal homepage: [www.elsevier.com/locate/eeh](http://www.elsevier.com/locate/eeh)

# Playing yo-yo with bank competition: New evidence from 1890 to 2014<sup>☆</sup>

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## ARTICLE INFO

JEL classification:

D40

G21

L10

## ABSTRACT

This paper uses a unique data set – comprising 125 years of individual bank balance sheets – to investigate the effect of regulatory changes on the evolution of bank competition in Italy. The historical depth of this data set makes it possible to assess the impact of infrequent regulatory reforms that drastically changed the banking sector in the 1930s and in the 1980s. We compare several indicators to analyze how bank competition evolves, and we find that its evolution exhibits a yo-yo pattern induced by the changes in regulatory regimes.

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## 1. Introduction and motivation

Using a novel data set of bank balance sheets spanning 125 years, from 1890 to 2014, we analyze the evolution of banking competition in Italy to understand the impact of changing regulatory regimes. Given the dramatic changes that have taken place in the country's regulatory structure, the long run perspective has the potential to provide useful insights into the interplay between regulation and competition, an issue that has been underexplored in the literature.

In accord with policy developments, we examine three regimes: the so-called free-banking era that characterized Italy from 1890 through the 1920s; the highly restrictive regulatory regime introduced in the 1930s, which remained mostly unchanged until the 1970s; and the period, starting in the 1980s, that featured bank deregulation and liberalization (on the evolution of the Italian banking system, see [Toniolo, 1995](#); [Guiso et al., 2004](#); [Gigliobianco and Giordano, 2012](#); [Toniolo and White, 2015](#); [Gigliobianco and Toniolo, 2017](#)). During the free banking era, which started with the political unification of Italy in 1861, regulation maintained a pro-competitive spirit and did not discriminate between commercial banks and other firms ([Ferrara, 1873](#)). A bank required no special authorization to set up or open new branches; nor were there any mandatory capital ratios to observe. It was the post-World War I financial instability that brought a new banking law in 1926. Disruptive bank failures during the Great Depression led to deeper reforms between 1936 and 1938. The *second* regime started with the implementation of this new banking regulatory framework. The Bank of Italy could decline to authorize bank creation and branch openings as well as merger and acquisition (M&A) operations and to revoke the license of any bank with insufficient capital. There were restrictions on the areas in which banks were allowed to operate. Banks were also required to join a bank cartel that set caps on deposit interest rates (see [Albareto, 1999](#)). Most of the banking sector became state owned. After World War II, the Bank of Italy maintained its restrictive supervisory policy for three

<sup>☆</sup> The authors appreciate the comments from participants at the conference “Competition and Growth” held at the Bank of Italy in October 2014, at the CEPR “Economic History Symposium” held in Oslo in June 2015, at seminars held at the University of Bologna and the LUISS University in Rome, and at the Italian Economic Society Conference held in Naples in October 2015. We thank the editor and two anonymous referees for very helpful suggestions. We are grateful also to Giorgio Albareto, Nicola Cetorelli, Alfredo Gigliobianco, Luigi Guiso, Marco Pagano, Andrea Pezzoli, Fabiano Schivardi, Daniele Terlizze, and Gianni Toniolo for their suggestions regarding an earlier version. The usual disclaimers apply.

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<https://doi.org/10.1016/j.eeh.2017.10.002>

Received 24 June 2016; Received in revised form 10 October 2017; Accepted 11 October 2017

Available online xxx

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decades (de Cecco, 1968). The *third* regime started around the late 1970s. The supervisory authority favored competition, while the European Economic Community was heading toward a more integrated financial system. During the 1980s, barriers to competition were gradually removed. The liberalization process experienced a boom in 1990: branch openings were deregulated; state-owned banks were authorized to become public companies; and Parliament passed the first Italian antitrust law. In 1993, a new banking law reorganized all the regulatory changes that had occurred during the previous years within a coherent, pro-competitive framework in which bank creation was free and markets were no longer segmented.

Competition plays a major role in economic theory, but there is no consensus on how to measure it. We primarily draw on the indicator proposed by Boone et al. (2013): profit elasticity (PE) with respect to (w.r.t.) marginal costs. The rationale behind this indicator is that, when competition increases, less efficient firms (for which costs are higher) are more harshly punished – in terms of profits and market shares – than are efficient ones. The profit elasticity can be estimated through a regression of profits on marginal costs, and the coefficient obtained should be negative: the higher the elasticity (in absolute value), the stronger the competition.

Compared with other measures of competition, Boone's indicator has some advantages that are especially valuable for economic historians. First, the measure can be estimated on a subset of firms without the need for statistics on the entire universe of firms, which could hardly be collected for remote years. Second, data requirements are less onerous than those for other measures, such as the price-to-cost margin (PCM), which is important because data on the prices charged by banks are not generally available. Third, even when there exist data regarding the interest rates paid on loans and deposits, profit-based metrics have the advantage of reflecting all the revenues and costs of banking activity. Finally, traditional measures of competition – such as the Herfindahl index and the PCM – may be biased (Marques-Ibanez et al., 2014; Xu et al., 2013; see also Appendix A.1).

Despite the Boone indicator's advantages, our analysis of bank competition evolution includes (apparently the first) long-term estimates also of the Herfindahl index, the PCM, and banks' turnover rate. Thus, we can compare results obtained via the Boone indicator with those based on other measures of competition.

Our estimates of the degree of competition establish the existence of a *yo-yo* pattern linked to regulatory changes. As the numbers of banks and their branches rose during the 20th century's early decades, competition increased. That trend reversed at the end of the 1930s, when banks' market power increased because of the restrictive banking regulation introduced to ensure financial stability after the Great Depression. During this era of "financial repression" (McKinnon, 1973; Shaw, 1973), a low degree of competition prevailed. With the takeoff of the deregulation process in the 1980s, the banking system moved toward a more competitive framework. The *yo-yo* pattern continued with a reversion to decreased competition in the second half of the 1990s. Declining competition ended in the early 2000s, and the extent of competition remained stable during the long Italian recession of 2008–2014. In brief, during the 125 years of our sample, changes in competition reflected changes in regulation except for only one period – the late 1990s.

## 2. Data and empirical strategy

### 2.1. Data

Our database spans the period 1890–2014 and includes information on bank profit and loss accounts as well as on bank balance sheets. It *excludes* the first three decades of the post-unification (Italy did not reach political unification until 1861, and Rome was not annexed until 1870), years for which systematic information is hard to come by (although we report some narrative evidence on pre-1890 bank competition in Appendix A.4). The data set may be split into two parts as follows.

- For the years 1890–1973, statistics are taken from the Historical Banking Archive of the Bank of Italy (ASCI; see Natoli et al., 2016); scholars can obtain these data from the Bank of Italy.
- For the years 1977–2014, information is taken from the electronic database of prudential statistics of the Bank of Italy (balance sheet data are missing for the years 1974–1976).

Our historical archive comprises bank balance sheets, which were regularized via a common scheme applied to observations in all periods. This scheme includes 14 asset-side variables and 9 liability-side variables; it also yields total costs and total revenues. The number of banks included in a given year of the sample depends on the availability of historical data. Nearly the entire universe of savings banks is included in the sample; as is more than 70% of commercial banks (except for 1926). The fraction of cooperative banks is volatile: it generally exceeds 30% (50% since 1951) but was lower between 1911 and 1935. Since these intermediaries were small, the other banks in our data set account for more than 80% of total deposits and total assets.<sup>1</sup> For the 1963–1973 period we were able to add more details on bank profit and loss accounts using an additional data set provided by the Bank of Italy. Statistics for 1977–2014 are, of course, more detailed than those for 1890–1973. For all years after 1976, our sample coincides with the universe of Italian banks *without* mutual cooperatives and so covers some 90% of all loans and deposits.

The yearly average number of banks is about 400 institutions (see Table 1 and Panel A of Fig. 1). Our data set contains nearly 50,000 observations over the 1890–2014 time interval. To facilitate statistical comparisons, we exclude mutual cooperative banks and special credit institutions – categories for which data prior to (respectively) 1983 and 1995 are not readily available. So despite such data being available for *later* years, they are excluded to preserve continuity of the time series. In order to reduce variability in the sample size, we deleted all observations that did not persist for at least two consecutive years. The average size of banks (as measured by yearly average assets) increased monotonically throughout the sample period.

<sup>1</sup> Amounts of total deposits and assets are as reported in Cotula et al. (1996), Garofalo and Colonna (1999), and De Bonis et al. (2012).

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