



ENTRY DECISIONS AFTER DEREGULATION: THE ROLE OF INCUMBENTS' MARKET POWER

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Entry decisions after deregulation: the role of incumbents' market power *

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Abstract

This paper investigates the role of incumbents' market power in shaping the entry decisions of Italian banks after branching liberalization in 1990. Using a unique dataset on 260 banks, we find that entry over the 1990-1995 period was targeted towards markets that were more competitive to begin with, i.e. where banking spreads were smaller. The results confirm the entry deterrent role of market power in the short-run and show a long run effect of regulation that survives after the removal of administrative barriers. The capacity of market power to discourage entry is confirmed in instrumental variables specifications, where we use the characteristics of the local banking markets in 1936, a proxy for tightness of banking regulation, to identify an exogenous source of variation in the spreads.

Keywords: deregulation, banking, barriers to entry, market power
JEL classification: L1, L5, G28

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1 Introduction and motivation

During the 1980s and the 1990s, most European countries and the US have implemented regulatory reforms that affected the banking sector, aimed at removing restrictions to banking business and activities. In the US, the reforms started in the 1970s and culminated in the Riegle-Neal Act of 1994, which allowed nationwide acquisitions of banks across states (Jayaratne and Strahan, 1997). In Europe, the elimination of restrictions to banks' activities started after the approval of the Single Market Program, that required the integration of national financial markets. The implementation of the First and the Second Coordination Banking Directives in the early 1990s allowed European banks to branch freely in each national market and across member states. At the same time, privatization started in many countries.¹

With the removal of administrative barriers to branching, banks increased the size of their networks, expanding the scope of their activity within their own markets and entering new markets. The study of banks' expansion strategies became a relevant research field both from a management and an industrial organization perspective. The management literature focused essentially on the existing nexus between banks' organization and strategic decisions,² while the industrial organization literature focused on the identification and quantification of existing barriers to entry that survived after deregulation. Such barriers are known to be pervasive in the banking industry, as documented by Vives (2001).³

In this paper, we investigate the role played by incumbents' market power in shaping the entry decisions of banks after the removal of branching restrictions. We look at how "initial" conditions in terms of competition intensity shape the short run adjustments of markets towards the new free entry equilibrium. By "initial" we refer to the

¹An excellent survey of the organization of the European banking market on the eve of the launch of the monetary union is De Bandt and Davis (2000).

²In particular, the emphasis has been placed on testing the hypothesis related to the impact of differences in functional skills, resources and organizational attributes possessed by the entrant and the entry timing decision. A review of this literature can be found in Fuentelsaz and Gomez (2001) and Fuentelsaz et al. (2002).

³The empirical literature on entry barriers faced by banks after deregulation is vast. We have identified four main strands of this literature: the first examines how asymmetric information between incumbents and entrants shapes entry decision. The second analyzes the link between market structure and entry (Amel and Liang, 1997; Calcagnini, De Bonis and Hester, 2001 and 2002; Adams and Amel, 2007); the third looks at the importance of entry deterrence and first mover advantages (Pita Barros, 1995 and Berger and Dick (2007)). The fourth looks at the importance of distance as a factor shaping entry and the competitive interaction among banks (Felici and Pagnini, 2008 and Degryse and Ongena, 2005).

period that immediately precedes deregulation, that is to the situations faced by potential entrants after the elimination of administrative barriers to entry. We test the market power-entry relationship looking at the Italian experience, which is particularly suitable for two reasons. First, Italian local markets appeared extremely segmented in terms of market structure and competitive interaction at the outset of deregulation. Second, as shown in Guiso et al. (2004a), these heterogeneous "initial" conditions can in large part be attributed to the regulatory framework introduced in the 1930s, that imposed a differential treatment to the Italian local markets in terms of entry restrictions (De Cecco (1968)). The existence of such differential effect can be exploited as an identification approach that allows to isolate an exogenous source of variation in local competition at the inception of the deregulatory process.

From a theoretical point of view, the relationship between incumbents' market power and entry is ambiguous (Cotterill and Haller 1992, Amel and Liang 1997). We try to discriminate between two views. On one hand, markets which have been heavily regulated and insulated from entry should be more profitable and attract relatively more entry. Those should be the markets in which there are higher profit margins to erode and where the incumbents might be relatively inefficient, insofar as entry (or the entry threat) represents one of the main efficiency driver.⁴ On the other hand, the market power held by the incumbents associated to long-lasting regulation might signal the existence of significant barriers to entry. We believe these barriers to be of two kinds: informational and strategic.

Informational asymmetries between entrants and incumbents as an entry barrier have been thoroughly analyzed in theory. Dell'Ariccia et al. (1999) and Dell'Ariccia(2001) show that incentives to entry in credit markets can be dampened by an adverse selection problem due to the incumbents' superior information about borrowers' creditworthiness.⁵ The adverse selection problem is a structural feature of the banking industry: heterogeneous degrees of market power held by the incumbents in local markets might

⁴Empirical evidence of the entry efficiency nexus can be found in Jayaratne and Strahan (1997) or Claessens et al. (2001) for the banking sector or Aghion et al. (2009) in general .

⁵The role of asymmetric information as a barrier to entry has been empirically confirmed, although indirectly. For example, Shaffer (1998) and Bofondi and Gobbi(2003) show that the loan default rates experienced by the entrants is higher than those of the incumbents. Also, Gobbi and Lotti (2004) show, looking at the Italian experience after deregulation, that entry through branching is less likely than *de novo* entry (the creation of a new bank). The authors attribute this finding to the fact that asymmetric information plays a less relevant role for *de novo* entrants, which have in general a higher knowledge of the local business community.

reflect different intensity of the informational asymmetry.⁶ In the context we study, the asymmetric information channel matters also insofar as entry regulation has contributed to the acquisition of informational rents for incumbents. Indeed, restrictions to entry might have increased the ability of banks to collect a long time series of information about the creditworthiness of customers, the more so in more tightly regulated markets.⁷

The second channel through which a regulatory regime that favors the creation of dominant positions might discourage entry is related to the strategic interaction between incumbents and future entrants. The higher margins granted by the regulation to the incumbents translate into greater resources to engage in entry deterrence or to credibly threaten to do it. This is the so-called deep-pocket argument, dating back to Telser (1966) and Benoit (1984). Financially stronger incumbents are in the position to engage in predatory strategies, or in entry deterring strategies that are financially costly in the short run, but profitable in the long run, as they discourage entry or they actually force new competitors to leave the market.⁸ Moreover, the effectiveness of entry deterrent strategies in an oligopolistic setting relies on the incumbents' ability to coordinate. Being largely protected from the threat of entry during the long-lasting regulated period, in a market which was formally organized as a cartel until the mid 1970s and where competition was banned because of its perceived detrimental impact on financial stability, incumbents were in the position to develop tacit or explicit coordination mechanisms (Scherer and Ross, 1990, and Vives, 1991). Such collusive devices might well survive after deregulation, especially where the incentives to deter entry are higher and the market structure helps to sustain them.

We test the nature of the market power-entry relationship by estimating a simple model of the probability of entry on a panel of 99 local Italian markets. Our dependent variable is the opening of at least one new branch over the years 1990-1995 in a province

⁶Demand side factors such as the size of non-financial firms in the relevant market, institutional quality or the scope for non-lending related activities for banks might determine the relevance of the adverse selection problem.

⁷The idea that we explore is that in presence of restrictions to entry, the ability of a bank to engage in a long lasting relationship with his clients is increased. When the regulatory regime allows entry, borrowers might more easily shift from one bank to another, thus disrupting the quality and depth of information that each incumbent has on a given firm. This, in turn, reduces the informational advantage that incumbents have on average over entrants.

⁸There is a wide literature that examines the role played the financial strength of market participants on industry outcomes and entry. A recent contribution is the one by Cestone et al. (2009), who study how the financial strength of business groups shapes entry decision of French firms both in the manufacturing and in the service industry. Our paper is related to their work, although we look at market power and regulation as a source of financial strength while they look at incumbents' access to business group deep pockets.

in which a bank was not operating at the beginning of the sample period. We estimate how the probability of entry over the years that follow the removal of administrative barriers is influenced by the market power held by the incumbents at the outset of the deregulation. We measure market power in local markets using the spread between loan rates (computed from single loan contracts) and the average deposit rate in the province, correcting the spread for the riskiness of local borrowers, as well as for other factors unrelated to market power. Given the potential endogeneity of our measure of market power, we also use the characteristics of the banking sector in the 1930s, a proxy for the byte of regulation in local markets, as instruments for the market power held by incumbents at the inception of deregulation.⁹

Our results suggest that market power acts as an entry deterrent mechanism in the years that follow the lifting of administrative barriers, at least in the short-run. In other words the econometric exercises are in favor of the second view we presented earlier. Indeed, the probability of entry is significantly lower in those markets where incumbents enjoy higher rents associated with the long lasting regulation approved in the 1930s. This result bears important policy implications, insofar as the removal of entry barriers was conceived to promote the convergence of local markets towards a competitive equilibrium, pushing new competitors where the rents enjoyed by the incumbents were higher. The entry deterrent effect of market power is amplified in our instrumental variables specification. Finally, we perform an interaction analysis in which we look at how the market power-entry relationship changes according to banks' and local markets' characteristics. The results suggest that both informational asymmetries and strategic barriers are in place.

The paper is organized as follows. Section 2 describes the institutional features of the Italian banking sector, from the regulation of the 1930s to the complete removal of branching restrictions in the 1990s. Section 3 presents the empirical model, while Section 4 describes the variables employed and the relative data sources. Section 5 presents the main empirical results, while section 6 illustrates the interaction analysis. Section 7 concludes. The Appendix contains some robustness checks.

⁹The use of regulation as potential instrumental variable for different proxies of competition intensity is widespread. See, for example Aghion et al. 2005 .

2 The Italian banking sector: from the 1936 law to the liberalization

The regulation of the Italian banking sector was introduced in 1936, after the financial crisis that hit the US and Europe in the early 1930s. The law imposed restrictions to the ability of different types of credit institutions to open new branches and to extend loans. An area of competence was assigned to each bank on the basis of its presence on the Italian territory in 1936, and the ability of each bank to grow and operate was limited to that area. The regulation established a differential treatment for the different existing credit institutions, in terms of their potential expansion. Indeed, while national banks were allowed to branch only in the main cities and in areas of particular economic relevance, cooperative banks and local commercial banks were allowed to branch in the entire territory of the province in which they were located in 1936. Finally, savings banks, public institutions controlled by local governments, were allowed to branch within the entire territory of the region.¹⁰

The main effect of the regulation was to freeze the Italian banking market for the next fifty years. However, the ability to grow of different credit institutions was affected in a very different way: while local banks' offices grew by 138% on average, big national banks' office grew by 70% on average. This heterogeneity cannot be attributed to different conditions in the demand for the services, as local and national banks differed in their legal status but not in their functions. As a consequence of the institutional framework introduced in 1936, the Italian local markets developed over the next fifty years very different market structures. In areas where local banks, and in particular savings banks, were prevalent for reasons mainly related to the colonial heritage of the country, markets grew less concentrated relative to areas where big national banks were the main market players.

Deregulation started in the late 1980s, triggered by the initiatives taken at the EU level to create a single market. In particular, European Directives asked for the creation of universal banks, credit institutions that should be free to branch across states once they had

¹⁰We use the term regulation relating both to the legal rules introduced in the 1930s in the aftermath of the financial crisis and to the policy adopted by the government and the central bank towards the banking sector until the 1980s. Such policy was consistently inspired by the need to restrict competition between banks, with significantly more space to expand granted to local and in particular savings banks. An interesting description of the Italian banking regulation can be found in Polsi (2001) and in Conti and La Francesca (2000)

obtained a license in their home country. Branching restrictions were entirely removed in Italy in 1990.¹¹ In 1993, a new Banking code was approved, which incorporated the Second Coordination Banking Directive and completely reorganized the sector.

2.1 The banking sector after deregulation

Following liberalization, branches increased rapidly, raising from around 15,600 in 1989 to 23,400 in 1995. International comparisons of banking structures show that in few years Italy reached about the median in European rankings of indicators of banking capacity. Figure 1 plots the evolution of the number of branches between 1987 and 1998: the pattern is fairly stable in the years that precede the liberalization. In 1990, with the complete removal of administrative barriers, the number of branches starts growing and keeps growing at positive rates over the following years.

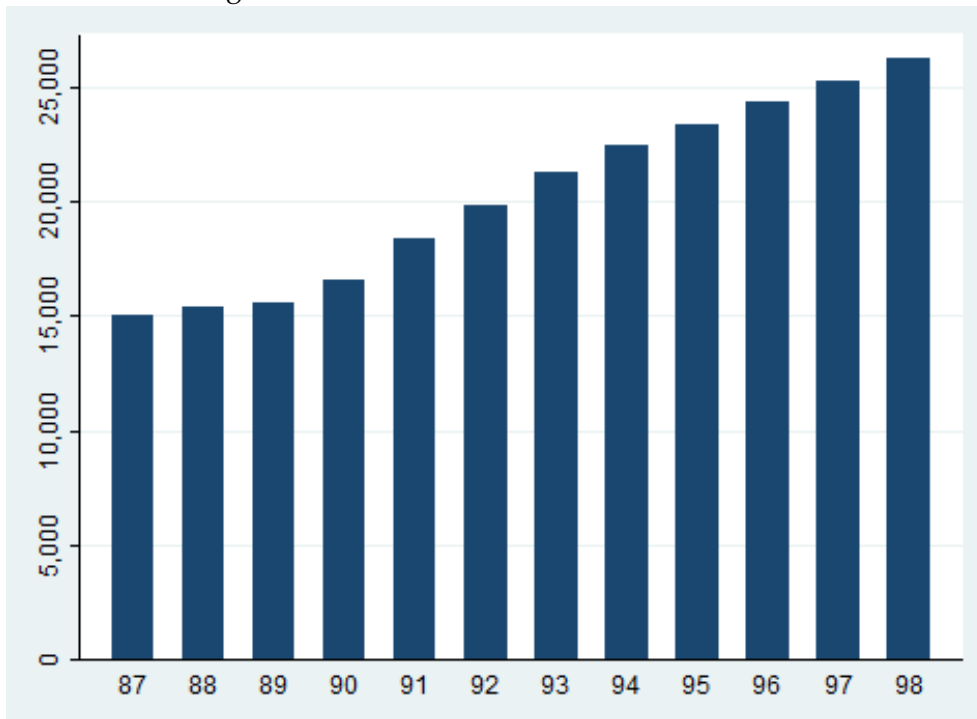
In Figure 2 we plot the growth rates of the number of opened branches: the growth rate is close to zero in 1988 and 1989, while it goes to 10 % in 1991 and it keeps very high in the following years. A stabilization in the growth rate is observed starting from 1995. A careful look at the data, however, reveals that only a small fraction of opened branches is represented by entry into new geographic markets. Indeed, more than 90% of the new branches that were opened over the 1990-1995 period were opened by incumbents, that is by banks that were already operating in the local market before the liberalization. This preliminary observation suggests the existence of significant barriers to entry.

As anticipated we investigate the role of incumbents' market power in shaping the entry behavior of banks. Table 1 presents simple correlation statistics between entry into new geographic markets over the years 1990-1995 and a set of proxies of the market power held by incumbents at the outset of liberalization. We correlate the decision of a bank to open at least one branch in a local market (province) where it was not operating in 1989 with different measures of market concentration (CR4 and the Hefindahl-Hirschman index), the average interest rate on loans in the province, and a measure of the spread between loans and deposits rates. These market power proxies are averages of the 1987-1989 period.

The table shows a negative and significant correlation between the decision to enter

¹¹An anticipation of liberalization took place in the 1980s, when the Bank of Italy authorized the opening of new branches throughout the country. The Bank of Italy decided which banks could open branches in a given area, still in according to the principles of a "regulated" expansion of the banks' networks. Such regulatory approach was abandoned in 1990.

Figure 1: Evolution of the number of branches



The figure plots the total number of branches of Italian banks over the period 1987-1998.

Source: Bank of Italy

a new geographic market and all proxies of incumbents' market power, which are significantly correlated among each other. This data suggests that entry was lower in more concentrated markets, where prices and spreads were higher. Such finding is merely descriptive, but it clearly points to the necessity of a closer investigation, since branching deregulation was expected to spur entry in those markets where instead it appears to be a less significant phenomenon, at least in the five years that followed deregulation. A confirmation comes from a simple count of the entry episodes matched with different spread levels. We segment our provinces' sample into low (first quartile), medium (second and third quartile) and high (fourth quartile) spread provinces: the entry episodes are 130 in low spread provinces, 230 in medium spread provinces, and only 64 in high spread provinces.

The increase in the number of branches came hand in hand with a privatization and a consolidation wave through mergers and acquisitions. In 1990 public sector banks - banks of national interest, credit institutes of public law, and saving banks - were the

Table 1: Market power and entry: correlation pattern

	entry	CR4	herf	avint	spread
entry	1				
CR4	-0.0307*	1			
herf	-0.0485*	0.4383*	1		
avint	-0.0521*	0.3205*	0.4389*	1	
spread	-0.0285*	0.1834*	0.2023*	0.5107*	1

* $p < 0.01$

dominant banking institutions in Italy, accounting for a market share of approximately 70%. In the years that followed the liberalization, the State and the local governments, through the foundations (juridical entities of public law), still maintained the control of their banks in most of the cases. The privatization of large Italian banks took place only from 1993 onwards (Farabullini and Hester, 2005), while the foundations substantially diminished their ownership of public sector banks only after 1995. The liberalization and the privatizations triggered a major consolidation of the banking sector. Mainly because of mergers and acquisitions, there was a substantial decrease in the number of banks operating in the Italian territory, from 1,193 in 1989 to 1,023 in 1995.¹²

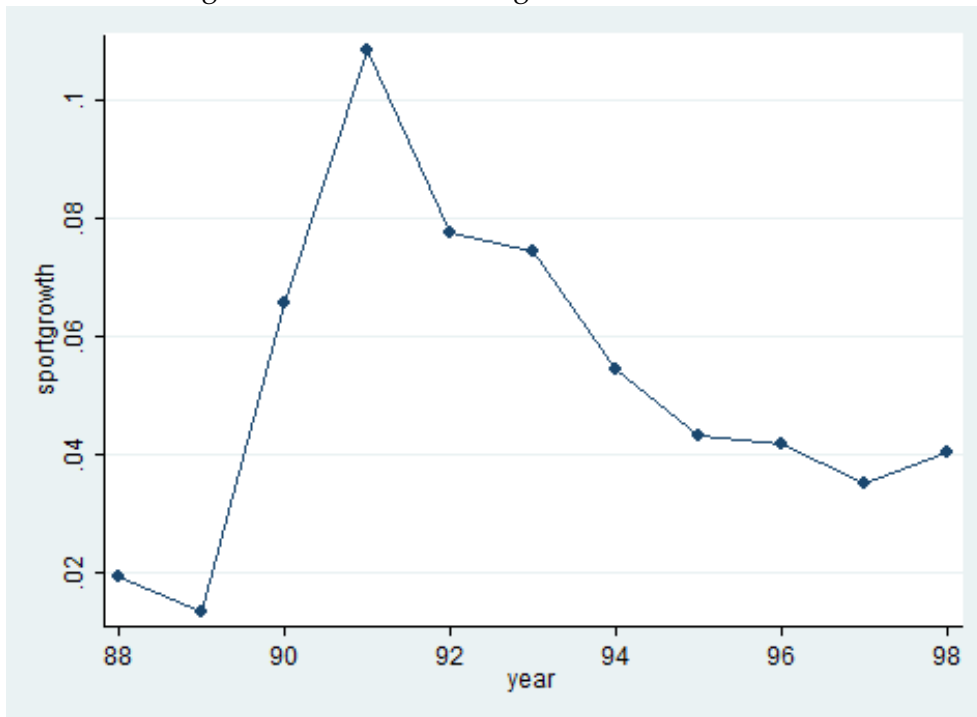
3 The empirical model and specification issues

We estimate a model for the probability of entry by branching into local markets over the period that goes from 1990 to 1995. Our analysis concentrates on the short run market adjustment following deregulation. The choice of the 1990-1995 period has two main motivations. First, we want to capture the potential extra effect on entry decisions of the new discipline of the banking sector introduced in 1993 with the new Banking Code, after the full liberalization of branching in 1990. Second, limiting our sample to 1995, we can analyze the post deregulation branching behavior of banks before the consolidation process and privatizations begin to unfold their effects. Moreover, as we have seen before, in 1995 there was a stabilization in the growth rate of branches. Following the existing literature and the indications of the Bank of Italy,¹³ we define a local market as

¹²The number of mergers involving Italian banks increased substantially at the beginning of the 1990s. However, the market shares of banks involved in acquisitions became particularly high beginning from the second half of the 1990s and continued to grow in the new millennium.

¹³The Bank of Italy was the Italian competition authority for the banking sector until 2006. The power to decide on competition issues was then passed to the Italian competition authority,

Figure 2: Evolution of the growth rate of branches



The figure plots the growth rate in the number of branches of Italian banks over the period 1987-1998. Source: Bank of Italy

a province, a juridical entity analogous to the US metropolitan statistical areas. We pool the episodes of entry over the reference period and check how the probability that a bank opens a branch in a province in which it was not operating before 1990 is affected by the pre-liberalization market and banks' characteristics. The explanatory variables thus capture the conditions under which the banks develop their strategic entry decision.¹⁴

We define the set of potential entrants as the set of banks that were operating at the end of the sample period (1995). In this way, we exclude from our analysis the very few entry episodes involving banks that cease to exist over the reference period. For each bank included in the sample, we consider the subset of provinces in which the bank was not operating in 1989. In modeling the entry decision of banks, it should be recognized that when banks design their networks, they take into account both their own and competitors network choices. However, given the difficulty of estimating such a complex

¹⁴Using pre-deregulation variables to explain post-deregulation entry behaviours, we limit the potential endogeneity bias associated with the simultaneous determination of the banks' decision to enter new markets and market outcomes.

model, we follow Pita Barros (1995) and Fuentelsaz and Gomez (2001) and adopt a partial equilibrium model in which we assume that banks take independent decisions in relation to their presence in each of the different geographical markets. In the appendix we present results of specifications in which we attempt to control for the interrelation between the entry decisions.

We assume that a bank expands the scope of its operation as long as the expected stream of profits guarantee survival in the long run. The decision to enter a new geographic market can be modeled as a function of the difference between the expected revenues associated with entry and the cost of entry. Expected profits depend on both demand and supply side factors, as well as on the characteristics of the entrant, while the cost of entry is a function of the extent of entry barriers faced by the entrant.¹⁵

Let Y_{ij} be a dichotomous dependent variable defined as:

$$Y_{ij} = \begin{cases} 1 & \text{if bank } i \text{ originally not operating in province } j \\ & \text{enters province } j \text{ over the reference period (90-95)} \\ 0 & \text{otherwise} \end{cases}$$

In the main specification, we use a **probit** probability model.¹⁶ This implies that the probability that a bank i , initially not operating in market j , decides to enter in that market, is given by:

$$Pr(Y_{ij} = 1) = \int_{-\infty}^{X_i\beta + Z_j\omega + W_{ij}\gamma} \phi(t) dt = \Phi(X_i\beta + Z_j\omega + W_{ij}\gamma)$$

where the X_i are bank level characteristics that affect the entry decision, Z_j are characteristics of the target market, and W_{ij} are characteristics that link the single bank and the target market. The banks' characteristics are size and geographic scope of operation, as well as indicators of efficiency and profitability. The link between a potential entrant and each target market is represented by the geographical distance between a bank's head-

¹⁵Amel and Liang (1997) model entry by a firm into a market as a positive function of the difference between the firms' expected profits and entry-forestalling profits. Entry-forestalling profits represent that level of profits below which no firm will choose to enter, and they are a function of entry barriers and characteristics of the market. Expected profits can be characterized as a function of pre-entry profits, entry barriers, market concentration, and other market characteristics.

¹⁶We tested the robustness of our results to the choice of different functional form. In particular, we exploited the panel dimension of our dataset to estimate a conditional fixed effect logit model that eliminates the bias resulting from bank level heterogeneity that is invariant across markets. See the results in the Appendix.

quarters and each of the Italian provinces. The target market characteristics are the size of the market, its potential growth and a measure of the scope of entry, represented by the initial density of branches in a province. Finally, our main variable of interest is a proxy for the intensity of market power held by the incumbents at the outset of deregulation, represented by the spread of loan rates over deposit rates. Although the use of spread measures as proxies for market power is quite common in the empirical banking literature, the possibility to achieve a correct interpretation of such measures is subject to a set of "identification" issues, to which we turn in the next section.¹⁷

3.1 Identification

Our main empirical challenge consists in finding an identification strategy that allows to interpret the results we obtain as evidence of a causal link between incumbents' market (monopoly) power and the entry decisions of banks. There are two distinct issues to face in this context. The first issue is that the observed spread between the loan and the deposit rates might capture characteristics of the marketplace that have nothing to do with market power. The main concern is that observed spreads might be correlated with the riskiness of local borrowers or with any features of banks that impact on their operating costs. For example, spreads may vary across markets because of existing differentials in the cost of collecting information. The second issue is that, even if we believe that the proposed strategy correctly identifies market power, there exist many potential sources of the incumbents' dominant position. For example, banks might enjoy market power through a collusive agreement that restrains competition, or because of their superior efficiency vis-à-vis potential entrants. The policy implications that we may derive from our study would change in the two cases. As a consequence, only if we can say something about the source of incumbents' market power we can also say something about its relationship with entry decisions.

Our preliminary identification effort consists in using a measure of the spread that does not simply capture the difference between loan and deposit rates. Starting from individual loan contracts, we use a refined measure that represents the residual part of the

¹⁷Another widely used measure in the empirical banking literature to proxy for the intensity of competition in a market is the degree of concentration of the industry. However, the use of concentration indexes as proxies for competition has been widely criticized from a theoretical point of view, as concentration may actually be the outcome of a fierce competitive fight in which less efficient firms are kicked out of the market. On this issue see Berger and Hannan (1989) and (1992), and Jackson (1992).

spread that is explained neither by the riskiness of local borrowers, nor by a set of banks' characteristics that might affect their marginal cost, as it will be thoroughly explained in the next section. Moreover, in the estimated equations, we insert many controls to proxy for factors that might impact on the spread and that are not related to the monopoly power held by the incumbents.

The main identification approach consists however in the use of instrumental variables. The history of Italian banking regulation suggests to use the characteristics of the banking sector in the 1930s as instruments for the spread observed in the late 1980s. The regulation of the banking sector approved in the 1930s had a different impact on Italian credit institutions. As a consequence, the Italian provinces developed different competitive conditions during the following fifty years. The fact that local banks, and among them savings banks, were granted a greater possibility to expand over national banks, had the consequence to allow more entry and more competition in those areas where local, and in particular savings banks were prevalent at the time of the regulation.¹⁸ The different tightness of regulation was motivated by political and historical reasons, and it was largely exogenous with respect to the economic performance of the markets. The use of the characteristics of the banking sector in the 1930s as instruments for the competitive conditions at the outset of deregulation has been suggested by Guiso et al. (2004a, 2004b). The exogeneity of the differential treatment of the regulation is based on the following arguments: first, the number and composition of banks in 1936 was not linked to any characteristics of the region that affected the ability of banks to expand or the profitability of a local market; second, the regulation produced a differential impact on the various areas of the country mainly for "exogenous" reasons related to the political support that the different credit institutions guaranteed to the fascist regime. Finally, the regulation was kept for so many years for reasons that have nothing to do with the economic performance of the regions.

Instrumental variables isolate that part of the loan deposit rate spread that is explained by the regulatory regime introduced in 1936. This allows to interpret the ob-

¹⁸As we already mentioned in the introduction, the banking market was formally organized as a cartel until the mid 1970s. The spirit of the regulatory regime was to protect the banking market from competition, which was deemed dangerous for financial stability. During the 1980s, the cartel was formally abandoned and banks were let formally free to compete on prices and on other dimensions of their business. However, local markets differ substantially in terms of their market structure, and this is in large part attributable to the regulation. The idea we explore and test looking at the data is that the cartel was perpetuated in those markets where few banks had the ability and the incentives to keep the collusive agreement.

served spread-entry relationship as one due to market power, since the channel through which the regulation affects the spread is the protection from competitive pressures. Moreover, the instrumental variables approach allows to address our second identification concern, ruling out the "efficiency" source for the observed market power entry relationship. Indeed, the local markets which were more protected by the regulation from the entry threat, are unlikely to be the markets where incumbents are more efficient fifty years later. This argument relies on the widely documented nexus between entry and efficiency.¹⁹

As a refinement of our identification approach, we perform an interaction analysis aimed at shedding light on the channels through which monopoly power affects entry behavior. The existence of strategic and informative barriers suggests an heterogeneous effect of market power on entry, depending on the characteristics of the entrant, of the local markets and on the mode of entry. We postpone the discussion of these interactions to a later section of the paper, after presenting the data employed for the analysis and the results of our main specification.

4 Data sample and Descriptive Statistics

In the following sections we describe the main variables used in our regressions. We begin with the dependent variables, the entry measures. We then move to the description of the proxy for market power and of the instruments. We conclude by describing the control variables employed in the different specifications proposed. Table 2 provides summary statistics.

4.1 The definition of entry: entry through branching and entry by acquisition

In order to construct the entry measures we employ Bank of Italy statistics that records the annual number of branches that each bank has in each province. The dependent variables are measures of entry in local banking markets. We distinguish two types of entry: entry through branching and entry by acquisition. Entry through branching (**entry**) oc-

¹⁹A relevant contribution is Aghion et al. (2004), who show how the policy reforms in the United Kingdom that changed entry conditions by opening up the U.K. economy during the 1980s have led to faster total factor productivity growth of domestic incumbent firms and thus to faster aggregate productivity growth. For similar evidence related to the banking sector, see Jayratne and Strahan (1998) and Sturm and Barry (2004).

curs whenever a bank opens, between 1990 and 1995, at least one branch in a province in which it was not operating in 1989, at the outset of deregulation. This is our main dependent variable. However, as part of our identification approach, we also use entry by acquisition as dependent variable. Entry by acquisition (**entryacq**) occurs when a bank enters a province through the acquisition of another bank.

4.2 Measuring market power

Our main independent variable is a measure of the extent of monopoly power in local banking markets in the period immediately preceding deregulation (**marketpower**). We proxy market power in a local market by using the spread between the loan rate applied to firms and the average deposit rate in the province. The spread is calculated from data on individual loans extended by a bank in a province. In order to control for firms and banks characteristics that might have an effect on the spread which are not related to market power, the spread is regressed on indicators that capture the riskiness of local borrowers and the efficiency of banks. The borrower characteristics controls are: the firm return on sales, its leverage (as proxy for financial fragility), its size (measured by log assets), and the firm Z-score (a measure of the financial distress status of a firm), which is likely to capture important information that banks use to assess the riskiness of their borrowers. The bank characteristics included are size, profitability, ownership structure as well as the ratio of non performing loans over total loans (the source is Bilbank, a commercial database). The residual part of the spread that is not explained by lenders and borrowers' characteristics, which is assumed to measure the banks' market power, is captured by a full set of provincial dummies. The employed measure of local market power is then a normalized version of the coefficient attached to each province.²⁰

4.3 The instruments: the characteristics of the banking market structure in 1936

Our measure of market power - the spread - though controlling for many factors other than market power that might have an influence on it, might still suffer from an endo-

²⁰ The variables used to construct the index of market power refer mostly to the years that precede deregulation, in particular to 1985. Data on interest rates refer to 1991, when deregulation had not yet begun to unfold its effects, as demonstrated in Angelini and Cetorelli (2003), who show that interest rates remain basically unchanged until 1992.

geneity bias, in the sense that it might capture market level characteristics other than the intensity of competition. The history of Italian banking regulation provides valid instruments for our analysis, as discussed in the previous identification section. We use some statistics on the banking structure in 1936 as instruments for the spread observed in the late 1980s. As we have seen, the regulation gave a greater possibility to expand to local banks and among them to savings banks. As a consequence, in local markets where this type of banks were prevalent in 1936 there was more entry in the following fifty years and this explains a substantial part of the spread differentials in the late 1980s, as we will show later. More specifically, the instrumental variables used in our specifications are the following: the fraction of banks' branches owned by local banks in each province in 1936, the number of savings banks per 1000 inhabitants in the region in 1936, and the number of banks offices per 1000 inhabitants in each province in 1936. We take our measure of market power, as well as the instrumental variables from Guiso et. al (2004a).

4.4 Control Variables

The control variables can be divided into three categories: variables that capture characteristics of the target market of the potential entrants, variables that measure characteristics of the potential entrants that might affect the entry decision, and variables that link the market of origin of a potential entrant with the target market.

4.4.1 Market level variables

All market level variables refer to a period that precedes the lifting of the regulatory barriers to entry, as we want to capture the initial conditions faced by the entrants when the regulatory barriers were lifted. The size of the market, capturing the potential demand for loans, is proxied by the total loans granted in the province (**loans**), while the potential for market growth is measured through the growth rate of loans (**loansgrowth**), as well as by the growth rate of value added in the province (**vagrowth**). The supply side characteristics included in the study are the concentration of the loan market in the province, and the branch density in the province. The concentration in the loan is measured through the Herfindahl-Hirschman index (**herf**), while branch density (**scopeofentry**) is measured as the ratio between the number of branches in the province and the surface of the province itself. Finally, we use a dummy to identify the local markets located in the South of

Italy (**south**), to proxy for potential institutional and development factors driving the entry decisions. All the market level variables are averages of the years 1987-1989. In our interaction analysis, we exploit two variables proxying the size of non-financial firms operating in the province and the size of non loan-related activities of the banking sector in each province. The size of non-financial firms is measured through the average number of employees per firm operating in each province in 1991 (**empl**), while the size of non loan-related activities (**securities**) is captured by the securities held by banks on behalf of the customers in a given province (it is an average of 1990 and 1991).

4.4.2 Bank level variables

The bank level characteristics are constructed from the data on the number and location of branches of a given bank and from balance sheets. The variable (**size**) measures the number of branches by a given bank at the beginning of the reference period. The variable (**scope**) measures the number of provinces in which the bank operates²¹. The variable (**sizeloans**) measures the total amount of loans extended by a bank. Finally, we measure the financial soundness of a bank by the variable (**badloans**), that is the ratio of bad loans to the total amount of loans extended by a bank. The bank balance sheet statistics are taken from Bilbank. A final variable included in our specifications is the distance between the market of origin in which potential entrants operate, and the target market. Distance can be measured across different dimensions (on this subject see Alessandrini, Presbitero and Zazzaro, 2009). Given the nature of control that distance has in this work, we controlled exclusively for the geographical distance between a bank's headquarters and the center of each province(**distance**).

5 Main results

In this section we present the main results of our work. Table 3 shows the results of the principal specification. The dependent variable is a dummy variable that records entry by branching in local markets over the period 1990-1995. We employ bank level data in which each observation corresponds to a bank-province pair. In column (1) we report

²¹In the main specifications, the variable used is a dummy variable that separates single-province banks from banks operating in more than one province. The variable, which shows to be highly significant in all regressions, has been so constructed to avoid problems of collinearity with other size variables.

Table 2: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
entry	0.021	0.143	0	1	20164
entryacq	0.004	0.064	0	1	20164
marketpower	1.722	0.747	0	3.628	20164
loans	1760.506	3492.381	100.529	27649.279	20164
loansgrowth	0.156	0.056	-0.006	0.355	20164
scope	0.711	0.453	0	1	20164
scopeofentry	0.287	0.182	0.036	1.282	20164
avvagrowth	0.091	0.01	0.058	0.11	20164
herf	0.095	0.049	0.029	0.263	20164
empl	34048.701	31902.655	5044	236115	20164
securities	2710.855	7251.355	34.89	62263.844	20164
size	47.412	88.052	0	1250	20164
sizeloans	777.886	2017.002	0	17004.975	20069
badloans	0.001	0	0	0.006	19974
distance	25.556	26.856	0	146.599	20164

the estimates for our baseline specification, consisting in a probit model. Both the firm level and market level variables play a significant role in shaping banks' short run geographic diversification decisions. The **size** of a bank and its **scope** of operation have a positive and significant effect on the probability of entry. The positive effect of size is consistent with the view that resource constraints play a crucial role in shaping entry decisions (Cotterill and Haller, 1992; Ingham and Thompson, 1994): size can be seen as a proxy for slack resources available within a firm, and the availability of such resources facilitates the overcoming of entry barriers, especially in a context in which it might be difficult to access external funds (Felici and Pagnini, 2008). Also the market level controls show in general the expected sign and significance: the size of the market, as well as past value added growth in the province, exert a positive role in attracting new entrants. These measures correctly capture the growth potential of the market, as suggested in the literature (Amel and Liang, 1997; Pita Barros, 1995). Also, a greater density of branches per inhabitants, measured by the variable **scopeofentry**, reduces the likelihood of entry by banks, although the coefficient is not significant. The other variable that enters significantly in our model is the distance between a potential entrant's headquarters and the target market. Felici and Pagnini (2008) stress different sources of distance-related entry barriers. First, the role of reputation in attracting customers is crucial in banking as in many other commercial sectors. A bank has accumulated over the years a reputational

capital that can invest when entering a new market; however, this reputation effect dissipates with distance. Second, it is well known (Dell'Ariccia et al., 1999 and Dell'Ariccia, 2001) that asymmetric information represents a major entry barrier in banking. Potential entrants face an adverse selection problems being uninformed about the quality of potential borrowers, over which the incumbents possess an informational advantage. For a potential entrant, the cost of collecting information about local borrowers is likely to be reduced if the market is located close to where the entrant already operates. We will return to this point in our interaction analysis.

We now turn to our main variable of interest, i.e. **market power**. As we can see, the degree of market power held by the incumbents, as measured by the spread between loan and interest rates at the outset of liberalization, exerts a negative effect on the probability of entry. The effect is significant at 5% level of confidence, and remains significant in the richer specification proposed in column (2), which extends the baseline model. We include a different measure of a bank's size, that is the total amount of loans extended by a bank in the period immediately proceeding deregulation (**sizeloans**); the variable **loans-growth** measuring the average observed growth of the total amount of loans extended in a province, and the **south** dummy variable, capturing potentially important institutional differences between northern and southern regions of the country. The results in this second specification confirm that bank's size is positively correlated with the probability of entry into a new geographic market, and that the potential growth of the credit market, as proxied both by value added growth in the province and by the growth rate of the amount of loans extended in the province, exerts a positive effect on the probability of entry. The variable **south** does not play a significant role.

The proxy for market power included in column (1) and column (2) of Table 2 is the spread between the loan and deposit rates for each province. As we have seen in Section 3 on identification, the observed spread between loan and deposit rates might capture characteristics of the banking market unrelated to the intensity of incumbents' monopoly power.

To refine our identification strategy, we use an instrumental variables approach, as described in section 3. We use the characteristics of the banking sector in 1936 as instruments for the spread between loan and deposit rates. Column (3) presents the results of a 2SLS estimation (assuming a linear probability model). This specification confirms the validity of our main finding: market power acts as an entry deterrent mechanism.

Table 3: Market Power and entry: main results

	(1)	(2)	(3)	(4)
	probit	probit	2sls	ivprobit
marketpower	-0.00232** (0.00110)	-0.00270** (0.00117)	-0.0132** (0.00604)	-0.00609* (0.00369)
size	0.0714*** (0.00737)		0.271*** (0.0258)	0.0717*** (0.00740)
sizeloans		0.00306*** (0.000320)		
scope (d)	0.00849*** (0.00150)	0.00840*** (0.00143)	0.00438** (0.00213)	0.00856*** (0.00149)
scopeofentry	-0.00285 (0.00315)	-0.00313 (0.00295)	-0.0161 (0.0108)	-0.00784 (0.00586)
distance	-0.438*** (0.0482)	-0.458*** (0.0467)	-0.357*** (0.0516)	-0.426*** (0.0434)
loans	0.00109*** (0.000246)	0.00108*** (0.000220)	0.00285*** (0.000821)	0.00109*** (0.000132)
vagrowth	0.177** (0.0785)	0.157** (0.0740)	0.341** (0.161)	0.232** (0.0905)
loansgrowth		0.0303** (0.0154)		
south (d)		0.00178 (0.00222)		
Observations	20164	20069	20164	20164
Hansen J stat.			0.212	
F-square first			6.86**	
Anderson CC			1806***	

Marginal effects; Cluster robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Indeed, the probability of entry is lower in those markets where entry regulation was tighter. At the bottom of column (3) we report statistics that are useful to test the validity of our IV strategy: the Hansen J-statistic, the GMM counterpart of the Sargan statistic, shows that we cannot reject the null of no correlation between the instruments and the error term in our equation. The F-test of excluded instruments shows that the instruments are jointly significant in explaining the endogenous measure of market power, which is supported also by the Anderson canonical correlation, which seems to exclude a weak-instruments problem in our model. In column (4) we present the result of a non linear instrumental variable probit model (see Cameron and Trivedi, 2005 for a detailed description of the model). The results appear qualitatively similar to the previous models and confirm that market power exerts a negative effect on entry.

In summary, the results contained in Table 3 illustrate that the probability of entry is significantly reduced in markets where incumbents have been protected for many years from the threat of entry. In order to give a sense of the magnitude of the estimated effect, we run several simulations. We compare the suggested magnitude of the market power effect on entry of the specification presented in column (1) and column (3), respectively the simple probit and the instrumental variable probit models. The simple probit model predicts that going from the most competitive province in Italy (Ravenna) to the least competitive one (Catanzaro), the probability of entry drops by 52%, holding constant all other variables included in the model. The instrumental variable probit, in which we address the potential endogeneity of our spread measure, the probability falls even more, by 82%.

In Table 4 we test the robustness of our main finding using market-level data (i.e. aggregated statistics). The dependent variable has been changed into the total number of entry episodes recorded in a province between 1990 and 1995. In column (1) we report the result of OLS specification. We find a negative and significant effect of market power on entry. This finding is confirmed in column(2), where we show the results of 2SLS estimation. Again, as in the context of bank-level data, the magnitude of the estimated effect increases significantly when we account for the endogeneity of market power using the characteristics of the banking sector in 1936 as instruments. Finally, the results are confirmed in column(3) where we estimate a model *à la Poisson*.

Table 4: Market Power and entry: aggregate market data

	(1) Ols	(2) 2sls	(3) Poisson
marketpower	-1.296*** (0.377)	-3.789*** (1.281)	-0.903** (0.361)
scopeofentry	-0.517 (1.142)	-4.075* (2.345)	-1.194 (0.998)
loans	0.000498*** (0.000168)	0.000500*** (0.000160)	0.000223*** (0.0000529)
loansgrowth	11.07* (5.585)	11.05* (6.117)	7.726 (4.826)
vagrowth	49.24** (23.20)	84.00** (34.51)	39.85* (23.59)
south (d)			-1.924*** (0.471)
Observations	95	95	95

Marginal effects; Robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6 Interaction analysis

The results presented in the previous section illustrate that the regulation approved in 1936, shaping the competitive framework for the successive 50 years, impacted on the entry behavior of banks in the aftermath of deregulation. Indeed, in markets which have been more protected from the entry threat, incumbents enjoy greater market power, and this acts as an entry deterrent mechanism. This evidence bears important policy implications, as it suggests that liberalization policies might delay in delivering the expected benefit of increased competition just where it is more necessary.²²

In this section we provide the results of an interaction analysis, in which we explore how the market power entry relationship changes with the characteristics of the entrants, of the target markets, and the mode of entry. These further specifications try to shed light on the existence of strategic and informational channels behind the estimated nexus between entry and monopoly power.

The strategic explanation of the negative relationship between market power and entry lies on one main argument. Incumbents that have been protected by the regulation for decades have accumulated "deep pockets" that can exploit to discourage entry after the removal of administrative barriers. The strategic deterrence effect of market power is reinforced by the incumbents' ability to coordinate in their actions. This coordination is much more likely where the regulation determined a strongly concentrated market. The strategic channel story suggests that the ability to overcome the entry barrier represented by incumbents market power should be a function of the availability of slack resources for potential entrants or, more in general, of their financial strength. Therefore we interact our independent market power variable with dummies that identify the group of banks that appear more financially equipped to engage in an entry fight and reap the benefits of higher margins. The results are presented in Table 5. The first variable that we consider in column (1) is **size**, always measured by the bank's branches network. Size can be seen as a proxy for financial strength: bigger banks should be better equipped for surmounting the strategic barriers erected by incumbents. We test whether the observed market power entry relationship changes according to the size of entrant banks. We defined three size

²²Unfortunately, the lack of pricing data does not allow us to verify the effects of the post-deregulation entry behavior on the commercial conditions offered by firms. However, a simple (unreported) analysis on average interest rates, seems to support the idea that less competitive provinces, where interest rates on loans were higher in the late 1980s, did not converge rapidly to the levels of more competitive provinces in the years that follow the liberalization.

categories (small, medium and large banks) using the size empirical distribution. Small banks are those whose size does not exceed the first quartile of the distribution, while big banks are those whose size exceeds the third quartile. Medium banks are those whose size is included between the first and the third quartile. We tested the differential effect of market power on entry estimating three different coefficients for our market power variable, that is interacting the market power variable with three dummies, one for each size category. For this interaction analysis, we employed the linear instrumental variable model, which facilitates the interpretation of interaction coefficients. Column (1) of Table 5 illustrates that the negative effect of market power on entry is statistically significant only for small and medium sized banks. For large banks, the effect is still negative, but extremely reduced in magnitude and no longer statistically significant. This result is confirmed by column (2), where we use a different proxy for a bank's size, based on the total amount of loans extended (the variable **loans** described above). Again, the market power entry deterrent effect disappears when we look at large banks.

Size is only one of the potential proxies of the financial strength of a bank and of its ability to surmount the barriers represented by incumbents' market power. The market power entry relationship may also be affected the financial soundness of the entrant. Among the potentially available proxies of a bank's financial soundness, we focus on the the proportion of bad loans over total loans. This variable should capture the allocative efficiency of banks and the possibility to sustain the short term losses associated to the incumbents' reaction upon entry. As for the previous interactions, we estimate the effect of market power on entry for three groups of banks, identified by the size of the ratio between bad loans and total loans. The results are shown in column (3). The results indeed confirm that the entry deterrent effect of market power on entry disappears for banks whose financial position appears sounder. Overall, the results presented in Table 5 suggest that incumbents' market power does not reduce the probability for banks which are financially better equipped. Being aware that multiple stories might support such empirical findings, the results appear consistent with the strategic interaction channel proposed above.

The deterrent effect of market power might as well be attributed to an informational advantage of incumbents, as we saw in the introduction. The idea is that the regulation, insofar as it protected incumbents from the entry of new competitors, has contributed to the creation or at least to the reinforcement of an informational dividend. This dividend

Table 5: Market Power and entry: the role of entrants' characteristics

	(1)	(2)	(3)
	2sls	2sls	2sls
mpsmallsize	-0.0101* (0.00562)		
mpmediumsize	-0.0137** (0.00565)		
mpbigsize	-0.00562 (0.00565)		
mpsmallsizeloans		-0.0158*** (0.00572)	
mpmediumsizeloans		-0.0121** (0.00569)	
mpbigsizeloans		-0.00271 (0.00559)	
mplowbadloans			-0.00198 (0.00547)
mpmediumbadloans			-0.0124** (0.00551)
mphighbadloans			-0.0160*** (0.00588)
size	0.237*** (0.0324)		0.261*** (0.0261)
loans		0.0103*** (0.00142)	
badloans			2.912** (1.343)
scope (d)	0.00491** (0.00231)	0.000605 (0.00209)	0.00461** (0.00219)
scopeofentry	-0.0145 (0.00957)	-0.0145 (0.00970)	-0.0143 (0.00962)
distance	-0.379*** (0.0503)	-0.375*** (0.0478)	-0.376*** (0.0478)
loans	0.00287*** (0.000779)	0.00292*** (0.000783)	0.00292*** (0.000783)
loansgrowth	0.0567** (0.0256)	0.0575** (0.0257)	0.0568** (0.0258)
vagrowth	0.276* (0.149)	0.286* (0.150)	0.282* (0.150)
Observations	20164	20069	19974

Marginal effects; Cluster robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

indeed should be higher where competition was relatively more restricted from regulation. We explore the existence of an informational channel as a potential explanation of our results through four further specifications presented in Table 6. In column (1) we change our dependent variable, looking at entry by acquisition instead of entry through branching. The idea is that if market power acts on entry as it signals an informational advantage of incumbents over entrants, the effect should be extremely reduced or even reverted when entry takes place through the acquisition of an incumbent bank. The reason is that the assets acquired by the entrant include also the informational capital of the incumbent. The results seem to confirm the intuition, as market power does not exert a significantly negative effect on entry by acquisition.²³

In column (2) we look at the role of distance in shaping the market power entry relationship. The idea is again suggested by the literature on the informational barriers to entry in the banking sector. Felici and Pagnini (2008) stress that the cost of collecting information about local borrowers should be lower when the entrant is closer to the target market. This suggests the possibility to test whether market power acts on entry through the information channel by looking at whether the estimated relationship changes when market power is interacted with distance. Indeed, interacting our market power variable with a dummy that identifies a close distance between potential entrants and target markets, we see that the negative effect of market power is reverted for entrants that are located close to the target market. In column (3) we test how the market power entry relationship changes with the size of non financial firms operating in the target province: in the methodological section above we explained how the literature that describes the asymmetric information problem associated to entry in the banking sector suggests that information asymmetries might be reduced if the requirement of soft information about local firms is lower. When the non financial firms operating in a province are relatively big, the screening of their quality as borrowers is based mainly on balance sheet, that is on hard information, which reduces the informational gap of entrants vis-a-vis the incumbents. This suggests that, if the market power entry relationship is determined by an adverse selection problem, the negative effect of market power on entry would be reduced if the non-financial firms that operate in the market are relatively big. We measure the average size of non-financial firms in a province by their average number of employ-

²³The result is also consistent with the strategic deterrence story. Indeed, when entry takes place through acquisition, the entrant replaces an existing incumbent and does not represent a threat as in the case of a de-novo entrant.

Table 6: Market power and entry: the role of acquisitions, distance, and target market characteristics

	(1)	(2)	(3)	(4)
	entryacq	entrynet	entrynet	entrynet
marketpower	-0.00168 (0.00128)	-0.0114** (0.00452)		
mplowdist		0.0241*** (0.00182)		
mplowsizefirms			-0.0104** (0.00420)	
mpmediumsizefirms			-0.00572 (0.00381)	
mphighsizefirms			0.0132*** (0.00420)	
mplowsecurities				-0.00769** (0.00365)
mpmediumsecurities				-0.00724 (0.00465)
mphighsecurities				-0.00475 (0.00571)
size	0.00834*** (0.00247)	0.276*** (0.0117)	0.271*** (0.0276)	0.270*** (0.0276)
empl			-0.000454* (0.000232)	
securities				0.0139 (0.0110)
scope (d)	0.00394*** (0.00104)	0.00394* (0.00226)	0.00449** (0.00190)	0.00449** (0.00190)
scopeofentry	-0.000645 (0.00157)	-0.0141* (0.00828)	-0.0147* (0.00836)	-0.0328** (0.0131)
distance	-0.0555*** (0.0179)	-0.0807* (0.0458)	-0.415*** (0.0361)	-0.387*** (0.0358)
avimp	0.000571** (0.000245)	0.00281*** (0.000283)	0.00510*** (0.00172)	0.00207*** (0.000659)
avimpgrowth	0.00797 (0.00556)	0.0489*** (0.0181)	0.0533*** (0.0168)	0.0511*** (0.0170)
avvagrowth	0.0161 (0.0270)	0.224* (0.118)	0.0319 (0.109)	0.206* (0.108)
Observations	20164	20164	20164	20164

Marginal effects; Cluster robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

ees. Using the same approach for the previous interaction analysis, the results in column (3) show that indeed, the negative effect of market power on entry disappears in markets where firms are relatively big. In column (4) we present the final results of our interaction analysis, where we still look for evidence of an asymmetric information channel driving the observed relationship between incumbents' market power and entry. The scope of asymmetric information between entrants and incumbents is mainly related to the loan segment of a bank's activity. In other words, the greater is the proportion of banks' revenues coming from non loan-related activities, the lower is the scope for informational barriers to entry. This suggests that the entry deterrent effect of market power should be reduced the higher the potential for non loan-related revenues. The scope of non-loan related revenues for a banks is captured by the amount of securities held on behalf of customers within the boundaries of a given province. The interaction analysis confirms that the negative role exerted by market power on entry is significant only in those markets in which the degree of securitization of consumers' savings is relatively low.

Overall, our interaction analysis shows how the observed average relationship changes when we look at subsample of entrants and local markets. The results do not rule out any of the proposed channels through which market power might act as an entry deterrent mechanism. On the contrary, our exercise points to the existence of multiple channels operating at the same time.

7 Conclusion

In this paper we obtained three main results. First we found that entry in the years that followed branching deregulation was targeted towards more competitive markets, i.e. where the incumbents had a lower market power. As underlined by North (1993), institutions and time matter. The survival of a strict regulation on banking entry for more than 50 years contributed to a strong market power of the incumbents. We measure market power with a risk-adjusted spread between loan and deposit rates. Given the potential endogeneity of the spread, we used the characteristics of the banking markets in the thirties as instrumental variables for market power. These characteristics - essentially the number of small/local banks/branches in provincial markets - were highly persistent. They lasted until the eighties due to the framing of the regulation, and are able to explain in large part the development of competitive interaction in local markets for the following fifty years. Our results hold, i.e. instrumental variable regressions confirm the capacity of incumbents to deter entry. This evidence is also consistent with the idea that extra-profits persist in the long run because incumbent firms are able to discourage the entry of new competitors (Mueller, 1986). Second, our econometric exercises suggest that the market power entry relationship depends on the quality of the potential entrants and on other structural characteristics of target market. The results are consistent both with an informative and a strategic channel explaining the nexus between market power and entry. Third, if entry in local markets takes place through acquisition of an incumbent bank, market power does not exert any more a negative effect on entry. Again, this is consistent with the ability of entrant banks to overcome the entry barrier represented by incumbents' market power, be it linked to a strategic or to an informative advantage. Our evidence is consistent with the idea that in the banking industry large market shares may be acquired by new intermediaries only through acquisitions.

A Appendix

In this appendix we provide a set of robustness checks performed in order to test how the main result presented in the paper is affected by the choice of the specification, by the definition of the pool of potential entrants into a market and by the consideration of the potential interdependence of entry decisions among banks.

We start in column (1) of Table 7 by presenting the results of the estimation of our baseline specification by using a conditional fixed effect logit model. This model applied to the data allows to control for the possible existence of unobservable bank level heterogeneity. The model, described in detail in Cameron and Trivedi (2005), determines the probability of entry among the set of Italian provinces, conditioned on the the total number of entries effectively undertaken by each bank. Such transformation, analogously to the linear panel data transformation (the de-meaning of variables), gets rid of the individual fixed effects and allows to retrieve consistent and efficient estimates of the parameters of interest. This model is relevant if unobservable bank level heterogeneity is deemed to play an important role, as suggested among others by Fuentelsaz and Gomes (2001) and more recently by Felici and Pagnini (2008). The conditional fixed effect approach has two drawbacks: first, the effect on the probability of entry of bank specific variables is no longer identifiable; second, the conditioning approach is such all the observations corresponding to those banks that did not enter any market over the considered period are lost in the estimation, so we have a considerably lower number of observations. The results confirm our main finding that market power, as measured by the spread between loan and deposit rates, exerts a negative effect on entry.

In column (2) we present the results of a specification in which we modify the definition of potential entrants. In the main model, all banks operating in the country at the end of the sample period (1995) are set as potential entrants in each local market. Although we consider this as the preferable approach, we test the robustness of our main findings against the exclusion from the set of potential entrants in each local markets the banks whose headquarters are far away from the target market. We use a statistical criterion, and drop the fourth quartile of the distribution of the variable **distance**. Again, the results of the specification, estimated with IV probit, confirm the negative effect exerted by market power on the probability of entry.

In column (3) and (4) we propose a preliminary way to address the potential concern

Table 7: Market Power and entry: robustness checks

	(1)	(2)	(3)	(4)
	Logit FE	ivprobit	ivprobit	ivprobit
marketpower	-0.0434** (0.0203)	-0.00933* (0.00503)	-0.0109** (0.00542)	-0.0177** (0.00790)
size		0.273*** (0.0276)	0.272*** (0.0259)	0.327*** (0.0278)
scope (d)		0.00486** (0.00234)	0.00649*** (0.00239)	0.00408* (0.00214)
scopeofentry	-0.110 (0.0765)	-0.0146* (0.00890)	-0.0146 (0.00955)	-0.0440*** (0.0144)
distance	-0.0102*** (0.00119)	-0.000658*** (0.0000706)	-0.000361*** (0.0000492)	-0.000249*** (0.0000568)
loans	0.0218*** (0.00229)	0.00312*** (0.000756)	0.00287*** (0.000778)	0.000563 (0.000566)
loansgrowth	0.641*** (0.238)	0.0559** (0.0253)	0.0570** (0.0259)	0.113** (0.0455)
vagrowth	2.968** (1.345)	0.321** (0.138)	0.283* (0.148)	-0.0320 (0.227)
expansion			0.0115*** (0.00316)	
multimarket				0.00934*** (0.000886)
Observations	12201	18397	20164	20069

Marginal effects; Cluster robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

that entry decisions of banks are not conditionally independent. The approach we follow consists in controlling for factors that potentially determine the dependence structure of the entry decisions, in order to verify whether the observed negative relationship between market power and entry still holds. The first control in column (3) is suggested by Felici and Pagnini (2008), and their argument goes as follow: a bank can expand its network of branches either by opening a new outlet in its pre-entry locations or by branching into new geographic markets. The two expansion strategies may be independent, complement or substitutes. If the strategies are indeed substitutes, in order to branch into a new geographic market a bank should abandon some expansion projects in its pre entry locations. This would imply that the bank under consideration is subject to some constraints and that these constraints may determine a lack of independence of entry decisions. Essentially, what Felici and Pagnini (2008) aim at modeling is the dependence of the entry decisions of a given bank across different markets. In order to control for this effect, we follow them and introduce a variable (**expansion**), defined by the ratio between the number of pre-entry locations where a bank opened a new outlet and the total number of its pre-entry locations (recorded at the beginning of our sample period, that is prior to deregulation). As for Felici and Pagnini (2008), the variable enters significantly in the estimated specification with a positive sign (which suggests complementarity between the two expansion strategies), but the main result of our paper related to the market power-entry relationship does not change. In column (4) we try to model an additional factor that might shape the dependence of the entry decisions, namely the intensity of multi-market contacts between banks. The banks included in our estimation are both potential entrants for the markets in which they do not operate at the time of deregulation and incumbents in all the markets in which they possess branches. A bank deciding whether or not to enter a new geographic market might take into consideration the number of "contacts" it has with the incumbents operating in the target market, that is the fact that it is contemporaneously present with those incumbents in other markets. The acknowledgement of this link between entrants and incumbents might shape the dependence of entry decisions. The literature on mutual forbearance-collusion and multi-market contact is well known (see the theoretical contributions of Bernheim and Whinston, 1990 and Spagnolo, 1999 among others). This literature suggests that banks might refrain from entering a market in which operate incumbents with whom they have contacts in other local markets. However, a recent contribution by Fuentelsaz and Gomez (2006) shows that, for

low levels of multi-market contacts, there might be an incentive to enter those markets, precisely to set up a network that might facilitate collusive practices afterwards. Whatever the story is, multi-market contact between entrants and incumbents might generate a dependence in the entry patterns, both between the entry decisions of a given bank in different markets (that share the same incumbents) and between the entry decisions of different banks. For this reason, we introduce a control variable that counts the number of multi-market contacts that each bank has with the incumbents in the target market. The variable **multimarket** is given by the ratio between the sum of contacts that a bank has with the incumbents in the target market and the number of provinces in which a bank is operating at the beginning of the sample period. The variable enters positively the estimated specification, which suggests that banks, at least at the early stage of deregulation, were targeting markets in which incumbents were "known" incumbents. This, however, does not alter the main finding of our paper, that is the negative link between market power and entry.

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