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BAD LOANS AND ENTRY INTO LOCAL CREDIT MARKETS

by Marcello Bofondi* and Giorgio Gobbi*

Abstract

Is deregulation sufficient to grant free entry in local credit markets? Economic theory suggests at least two ways in which asymmetric information between incumbents and entrants can work as an endogenous barrier to entry. First, entrants' pool of applicants contains a larger share of potential customers who are not creditworthy because it includes all those would-be borrowers who were previously rejected by mature banks in the market. Second, since a substantial amount of the information used by banks to screen loan applicants and monitor borrowers is generated through repeated interaction with their customers and the local business community, incumbents' creditworthiness tests are likely to be more accurate. Other things being equal, entrants are therefore expected to experience higher loan default rates than incumbents. Using a unique database of 7,275 observations on 729 individual banks' lending in 95 Italian local markets, we find that both adverse selection and informational disadvantage play a significant role in explaining entrants' loan default rates. We argue that these endogenous barriers can help to explain why in many local credit markets by domestic and foreign banks was slow, even after substantial deregulation.

JEL classification: D82, G21, L13

Keywords: credit markets, barriers to entry, winner's curse, asymmetric information

Contents

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1. Introduction[1]

Geographical restrictions and legal barriers to entry into banking markets have been progressively relaxed since the late 1970s in the United States, Europe, both at country and European Union level[2], and many other countries. The lifting of regulatory constraints has been followed by an increase in competition that has led to substantial gains in terms of consumer welfare.[3] However, US banks have been slow to move into new markets and cross-border banking in Europe is still limited, particularly in the retail market.[4] Meanwhile, banking crises that have erupted in several countries around the world have been traced directly or indirectly to the repeal or relaxation of regulatory entry barriers.[5]

Is there anything special about banking services that makes entrants face additional entry costs, different from those paid by entrants in other markets, even when regulatory restrictions are lifted? Were the social benefits of increased competition, in terms of higher efficiency, higher deposit rates and lower loan rates, a free ride? Answering these questions is very important for policy reasons.

If entry barriers inherently linked with the nature of credit markets do exist, then geographical segmentation is likely to be a persistent feature of financial markets, regardless of deregulation and technological advances.[6] This implies that allowing for market free entry may not be sufficient to help local financial development, which has been proved to play a

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[2] See Berger et al. (1995) and Vives (1991) for a survey of the major regulatory changes in the US and in the European Union respectively.

[3] Hannan and Prager (1998) and Angelini and Cetorelli (2003).

[4] As documented in Buch (2002) and Danthine et al. (1999).

[5] Demirgüç-Kunt and Detragiache (2001), analyzing a sample of 53 countries, show that financial liberalization increases the probability of a bank crisis. Caprio and Klingebiel (2000) document a recent increase in the frequency of crises, attributing it at least in part to the lifting of structural controls. Pesola (2001) finds that market liberalization had a substantial role in bank crises in the Scandinavian countries during the early 1990s.

[6] Petersen and Rajan (2002) document that distance still plays a major role in the provision of credit to small firms, even though its importance is diminishing with the growth of remote banking facilities.

fundamental role in supporting and fostering economic growth (King and Levine, 1993; Guiso et al. 2003a).

Building on a vast theoretical literature, in this paper we argue that owing to asymmetric information new entrants in credit markets are likely to face a riskier pool of borrowers than that served by the incumbents. The entrant has a restricted choice in terms of risk-return combinations when assembling its loan portfolio and is therefore at a disadvantage compared with the incumbent. Furthermore, since credit risk is generally endogenous with respect to loan rates because of adverse selection, the entrant may actually be left with the less profitable segment of the market. As a consequence, asymmetric information can weaken incentives to entry and shield the incumbents' profits.

Entry may also occur because there are profitable lines of business other than lending to be exploited (e.g. payments and other financial services) or because of incumbents' inefficiency. Nonetheless, entry may generate social costs relating to the special nature of the banking firms, as long as the additional risks taken by banks entering a credit market raise their probability of default. Commercial banks' key role in providing liquid assets to the economy implies that the social losses associated with their bankruptcy usually exceeds the private losses of equity holders. Even if entry barriers are not too high to block entry, they may nevertheless add to systemic risk should some of the entrants default.

We address these issues using data on the Italian local credit markets in the early 1990s. Regulatory reforms introduced in the late 1980s allowed a substantial increase in the number of banks operating in each local market. The 1992-93 recession caused an unprecedented surge in non-performing loans, followed by severe losses for a large number of banks. Thanks to this unique database, we investigate individual banks' loan default rates in each local market.

There are two main theoretical arguments supporting the view that asymmetric information can work as a barrier to entry into credit markets and that incumbents' market power can be shielded to some extent from potential competition from outsiders. The first one, known in the auction theory as the winner's curse hypothesis, is related to the possibility that entry enables previously rejected applicants to apply for loans at additional banks. Insofar as borrowers' creditworthiness is assessed through screening procedures that

are not fully revealing and are imperfectly correlated across banks, a larger number of banks increases the probability that a bad risk will be considered creditworthy by at least one of them (Broecker, 1990). Adverse selection is greater for new entrants because their pool of applicants is likely to include would-be borrowers who were previously rejected by mature banks in the market. To our knowledge, Shaffer (1998), who is very close in spirit to our paper, has performed the only study that empirically tests the winner's curse hypothesis.

The second argument highlights the informational advantages of the incumbents regarding market-specific characteristics. A substantial amount of the information used by banks to screen loan applicants and monitor borrowers is generated through repeated interaction with their customers and the local business community (Dell'Ariccia et al., 1999). Many theoretical and empirical studies have documented that long-term relationships between lenders and borrowers are an important feature of most bilateral credit markets (e.g. Sharpe, 1990; Rajan, 1992; Boot, 2000). A considerable amount of valuable information can be acquired only on a market-specific "learning-by-doing" basis; moreover, the threat of potential competition can increase investments in bank-firm relationships (Yafeh and Yosha, 2001). It follows that incumbents' creditworthiness tests may well be more accurate than those of the entrants.

We test these hypotheses by investigating the variance in individual banks' default rates. As predicted by theory, we find evidence that, after controlling for the level of information on local market conditions, entrants are more exposed to bad loans than incumbents since they have to deal with the backlog of previously rejected applicants. Subsequently, we distinguish between two different ways in which a bank enters a local market. The first consists in granting loans from branches or the headquarters outside the local market. The second is to open a local branch. We argue that the two types of entry differ substantially in terms of the information gap vis-à-vis incumbents. Having on site-branches allows banks to monitor borrowers more rigorously and to acquire a deeper knowledge of the local economy. Moreover, entry with branches is usually anticipated by entry with outside lending. We find that banks that entered with relatively more information, i.e. by opening a branch, experienced a lower default rate than those that entered without branches. There is also a positive relation between the loan default rate and the number of banks operating in a market, as predicted by the winner's curse hypothesis. As a general

result, we find that the sub-optimal effects of entry on loan quality are mitigated when entrant banks are among the top performers of the industry. Borrowers of banks that are well-capitalized, efficient and have above-average profits show substantially lower default rates.

The remainder of this paper is organized as follows. In Section 2 we survey some theoretical and empirical contributions in this field. In Section 3 we illustrate our empirical specifications, and in Section 4 we discuss our data and explain how the relevant variables have been constructed. Section 5 presents our results and Section 6 draws the conclusions.

2. Related literature

The possibility that an increase in banking competition may have sub-optimal allocative effects has long been recognized, but only recently has the argument been cast in formal models. The backbone of most of these is an application of the theory of common value first-bid auctions (Milgrom and Weber, 1982). When banks compete in prices (i.e. interest rates) and have an imperfect knowledge of the would-be borrowers' ability to repay their debts, they face an externality caused by the decisions of the other banks.[7] The screening procedure used by banks may be thought of as a not fully revealing test of the quality of the applicant. Depending on the result of the test, banks make an interest rate offer or deny credit. The borrower chooses to sign the credit contract with the bank that offers the lowest interest rate. If the tests run by different banks are not perfectly correlated, there is a positive probability that an applicant's creditworthiness will be assessed differently by different lenders. This implies that the probability that a high-risk borrower will be found creditworthy is positively correlated with the number of tests run. It follows that the average quality of the pool of successful borrowers (and consequently the expected losses from bad loans) declines (increases) as the number of banks in the market increases (decreases).

This idea was formalized by Broeker (1990) using credit-scoring tests with binary outcome. Competition is modeled in two different ways – as a one-stage game and as a two-stage game – obtaining different results for the existence and the characterization of the

[7] As stressed by Dell'Ariccia et al. (1999) in order to obtain a winner's curse effect asymmetric information between lenders and borrowers about the borrowers' type is not strictly necessary. The borrower may as well

equilibrium solutions. In both cases an increase in the number of banks can have negative effects on the average ability to repay the loan of those who are granted credit. A similar result was obtained by Riordan (1993) in a model in which banks are able to run creditworthiness tests delivering continuous signals. An increase in the number of banks raises the threshold value of the signal above which the loan is granted, but this effect can be offset by the higher probability that at least one bank will observe a "high-quality" signal screening a "low-quality" applicant. In Riordan's model the entry of new banks into a credit market is associated with a more restrictive supply stance. For a non-trivial set of parameters, the equilibrium default rate in the market is also positively correlated with the number of active banks.

As auction theory has long recognized, additional insight may be gained when information about the value of the object being sold is asymmetrically distributed among participants (Wilson 1967, 1977). Dell'Ariccia et al. (1999) analyze an entry model in which the incumbent has an informational advantage through a long-term relationship with a percentage of customers. This advantage is greater the lower is the customer turnover in the market. They characterize the equilibrium under Bertrand duopoly and show that the adverse selection of the pool of borrowers blocks entry. Marquez (2002) proposes a two-period model assuming that borrowers' characteristics are observable by banks only after a loan has been granted and that there is some turnover among borrowers. In the second period banks will refuse to continue financing borrowers shown to be bad. Since information is proprietary, these borrowers continue to be part of the pool of customers unknown to all the other banks. In this framework an increase in the number of banks disperses borrower-specific information, reducing banks' screening ability. Incumbents' informational advantage may also act as a barrier to entry if borrower turnover is low.

The role of relationship lending in magnifying entrants' vulnerability has been extensively studied. Relationship lending generates informational rents accruing to the banks; "captured" firms can try to escape by looking for better deals in the credit market. Sharpe (1990) has shown that if an uninformed outsider bank offers a competitive interest

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ignore his/her own type.

rate (e.g. reflecting the average credit quality), only bad borrowers would prefer to switch.[8] The information asymmetries on the same side of the market (the supply side) created by relationship lending are therefore most likely to compound the adverse selection problems faced by a new entrant (Nakamura, 1993). Furthermore, when assessing the creditworthiness of a loan applicant, banks usually refer to their past experience with similar borrowers in similar markets. This may imply that when a bank expands in a new market or sector, the negative effects of a lack of expertise may overcome the benefits from risk diversification (Winton, 1997).

Compared with the abundance of theoretical papers on the subject, empirical work has been rather limited. Keeley (1990) finds indirect evidence of increasing credit risk as a consequence of entry. Analyzing US data from the period 1970-1986, he shows that banks with more market power have a lower default risk as reflected in lower risk premiums on large, uninsured CDs. Shaffer (1998) tests empirically the prediction that *de novo* banks should suffer higher loan losses due to the adverse selection effect. He considers all US commercial banks during the period 1986-1995 and regresses the net chargeoff ratio versus annual age dummies for each of a bank's first 10 years, controlling for business cycle and other macroeconomic effects, including quarterly calendar time dummies. He finds that the net chargeoff rates are strongly and significantly higher from year 3 on. After discussing alternative explanations of this pattern (such as the seasoning of a new portfolio or learning by an inexperienced lender), he concludes that adverse selection is the main cause. Shaffer also estimates a cross-sectional model using data from mature banks, each operating in a single geographic market (MSA). He finds a strong positive link between gross chargeoff rates and the total number of banks in each MSA.

On a different ground Hedricks and Porter (1988) investigate the links between the winner's curse and asymmetric information among bidders in auctions. They show that in equilibrium the uninformed buyer makes zero profits, while the informed buyer makes positive profits thanks to superior information. They also test these theoretical conclusions

[8] As pointed out by Von Thadden (2001) Sharpe's analysis is slightly incorrect since it assumes the existence of a pure strategy equilibrium in interest rates, which is not true. Nevertheless, informed banks still earn positive informational rents and so Sharpe's intuition is correct.

with data from federal offshore oil and gas drainage lease sales, finding that both types of buyer actually behave consistently with the Bayesian-Nash equilibrium.

3. Empirical strategy

The purpose of this paper is to test whether entrants in a local credit market are systematically subject to higher loan default rates than incumbents. If this is the case, we argue that it is a consequence of asymmetric information between banks.

The loan default rate is defined as the ratio between new bad loans at time T and the stock of performing loans at time $T-1$ granted to firms by a bank in a given local market. Loans are attributed to markets on the basis of customer location. The loan default rate is an ex-post measure of risk and thus depends on the states of nature that trigger defaults. In normal times defaults tend to be highly idiosyncratic according to the many characteristics of the borrowers, so that empirically it can be very difficult to test differences in banks' choices. We therefore choose to measure default rates in the aftermath of an economic downturn affecting all borrowers. Figure 1 summarizes the sequence of events that we try to capture. Given some initial conditions for banks and local markets, reforms are introduced lowering the barriers to entry into local markets. This facilitates entry and banks react in different ways to the new environment. Finally, a strong macroeconomic shock occurs and the magnitude of risks in banks' portfolios is revealed.

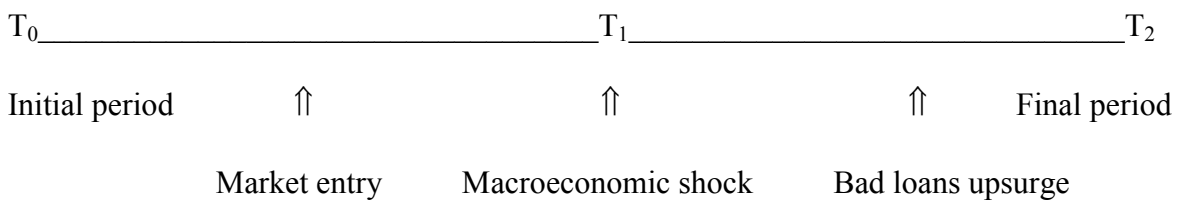

Fig. 1

3.1 The basic econometric model

We model the loan default rate of a bank in a given local market as a function of entry and information, plus two sets of dummy variables for banks' and markets' characteristics.

We expect entrants to face more severe problems of adverse selection, since they will receive applications from all the firms that have been previously rejected by the incumbents. Moreover, the adverse selection effect faced by the incumbents should be inversely correlated with their knowledge of the local markets. We estimate the following equation by weighted least squares logit regression for grouped data: [9]

$$y_{ij,T_2} = \alpha_i B_i + \beta MKT\_SHARE_{ij,T_0} + \gamma ENTRY_{ij} + \varphi_j P_j + \varepsilon_{ij} \quad (1)$$

where y_{ij,T_2} is the log-odds transformation of the default rate of bank i's loans in market j at time T_2. Local market characteristics are accounted for by the dummy P_j, while B_i is bank's i fixed effect. The variable $ENTRY_{ij}$ is a dummy that assumes a value of 1 when bank j enters market i in the period between T_0 and T_1. Entry is defined as the shift from a market share of zero to a positive one. Finally, we chose the loan market share in the initial period as a proxy for the amount of information about market characteristics.[10, 11]

The comparative disadvantage of entrants should be mitigated by a high turnover of bank customers. In each period the pool of potential borrowers is composed of the backlog of those previously rejected and of first-time applicants. The higher is the latter component, the lower the informational disadvantage of the entrants. We test this hypothesis by introducing in our regression an interaction variable between the entry dummy and a dummy identifying high turnover markets:

$$\begin{aligned} y_{ij,T_2} &= \alpha_i B_i + \beta MKT\_SHARE_{ij,T_0} + \gamma ENTRY_{ij} + \\ &+ \tau\, ENTRY_{ij} * TURNOVER_j + \varphi_j P_j + \varepsilon_{ij} \end{aligned} \quad (2)$$

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[9] This estimation method is chosen because we are dealing with proportion data, i.e. the fraction of loans in a local market that defaults in a given time interval. The dependent variable is continuous and ranges from zero to one. Applying the logistic transformation to the dependent variable allows it to range over all real values (the logistic transformation of p is given by ln(p/1-p)). Since the variance of the default rate is inversely correlated with the size of total bank lending in the market under consideration, weighted least square estimation is needed in order to avoid heteroskedasticity problems.

[10] A large market share may also be associated with monopolistic power, which in turn may affect risk-taking. The exertion of market power, however, depends on the overall market structure, for which we control through the dummies P_j.

[11] The choice of the market share as a proxy for information is justified by the conclusions drawn by Sharpe (1990), Dell'Ariccia et al. (1999) and Marquez (2002).

we expect a negative coefficient for the interaction variable and a stronger effect of the entry dummy on the default rate than in equation (1).

3.2 Different definitions of entry and different levels of information

The definition of entry we have used so far is very broad; the acquisition of a positive market share may be episodic and not necessarily reflect a strategic entry decision. In our definition the borders of local markets are those of local governments for which a satisfactory set of statistics exists. Bonaccorsi di Patti and Gobbi (2001) argue that provinces are also good approximations for local credit markets. On average, 80 per cent of borrowing by residents in a given province is from bank branches in the same province. Nonetheless, the proportion of credit granted from outside is not negligible. A natural alternative definition of entry is the opening of a new branch. When a bank enters a market by opening a new branch, it presumably has more of information about the local market conditions and its potential new borrowers than when it enters simply by granting loans from outside. This difference in knowledge may be due to the fact that the bank already had some customers in that market or to preliminary market research.[12] Opening a new branch implies sunk costs that must be justified by the expectation of reaching a critical mass of loans, and these expectations must be supported by information. Moreover, when a bank opens a new branch it is likely to provide payment services to its borrowers. Black (1975) and Fama (1985) argue that this may greatly help banks in their monitoring activity. Mester et al. (2001) provide empirical evidence that checking account information actually improves monitoring. We therefore compare the effects on the loan default rate of different types of entry characterized by different levels of information. Equations (1) and (2) are modified as follows:

$$y_{ij,T_2} = \alpha_i B_i + \beta MKT\_SHARE_{ij,T_0} + \phi ENTRY\_BR_{ij} + \\ + \nu ENTRY\_LOA_{ij} + \rho OUTLOANS_{ij} + \varphi_j P_j + \varepsilon_{ij} \tag{3}$$

where $ENTRY\_BR_{ij}$ indicates if bank i opened a branch in market j, $ENTRY\_LOA_{ij}$ indicates that bank i entered market j acquiring at least one new customer but without

[12] In our sample 452 out of 493 episodes of entry with branches refer to banks that were already lending in those markets. Moreover, an ANOVA analysis (not reported) shows that in the year preceding entry banks that entered with branches had been granting, on average, a larger quantity of loans than those that did not open branches.

opening a branch and finally, $OUTLOANS_{ij}$ is a dummy that is equal to one if bank i is an incumbent in market j but never opened a branch. We expect all three dummies to have positive coefficients. In particular, the effect on the default rates should be larger for banks that entered a market by lending from outside than for those that opened a branch.

Again we test whether high customer turnover mitigates the adverse selection effect by interacting the entry dummies and $OUTLOANS_{ij}$ with the high turnover market indicator. In what follows we refer to this specification as equation (4).

Theory suggests that we should obtain higher coefficients than those of equation (3) for the entry dummies and $OUTLOANS_{ij}$, while the interaction variables are expected to have a negative effect on the default rate.

The difference between entry with and without branches suggests a further possible test. The informational disadvantage of the entrants with branches should be lower if they were already granting loans in the market they entered. This reduction of the informational disadvantage should be smaller the larger their market share (our proxy for information) before entry. By the same token the default rate of the incumbents without branches should be also lower the larger the market share. We test this hypothesis interacting $ENTRY\_BR_{ij}$ with the pre-entry market share ($PRE\_MKT\_SHARE_{ij}$) and $OUTLOANS_{ij}$ with the initial period market share.

$$
\begin{aligned}
y_{ij,T_2} &= \alpha_i B_i + \beta MKT\_SHARE_{ij,T_0} + \\
&+ \phi ENTRY\_BR_{ij} + x\ ENTRY\_BR_{ij} * PRE\_MKT\_SHARE_{ij} \\
&+ \nu ENTRY\_LOA_{ij} + \\
&+ \rho\, OUTLOANS_{ij} + \eta\, OUTLOANS_{ij} * MKT\_SHARE_{ij,t} + \varphi_j P + \varepsilon_{ij}
\end{aligned} \tag{5}
$$

Introducing the interactions should reduce the value of the coefficient associated with the market share and increase that of $ENTRY\_BR_{ij}$ and $OUTLOANS_{ij}$ compared with equation (3). At the same time the two interactions are expected to have a negative effect on the default rate.

As a final test we specify a model in which both the turnover and the pre-entry information effect are present. In what follows we refer to this specification as equation (6).

3.3 Bank and market characteristics

As an extension of the basic model we replace the banks' fixed effects and the local market dummies with appropriate controls in order to have insights on bank and market characteristics that affect the loan default rate. Moreover, this procedure allows us to test two additional hypotheses. One, a direct consequence of the independence of the creditworthiness tests, is that the average quality of loans decreases as the number of banks in the market increases. The other, related to information, is that high borrower turnover, though mitigating the relative disadvantage of the entrants, should be positively correlated with the average default rate as it increases the share of borrowers known only through the creditworthiness tests. The empirical models have the same structure as those previously described and in what follows we refer to them as equations (1a), (2a), (3a), (4a), (5a) and (6a). Their specification can be found in Table VII.

We replace the markets' fixed effects with two sets of variables, the first intended to control for the initial conditions at time T_0, the second to take into account the changes occurring between time T_0 and time T_1. In our specifications we control for the size of the market and for the level of its overall economic activity through the variables $MARKET\_SIZE$ and $MARKET\_OUTPUT$. The two hypotheses previously described are tested by introducing the dummy $TURNOVER$ and the variable $NUMBER\_BANKS$; both are expected to have a positive coefficient. Market structure is controlled by the Herfindahl-Hirschman concentration index (HERFINDAHL) computed on loan market shares in the province. There are several reasons for introducing this variable. First, strong competition can have a disruptive effect on relationship banking, thereby reducing information reusability and returns; this diminishes the incentives to gather information and, consequently, the accurateness of the creditworthiness evaluation (Chan et al., 1986). Second, the exertion of some market power increases the benefits from providing financial support to firms in temporary distress (Petersen and Rajan, 1995), making borrowers' debt restructuring relatively less costly than default. These two effects should lead to a negative correlation between market concentration and loan default rates. On the other hand, low market concentration is frequently associated with low loan interest rates, as has been shown by many empirical studies (e.g. Berger and Hannan, 1989). According to the Stiglitz-Weiss

standard result on equilibrium credit rationing, when interest rates are low the pool of borrowers is likely to include a high proportion of low-risk customers Consequently, market concentration should be negatively correlated with low default rates[13]. A further reason to control for the level of competition is the use of banks' market shares as proxies for information. Finally, as will be discussed later, measures of concentration were employed by the regulators to set structural controls.

We account for the average quality of the borrowers in the market, as perceived by banks, by introducing the variable $LOAN\_RATE$: high loan interest rates in the initial period should signal that riskier projects have been financed and they are therefore expected to be positively correlated with ex-post default rates. In Italy court proceedings take a long time to produce an outcome (Generale and Gobbi, 1996; Bianco et al., 2001). Differences in court efficiency in enforcing bankruptcy procedures may be reflected in opportunistic behaviour on the part of borrowers (Shleifer and Vishny, 1993). Therefore, we include the variable $BANKRUPTCY$ indicating the average number of days needed to complete bankruptcy proceedings; the expected sign of its coefficient is positive. The changes in market conditions between T_0 and T_1 are described by the variables $DHERFINDAHL$ and $DLOAN\_RATE$. Finally, we control for the effect of the economic downturn with the variable $OUTPUT\_SHOCK$.

Regarding banks' characteristics, we control for size, efficiency and leverage. A bad management may have poor skills in credit scoring, be unable to appraise the value of collateral and have difficulty in monitoring. Banks that had a high proportion of bad loans in the initial period ($BANK\_BADL$) are also likely to have a high default rate in later periods. Overall efficiency is proxied by gross returns on equity ($BANK\_PROFIT$) and it is expected to have a negative coefficient. The loan default rate may also be affected by banks' moral hazard. Banks with low returns may be tempted to gamble, assuming too much risk in order to remain in the market. This temptation is stronger the greater the leverage, due to the effect of deposit insurance and limited liability (Brander and Lewis, 1986; Dewatripont and Tirole, 1994). The variable $BANK\_CAPITAL$, defined as the ratio of equity capital to total

[13] In Boyd and De Nicolò (2002) this insight is framed in a formal model.

assets, is expected to have a negative coefficient. The changes occurring between time T_0 and time T_1 are captured by the two variables $DBANK\_CAPITAL$ and $DBANK\_PROFIT$. An increase in leverage should be positively linked to the default rate, owing to the regulator's intervention. The expected sign of the coefficient associated with $DBANK\_PROFIT$ is less straightforward. An increase in bank profits may have two interpretations. On one hand, banks' overall efficiency may have improved during the period under consideration, and this would imply a negative coefficient associated with the variable $DBANK\_PROFIT$. On the other hand, short-sighted managers may deliberately choose to skimp on the resources devoted to creditworthiness evaluation in order to obtain high short-run returns at the price of larger loan losses in the future (Berger and DeYoung, 1997). In this case the coefficient should be positive. We also include a set of dummy variables indicating the institutional status of the bank (i.e. thrift institutions, special credit institutions, cooperative banks or community banks). We expect the coefficients of the dummies associated with cooperative and community banks to be negative, because of the high level of information that these institutions have about their customers, as documented by previous studies (e.g. Angelini et. al., 1998).[14]

3.4 Consequences on incumbents' loan default rates

A natural extension of the analysis is to assess the consequences of entry on incumbents' default rates. Theory suggests two effects working in opposite directions. The first one is related to incumbents' customers. According to Sharpe (1990), uninformed entrants offer an interest rate that reflects the average credit quality of borrowers in the market. In so doing they attract incumbents' high-risks customers who are charged high interest rates (Sharpe effect). This implies a negative relation between the number of entrants in a given market and incumbents' default rate. The second effect is related to the first-time loan applicants. Broeker (1990) and Shaffer (1998) predict that entry, by increasing the number of banks, increases the probability that a bad borrower will be found creditworthy by at least one of them (Shaffer effect). Therefore, a large number of entrants should be

[14] Both cooperative and community banks (respectively *banche popolari* and *banche di credito cooperativo*) are actually cooperative institutions, the latter being more strictly tied to relatively small local communities and subject to specific regulation.

correlated with higher default rates for incumbents. In order to test which of these two effects prevails, we estimate the following equation:

$$
\begin{aligned}
y_{ij,T_2} &= \alpha_i B_i + \beta MKT\_SHARE_{ij,T_0} + \eta\, OUTLOANS_{ij} + \\
&+ \phi N\_ENTRANTS_j + \gamma TURNOVER_j + \delta N\_ENTRANTS_j * TURNOVER_j + \\
&+ MARKET\_CONTROLS + \varepsilon_{ij}
\end{aligned} \tag{7}
$$

where y_{ij,T_2} is the log-odds transformation of the default rate of incumbent bank i's loans in market j at time T_2; $N\_ENTRANTS_j$ is the number of entrants in market j in the period between T_0 and T_1 and MARKET _CONTROLS is a set of covariates including market size, the number of existing banks, the Herfindahl index, the average loan rate, the average number of days needed to complete a bankruptcy procedure, the level of economic activity and the output shock. Depending on which of the two effects prevails the variable $N\_ENTRANTS_j$ will have a positive or negative coefficient. Whichever is the prevailing effect, incumbents in markets characterized by a high level of turnover should exhibit higher default rates, since in every period there is a larger proportion of borrowers whose risk level can be assessed through the creditworthiness test only. Actually, the Shaffer effect only works on new customers, so that introducing an interaction between the number of entrants and turnover allows us to disentangle the two effects. In order to check for robustness of these specifications, we also estimate the same models considering entry with branches and entry with loans.

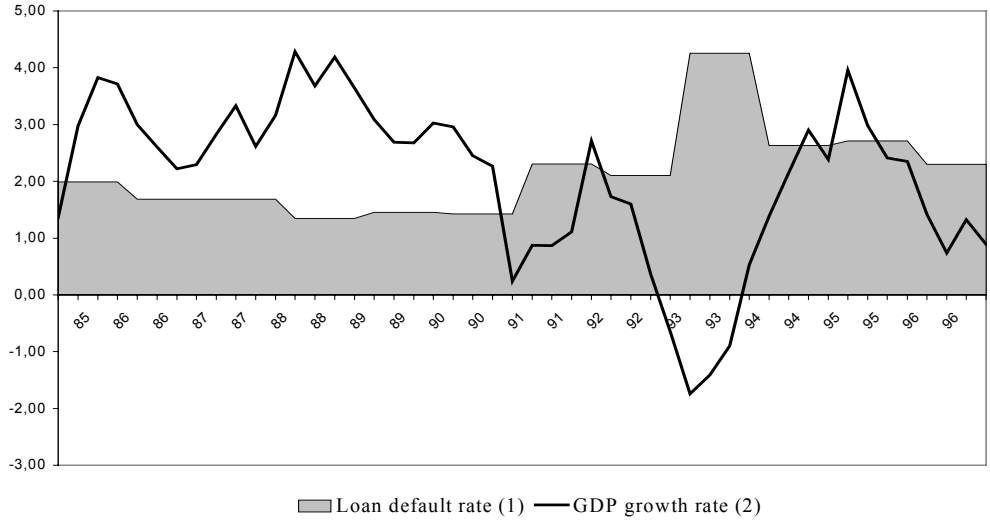
4. Data

We use data referring to the Italian banking industry for the period from 1986 to 1996 and define local markets as provinces.[15] Beginning in the 1980s the Italian banking system underwent a series of reforms aimed at increasing competition in the market. From 1985 to 1991 the Italian economy enjoyed a period of growth, which ended in 1992 with the deepest recession of the post-war period (see Chart 1).

[15] Italy is divided into 103 provinces, which correspond by and large to US counties. However, since 8

Chart 1

BAD LOANS OF ITALIAN BANKS
(pecentages and percentage changes)



Sources: Bank of Italy (Central Credit Register and Supervisory Reports) and Istat (National Accounts).
(1) New bad loans as a percentage of the stock of performing loans outstanding at the end of the preceding year: annual data.– (2) Percentage change at constant prices with respect to the corresponding quarter of the preceding year.

In particular, the Italian Credit Authorities increasingly liberalized branching and eased the geographical restrictions on lending, thereby lowering the barriers to entry into the local markets. From the late 1970s the opening of new bank branches had been regulated by the "branch distribution plans" issued every four years. Structural control on entry into local credit markets was deemed necessary on the grounds, widely shared by regulators in those years, that market forces alone could not deliver both efficiency and stability. Among the objectives of branch distribution plans was that of "seeking a more homogenous level of competition in the various areas" (Lanciotti, 1984, p. 229), and measures of market concentration were used to gauge rivalry among banks.

The last distribution plan was issued in 1986; from March 1990 the establishment of new branches was completely liberalized. This led to unprecedented growth in the number of branches: from 13,136 in 1985 to 19,786 in 1992. The phenomenon was nationwide: the province with the largest number of branches went from 891 in 1985 to 1,512 in 1992, the

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provinces were carved out in 1995, in our sample period we have only 95 local markets.

one with the smallest from 13 to 21. Along with the number of branches, the credit-to-GDP ratio also rose significantly in the same period. The GDP growth started to slacken at the end of 1991 and bottomed out during the first quarter of 1993. The long and severe recession proved to be a hard test for loans granted in the previous years; the default rate rose to 4.2 per cent, depressing banks' returns for several years.

We draw our data from four sources. The default rate and the local market credit variables are from the Italian Central Credit Register (CCR).[16] Banks' characteristics are from the Supervisory Reports to the Bank of Italy, which collects data about banks' balance sheets and income statements. GDP by province comes from the data constructed by the Istituto Tagliacarne, a research unit of the Italian Chambers of Commerce, while the length of court bankruptcy proceedings is drawn from the Court Statistics compiled by Istat, Italy's National Institute for Statistics. The Italian Central Credit Register (CCR) is a department of the Bank of Italy that collects data on borrowers from their lending banks. The reporting banks file detailed information for each borrower with total loans and credit lines above 75,000 euros. Banks are requested to report smaller exposures only in the case of the borrower's default. Bad loans are defined on a customer basis and therefore include all the outstanding credit to borrowers considered insolvent.

For bad loans we use the "adjusted" statistics provided by the CCR. In the case of a single bank relationship the "adjusted" definition coincides with bad loans, namely all the loans extended to insolvent borrowers. Loans extended to borrowers with multiple bank relationships are all classified among the "adjusted" bad loans when: i) the borrower is reported as insolvent by a bank which accounts for 70 per cent or more of the exposure to the banking system; ii) the borrower is reported as insolvent by two or more banks which account for at least 10 per cent of the total exposure to the banking system.

Our sample has 7,275 observations referring to 729 banks, representing virtually all commercial banks for which data were available during the period under consideration. Mergers and acquisitions that took place between 1986 and 1996 were considered as if they occurred in 1986. This implies that entry by M&A is not considered in our analysis; a bank

[16] A description of the Italian CCR is contained in Miller (2000).

entering a new market by M&A does not increase the number of banks in that market and inherits the information held by the acquired bank.

The sets of dummy variables that we use in our specifications lead to two partitions of our sample based on the banks' status of incumbent or entrant. Table I describes these partitions. Panel A is based on the dummies used in equations (1) to (6), where entry is defined as passing from a market share equal to zero to a positive one. By contrast, the partition in Panel B is based on the set of dummy variables used in equations (7) to (12), in which we distinguish between entry with and without branches.

Table II shows the descriptive statistics for the dependent and the independent variables. We constructed our dependent variable, the default rate, as an average from 1993 to 1996 of the ratios between new bad loans at time T to performing loans at time $T-1$. Italian regulations allow banks a large degree of discretion in judging whether a loan is bad or performing. The "adjusted" statistics on bad loans remove differences in banks' loan classification for multiple-bank borrowers. To cope with single-bank borrowers we chose to take the average ratio over several years. The initial period (1993) is the year of the business cycle trough which was followed by a short recovery and a further slowdown. The final period (1996) marks the beginning of a steady recovery. In computing the default rate we used data on non-financial firms with bank debt ranging from 130,000 to 26,000,000 euros. Data below this range are rather noisy because of the distortion introduced by the CCR reporting threshold, while those above it refer to loans granted to large firms, which are usually managed by banks' headquarters rather than by local branches. The average ratio was appropriately adjusted to compute its log-odds ratio.[17]

The variable MARKET_SHARE, intended to capture the level of information about market economic conditions, is the market share of loans by bank and province. The information acquired before opening a branch in a new market is proxied by the variable PRE_MK_SHARE, which is constructed as the market share of entrants with branches the year before entry.

[17] The default rate is p=z/k, where z are the new bad loans and k the stock of performing loans the year before. The correction sets z'=0.001*k whenever z=0 and k'=k+0.001*z whenever k=z.

All the initial conditions for bank and market characteristics refer to 1986, when the last "branch distribution plan" was issued. TURNOVER is a dummy variable that has a value of one if the customer turnover in a market (computed as the ratio between new customers in 1986 to existing customers in 1985) exceeds the 75^{th} percentile of the distribution of turnover over markets. The variable MARKET_SIZE is the log of the province's population, NUMBER_BANKS is the log of the number of banks operating in that market. Concentration is measured by the variable HERFINDAHL, which is the Herfindahl index computed on loans, based on the location of the borrower; LOAN_RATE, which measures the risk of the financed projects as perceived by banks, is the average interest rate on loans. The intensity of economic activity is measured by per capita value added (MARKET_OUTPUT). DHERFINDAHL and DLOAN_RATE are the differences of HERFINDAHL and LOAN_RATES respectively in 1991 (the last year before the recession) and 1986. The macroeconomic shock is captured by the variable OUTPUT_SHOCK, the rate of growth of value added in real terms in 1993, the year in which the recession reached its trough. A slightly different approach was used to construct BANKRUPTCY. This variable is the log of the average number of days needed to complete bankruptcy proceedings during the period 1983-86.

The variable BANK_SIZE is constructed as the log of total assets; BANK_CAPITAL is the ratio of capital to total assets. BANK_BADL is the ratio between the stock of bad loans and the stock of performing loans. BANK_PROFITS is measured by returns on equity before taxes. The variables accounting for changes in bank's characteristics, DBANK_CAPITAL and DBANK_PROFITS, are computed as the differences between the respective variables in 1991 and 1986. COMMUNITY, COOPERATIVE, SCI and THRIFT are dummy variables indicating whether the bank was, respectively, a cooperative bank, a community bank, a special credit institution or thrift institution.

The variable N_ENTRANTS is the log of one plus the number of entrants during the interval 1986-1991 in a given market. N_ENTRANTS_LOA and N_ENTRANTS_BR are the log of one plus the number of banks that entered a given market with loans and with branches respectively.

5. Results

We estimated equations (1) to (10) using weighted least squares logit regression for grouped data. Estimation results for the fixed effects model are shown in Table III. The first two columns report the estimated coefficients of the equations in which entry is defined as the acquisition of a positive market share during the period 1986-1991. The remaining columns show the estimation results for the equations in which we distinguished between entrants and incumbents with and without branches. The overall pattern of the coefficients is consistent across the different specifications.

Our hypothesis on the consequences of entry is confirmed by the data: the entry dummies are positive and strongly significant under both the definitions adopted. The coefficient associated with the market share is negative and significantly different from zero: the greater the information about the local market conditions and the pool of customers, the lower the default rate. The positive coefficient associated with *OUTLOANS* implies that granting loans from outside, i.e. with a small informational endowment, leads to high default rates. Moreover, the introduction of the interactions of the entry dummies with the market share, the pre-entry market share and customer turnover has the expected negative effects, confirming that the informational disadvantage is greater for complete newcomers and that the adverse selection they face is less where the turnover of customers is high.

As is well known, in a logit regression for grouped data it is not possible to interpret the regression coefficients as the partial derivatives of the conditional expectation of the default rate with respect to the associated independent variables. In order to assess the economic significance of the coefficients, we estimate the predicted loan default rates for different values of the relevant independent variables using Duan's (1983) smearing estimator.

The smearing estimate of the expected default rate evaluated at *k* is:

$$\hat{E}(p \mid X)_k = \int h(x_k' \hat{\beta}_{WLS} + \hat{\varepsilon}) d\hat{F}_n(\varepsilon) = \frac{1}{n} \sum_{i=1}^{n} h(x_k' \hat{\beta}_{WLS} + \hat{\varepsilon}_i) \tag{8}$$

which is consistent under mild regularity conditions, where

(9) $$h(y) = p = \frac{e^y}{1+e^y}$$

i.e. the inverse of the log-odds transformation, x_k is the vector of the control variables evaluated at k and $\hat{\beta}_{WLS}$ the vector of the estimated coefficients of the log-odds model. Following Manning (1998) the residuals are obtained as:

(10) $$\hat{\varepsilon}_i = y_i - x_i^{'}\hat{\beta}_{WLS}$$

where y_i is the $i-th$ observation of the dependent variable and x_i the vector of the regressors relative to the $i-th$ observation.

Table IV reports the predicted default rates based on the regression coefficients of equations (1) and (3) (Panels A and B, respectively). Panel A shows that loans granted by banks that enter a new market (here entry is defined as the acquisition of a positive market share) end up as bad debts with a 7.44 per cent probability, almost twice as high as loans granted by incumbents that had a large market share (i.e. equal to the 90th percentile of the distribution of MARKET_SHARE for the incumbents) in the initial period (3.08 per cent). Incumbents with a small market share (i.e. equal to the 10th percentile) experience a default rate lying between the two extremes, though closer to the lower one (3.59 per cent) and still below the sample mean. The difference in the predicted probabilities between the two types of incumbents can be explained by the different endowments of information. The entrants, on the other hand, not only have scarce information about the local market conditions, but they are also more exposed than incumbents to adverse selection.

The results reported in Panel B distinguish between banks that enter a new market by opening a branch (possibly already having some customers there) and those that enter by granting loans. The different categories of banks are ranked in ascending order with respect to the predicted default rate of their loan portfolio. This ranking would be exactly the same if we ordered them according to the amount of information they presumably have about the local market conditions and their borrowers or the possibility they have to monitor borrowers closely. Incumbent banks with a large market share and with branches are best placed to assess the impact of the business cycle on the local economy, to evaluate the creditworthiness of their borrowers and to monitor them once the loan is granted. Their

predicted default rate, equal to 2.00 per cent, is far below the sample mean. This informational advantage declines if the market share is small and becomes even less if a bank is new in that market: entrants with branches experience a default rate 0.9 percentage points (or 45 per cent) higher than incumbents with branches and a large market share. Having a branch on site seems to be very important in order to avoid credit losses. According to our estimates, even incumbent banks with a relatively large market share, but not present with a branch, are likely to have high default rates (4.40 per cent), more than twice as high as that of incumbents with a large market share and branches. An explanation is that better screening and monitoring abilities are associated with the presence of a branch.[18] Also, opening a branch implies some sunk costs and that requires a careful ex ante assessment of the profitability and the risk of the operation. It is therefore reasonable to suppose that banks that decide to open a branch are already quite well informed about the market conditions and the potential risks linked with the winner's curse. If a potential borrower applies for a loan in a bank that is relatively far from his location, it is reasonable to suppose that his application was previously rejected by some, if not all, the banks that have branches in his province. The winner's curse is therefore far stronger for those that grant loans from outside. This, plus the scarce information about local market conditions, explains the extremely high default rate (7.78 per cent) on the loan portfolio of those banks that enter without opening a branch.

Table V reports the predicted default rates obtained using the regression coefficients of equation (4) and highlights the role of information in reducing the loan default rate. Entrants with branches and with a small pre-entry market share experience loan loss rates 6 per cent higher than those with a large pre-entry market share. The difference between incumbents without branches with large and small market share is larger (10 per cent).

Table VI shows the effect of high customer turnover. Panel A reports the predicted default rates based on the regression coefficients of equation (5). Low customer turnover increases the default rate of entrants by 30 per cent. In Panel B, the predicted default rates are based on the regression coefficients of equation (6). Entrants with branches in high

[18] The presence of a branch is almost a necessary condition for the bank to supply payment services to borrowers in a local market. As shown by Mester et al. (2001) the information gathered through checking accounts makes banks more effective in their monitoring activity.

turnover markets have a default rate 11 per cent lower than their peers in high turnover markets. Entrants without branches reduce their loan default rate by 51 per cent if they enter a high turnover market instead of a low turnover one. This confirms that entrants without branches are much more exposed to adverse selection and informational disadvantage than entrants with branches.

We show the estimation results for the covariate model in Table VII, organized in the same way as Table III. Replacing market and bank fixed effects with the covariates does not alter the sign and the significance of the entry dummies and their interactions with market share, pre-entry market share and customer turnover. Again, the overall pattern of coefficients is consistent across the different specifications. The data support our hypotheses regarding the effects of the number of banks operating in a market and the existence of a high customer turnover: both NUMBER_BANKS and TURNOVER have a positive and significant coefficient. Banks operating in markets characterized by a large number of banks experience higher default rates, as predicted by the theory; high customer turnover increases loan losses because it increases in the share of borrowers known only through the creditworthiness tests. HERFINDAHL has a positive sign which is at odds with most of the theoretical predictions (e.g. Chan et al., 1986) and previous empirical evidence (Keeley, 1990).[19] There are several possible interpretations. One is that previous regulations on branching tended to shelter more fragile markets from competition. Another is that the inefficiencies associated with a lack of competition reverberate on the screening procedures (Guiso et al., 2003b). Finally, highly concentrated markets, other things being equal, are likely to experience high interest rates, therefore attracting high risk borrowers (Boyd and De Nicolò, 2002).

All the remaining coefficients on market covariates have the expected signs. The hypotheses regarding banks characteristics are also confirmed. Banks with high leverage, incapable managers and low efficiency experience significantly higher default rates, as confirmed by the signs associated with the variables BANK_CAPITAL, BANK_BADL and BANK_PROFITS. The negative coefficient associated with the variable DBANK_PROFITS

[19] Since we are aware of the potential problems due to multicollinearity with other variables we have estimated equations 1a to 6a without the variable HERFINDAHL, with no qualitative change and a slight inflation in the standard errors of some coefficients.

suggests rejecting the skimping hypothesis and accepting the idea of an improvement in banks' overall efficiency.

Applying the same methodology previously described, we assess the economic significance of the estimates by computing the predicted default rates for different values of the entry dummies, information and banks' and markets' covariates. The results in Table VII are computed using the regression coefficients of equation (1a). The top line of the table shows the predicted default rate for the three types of banks identified in this specification, keeping all the other covariates at their mean values[20]. The rest of the table reports the predicted default rates obtained by setting one regressor at the 25^{th} (75^{th}) percentile, while keeping all the others at the mean. Tables IX and X are similarly organized and report the predicted default rates for banks lending in local markets with and without branches, respectively; the regression coefficients used for the calculations are those of equation (3a). The values obtained keeping all the covariates at their mean are consistent with those reported in Tables IV and V. Banks lending in markets with a large number of banks experience a default rate up to 18 per cent higher than if they lent in markets with a small number of banks. Efficiency and managers' ability play a crucial role in determining the loan default rate of banks. Overall, ex-ante efficiency reduces the predicted default rate by almost 19 per cent. As could be expected, specific abilities in assessing creditworthiness and monitoring also have a significant impact. The predicted default rate is 15 per cent higher if computed at the 25^{th} or 75^{th} percentile of BANK_BADL. Finally, the strong local roots of cooperative and community banks generate relationship information of which lenders seem to take advantage in their screening and monitoring activities. The finding that these intermediaries experience lower than average loan default rates is consistent with other empirical studies performed using different samples and different methodologies (e.g. Cannari and Signorini, 1997).

Table XI reports the results of the analysis of the effects of entry on incumbents' default rate. The first two columns show the regression coefficients of the estimate of equation (7), with and without the interaction between the number of entrants and turnover. The negative coefficient of the variable N_ENTRANTS indicates that the Sharpe effect is stronger than the Shaffer effect: the improvement in incumbents' default rates deriving from

the fact that their riskier customers switch to the entrants more than compensates for the worsening of their loan quality due to the higher probability they have of assessing a high-risk new customer creditworthy. The second column of the table shows, however, that the Shaffer effect does exist and is significant. The coefficient of the interaction between the number of entrants and customer turnover is positive, while the absolute value of the coefficient of N_ENTRANTS increases. This is consistent with the hypothesis that, as far as first-time loan applicants are concerned, an increase in the number of banks in the markets causes incumbents' default rate to rise. Finally, this further specification can also be interpreted as a robustness check of the result that reduced distance between banks and their customers helps to keep the default rates low and that more information reduces the risk level of banks' loan portfolios. Both the coefficients of OUTLOANS and of MKT_SHARE are significant and with the same sign obtained in the previous specifications.

6. Conclusions

This paper has explored the links between entry and default rates of loans granted by the entrants. Using the coefficients of a log-odds regression for grouped data, we estimated the loan default rates for different definitions of entry and for different levels of information about the local market economic conditions. We found significantly higher default rates for banks that enter local markets than for the incumbents. The default rate is higher for banks that enter without opening a branch, suggesting that having a branch on site can help to reduce the informational disadvantage. Our results confirm the insights provided by theoretical models which emphasize the role of asymmetric information in determining incentives and costs of entry into credit markets.

We believe that our empirical results can have implications for several issues investigated in the banking literature as well as for policy-making. We discuss two of them: the welfare effects of a rise in bank competition and the importance of the distance between lenders and borrowers for market integration.

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[20] Mean values and percentiles refer to the distributions by banks and by provinces.

According to our estimates, entry into credit markets can generate substantial costs in term of loan losses and therefore the number of entrants into local credit markets may be too low. Combined with the well-established negative correlation between the measure of market competition and loan interest rates (Berger and Hannan, 1989; Berger and Hannan, 1998) our results suggest that market free entry may not sweep away all of the monopolistic rents earned by the incumbents. Endogenous barriers to entry are likely to be particularly high in two circumstances. The first is that in which lending and other activities based on the acquisition of proprietary information generate a high proportion of bank revenues. Banks are multi-output financial firms and for some of these outputs the importance of asymmetric information is of second order with the respect to the supply of loans. For instance, Hannan and Prager (1998) find evidence that in the US the liberalization of state laws restricting inter-state multi-bank holding company operations caused an increase in deposit interest rates. After the repeal of this legislation banks entering local markets to pursue profits in the deposit markets may also have exerted competitive pressures on the local loan markets. More generally, the ongoing trend of the last decade towards a larger share of service-based revenues by the banking industries in a large number of countries (OECD, 2003) may have substantially reduced the importance of barriers to entry related to loan markets. The other circumstance in which endogenous barriers to entry may be particularly severe is for relationship lending, i.e. for loans to small and innovative firms. Other empirical studies have emphasized the sensitivity of relationship lending to competition (e.g. Petersen and Rajan, 1995) because of the long term commitments required by strong bilateral relationships, which lead to very illiquid financial assets. Again, developments in the financial industries bringing new contracts and new intermediaries such as those associated with venture capital are likely to reduce the role of close bank-firm relationships and therefore of asymmetries among lenders (Rajan and Zingales, 2003).

The second issue we intend to dwell on is the role of distance. One of our key findings is that banks lending in markets in which they have branches experience far lower loan default rates than banks lending from a distance. The importance of distance in banking has been recently emphasized by a number of papers discussing the impact of technical progress in financial intermediation. Petersen and Rajan (2002) find evidence that in the United States the distance at which banks lend has increased substantially during the last decade. However

they also find that informationally opaque firms have closer lenders. Berger et al. (2002) show that large banks, which lend at a greater distance, interact more impersonally with their borrowers and have shorter relationships. In credit markets, where incomplete contracting is widespread, physical proximity is likely to reduce the information gap between lenders and borrowers. Geographical market segmentation is therefore likely to be a persistent characteristic for a significant proportion of borrowers, despite the development of remote banking facilities.

Tables

Table I

ENTRY INTO LOCAL MARKETS IN THE 1986-1991 PERIOD

The table reports the partition of our sample determined by the two different definitions of entry used. Panel A displays the number of observations referring to incumbents and entrants, in which entry is defined as passing from a zero to a positive market share during the sampling period. Panel B distinguishes between incumbents and entrants with and without branches. Note that the number of incumbents in Panel A is not the sum of the two types of incumbents in Panel B because 452 banks that entered with a branch, but were already granting loans, must be added. Similarly, the number of entrants displayed in Panel A is the number of entrants without branches reported in Panel B plus 41 banks that entered a local market in which they were not previously granting loans.

Panel A
Partition determined by the dummies used in equation (1), (2), (3), (4), (5) and (6)

ENTRY	Description	No. Obs.
0	Incumbents	5,696
1	Entrants	1,579
	Total	7,275

Panel B
Partition determined by the dummies used in equation (6), (7), (8), (9), (10), (11) and (12)

ENTRY_BR	ENTRY_LOA	OUTLOANS	Description	No. Obs.
0	0	0	Incumbents with branches	1,852
0	0	1	Incumbents without branches	3,392
1	0	0	Entrants with branches	493
0	1	0	Entrants without branches	1,538
			Total	7,275

Table II

VARIABLE DEFINITIONS AND DESCRIPTIVE STATISTICS

The table displays the descriptive statistics for the dependent and the independent variables. The database has 7,275 observations, referring to 729 banks and 95 local markets. The (0,1) notation indicates a dummy variable. The dependent variable, DEF_RATE, is the default rate of loans granted to firms and is obtained as an average from 1993 to 1996 of the ratio between new bad loans at time *T* and performing loans at time *T-1*. The original default rate was corrected in order to compute its log-odds ratio. The correction was made as follows: denoting the default rate as p=z/k, where z is the new bad loans and k the stock of performing loans the year before, we set z'=0.001*k whenever z=0 and k'=k+0.001*z whenever k=z. All the explanatory variables refer to 1986, except when differently specified. MKT_SHARE is the market share of loans by bank and market; PRE_MK_SHARE is the market share of the entrants with branches the year before entry. The following dummy variables are the indicators for entry and refer to the period 1986-1991: ENTRY indicates if a bank passed from a zero to a positive market share in a given market; ENTRY_BR assumes value one if a bank opened a branch in a market; ENTRY_LOA indicates whether a bank passed from a zero to a positive market share in a given market without opening a branch; OUTLOANS assumes value one if a bank was an incumbent in a market, but did not have a branch. TOURNOVER is a dummy variable that assumes value one if the customer turnover in a market (computed as the ratio between new clients in 1986 and existing clients in 1985) exceeds the 75th percentile of the distribution of turnover over markets. The variable MARKET_SIZE is the log of the province's population, NUMBER_BANKS is the log of the number of banks in each market. HERFINDAHL is the Herfindahl index computed on loans, based on the location of the borrower; LOAN_RATE is the average interest rate on loans. BANKRUPTCY is the log of the average number of days needed to complete bankruptcy proceedings during the period 1983-85. MARKET_OUTPUT is the log of per capita value added. DHERFINDAHL and DLOAN_RATE are the differences of HERFINDAHL and LOAN_RATES respectively in 1991 and 1986. OUTPUT_SHOCK is computed as the growth rate of value added in real terms in 1993. The variable BANK_SIZE is constructed as the log of total assets; BANK_CAPITAL is the ratio of capital to total assets. BANK_BADL is the ratio between the stock of bad loans and the stock of performing loans. BANK_PROFIT is measured by returns on equity before taxes. DBANK_CAPITAL and DBANK_PROFITS are constructed as the differences between the respective variables in 1991 and 1986. COMMUNITY, COOPERATIVE, SCI and THRIFT are dummy variables indicating whether the bank is, respectively, a cooperative bank, a community bank, a special credit institution or thrift institution.

Symbol	Mean	Min.	Max.	St. Dev.
Dependent Variable				
DEF_RATE	0.048	0.001	0.999	0.106
Explanatory Variables				
Bank - market variables				
MKT_SHARE	0.012	0.000	0.461	0.034
PRE_MKT_SHARE	0.001	0.000	0.223	0.005
ENTRY (0,1)	0.217	0.000	1.000	0.412
ENTRY_BR (0,1)	0.068	0.000	1.000	0.251
ENTRY_LOA (0,1)	0.211	0.000	1.000	0.408
OUTLOANS (0,1)	0.466	0.000	1.000	0.499

Table II – *Continued*

Market variables				
TURNOVER (0,1)	0.292	0.000	1.000	0.455
MARKET_SIZE	13.228	11.433	15.191	0.829
NUMBER_BANKS	4.851	3.296	5.979	0.546
HERFINDAHL	0.083	0.029	0.261	0.042
LOAN_RATE	14.823	12.660	17.960	1.311
BANKRUPTCY	7.652	7.389	8.125	0.177
MARKET_OUTPUT	3.313	1.369	5.122	0.527
DHERFINDAHL	-0.006	-0.122	0.051	0.019
DLOAN_RATE	-0.041	-2.690	1.530	0.764
OUTPUT_SHOCK	-1.580	-4.920	1.737	1.401
Bank variables				
BANK_SIZE	7.798	1.692	11.275	2.050
BANK_CAPITAL	0.059	0.005	0.204	0.033
BANK_BADL	0.063	0.000	0.472	0.034
BANK_PROFIT	0.262	0.012	2.979	0.156
DBANK_CAPITAL	0.014	-0.111	0.230	0.028
DBANK_PROFIT	-0.092	-2.876	1.704	0.165
COOPERATIVE (0,1)	0.197	0.000	1.000	0.397
COMMUNITY (0,1)	0.126	0.000	1.000	0.332
SCI (0,1)	0.195	0.000	1.000	0.397
THRIFT (0,1)	0.204	0.000	1.000	0.403

Table III

DETERMINANTS OF THE LOAN DEFAULT RATE: THE FIXED EFFECT MODEL

The table reports regression coefficients and associated standard errors, robust to heteroskedasticity, for the fixed effect model. The regressions are estimated with weighted least square logit for grouped data. The (0,1) notation indicates a dummy variable. Dummy variables for banks and markets are not reported. The dependent variable is the log-odds ratio of the loan default rate. The first two columns report the estimated coefficients of the equations where entry is defined as the acquisition of a positive market share during the period 1986-1991. The second column adds to the basic model the interaction between entry and customer turnover. Columns from three to six distinguish between entrants and incumbents with and without branches. The fourth column extends the basic model introducing two interactions: one between the entry dummy and the pre-entry market share (for those entering with branches), the other between the dummy for being an incumbent without branches and the market share. Column five introduces customer turnover, while the last column shows the effects of both market share and turnover.

Equation	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	-3.057 ***	-3.056 ***	-3.097 ***	-3.115 ***	-3.085 ***	-3.098 ***
	0.049	*0.049*	*0.046*	*0.046*	*0.046*	*0.046*
MKT_SHARE	-3.421 ***	-3.420 ***	-2.377 ***	-2.159 ***	-2.374 ***	-2.138 ***
	0.120	*0.120*	*0.125*	*0.126*	*0.125*	*0.126*
ENTRY (0,1)	0.964 ***	1.086 ***				
	0.081	*0.098*				
ENTRY * TURNOVER (0,1)		-0.355 ***				
		0.162				
ENTRY * MKT_SHARE						
ENTRY_BR (0,1)			0.187 ***	0.289 ***	0.238 ***	0.362 ***
			0.032	*0.036*	*0.040*	*0.045*
ENTRY_BR * TURNOVER (0,1)					-0.127 **	-0.163 ***
					0.061	*0.061*
ENTRY_BR * PRE_MKT_SHARE				-3.820 ***		-4.050 ***
				0.760		*0.767*
ENTRY_LOA (0,1)			1.392 ***	1.392 ***	1.589 ***	1.588 ***
			0.083	*0.082*	*0.101*	*0.100*
ENTRY_LOA*TURNOVER (0,1)					-0.551 ***	-0.546 ***
					0.162	*0.161*
OUTLOANS (0,1)			0.687 ***	0.775 ***	0.732 ***	0.863 ***
			0.027	*0.029*	*0.032*	*0.035*
OUTLOANS * TURNOVER (0,1)					-0.100 **	-0.185 ***
					0.042	*0.043*
OUTLOANS * MKT_SHARE				-5.331 ***		-5.771 ***
				0.573		*0.584*
Adj. R-squared	*0.623*	*0.624*	*0.659*	*0.664*	*0.659*	*0.666*
N. of observations	7,275	7,275	7,275	7,275	7,275	7,275
N. of local markets	*95*	*95*	*95*	*95*	*95*	*95*
N. of banks	*729*	*729*	*729*	*729*	*729*	*729*

*** , ** and * denote significance at the 1%, 5% and 10% levels, respectively, in a two-tailed test against a null of 0.0.

Table IV

ECONOMIC SIGNIFICANCE: THE EFFECT OF ENTRY IN THE FIXED EFFECT MODEL

The table reports the smearing estimates (Duan, 1983) of the effect of entry on the loan default rate. We obtain the predicted default rates shown in Panel A as follows. Using the coefficients reported in the first column of Table III, we compute the regression residuals as the difference between the dependent variable and the linear predictions (Manning, 1998). Then we compute the predicted values for each observation by adding to the residuals the product of the vector of the regression coefficients times the vector of the covariates evaluated at the mean value, except for the variables of interest. That is, we set MARKET_SHARE=90^{th} percentile of the distribution of MARKET_SHARE for the incumbents and ENTRY=0, if computing the default rate of the incumbents with a large market share; MARKET_SHARE=10^{th} percentile and ENTRY=0, if computing the default rate of the incumbents with a small market share; MARKET_SHARE=0 and ENTRY=1, if computing the default rate of entrants. Then we take the average and finally we apply the inverse of the log-odds transformation, obtaining the predicted default rate. The results shown in Panel B are obtained using the regression coefficients reported in the third column of Table III.

Panel A

	Predicted default rate
Incumbents with a large market share	3.08
Incumbents with a small market share	3.59
Entrants	7.44

Panel B

	Predicted default rate
Incumbents with a large market share and with branches	2.00
Incumbents with a small market share and with branches	2.58
Entrants with branches	2.90
Incumbents with a large market share and without branches	4.40
Incumbents with a small market share and without branches	4.53
Entrants without branches	7.78

Table V

ECONOMIC SIGNIFICANCE: THE EFFECT OF INFORMATION IN THE FIXED EFFECT MODEL

The table reports the smearing estimates of the effect of information on the loan default rate based on the regression coefficients shown in the fourth column of Table III. The computation technique is the same used in Table IV.

	Predicted default rate
Incumbents with a large market share and with branches	1.99
Incumbents with a small market share and with branches	2.51
Entrants with branches and with a large pre-entry market share	2.91
Entrants with branches and with a small pre-entry market share	3.09
Incumbents without branches and with a large market share	4.31
Incumbents without branches and with a small market share	4.73
Entrants without branches	7.60

Table VI

ECONOMIC SIGNIFICANCE: THE EFFECT OF TURNOVER IN THE FIXED EFFECT MODEL

The table reports the smearing estimates of the effect of customer turnover on the loan default rate based on the regression coefficients shown in the fifth column of Table III. The computation technique is the same used in Table IV.

Panel A

	Predicted default rate
Entrants in high turnover markets	6.28
Entrants in low turnover markets	8.13

Panel B

	Predicted default rate
Entrants with branches in high turnover markets	2.83
Entrants with branches in low turnover markets	3.14
Incumbents without branches in high turnover markets	4.26
Incumbents without branches in low turnover markets	4.61
Entrants without branches in high turnover markets	5.92
Entrants without branches in low turnover markets	8.95

Table VII

DETERMINANTS OF THE LOAN DEFAULT RATE: THE COVARIATE MODEL

The table reports regression coefficients and associated standard errors, robust to heteroskedasticity, for the covariate model. The regressions are estimated with weighted least square logit for grouped data. The (0,1) notation indicates a dummy variable. Dummy variables for thrift and special credit institutions are not reported. The dependent variable is the log-odds ratio of the loan default rate. The first two columns report the estimated coefficients of the equations where entry is defined as the acquisition of a positive market share during the period 1986-1991. The second column adds to the basic model customer turnover. Columns from three to six distinguish between entrants and incumbents with and without branches. The fourth column extends the basic model introducing two interactions: one between the entry dummy and the pre-entry market share (for those enter with branches), the other between the dummy for being an incumbent without branches and the market share. Column five introduces customer turnover, while the last considers both the effects of market share and turnover.

Equation	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
CONSTANT	-12.822 ***	-10.411 ***	-13.617 ***	-13.163 ***	-11.103 ***	-10.810 ***
	0.603	*0.612* ***	*0.586*	*0.581*	*0.594*	*0.588*
MKT_SHARE	-2.150 ***	-2.141 ***	-1.278 ***	-0.940 ***	-1.247 ***	-0.898 ***
	0.131	*0.129* ***	*0.135*	*0.137*	*0.132*	*0.134*
ENTRY (0,1)	0.918 ***	1.037 ***				
	0.101	*0.123* ***				
ENTRY * TURNOVER (0,1)		-0.451 ***				
		0.205				
ENTRY_BR (0,1)			0.281 ***	0.329 ***	0.310 ***	0.391 ***
			0.038	*0.043*	*0.048*	*0.055*
ENTRY_BR * TURNOVER (0,1)					-0.089 ***	-0.126 *
					0.072	*0.073*
ENTRY_BR * PRE_MKT_SHARE				-1.020 ***		-1.676 ***
				0.798		*0.803*
ENTRY_LOA (0,1)			1.368 ***	1.370	1.542 ***	1.548 ***
			0.105	*0.104*	*0.129*	*0.128*
ENTRY_LOA * TURNOVER (0,1)					-0.561 ***	-0.566 ***
					0.209	*0.207*
OUTLOANS (0,1)			0.688 ***	0.849 ***	0.719 ***	0.949 ***
			0.033	*0.035*	*0.039*	*0.043*
OUTLOANS * TURNOVER (0,1)					-0.010	-0.191 ***
					0.052	*0.054*
OUTLOANS * MKT_SHARE				-7.691 ***		-7.611 ***
				0.624		*0.639*
TURNOVER (0,1)		0.370 ***			0.397 ***	0.406 ***
		0.023			*0.024*	*0.024*
MARKET_SIZE	0.128 ***	0.040	0.174 ***	0.169 ***	0.082 ***	0.081 ***
	0.027	*0.027*	*0.026*	*0.026*	*0.026*	*0.026*
NUMBER_BANKS	0.359 ***	0.284 ***	0.338 ***	0.316 ***	0.260 ***	0.246 ***
	0.056	*0.055*	*0.054*	*0.054*	*0.053*	*0.053*
HERFINDAHL	6.426 ***	6.996 ***	6.377 ***	6.063 ***	7.004 ***	6.730 ***
	0.353	*0.349*	*0.343*	*0.342*	*0.339*	*0.338*
LOAN_RATE	0.309 ***	0.258 ***	0.302 ***	0.297 ***	0.249 ***	0.247 ***
	0.014	*0.014*	*0.013*	*0.013*	*0.014*	*0.014*

Table VII – *Continued*

BANKRUPTCY	0.335 ***	0.334 ***	0.350 ***	0.325 ***	0.349 ***	0.329 ***
	0.060	*0.059*	*0.058*	*0.057*	*0.057*	*0.056*
MARKET_OUTPUT	-0.126 ***	-0.200 ***	-0.072 *	-0.078 **	-0.150 ***	-0.154 ***
	0.040	*0.039*	*0.039*	*0.038*	*0.038*	*0.038*
DHERFINDAHL	2.696 ***	2.968 ***	2.970 ***	2.953 ***	3.302 ***	3.384 ***
	0.714	*0.702*	*0.694*	*0.692*	*0.680*	*0.679*
DLOAN_RATE	0.216 ***	0.189 ***	0.210 ***	0.217 ***	0.182 ***	0.186 ***
	0.017	*0.017*	*0.017*	*0.017*	*0.017*	*0.016*
OUTPUT_SHOCK	-0.072 ***	-0.044 ***	-0.076 ***	-0.070 ***	-0.048 ***	-0.044 ***
	0.007	*0.007*	*0.007*	*0.007*	*0.007*	*0.007*
BANK_SIZE	-0.058 ***	-0.059 ***	-0.061 ***	-0.059 ***	-0.063 ***	-0.063 ***
	0.009	*0.009*	*0.008*	*0.008*	*0.008*	*0.008*
BANK_CAPITAL	-4.156 ***	-4.115 ***	-4.005 ***	-4.302 ***	-3.967 ***	-4.204 ***
	0.477	*0.469*	*0.463*	*0.462*	*0.454*	*0.453*
BANK_BADL	3.831 ***	3.904 ***	3.920 ***	3.893 ***	3.953 ***	3.971 ***
	0.411	*0.404*	*0.399*	*0.396*	*0.392*	*0.389*
BANK_PROFIT	-1.610 ***	-1.518 ***	-1.671 ***	-1.571 **	-1.572 ***	-1.481 ***
	0.128	*0.126*	*0.124*	*0.123*	*0.122*	*0.121*
DBANK_CAPITAL	2.571 ***	2.249 ***	2.118 ***	2.030 ***	1.774 ***	1.634 ***
	0.533	*0.525*	*0.518*	*0.513*	*0.509*	*0.504*
DBANK_PROFIT	-0.277 **	-0.209 **	-0.407 ***	-0.302 ***	-0.336 ***	-0.261 **
	0.133	*0.131*	*0.129*	*0.128*	*0.127*	*0.126*
COOPERATIVE (0,1)	-0.070 ***	-0.069 ***	-0.086 ***	-0.090 ***	-0.084 ***	-0.089 ***
	0.034	*0.033*	*0.033*	*0.032*	*0.032*	*0.032*
COMMUNITY (0,1)	-0.451 ***	-0.410 ***	-0.384 ***	-0.357 ***	-0.342 ***	-0.321 ***
	0.087	*0.086*	*0.085*	*0.084*	*0.083*	*0.082*
Adj. R-squared	*0.332*	*0.355*	*0.372*	*0.385*	*0.397*	*0.409*
N. of observations	7,275	7,275	7,275	7,275	7,275	7,275
N. of local markets	*95*	*95*	*95*	*95*	*95*	*95*
N. of banks	*729*	*729*	*729*	*729*	*729*	*729*

*** , ** and * denote significance at the 1%, 5% and 10% levels, respectively, in a two-tailed test against a null of 0.0.

Table VIII

ECONOMIC SIGNIFICANCE: THE EFFECT OF ENTRY IN THE COVARIATE MODEL

The table reports the smearing estimates of the effect of entry by acquiring a positive market share on the loan default rate, based on the regression coefficients shown in the first column of Table VII. The computation technique is the same used in Table IV.

	INCUMBENTS WITH A LARGE MKT SHARE		INCUMBENTS WITH A SMALL MKT SHARE		ENTRANTS	
Mean values	3.78		4.15		8.03	
	25° perc.	75° perc.	25° perc.	75° perc.	25° perc.	75° perc.
BANKS	3.44	4.17	3.78	4.57	7.37	8.76
HERFINDAHL	3.14	4.17	3.45	4.57	6.78	8.75
LOAN_RATE	2.95	4.79	3.24	5.25	6.40	9.91
BANKRUPTCY	3.62	3.94	3.97	4.32	7.71	8.33
MARKET_OUTPUT	3.91	3.69	4.29	4.05	8.27	7.85
DHERFINDAHL	3.72	3.88	4.08	4.25	7.91	8.21
DLOAN_RATE	3.51	4.15	3.86	4.55	7.50	8.71
OUTPUT_SHOCK	3.96	3.61	4.34	3.96	8.35	7.69
BANK_CAPITAL	3.98	3.64	4.37	3.99	8.41	7.75
BANK_BADL	3.43	3.99	3.76	4.37	7.34	8.41
BANK_PROFITS	4.19	3.59	4.59	3.94	8.80	7.65
DBANK_CAPITAL	3.68	3.87	4.04	4.24	7.84	8.19
DBANK_PROFIT	3.83	3.73	4.20	4.09	8.12	7.91
COOPERATIVE	3.61		3.96		7.69	
COMMUNITY	3.37		3.71		7.24	

Table IX

ECONOMIC SIGNIFICANCE: THE EFFECT OF ENTRY WITH BRANCHES IN THE COVARIATE MODEL

The table reports the smearing estimates of the effect of entry with branches on the loan default rate, based on the regression coefficients shown in the third column of Table VII. The computation technique is the same used in Table IV.

	INCUMBENTS WITH A LARGE MKT SHARE AND BRANCHES		INCUMBENTS WITH A SMALL MKT SHARE AND BRANCHES		ENTRANTS WITH BRANCHES	
Mean values	2.83		3.23		4.00	
	25° perc.	75° perc.	25° perc.	75° perc.	25° perc.	75° perc.
BANKS	2.58	3.12	2.94	3.56	3.65	4.39
HERFINDAHL	2.33	3.13	2.66	3.57	3.31	4.41
LOAN_RATE	2.19	3.62	2.50	4.11	3.11	5.07
BANKRUPTCY	2.70	2.96	3.08	3.38	3.81	4.18
MARKET_OUTPUT	2.89	2.79	3.29	3.18	4.07	3.94
DHERFINDAHL	2.78	2.91	3.17	3.32	3.92	4.11
DLOAN_RATE	2.62	3.11	2.99	3.54	3.71	4.38
OUTPUT_SHOCK	2.98	2.68	3.39	3.06	4.20	3.80
BANK_CAPITAL	2.98	2.72	3.40	3.10	4.21	3.85
BANK_BADL	2.54	3.00	2.90	3.42	3.60	4.22
BANK_PROFITS	3.17	2.67	3.61	3.05	4.46	3.78
DBANK_CAPITAL	2.77	2.89	3.16	3.29	3.91	4.07
DBANK_PROFIT	2.89	2.76	3.29	3.15	4.07	3.90
COOPERATIVE	2.66		3.04		3.76	
COMMUNITY	2.55		2.92		3.62	

Table X

ECONOMIC SIGNIFICANCE: THE EFFECT OF ENTRY WITHOUT BRANCHES IN THE COVARIATE MODEL

The table reports the quantitative assessment of the effect of entry without branches on the loan default rate, based on the regression coefficients shown in the third column of Table VII. The computation technique is the same used in Table IV.

	INCUMBENTS WITH A LARGE MKT SHARE AND NO BRANCHES		INCUMBENTS WITH A SMALL MKT SHARE AND NO BRANCHES		ENTRANTS WITHOUT BRANCHES	
Mean values	5.43		5.51		8.97	
	25° perc.	75° perc.	25° perc.	75° perc.	25° perc.	75° perc.
BANKS	4.97	5.95	5.05	6.04	8.28	9.75
HERFINDAHL	4.52	5.97	4.59	6.06	7.58	9.78
LOAN_RATE	4.26	6.82	4.33	6.92	7.18	11.03
BANKRUPTCY	5.19	5.67	5.26	5.75	8.60	9.33
MARKET_OUTPUT	5.53	5.35	5.62	5.44	9.13	8.86
DHERFINDAHL	5.33	5.58	5.41	5.66	8.83	9.20
DLOAN_RATE	5.05	5.93	5.13	6.02	8.40	9.73
OUTPUT_SHOCK	5.69	5.17	5.78	5.25	9.37	8.58
BANK_CAPITAL	5.70	5.23	5.79	5.31	9.39	9.68
BANK_BADL	4.91	5.73	4.99	5.81	8.19	9.42
BANK_PROFITS	6.03	5.14	6.12	5.22	9.87	8.53
DBANK_CAPITAL	5.31	5.53	5.39	5.61	8.80	9.12
DBANK_PROFIT	5.53	5.31	5.61	5.39	9.13	8.79
COOPERATIVE	5.13		5.20		8.51	
COMMUNITY	4.93		5.01		8.22	

Table XI

EFFECT OF ENTRY ON INCUMBENTS' DEFAULT RATE

The table reports regression coefficients and associated standard errors, robust to heteroskedasticity, for equations (7) to (10). The regressions are estimated with weighted least square logit for grouped data. The (0,1) notation indicates a dummy variable. Dummy variables for banks and markets are not reported. The dependent variable is the log-odds ratio of the loan default rate of incumbents. The first two columns report the estimated coefficients of the equations where entry is defined as the acquisition of a positive market share during the period 1986-1991. The second column adds to the basic model the interaction between entry and customer turnover. Columns from three to four distinguish between entrants with and without branches. The fourth column introduces the interactions of the two types of entry with customer turnover.

Equation	(7)	(8)	(9)	(10)
CONSTANT	-8.458 ***	-8.043 ***	-8.198 ***	-7.602 ***
	0.620	*0.654*	*0.623*	*0.648*
MKT_SHARE	-2.442 ***	-2.420 ***	-2.390 ***	-2.363 ***
	0.152	*0.153*	*0.153*	*0.153*
OUTLOANS	0.674 ***	0.675 ***	0.677 ***	0.681 ***
	0.033	*0.033*	*0.033*	*0.033*
N_ENTRANTS	-0.191 ***	-0.224 ***		
	0.036	*0.040*		
N_ENTRANTS_LOA			-0.111 ***	-0.100 ***
			0.028	*0.037*
N_ENTRANTS_BR			-0.133 ***	-0.161 ***
			0.023	*0.024*
N_ENTRANTS*TURNOVER		0.100 *		
		0.051		
N_ENTRANTS_LOA*TURNOVER				0.044
				0.042
N_ENTRANTS_BR*TURNOVER				0.172 ***
				0.043
TURNOVER (0,1)	0.337 ***	0.004 **	0.344 ***	-0.115
	0.025	*0.170*	*0.025*	*0.146*
MARKET_SIZE	0.071 **	0.038	0.067 **	-0.017
	0.030	*0.034*	*0.029*	*0.036*
NUMBER_BANKS	0.199 ***	0.232 ***	0.227 ***	0.282 ***
	0.056	*0.059*	*0.057*	*0.059*
HERFINDAHL	4.785 ***	4.733 ***	4.965 ***	4.451 ***
	0.351	*0.352*	*0.352*	*0.373*
LOAN_RATE	0.107 ***	0.108 ***	0.091 ***	0.115 ***
	0.011	*0.011*	*0.012*	*0.013*
BANKRUPTCY	0.350 ***	0.357 ***	0.319 ***	0.344 ***
	0.060	*0.060*	*0.060*	*0.060*
MARKET_OUTPUT	-0.111 **	-0.140 ***	-0.088 *	-0.160 ***
	0.044	*0.046*	*0.044*	*0.048*
OUTPUT_SHOCK	-0.016 **	-0.014 *	-0.019 ***	-0.006
	0.008	*0.008*	*0.008*	*0.008*
Adj. R-squared	*0.586*	*0.586*	*0.587*	*0.588*
N. of observations	*5,244*	*5,244*	*5,244*	*5,244*
N. of local markets	*95*	*95*	*95*	*95*
N. of banks	*726*	*726*	*726*	*726*

*** , ** and * denote significance at the 1%, 5% and 10% levels, respectively, in a two-tailed test against a null of 0.0.

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