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History, Geography, and the Markets for Mortgage Loans in Nineteenth-Century France

Philip T. Hoffman, Gilles Postel-Vinay,
and Jean-Laurent Rosenthal

5.1 Introduction: Inequality, Endowments, and Market Institutions

From his early articles on Early American manufacturing onward, much of Kenneth Sokoloff's research focused on how access and distance to markets changed individual behavior and in turn influenced subsequent market development. In particular, he emphasized the positive effects of large, competitive markets (1984, 1988). We take up this theme in a different context—mid-nineteenth-century French mortgage markets. Credit markets are often thought to benefit from larger scale, most simply because borrowers and lenders will benefit from having access to more potential counterparties. Such a larger population of potential partners in transactions might arise in a large city or if the countryside is dense with small market towns. It would also arise if individuals were willing to travel some distance to secure investment opportunities or capital.

In the case of credit, however, the large competitive markets do carry a danger: as markets get bigger, asymmetric information becomes an increasingly serious problem. In particular, a lender rarely knows whether borrow-

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ers will repay or whether forfeited collateral will compensate for default. As a result, an individual may prefer to participate in a small market where information is good than in a large one where it is poor.

One solution is to have the lender investigate borrowers, but if the borrowers are not nearby, the lender will likely rely on agents to carry out the investigation. If so, then the lender will be vulnerable to the agents' misbehavior. Such moral hazard is not just a recent creation of venal mortgage originators eager to sign virtually anyone up for subprime loans. It is in fact an old problem, as shown by the history of the east coast mortgage companies who hired agents to originate loans in the Great Plains in the late nineteenth century. A land boom and competition from new mortgage companies led the agents to relax their lending standards, which provoked huge losses after a drought struck the Plains (Snowden 1995).

Instead of having a lender or his agents investigate borrowers, the borrowers can conceivably seek out lenders and convince them of their creditworthiness. If the borrowers do not employ agents in their search, they will avoid the sort of moral hazard problems afflicting lenders. But if (as is likely) they operate on a smaller scale than lenders, then the costs of searching may make it relatively expensive for them to look far from home. If so, they will borrow nearby, and the lenders will risk having too many local loans in their portfolios, which will leave them vulnerable to local economic shocks. Only large scale loans will offer an escape from this dilemma and at the same time help integrate the credit market across space.

Both alternatives then have advantages and disadvantages. Having lenders hire agents to probe borrowers runs the risk of moral hazard; having borrowers seek out lenders penalizes small loans and puts lenders at risk from local shocks. Which of the two alternatives prevails will depend upon history, institutional details, and the extent and location of local credit markets. With mortgages on the Great Plains, the first alternative prevailed, with lenders hiring agents. In France, by contrast, borrowers, as we shall see, sought out lenders, although there was some searching going on by lenders, too. But the French borrowers (and lenders) did not look on their own. They benefited from a network of intermediaries who helped borrowers find and convince lenders of their creditworthiness. The intermediaries were notaries—semi-public, semi-private officials who drew up loan contracts and other legal and financial documents and kept official copies for court proceedings. They created a positive externality in lending so that borrowers who were close to multiple credit markets could take out more loans, and lenders could make more investments than would otherwise have been possible. The externality resembles that found by Sokoloff for inventors who lived close to product markets, who ended up filing more patents. In France, the externality made possible a thriving mortgage market.

We proceed in three steps. We begin by summarizing the sources of our data and our aggregate findings of our research on French credit markets.

We next move to an analysis of local credit markets and then search for the positive externality by examining loans between inhabitants of different cities and towns. We show that there was indeed a positive network externality in credit markets, and we demonstrate that it is consistent with a queuing model. Our data suggests that competition and market integration were supported by two different sets of institutions. Individuals who engaged in small scale transactions relied on the dense network of notaries who referred business to one another and were all within an afternoon's walk. Individuals who wanted to participate in larger deals tended to meet in larger cities and rely on formal lien registries. While the local networks were dense enough to obviate the idiosyncracies of local demand, market integration depended upon the capacity of larger transactions to move capital from one region to another. The reason for this complex pattern of behavior, we argue, were the costs borrowers and lenders faced. There were fixed costs involved in arranging loans, which made it advantageous for a borrower to avoid dividing up his loan among several lenders. The cost of waiting for an appropriate lender to appear would be high for unusually small or large loans. Borrowers wanting small or large loans would therefore have an incentive to seek lenders elsewhere (and particularly in large cities), but travel costs could rule out such a search for small scale borrowers.

5.2 Mortgage Markets and Notarial Credit in France as a Whole

As we have explained in a book on Paris and in articles on rural lending, mortgages were a fundamental component of the European financial system from the Middle Ages to the first World War; so were other sorts of medium- and long-term loans secured by other forms of collateral. Most of this lending involved loans arranged by notaries, who provided legal advice and served as financial intermediaries. Unlike the stock market or the banking system, the study of this financial system has most often been left to historians who have examined the evolution of credit in one market, region, or for a particular social group. While time and again these scholars have emphasized the local importance of credit, little has been done to assess its overall importance or draw out conclusions about the aggregate sums involved, which, as we will see, were enormous.

Notaries were private individuals who after some training purchased the right to draft and authenticate private contracts in a given location. Other elements of their activity vary from country to country in continental Europe, and in France, before the French Revolution, from region to region. By the mid-nineteenth century, their number in France had stabilized at two to five per rural canton, with a larger number in cities as a function of the urban population. (Here the canton is the second smallest of the administrative subdivisions of France, one just above that of the municipality. The country as a whole was divided into approximately one hundred roughly

equal-sized divisions called departments, each of which contained several smaller subdivisions called arrondissements. The arrondissements, which took roughly a day of travel to cross on foot, were in turn divided up into several cantons, which typically contained a town and several villages.)

In contrast to other parts of the world, the French government encouraged competition by ensuring that notaries were not local monopolists and by allowing individuals to draw up contracts in front of whatever notary they wanted. Parties to all sorts of contracts—not just loans—had a strong incentive to consult a notary, for in civil litigation the burden of proof weighted heavily against anyone wanting to overturn a notarized contract. Even mortgages between family members or friends were often notarized, for otherwise the lenders would have had difficulty getting control of collateral or pursuing a defaulting debtor in court. Lending that did not involve notaries certainly did exist, but it was likely minimal, although the exact amount at stake cannot be measured precisely.¹

Notaries also had the advantage that their records gave them unparalleled information about individuals' asset position, which revealed who was a good credit risk and who had money to lend. The records included all previous contracts they and their predecessors had drawn up, from loans and land sales to wills, estate settlements, and prenuptial agreements. Unlike banks, they could not take a position in the contracts they drafted, and so they served not as bankers, but as brokers of information. Yet, as we have shown for Paris, that role was extensive.

To study the notarial market, we selected a stratified set of 103 cantons and collected data on all the new loans recorded in these cantons in 1840 and 1865. The data come from the registers of the *Enregistrement* tax (*Actes Civils Publics*). This tax was collected on all notarial contracts at *Bureaux de l'Enregistrement*, which were dispersed throughout France. The registers maintained by officers of the *Enregistrement* contain a great deal of detail about the financial terms of notarial contracts; for credit, they reveal social characteristics of borrowers and lenders and tell which notary drew up the loan.

The cantons include very large cities (e.g., Paris, Lyon, and Rouen), towns (e.g., Montpellier, Evreux, Vannes), and villages (e.g., Baud, Estissac) and are drawn from eleven departments (the Aube, Eure, Gard, Haute Garonne, Herault, Morbihan, Rhone, Sarthe, Seine, Seine Maritime, and Vaucluse) split evenly between northern and southern France. We focus on data from

1. For notarial lending between family members and friends, see Hoffman, Postel-Vinay, and Rosenthal (2000). Debt that did not involve notaries included informal consumption loans and certain forms of merchant credit that were not subject to the registration requirements. For an individual merchant, the mercantile credit could be important, but because only a small number of people took out such loans, they would count for very little in the per capita calculations below. They would count for even less if we weight loans by duration and consider debt stock, for the mercantile debt was short term (typically ninety days or less), while the mortgages had durations of several years (table 5.1).

these 103 cantons to avoid a problem in the literature, which often assumes that local credit markets can be treated as isolates. We, however, have learned that the local credit markets were interconnected. We thus needed to include regions where we had a large number of contiguous cantons so that we could observe individuals lending or borrowing both ‘at home’ and ‘away.’ A dense sample is particularly important if borrowers’ and lenders’ behaviour is affected by search costs, which would encourage them (and financial intermediaries such as notaries) to find potential lending partners in nearby communities. If borrowers, for instance, were seeking out lenders, then we would overlook what the borrowers were doing if they found matches in a medium-sized city that happened to be adjacent to one of our cantons but not in the data set.

The data set we constructed to avoid such problems includes some 55,000 loans that give addresses (or more precisely, the municipality of residence, which might be a village, a town, or a city) for borrowers, lenders, and notaries. These addresses have, to the extent possible, the geographical information system (GIS) codes showing precise location, which is useful for studying spatial transaction costs. The location of all 103 cantons in our panel are displayed in figure 5.1.

To gauge the importance of notarial credit, we turned to another, larger sample of notarial loans to estimate total notarial credit for France as a whole (Hoffman, Postel-Vinay, and Rosenthal 2008).² Ours come extremely close to the government’s estimates.³ We then employ the reported duration of the loan contracts and evidence about contract renewals to estimate the stock of loans. If we compare these numbers to the gross domestic product (GDP), the stock of notarial loans outstanding amounted to 27 percent of the GDP in 1840 and 20 percent in 1865 (table 5.1). There is thus no doubt notarial credit was large. Indeed, given the huge number of notarial loans that were made, we estimate that about one quarter of French households were involved in this market either as lenders or more likely as borrowers.

This rosy picture of a broad credit market was clouded by one darker trend, for by our estimates the number of new loans fell between 1840 and 1865. If there was a loan outstanding for every fourteen persons or so in 1840, that number had fallen to one in twenty by 1865. While it is conceivable that the maturing banking industry was siphoning away some business from notaries, such a turn of events is unlikely, for even the first banks to offer mortgages worked hand in hand with notaries. Indeed, as the history of the first such major mortgage bank (the *Crédit Foncier*) shows, the new intermediaries were dependent upon the system for registering liens, which

2. For our estimate, we divided the data from the lending offices in our larger sample into four categories based on population (Paris, large cities, cities, and rural markets). We then computed per capita levels of lending for each category and then used French population data to estimate total lending for France as a whole.

3. See Martin du Nord (1844) and Allinne (1978).

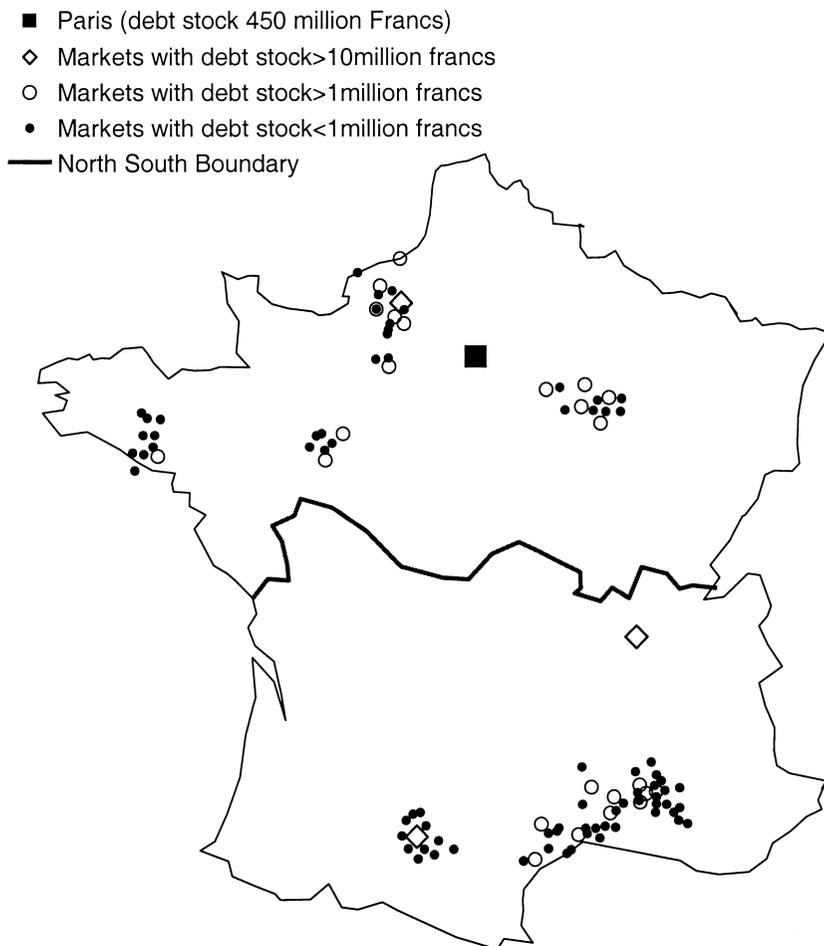


Fig. 5.1 Cantons in our sample

the notaries controlled, and in any case, the figure here for the number of loans in 1865 excludes those made by the *Crédit Foncier* (henceforth CFF).⁴ A more likely explanation was a rise in wealth inequality (Piketty, Postel-Vinay, and Rosenthal 2006). That process, which has been documented with data from wealth at death, included both a jump in the value of large estates and an increase in the fraction of the population dying without any wealth. If the distribution of wealth among the living was not appreciably different, then a declining fraction of the population had assets, which were a pre-

4. Adding the CFF would not change the number of loans per capita appreciably, but it would increase their size and duration (table 5.1).

Table 5.1 Estimates of mortgage lending in France, 1840–1865

	1840 total	1865 notaries	1865 CFF	1865 total
Number of loans (000)	653	452	1	454
Amount lent (million francs)	817	919	53	972
Number of outstanding loans (000)	2,314	1,958	40	1,997
Number of outstanding loans per capita	0.07	0.05	0.00	0.05
Total stock of loans (millions of francs)	3,675	4,097	581	4,678
Stock of loans/GDP	0.27	0.19	0.03	0.23
Average duration (years)	4	4	31	6
Average loan size (francs)	1,251	2,031	45,926	2,143
Average loan size/GDP per capita	2.7	3.5	83.6	3.9

Source: Hoffman, Postel-Vinay, and Rosenthal 2008.

Note: The CFF (Crédit Foncier de France), which was founded in 1852, was essentially the only bank that made mortgage loans in 1865. For details, see the text and Hoffman, Postel-Vinay, and Rosenthal 2000.

requisite for accessing notarial credit. The lack of collateral plus growth in average wealth for those who did have some assets might well have led to fewer notarial debt contracts in total and a larger average loan size for the smaller number of notarial credit contracts that were being drafted. That is precisely what we observe.

The size of the debt stock implies that notarial credit was extremely important to the French economy. Some loans were, of course, small—the 100 francs that the vintner François Meunier and his wife borrowed in 1840 from their neighbor, the laborer François Gressin, or 160 francs that the laborer Etienne Desgens owed the landowner François Poubeau in the same year.⁵ But even the 100 francs represented 50 days of work for an unskilled day laborer, and overall notarial lending, we know, was sizeable and mattered to a significant number of French families. Our laconic records rarely mention what the loans were used for, but the occupations of borrowers and lenders suggest that notarial credit was important to local industry, such as textiles in Lyon. And occasional indications in the records of the tax offices reveal that notarial credit could be used for the newest investments, such as installing gas lights in the city of Dijon.⁶ How, then, were all these loans arranged? How did borrowers and lenders manage to overcome the problems of asymmetric information and move such large sums of money? The rest of this chapter attempts to answer these two questions.

5. The examples here come from the records for the office of Dun-sur-Auron at the Archives départementales du Cher, 1 Q 4025 (6 January 1840).

6. Records of the office of Lyon, 2e arrondissement, at the Archives départementales du Rhône, 3Q18 9 (11 June 1840).

5.3 The Externality in Credit Markets

It is easy to understand why access to large credit markets might generate a positive externality. With a large market nearby, both borrowers and lenders would have more financial transactions to choose from and hence more that would be appealing. Their search costs would be lower, too. Lenders might be able to do without agents—and the attendant moral hazard problems—and if borrowers sought out lenders, they might have an easier time convincing them of the value of their collateral, provided the lenders were locals who were familiar with the local property market. In either case, we would then see more lending (other things being equal) when large credit markets were close by.

We wanted to see if such a positive externality appeared in our data. To do so, we created three measures of access for each of the municipalities in our sample and then regressed the per capita stock of lending in the municipality on the access measures. If there is a positive externality, the regressions should yield large and significant positive coefficients for at least one of the three measures.

The first access measure is simply an index that gauges whether a given municipality has large cantons (over 20,000 inhabitants) nearby. The other two measures are indexes for having medium-sized cantons (10,000 to 20,000 inhabitants) or small-sized cantons (under 10,000 inhabitants) nearby. The regressions (which we do not report here) also include fixed effects to control for local economic conditions, and they were run separately for groups of municipalities with different population levels.⁷

The regressions do point toward a strong positive network externality, but only one that benefited small- or medium-sized municipalities when they were surrounded by small- and medium-sized cantons. Only then was per capita stock of loans boosted by a statistically significant and economically sizeable amount.⁸ One might worry that we were simply picking up

7. The first index simply takes the population of each canton in our sample with over 20,000 inhabitants and divides it by the distance to a given municipality. This index will therefore be large if the municipality has large cantons (over 20,000 inhabitants) nearby. The other two indexes are calculated in a similar fashion using medium-sized and small cantons. To avoid problems of endogeneity, the calculations used 1806 populations, and to dampen noise from annual shocks to local markets, the dependent variable was the sum of the per capita stock of loans in 1840 and 1865. Alternative measures for the stock of loans were calculated using figures for local borrowing and local lending, and the regressions were run for each measure. The regressions were also run separately for the following groups of municipalities: those with over 5,000 inhabitants, those with populations between 2,000 and 5,000, those between 2,000 and 1,000, those between 500 and 1,000, and finally those under 500. The full regression results and further information about the variables are available from the authors.

8. For example, a one standard deviation increase in our second index (which measured having medium-sized cantons nearby) boosted per capita borrowing by 158 percent in municipalities with populations between 2,000 and 5,000, and by 468 percent in the smallest municipalities. The externality affected both per capita lending and per capita borrowing, but it disappeared when the regressions were run for municipalities with over 5,000 inhabitants.

the effect of trade between a municipality and the population in nearby cantons, which might raise incomes and therefore generate more lending, but if that were the case, then we would also expect more lending when large cantons were nearby. But having large cantons close by did not boost lending significantly. Furthermore, the pattern of lending was not consistent with a gravity model of trade, as one would expect if positive externality simply reflected trade effects.⁹

If we accept this evidence, where do the externalities come from? One possibility is that the externality is generated from the greater number of opportunities that appear when a small- or medium-sized municipality is surrounded by a dense network of small or medium cantons. The cantons give the residents of the municipality access to potential financial transactions that they could find in their municipality, and the cantons do so at relatively low cost since they are not far away. The effect then disappears in larger municipalities, where the population is large enough to furnish appealing financial partners without leaving the community, and the resulting pattern of transactions would not necessarily fit a gravity model. But how then do borrowers and lenders seek out the matches, whether at home or in neighboring cantons? Do the borrowers search, or the lenders? And do they seek the assistance of intermediaries?

5.3.1 Individual Loans

To see how borrowers and lenders might find matches and how the externality in credit markets might arise, let us consider what happened in the market for mortgage loans. First, most mortgage loans paid interest at close to 5 percent, since collateral requirements served to equalize the risk profile of borrowers (Hoffman, Postel-Vinay, and Rosenthal, forthcoming). The dimensions of a loan that mattered more were its duration, its size (someone who wanted to borrow a significant sum could do so in one or several loans, but transaction costs would be lower for a single loan), the amount of time that it would take to complete the transaction, and the distance between the borrower and the lender (while the two need not have met, they still had to sign documents in presence of the notary).

Distance between borrower and lender was more important than one might think, because the modern solution to the problem of matching borrowers and lenders—going to a bank that would raise capital from investors and then use the pooled money to fund mortgages—was a rarity, both in France and in other parts of Europe, until at least the 1850s. As we have previously shown, there were banks in many cities in France, and although the number of banks in a city was positively correlated with the volume of local mortgage lending, the banks were making short-term loans, not writing mortgages (Hoffman, Postel-Vinay, and Rosenthal 2008). The reason

9. Evidence from a gravity model regression is available from the authors.

was simple, as the recent mortgage meltdown in the United States shows: it was risky to fund medium- and long-term loans with the sort of demand deposits that banks relied on.

Visiting a bank was thus not an option for most borrowers. That was true even in 1865, when the major mortgage bank in France (the CFF) might have originated what we estimate to be some 12 percent of the stock of loans (table 5.1). Most of these CFF mortgages were large loans for Parisian or other urban borrowers; outside such large cities, the CFF was responsible for only 3 percent of the stock. At the time, there were really no other significant mortgage banks (Hoffman, Postel-Vinay, and Rosenthal 2000, 2008).

If the vast majority of borrowers and lenders were not matched up by a bank that conveniently pooled the lenders' deposits, they faced a queuing problem. Somehow, a borrower had to find a saver who happened to be interested in making a loan of the right size, right duration, and right interest rate. A lender faced the same problem, and it would be costly for the two to find one another if they lived apart. The problem would be particularly severe in smaller markets, because the arrival rate of demands for new loans would be slow, and the same would hold for offers to supply new loans. In larger markets the interval of time between new loan demands or between offers to supply new loans would be less.

Now consider a lender who lives in a settlement of a given size. In equilibrium, she faces transaction costs incurred in determining the characteristics of a potential partner and a given wait time for completing a desired transaction in her home market. If that wait time is long enough, she may want to see if there is another market nearby where she can arrange the transaction quickly. However, doing so raises three costs. First, since there are many alternative markets, she needs to find out where there are borrowers who are likely to suit her needs. She also faces the travel costs needed to complete the deal, both when trying to find a suitable borrower and when concluding the transaction. Finally, she must worry about the possibility of adverse selection and moral hazard. A borrower would face similar problems, and in particular would have to overcome adverse selection and moral hazard problems in convincing lenders that he was a good credit risk.

In the absence of intermediaries, the first and third problem are likely to prevent nearly anyone from arbitraging the wait times, for no one knows where to go, and people will worry about facing a lemons problem in the foreign market. The evidence from our credit markets suggests as much. It was rare to see loans between borrowers and lenders who had the sort of personal ties (belonging to the same family or profession, living in the same village or city neighborhood) that we would expect if they were arranging loans on their own without the help of intermediaries. In a big city like Paris, where the first and second sorts of costs would be irrelevant, borrowers and lenders had ceased relying on such personal ties back in the early eighteenth century (Hoffman, Postel-Vinay, and Rosenthal 2000). Evidence from Lyon

suggests much the same. There a sample of loans suggests that only 14 percent of lenders had obvious personal ties in 1840.¹⁰

Borrowers and lenders could therefore try to overcome their queuing problem, but they would then face even more serious trouble with asymmetric information. Demand would therefore rise for intermediaries who could furnish the desired information. We cannot demonstrate that notaries always stepped in to fill the necessary role, but we can show that markets were too big to allow every participant to maintain accurate knowledge of what others were doing. Most French people interacted in mortgage markets that spanned 10,000 people or more. In Paris, Lyon, and Toulouse, most loans involved borrowers and lenders who lived in the same city, but these metropolises were too big for borrowers and lenders to know one another, and in particular for lenders to be able to keep track of what borrowers were doing. In smaller communities, a lender's capacity to keep tabs on everyone rose, but the fraction of loans made with individuals who lived elsewhere increased. In fact, in our sample only 17 percent of borrowers in municipalities under 2,000 people ended up taking out a loan from a lender in the same community even though it was such communities that we would expect personal ties to be strongest.

Some 83 percent of the loans involved individuals who contracted with someone not from their own village, and for them, the median distance between borrower and lender was nine kilometers. Borrowers thus had access to a wide variety of potential lenders, but that in turn would have posed a serious problem for any lender who was considering making a loan. With so many other potential lenders around, how could a lender know what other loans a borrower had taken out? How could he assure himself that collateral was not overmortgaged or that earlier loans were not going to leave him a junior creditor? In all likelihood, he would have to turn to some sort of intermediary who knew the local mortgage market.

Evidence from the department of the Vaucluse in southeastern France suggests that it is what lenders were doing, and borrowers, too. If we use network software to plot the municipalities that were linked by mortgages between a borrower in one community and a lender in the other (figure 5.2), we see that the ties do not bind the small municipalities to the department's cities (Avignon, Apt, Carpentras, Orange). That is what we might expect if borrowers or lenders were employing personal ties to arrange loans, for the personal ties would presumably follow either migration, which typically

10. The calculation comes from the enregistrement records of 842 loans with complete information about borrowers' and lenders' professions and residences. The borrowers and lenders were considered to have personal ties if they were related, had the same profession (except when they were both in the broad categories of *propriétaire* and *rentier*), or lived in the same municipality (except in cases where they both lived in the large city of Lyon). There may, of course, have been instances in which borrowers and lenders lived in the same Lyon neighborhood or worked in related professions (such as wine merchants and café owners). Similarly, there may have been some family ties that were not evident in our sources, but such cases were likely rare.

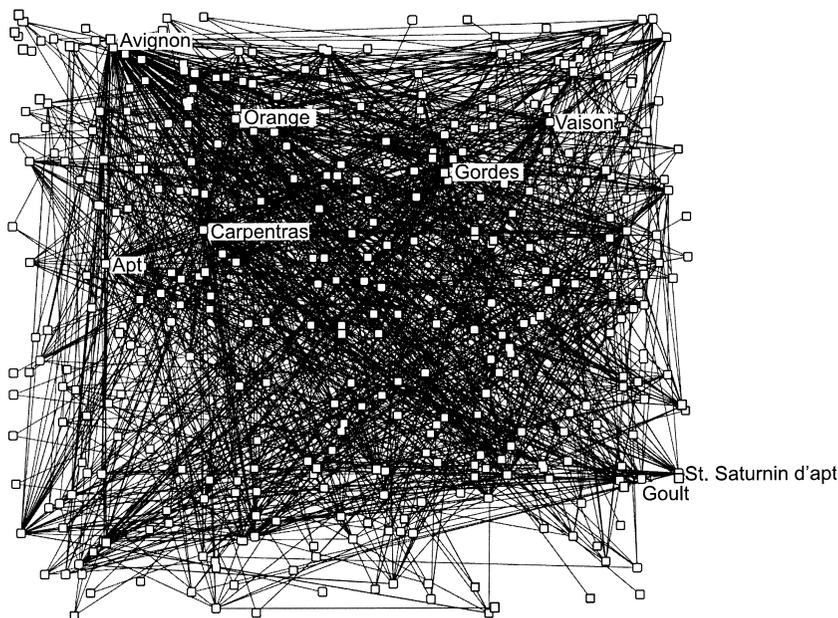


Fig. 5.2 Municipalities in the Vaucluse that were linked by mortgage loans

Notes: The figure, which is plotted using network software (Borgatti, Everett, and Freeman 2002), displays the municipalities in the French department of the Vaucluse without regard for their actual geographic location. There is a line between two municipalities if a borrower resides in one of the municipalities and a lender in another. Loans between residents of the same community are also shown. The lines do not take into account the number or size of loans, or the direction in which funds flowed. The largest cities in the department (Avignon, Apt, Carpentras, and Orange) are labeled, along with several other sizeable towns.

ran from smaller municipalities to cities, or lines of business, which also connected cities and the countryside. Instead, the small municipalities are all bound to one another, as well as to the cities. That pattern would not be what one would expect if borrowers and lenders were unaided by intermediaries.

If borrowers and lenders did in fact rely on local and distant intermediaries who cooperated in the regional redistribution of credit, then the situation would be very different. Our lender, for example, would know which nearby town would offer her opportunities for investing her funds, she could be assured that her concerns about adverse selection were moot, and the intermediary could monitor the borrower and remit his payments of interest and principal. In this case, beyond paying the intermediary for his services, our lender would only bear the cost of travel to the distant market and would in return face a much shorter wait time. Borrowers would enjoy similar benefits.

Who then could act as an intermediary? Notaries are the obvious candi-

dates, for they knew who had money to lend and who was a creditworthy borrower, with little debt and excellent collateral. The notaries acquired this information in the course of their business. They drew up loan contracts and investigated property titles and existing mortgages on collateral, so they knew who might be overburdened with debt. They also handled land sales and inheritances, which revealed who had savings to invest. Having amassed this information in the course of business, they could use it to match borrowers and lenders and do so at low marginal cost, and they could share information with one another by referring clients and opportunities. We know they played such a role in Paris, and the evidence (as we shall see) is consistent with their doing the same elsewhere in France. Elsewhere, other intermediaries had a similar informational advantage—attorneys in England, for example, who dominated the early mortgage market across the English Channel, or town registrars, who recorded mortgages in much of northern Europe.¹¹ But in France, it was notaries. Potentially, they could play a similar role in other countries influenced by Roman Law or the French legal tradition. But they would only be able to do so when other intermediaries (such as town registrars) had no informational advantage and only when inequality did not restrict lending. Inequality could have that effect because few borrowers had collateral, or because political leaders had an incentive to limit the supply of loans, as Steven Haber shows elsewhere in this volume.

To return then to the problems facing our borrowers and lenders, it is worth noticing that most of the costs involved in interregional intermediation are fixed. As a result, if the notary acted as an intermediary and shared information with a fellow notary about his net demands for credit transactions, then the costs involved would not depend on the size of the loans. Neither would the travel costs that he or the borrowers and lenders would face. Although the cost of investigating collateral would increase with loan size, it would be the same in the home market and in a distant one. Thus, if notaries were organized in a network in which information was traded, lenders would face a fixed transaction cost for distant deals, as would borrowers.

Now let us consider the lender's wait time, which depends on the population of her municipality and the distribution of wealth. (The problem of the borrower's wait time will lead to similar conclusions.) Suppose the municipality is small and wealth very evenly distributed. Wait times are then going to be higher for smaller and larger loans than for "middling" ones. Clearly, a lender who wants to invest a large sum will likely want to see what deals are available in nearby towns, provided the local wait times at home are long enough. Since small loans are rare, so will a lender who wants to lend out a small sum, but for her the interregional fixed costs of intermediation loom comparatively large, making her much less mobile. If travel costs are

11. For notaries in Paris and attorneys in England, see Hoffman, Postel-Vinay, and Rosenthal (2000, 287).

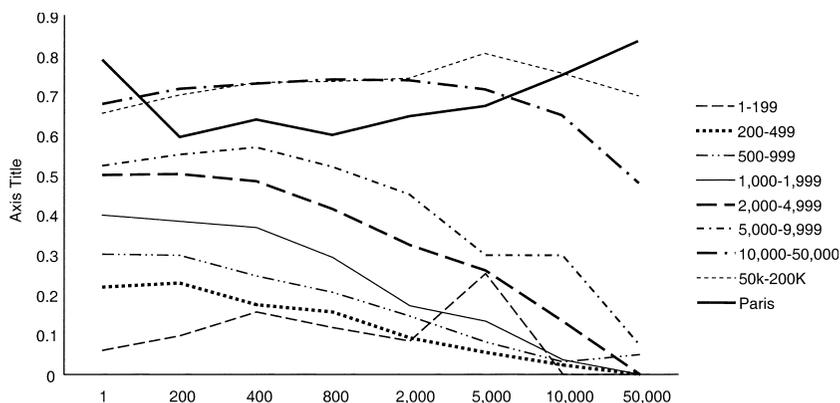


Fig. 5.3 Fraction of loans where borrowers and lenders co-reside

small, middling lenders are therefore the most likely to do their business at home, while small and large lenders will make loans to borrowers in other towns. The same will hold for borrowers. If, however, travel costs are large, then only individuals who seek larger transactions will do business with counterparties outside the home market. The integration of markets should thus vary systematically with loan size and municipal population. All other things being equal, individuals living in large municipalities should engage in credit transactions in their home community (because they have more potential partners), while individuals with less representative loan demands should be less loyal to their own municipality, provided their transactions are not too small.¹²

To explore the effects of these costs and wait times, we computed the fraction of loans in which the lender, the borrower, and the notary resided in the same municipality. We added the notaries since they were the most likely intermediaries. We performed the calculation for various-sized loans and municipalities (figures 5.3 and 5.4). Figure 5.4 reports the fraction of loans in which the borrower, the lender, and the notary all reside in the same municipality. Figure 5.3 modifies the calculation by including cases in which the borrower and lender resided in the same municipality but ended up traveling to a notary in another community. The cases added would include loans in which the borrower and lender lived in a small village with no notary, for they always had to go elsewhere to see a notary, even if they arranged a loan among themselves. Figure 5.3 would also include instances in which a borrower and lender from a municipality with a notary decided to do their business before a notary elsewhere.

12. Municipalities with railroads would have lower transport costs in 1865. We are currently gathering the data to test that hypothesis rather than just relying on physical distance.

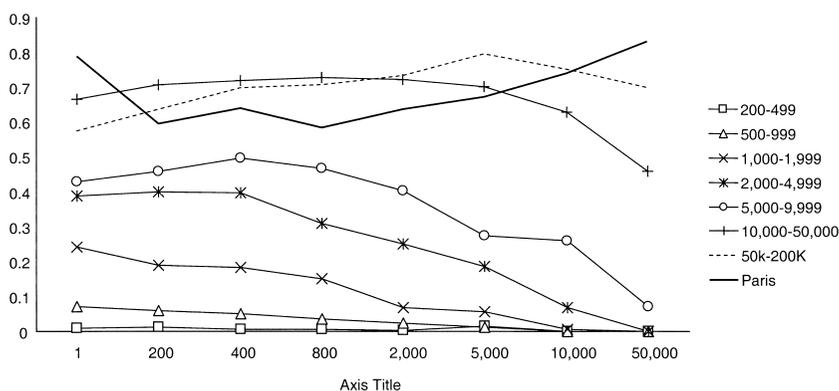


Fig. 5.4 Fraction of loans where borrower, notary, and lender co-reside

We expect both fractions to rise with the size of the municipality and to decrease with loan size. The data for the calculations come from 52,000 transactions in our sample for which residences could be recovered. The municipal populations are those of the community where the borrower resided; computations using the lender's residence lead to a similar conclusion, with the caveat that lenders are more urban and thus more likely to live in the same settlement as their notary.

The data confirm that individuals who live in large municipalities do more business at home, and that the fraction of loans arranged within a municipality diminishes for large loans (figures 5.3 and 5.4). In the very largest municipalities the share of the population that co-reside with their notary and partners approaches 80 percent and is not sensitive to loan size except for the largest loans. Nevertheless, even for the largest municipalities in our sample some 20 percent of loans had either a borrower or lender who did not reside in the same municipality as the notary. If we consider borrowers who lived in municipalities with between 1000 and 2000 inhabitants, the fraction of loans arranged with a lender and notary in the same community falls from 40 percent to nearly nothing as loan size passes from 100 to 50000 francs (figure 5.4). Clearly, transaction costs seem to matter according to what types of loans involve distant partners.

The other dimension of the spatial distribution of loans involves distance. Figure 5.5 traces the average distance between borrower and lender (for those loans where it is positive) given loan and city size. Here the reverse pattern holds. In small and medium municipalities where people travel often, they do not go very far: usually less than fifty kilometers. How far one travels, however, increases with city size, so that individuals from smaller municipalities rarely go beyond thirty kilometers whatever the loan size, while in larger cities people may travel 100 kilometers or more (well over a day's travel before the advent of railroads). Such lengthy voyages are more

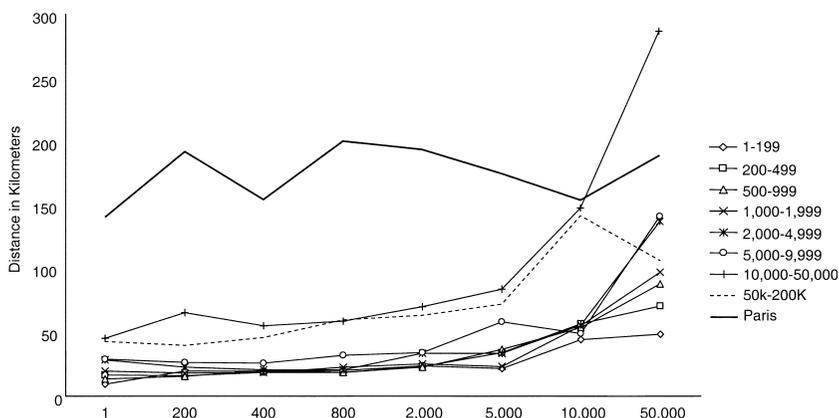


Fig. 5.5 Average distance borrower-lender for loans where distance > 0 by borrower residence and loans size categories

common with larger loans, for the distance traveled also rises steadily with loan size. That relationship between distance and loan size is precisely what one would expect if travel and search costs are largely fixed. The fixed costs will add less to the relative cost of large loans, and that in turn will make individuals seeking larger loans or investments more willing to bear the costs of a search in return for shorter queuing times.

Averages can be misleading, in particular for small municipalities. One can have an inordinate number of loans made to local borrowers by men in the military, who happen to be posted in distant garrisons. Or one can run into an unusual number of migrants who return home to invest. To filter out unusual cases of this sort, we examine the seventy-fifth percentile of the distribution of the distance borrowers and lenders travelled, conditional on their voyaging at all. We interpret this value as the outer range of how far people are willing to go to join a short queue for a match in the credit market. The results are displayed in figure 5.6. Once again, distance is increasing in loan size and municipal population, so long as the city is not too large. The striking finding, however, is that for all loans under 2000 francs (a category that account for 85 percent of all transactions) and for all municipalities with less than 5,000 inhabitants, this seventy-fifth percentile is 17.6 kilometers. The explanation for this upper bound on how far most people would travel is simple: it is the outer limit of a long day's round trip on foot. Only for the largest loans and the largest municipalities do individuals want to travel further. That large loans involved more distant travel is easy to understand, because a large loan dilutes the fixed cost of travel. That individuals in large cities are willing to voyage longer distances (for a given loan size) may reflect improved transportation between larger cities, as they connected to the national transport grid. In other words, the pattern of market integration

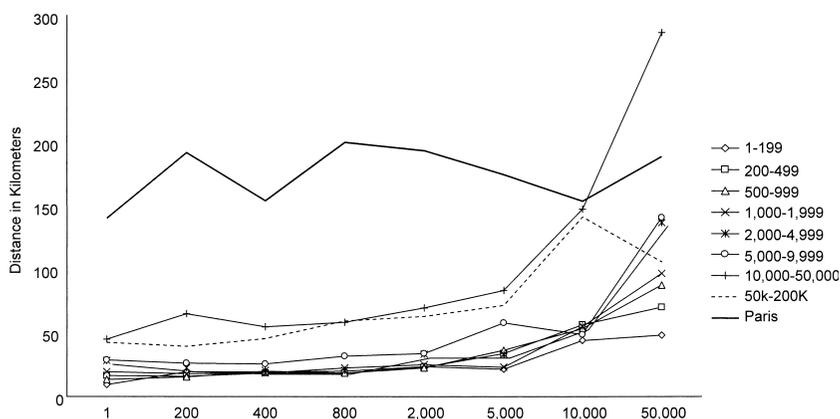


Fig. 5.6 Seventy-five percentile value of distance between borrower and lender conditional on distance > 0 by city and loan size

seems to reflect the fixed costs of travel, which weigh more heavily on small loans than larger ones.

That the same outer limits to travel applied to most loans and all but the largest municipalities is consistent with our belief that the notaries formed a network in which a notary whose shingle hung in a village of 1000 people had more or less the same information as a colleague in a town of 3000. Notaries knew not only what deals were available in their own municipality or canton but in nearby cantons as well. In larger municipalities more deals could be completed with coresidents, but when that failed, lenders and borrowers faced the same conditions as their rural brethren. Travel costs, however, made it undesirable to go far beyond a location that could be reached in a day, because they would then rise sharply.

One can surely imagine that individuals would sometimes have secured the information themselves without the help of notaries, but in that case it would be hard to understand why borrowers were less likely than lenders to live in the same municipality as the notary who drew up the loan contract. Lenders and notaries resided in the same municipality in 59 percent of the loans, yet borrowers and notaries did so only 44 percent of the time. If borrowers and lenders were seeking one another out with no help from intermediaries, we might expect no such difference in coresidence. After all, it would presumably be just as easy for a borrower to seek out a distant lender, persuade him that he was creditworthy, and then draw up a loan before the lender's notary as it would for a lender to go through a similar process of investigating the borrower's collateral and then signing the loan documents before the borrower's notary. But with a network of notaries, borrowers might more often than not be given an introduction from their notary and all the requisite paperwork and then be sent off to meet their lenders. The

borrowers would then be the ones to travel. That appears to be what was happening in France.

Thus, even for small loans, notaries worked to match lenders and borrowers in a series of overlapping markets that covered all of France. Market integration resulted from how ready borrowers and lenders in large loans were to travel. They could rarely arrange loans with someone in their hometown, and the large loan sizes made it economical for them to travel long distances in search of a suitable partner. Because the sums were big, the capital flows between regions (or actually between urban regional centers) were huge. Excluding Paris, but including Lyon and Rouen, some 53 percent of all loans greater than 5,000 francs (about seven times per capita income) involved borrowers and lenders who did not live in the same municipality. The average distance between a borrower and lender in a loan over 5,000 francs was thirty-six kilometers, and if we calculate that distance when parties did not live in the same place it was seventy-two kilometers.

These loans over 5000 francs amounted to only 7 percent of the loans in the sample, but they constituted 57 percent of the value of loans, and almost two-thirds of the stock. (The calculations here omit Paris because loans there were so large; if we include Paris, loans over 5000 francs amount to 73 percent of the value of the loans in the sample and 89 percent of the stock). When new opportunities arose, a large scale borrower could rely on the notarial system to raise capital from distant investors via mortgages backed by his real assets.

5.3.2 Change and Structure

The preceding sections have taken the data set as if it were a single cross section and then used it to shed light on the spatial structure of notarial lending. The evidence that individuals could, and frequently did, travel to meet partners in loans has important implications for research on the growth of mortgage markets. To begin with, most of the research implicitly studies these markets as island economies where changes in fundamental variables like wealth or economic structure interact with scale of the local market. The earlier evidence suggests that we must reconsider these implicit assumptions not just for the American Midwest or Latin America but also for the long-settled economies of continental Europe.

To see why, consider for a moment an economy where lending increases with wealth. Such a relationship could arise for a variety of reasons: land rents might be rising, individuals might be buying more valuable housing, more people might be taking out mortgages to purchase or build housing, or entrepreneurs might be turning to long-term markets to build manufactures. In a closed economy, such an increase in the demand for financial intermediation must be met locally and thus we expect the local credit market to grow. To some extent this is the story revealed by the astounding developments in the canton of Montcenis. One of France's largest iron and steel

firms, Schneider, had its main plant in Le Creusot, a town that soon became the largest of the canton. Between 1840 and 1865, as the works grew into the largest firm in France, the population doubled in the canton, and the credit market pretty much matched this growth, since the stock of loans per capita remained constant. Yet local credit did not finance the growth of Schneider, for the local supply of funds was simply too small. Instead, the Schneider family and their firm financed themselves in Paris and through retained earnings. Other inhabitants of Montcenis who wanted to borrow could turn to the nearby towns of Macon or Chalon-sur-Saone. Thus, the resources available for borrowing and lending in Le Creusot or in the canton of Montcenis are only a limited part of the story of financial change there. Instead, what mattered most was the interactions of Le Creusot with other areas of France, and in particular Paris, three hundred and fifty kilometers away.

The tale of Le Creusot is not as extreme as it might seem: the twenty-fold growth in the value of loans in the municipality of Aigues Mortes is solely due to a loan taken out by a corporation that intended to turn nearby marshes into vineyards and salt flats. The collapse of lending in the famous wine-producing town of Nuits Saint Georges (lending there collapsed by 91 percent) was not due to a sudden decline in demand for high quality Burgundy wines, but to an exceptionally large loan taken by a Dijon banking family in 1840 for more than a million francs. Such a huge loan was unheard of outside of Paris, and there was, of course, never anything like it again in Nuits.

The seemingly random walk of the development of our credit markets is not due to the chance arrival of large loans alone. If that were so, then larger markets would be more predictable than small ones, which is not the case. Rather, it is a direct consequence of the intense spatial integration of what are commonly taken to be closed and traditional markets. While a very large fraction of all loans matched local borrowers and lenders, even small loans could be transacted at some distance. Thus, when lending boomed in Mauguio (another canton with endowments favorable to salt marshes and wine) between 1840 and 1865, the inhabitants of the canton also appear in the two nearby markets of Montpellier and Lunel, where they took out twenty-five loans worth 40,000 francs. Beyond the smaller markets, if we take into account the growth of inequality between 1807 and 1899 and the redistribution of population from villages to cities, it is likely that this spatial integration was growing. As wealth inequality increased, the number of loans outstanding per capita fell while their size and duration increased. Longer and bigger loans made borrowers and lenders more willing to travel in order to find suitable counterparties. But the loans where partners met after some travel most likely depended both on notaries' information and on the formal registration of liens, which could be exploited by a new mortgage bank founded in the 1850s, the *Crédit Foncier*. In large settlements, many notaries may well have decided to drop arranging smaller loans because

there was more money to be made in dealing with rich clients, a move that would have increased inequality over time.

Evaluating the welfare consequences of the spatial scale of credit markets is thus complex. On the one hand, the progressive disappearance of smaller, shorter term loans was costly, in particular in areas where alternative institutions (savings banks, pawnshops) were scarce. On the other, the larger loans served to integrate the economy and to redistribute capital across different rural areas and toward the more rapidly growing urban centers. In the countryside, participation in local mortgage markets remained widespread through the 1860s, in part because demand was too small for alternative intermediaries to enter, and in part because the scale of farms and firms guaranteed that a very large number of entrepreneurs needed access to long term credit. In cities a completely different economy emerged, one where most of the population rented their lodgings and worked for large firms where the entrepreneur provided the capital. That was true even in Paris where much of manufacturing occurred on a contract basis, with workers toiling away in very small shops and owning their own tools. Most often it was the wholesale merchant (fabricant) who organized production and provided the working capital. Hence, cities could grow and grow quickly without credit markets serving small scale lenders.

The structure that our spatial analysis revealed suggests a final element to the process of change: competition. Although a notary might seem to control the local market, the increasing capacity of borrowers and lenders to direct their business to notaries in other municipalities gave him an incentive to exchange information in order to better serve his clients. The resulting competition was enhanced by the growing size of loans in the nineteenth century, since clients involved in big loans were more willing to travel in search of a better deal. The same clients were also more likely to have the loans inscribed on lien registries, which provided an alternative to using a notary to resolve problems of asymmetric information. The common thread here is that all these local markets were deeply interconnected.

5.4 Conclusion

The study of financial markets, in general, and of credit markets in particular, often focuses either on countries or on localities. Here we have broken with both traditions, for we wanted to study mortgage markets in France as a whole, even though we knew that mortgage markets rely on information that is inherently local. Inspired by Sokoloff's work on the importance of access to markets, we chose to assemble groups of markets that were geographically close together. This chapter shows that except for the very largest localities, nineteenth century mortgage markets cannot be understood in isolation; to a very large extent their capacity to serve borrowers and lenders came from their interconnection.

Although by American standards capital did not move any great distance, our study documents two kinds of integration. The first involved tens of thousands of small loans and took place within areas some twenty kilometers across. This local process helped obviate the noncoincidence of demand and supply in small localities where the market was thin. The second kind of integration, by contrast, involved large loans. They were rarer but they spanned much longer distances. Because the sums involved were large, it is likely that it is the second process that integrated different regions. All these important elements to the mortgage market would have been missed if one had focused only on familiar forms of intermediation such as banks, or on computing an aggregate value of credit transacted.

Because the frequency of interaction decreased with distance, regions that were dense (either in local markets or in medium-sized cities) did see more lending than others. We can therefore confirm Sokoloff's arguments about the beneficial aspects of access to markets. The French credit markets were highly competitive. While the state limited entry into particular forms of financial intermediation (most famously corporate banks and the stock exchange), it did not cartelize the whole of the system. In fact, entry into private banking was always free, and beyond the banks, more than 10,000 notaries competed for the business of intermediating private mortgages and markets for assets such as the real estate market.

Although the notaries were seemingly "traditional" intermediaries, they had the information that could make mortgage markets run smoothly. They were, in a sense, like a beneficial endowment—in their case, an endowment of information—which helped them raise enormous amounts of capital and integrate a national credit market. How this happened was a complicated process, but by the mid-nineteenth century, the notaries were helping to integrate French credit markets. In future work we hope to show that this was also the case before the French Revolution.

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