

The Old Economics of Information and the Remarkable Persistence of Traditional Credit Markets  
in France 1740-1899.

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*Abstract:* Using enumerations of notarized loans in a sample of 108 towns for the years 1740, 1780, 1807, 1840, 1865 and 1899, and evidence about the location of bank offices starting in 1829, we examine how banks and notaries competed. Because notaries only provided information services (and thus neither liquidity nor risk pooling) they have often been seen as less efficient than banks. Hence one might expect that the arrival of banks would lead notarial credit to decline or banks to replace private persons as lenders. We show that prior to 1899 neither was true. In fact there is a positive association between a variety of measures of traditional credit and banks. We then show that notarial credit was relatively ‘democratic’ and its clients changed with the economy. Finally we examine the successful entry of the *Crédit Foncier de France* in mortgage lending and show that it took better than 50 years for that firm to overcome its informational disadvantages relative to notaries.

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## Introduction

How was the Industrial Revolution funded? How was all the capital mobilized to build the factories and substitute the machines for artisanal labor? Western Europe, recent research suggests (Allen et al, 2005), was relatively rich in 1800, yet the wealth was unequally distributed and rarely in the hands of early industrial entrepreneurs. Were they hobbled by difficulties raising capital? Did new financial intermediaries—the great nineteenth-century banks in particular—solve the problem and speed up the mobilization of funds?

Questions of this sort have fascinated economic historians for over seventy years, ever since M. M. Postan lamented that on the eve of the Industrial Revolution “the reservoirs of capital were full enough but conduits to connect them with the wheels of industry were few and meagre” (1935, 2). For Postan the problem was difficulty of arranging the long term financing needed by industrial entrepreneurs. Joint-stock companies were rare, and although the first commercial banks could make the short term loans (typically 90 days or less) that backed domestic and international trade, they could not commit themselves to funding long term ventures such as the construction of a mill. Alexander Gerschenkron (1962, 12-14) saw the great nineteenth century universal banks as the answer here: they could raise money by short term borrowing and yet make long term investments too. Doing so was risky—and remains so today, as the recent subprime mortgage debacle demonstrates—but their diversification and superior information would make them a more effective source of capital. Countries without banks would simply not mobilize enough capital and would therefore suffer slower economic growth. France in particular has been invoked as a cautionary example here. Banks in nineteenth-century France, it is claimed, were “too few” and banking resources “pitifully inadequate.” The country therefore paid a price in slow industrialization, having fallen victim to the “intimate correlation between the

tardy development of banking structure and the equally slow progress of industrialization” (Cameron, 110-111, 127).

For Cameron and Postan, the critical institution was a universal bank that could take in short term deposits and make long term loans. Gerschenkron, who viewed France as a later developer, highlighted the impact of an early universal bank (the *Crédit Mobilier*) on the development of the French industrial sector. That view of the French economy has been challenged by O’Brien and Kayder (1978), Roehl (1976), and Lévy-Leboyer (1964) and Lévy-Leboyer and Bourguignon (1985). Lévy-Leboyer and other French economic historians have also questioned the received wisdom about French banking and put more emphasis on commercial banks. The role of commercial banks has been given a central role in England by Gerschenkron himself and by many others; they have also had a key role in American growth (Davis and Gallman 1978, Lamoreaux 1994).

We are agnostic about the relative value of one type of bank relative to another and will focus on the interaction of banks and notarial credit. We wanted to test the argument about banks using French data and see whether banks were in fact essential for long-term lending. Like England, France did have traditional financial intermediaries who arranged long term loans—in England it was attorneys, in France, notaries, semi private court officers who preserved records and also provided legal and financial advice. But if the claims about France in particular are correct, banks ought to have been much more effective at funding long term loans than the archaic notaries. Not only did the banks have better information but they could pool risks and offer clients liquidity. The notaries could do neither, for they neither pooled deposits nor provided investors with a portfolio of loans. Instead, they simply used what information they had to match borrowers with individual lenders (Hoffman, Postel-Vinay, and Rosenthal, 2000, 200x). When the banks entered a market, they would presumably have undercut the notaries’ business

and driven them out of the market. If not, then the arguments about France—and more generally about the critical role banks played in mobilizing capital—are wrong, and banks were not essential for long term investment.

After describing the data we have collected, we sketch a simple model of what banks and notaries did and then test whether banks were superior substitutes for notaries (they could offer intermediation services at a lower price). It turns out they were not. Indeed, their skills and the notaries' seemed to be complementary, and markets with more banks had more notarial business. As we demonstrate in the last two sections of the paper, it took a long time for bankers to acquire the information notaries had long possessed. In the meantime notaries, and not bankers, were the ones raising capital for long term lending from new sources—in particular from women and from investors who likely had no personal knowledge of the entrepreneurs they were funding.

## 1. The French data

The data we have gathered concern over two hundred thousand loans drawn from 108 credit markets scattered through France (see Figure 1 for a map). The markets were chosen to yield a stratified sample of towns and cities that would reflect the French population as a whole. The markets included Paris; other big cities such as Lyon; medium sized urban centers with 10 to 70 thousand habitants, such as Grenoble; and smaller towns with populations as low as 500 people.

As we shall see in sections 3 and 4, the loans in each market were drawn up and arranged by notaries, not by banks. Such loans were subject to a tax, and the notaries had to register the loans at the local tax office, where officials collected the tax and recorded information about the debts. We gathered data on the loans from the offices' archives, which covered lending in the

municipality where the office was located and in surrounding towns and villages. The information we collected included the number of new loans, average loan sizes, and loan durations; it allowed us to estimate the stock of outstanding debt in each market for 6 years: 1740, 1780, 1807, 1840, 1865, and 1899. (See the appendix for details about the data collection and the estimation process). The dates of these estimates were chosen to be roughly a generation apart, with two dates (1780 and 1807) bracketing a devastating bout of hyperinflation during the French Revolution. The first date, 1740, was the earliest one for which we could collect data on lending and explanatory variables for all of our markets; the last date was the latest one for which we could get access to the records needed for the data collection.

The notarized loans were quantitatively important. If we use population data (for lack of a better method) to extrapolate from our sample to the whole country, we find that there were likely to have been more than 1 million such loans outstanding at any point in time. Their value ranged from 13 percent of GDP right after the Revolution to 45 percent in 1899. (Table 1)

In 1840, the average loan lasted nearly 5 years (see Table 2 for this and other descriptive statistics for our sample). Only 8.2 percent of the loan durations were less than 12 months and 4.2 percent were less than 6 months. Even 6 months was much longer than the short term loans (90 days or less) that banks used to finance trade. The question is whether the banks began to enter this market for longer term loans and compete with the notaries. They did not face any regulatory hurdles, because banking in France was essentially unregulated. And new banks did open up beginning in the early nineteenth century, as one would expect if they were entering new markets. By 1829 there were already hundreds of banks in France, with about a third in Paris and the rest primarily in the largest cities. As the century wore on, banking spread to smaller cities. In 1829, only two out of every three cities with populations over 20,000 had a bank office; by 1851 all of them did. For cities between 5,000 and 10,000, the fraction with banks jumped from

one third in 1829 to 87 percent in 1862. Did superior information or an ability to pool risk allow these bankers to encroach on the notaries' long term lending?

## 2. Bankers and Notaries

If banks were moving into long term lending, they would presumably have been drawn to markets with a large volume of notarial loans, because there would be enough business to defray their entry costs. After all, if a banker could undercut notaries and drive them out of long term lending, he would be better off doing so when they had a great deal of business to surrender. In that case, we would expect banks to enter markets where long term notarial lending was already high early in the nineteenth century, before banks had spread. We can measure notarial lending in 1807 and take the logarithm of the stock of loans per capita in that year as our yardstick. The stock of loans would be appropriate because a 1-year loan would be equivalent to four 90 day contracts, and gauging the stock relative to the number of people in the region served by the local tax office would help distinguish between the distinct appeal of large lending volumes and of large populations. If we do so, we find that the logarithm of the per-capita stock of loans is highly correlated ( $r = 0.41$ ,  $p < 0.0001$ ) with the number of banks 33 years later, in 1840. The results are stronger ( $r = 0.57$ ,  $p < 0.0001$ ) if we exclude Paris, which was a clear outlier. It already sported a large number of banks in the eighteenth century, and by 1840 it had far more of them than any other French city (216, versus only 26 for Rouen, the city with the next largest number).

The simple correlation could of course be affected by other factors that would make a market appealing, such high wealth, large demand for loans, or a smaller number of notaries who would be potential competitors. The number of notaries in each market, however, was essentially

fixed in each market, and we can take into account variations in wealth and in the demand for loans by regressing the number of banks in 1840 not just on the per-capita lending stock in 1807 but on a measure of local wealth (the per-capita property tax in 1840) and a proxy for local demand (the 1841 population of the municipality where the loans were registered). This municipal population differs from the population attached to the local tax office, which was used to calculate per-capita lending and per capita taxes, for the tax office served not just the municipality but also surrounding towns and villages.

Since the number of banks is an integer and often zero, we use a negative binomial regression with the actual number of banks as the dependent variable, or a Tobit regression with  $\ln(1 + \text{the number of banks})$  as the dependent variable. Either way, the number of banks in 1840 is still positively related to lending in 1807 (Table 3). If the dependent variable is  $\ln(1 + \text{the number of banks in 1840})$ , then the coefficient of the logarithm of the 1807 per capita loan stock is large (0.38) and statistically significant at the 5 percent level whether or not Paris is included in the Tobit regression. In the negative binomial regression the coefficient is again large and nearly significant at the 5 percent level when Paris is not included; the results change little if we add Paris. And the results are similar if we use a regression to predict when banks first open up in our markets. (The regression, in Table 3, is again a Tobit regression, since some markets still had no banks in 1899.) If notarial lending in a market was sizeable in 1807, then banks entered earlier, as we would expect if they were seeking to compete with the notaries

The results are all consistent with the banks' entering the notaries' markets to encroach on their long term lending. But they are also consistent with a very different interpretation of their behavior. The banks could simply have been providing financial services that were complements for notarial lending, not superior substitutes for it. In other words, their own short term lending

would benefit from notarial lending, not replace it. They would still seek to enter markets where the notaries did a great deal of lending, but not to drive them out of business

To see how this could happen, imagine a market with a population of  $X$  potential borrowers, all of whom are identical except for the size  $s$  of the loan they want, where  $s$  is exogenous at the individual level. We can think of  $s$  as being related to the size of the business they want to create, or, equivalently, as the collateral that they can put up for a loan. If they do not get a loan, they earn  $R'$ 's, where  $R'$  is exogenous, by lending their money out. (We are essentially assuming that they are perfectly mobile so that the return  $R'$  is set in a larger market.) Individuals who do borrow earn  $R$ 's, where  $R$  is also exogenous and  $R > R'$ ; to borrow, however, their collateral has to be verified at a cost  $p$ . They will therefore borrow if  $R_s - p \geq R'$ 's, or  $s \geq p / (R - R')$ . We will assume that  $s$  is distributed according to the continuous density  $f(s)$  with cumulative distribution function  $F(s)$  and that  $f(s)$  has compact support with  $f(s) = 0$  when  $s \geq s_H$  or  $s \leq s_L$  for some positive  $s_H$  and  $s_L$  with  $s_L < s_H$ . The total number of borrowers will be  $N(p) = X (1 - F(p/(R-R')))$ , which will be a decreasing continuously differentiable function of  $p$ , and the average loan size  $z$  will be the expected value of  $s$  given that  $s \geq p / (R - R')$ , or  $z = E (s | s \geq p / (R - R'))$ , which is an increasing function of  $p$ . Note that when  $p = (R - R') s_L$  the number of borrowers is  $X$  and  $z = E(s)$ . When  $p = (R - R') s_H$  no one asks for a loan.

Financial intermediaries such as notaries or bankers will verify potential borrowers' capital. For the moment, let us assume that notaries are the only intermediaries and that each notary has an identical cost function  $C(n, z)$  for serving  $n$  clients in a market where the average loan size is  $z$ . Since  $n$  is large even in small notarial markets, we will treat  $n$  as a real variable and assume that  $C$  is twice continuously differentiable, with positive partial derivatives  $C_1$ ,  $C_2$ ,  $C_{11}$ ,  $C_{22}$  and non negative cross partials  $C_{12} = C_{21}$ . (Here and elsewhere, subscripts denote partial derivatives.) We also assume that  $C_{11} * C_{22} - C_{12} * C_{21} > 0$ , so that  $C$  is strictly



increasing and strictly convex. Serving more borrowers is costly, as is working in a market where loans are large, because more collateral has to be examined and more capital has to be raised. We presume that there are fixed costs, which make  $C(0, z) > 0$  for all nonnegative  $z$ .

Notaries take  $z$  as exogenous, and we assume that they engage in Bertrand competition by choosing the number of clients that maximizes profits. If there is only one notary in the market, he will be a monopolist. If there are  $m$  notaries and  $m > 1$ , they will compete and provided that they can earn non negative profits by remaining in the market, they will each serve  $n$  borrowers with  $C_1(n, z) = p$ , which we can solve for the individual notary's supply function  $n(p, z)$  as a differentiable function of  $n$  and  $z$ , where  $n_1 > 0$  and  $n_2 \leq 0$ . Together, the  $m$  notaries will then supply services to a total of  $m n(p, z)$  borrowers.

Suppose that for all  $p$  and  $z$  with  $s_L \leq z \leq s_H$  and  $(R - R')_{s_L} \leq p \leq (R - R')_{s_H}$  the function  $n(p, z)$  exists, the  $m$  notaries earn non negative profits, and  $0 < m n(p, z) \leq X$ . Then it is easy to show that a competitive equilibrium exists with  $m$  notaries by considering excess demand  $N(p) - m n(p, z(p))$ . If  $p$  equals  $(R - R')_{s_L}$  then excess demand is nonnegative, because  $N(p)$  equals  $X$ , but if  $p$  equals  $(R - R')_{s_H}$  then excess demand is negative, because  $N(p)$  is zero while  $n(p, z(p)) > 0$ . Because excess demand is continuous, there must be a price  $p$  where it is zero, which is the competitive equilibrium.

The number of notaries who enter a market will depend on average costs. Let a notary's average cost function for a given  $z$  be  $g_z(n) = C(n, z)/n$  for  $n > 0$ . By our assumption of fixed costs,  $g_z(n)$  increases without bound as  $n$  approaches zero. For every  $z$  there exists a  $n^*$  on the compact interval  $[0.5, X]$  that minimizes  $g_z(n)$ , so that average cost curves are U-shaped. We will assume that  $1 \leq n^* < X$  for all  $z$ . This  $n^*$  is unique by the strict convexity of  $C$  and so is a function of  $z$ . For a fixed  $z$ , the aggregate supply curve for  $m > 1$  notaries will consist of all pairs

$(mn(p, z), p)$  such that  $n(pz) \geq n^*(z)$  and  $mn(p, z) \leq X$ ; in other words, it will consist of all pairs of prices and clients served that assure the notaries all make nonnegative profits.

An additional notary will enter the market if  $p$  increases enough to make it possible for  $m+1$  notaries to make nonnegative profits. This will happen when  $p$  is large enough to make  $mn(p, z) = (m + 1) n^*(z)$ , or equivalently, when  $n(p, z) - n^*(z) = n^*(z)/m$ . The threshold price  $p_{m+1}$  satisfying this equality will be unique for a given  $z$  since  $n$  is strictly increasing in  $p$ . Note that as a function of  $p$ ,  $n(p, z)$  equals  $n^*(z)$  when the price  $p$  equals  $g_z(n^*(z))$  or equivalently when the price equals  $C_1(n^*(z), z)$ , since marginal cost  $C_1(n^*(z), z)$  equals minimum average cost  $g_z(n^*(z))$  at  $n^*(z)$ . Applying the mean value theorem to  $n(p, z)$  as a function of  $p$  and using the fact that  $n(p_{m+1}, z) - n^*(z) = n^*(z)/m$ , we see that for our fixed  $z$ , there must exist a price  $p'$  with  $C_1(n^*(z), z) \leq p' \leq p_{m+1}$  such that

$$p_{m+1} = C_1(n^*(z), z) + n^*(z) C_{11}(n(p', z), z)/m = g_z(n^*(z)) + n^*(z)/(m n_1(p'(z), z))$$

The last equality follows because  $n_1(p'(z), z) = 1/ C_{11}(n(p', z), z)$ . If the sequence  $p_2 p_3 \dots p_m$  exists, it will be decreasing and approach  $C_1(n^*(z), z) = g_z(n^*(z))$  as  $m$  increases. In markets where  $m$  is large, the supply curve will thus be nearly horizontal at  $p = g_z(n^*(z))$ , and both  $m$  and total supply  $mn(p, z)$  will be essentially determined by demand  $N(p)$ .

So far we have assumed that notaries are the only intermediaries. Suppose now that bankers can serve as an alternative to notaries. We consider two possibilities: bankers are substitutes for notaries, or they provide a different, alternative service. Let us start with the case in which bankers are substitutes for notaries.

In this case, bankers are simply an alternative transaction cost technology. In other words their services are strict substitutes to those of notaries (borrowers will use the cheapest intermediary). A banker's cost curve  $C^b(n, z)$  is also an increasing strictly convex function of  $n$

and  $z$ , with all the same assumptions as for the notary. The only difference is that bankers as the ‘modern’ technology and have lower marginal cost than notary:  $C_1^b(n,z) < C_1(n,z)$ .

First consider the case where  $C_1^b(n,z)$  is such that  $n^{b*}(z) < n^*(z)$ . (Bankers have lower minimum efficient scale). Then bankers are a strictly more efficient technology than notaries and they will replace notaries everywhere because their costs are lower.

What then are the implications for the data? Let us suppose that we observe notarial lending at three dates: time 0 (1807) is before banks arise, time 1 (1840) is when bank entry has started and may not be complete, and times 2 and 3 (1865 and 1899) when banks have diffused. Let us suppose too that demand at time 2 or 3 is correlated with demand at time 0. Such an assumption is reasonable because market populations  $X$  are correlated over time. Furthermore, if we condition on  $X$  and correlates of  $F$ , the other determinant of demand, then it is not unreasonable to assume that other unobserved determinants of demand remain constant over time.

If these assumptions hold, then conditional on the determinants of demand, the presence of notaries (at time 0) will serve as a predictor of bank entry (time 1, 2, 3), although the correlation is not 1 because banks enter in markets not served by notaries. The number of notaries and average loan size at time 0 are also predictors of the number of banks at times 1, 2, and 3. Alternatively, we can use the number of loans and average loan size as predictors. More notaries or loans in time 0 should mean more banks at times 1, 2, and 3, because it means demand must have been higher at time 0, and the unobserved determinants of demand are likely to be higher too. Higher loan sizes at time 0 will also affect the number of banks at times 1, 2, and 3, although the sign of the effect will depend on the relative movement of the average cost curves for bankers and notaries as  $z$  changes. If we assume that both average cost curves shift by the same amount, then higher loan sizes  $z$  at time 0 should mean (other things being equal) fewer banks at times 1, 2, and 3. Finally, because notaries provide other services besides financial

intermediation, the arrival of banks does not necessarily mean that the number of notaries declines. It does mean, however, that the number and total value of the loans they certify does drop.

Now consider the more interesting case where  $C^b(0,0)$  is such that  $n^{b*}(z) > n^*(z)$ . (Bankers have higher minimum efficient scale because they have higher fixed cost). Then bankers are still a strictly more efficient technology but only when market demand is large enough. This is a sensible assumption because they are the incumbents and thus some of what are fixed costs for bankers (building their information stock) are already sunk for notaries.

Because minimum efficient scale is larger for bankers than notaries, bankers enter in most markets, but not in those where demand is too small. Let the notarial equilibrium be  $p, m, z$ : there are  $m$  notaries supplying  $mn(p, z)$  loans of average size  $z$ , at a price  $p$  for their services. A banker will enter only if  $p mn(p, z) - C^b(mn(p, z), z) \geq 0$ . In other words, a banker will enter if his revenue from charging the notaries' price is greater than the cost of certifying the loans that used to be certified by notaries. Given  $z$ , define  $N^b(z)$  to be the minimum number of loans that a banker must take over from notaries to enter. We can also define  $N(z)$  which is the smallest number of loans that a notary who can price as a monopolist would have to certify to enter. For any  $z$ ,  $N(z)$  is greater than  $N^n(z)$  because bankers have higher minimum efficient scale. Thus in the  $N, z$  positive quadrant, points below the curve  $N(z)$  are served by neither notary nor banker, points between  $N(z)$  and  $N^b(z)$  are served by notaries, while points above  $N^b(z)$  are served by bankers.

What then are the implications for the data in this case? Again, the number of notaries (at time 0) serves as a predictor of bank entry at times 1, 2, and 3. Similarly, the number of notaries at time 0 or the number of loans at time 0 is also a predictor of the number of banks at times 1, 2, and 3, and if we continue to assume bankers' and notaries' average cost curves shift by the same

amount as  $z$  changes, then higher loan sizes  $z$  at time 0 should mean (other things being equal) fewer banks at times 1, 2, and 3. Because notaries exit from the loan market when banks enter, the number of banks at time 1 is not a predictor of notarial lending at time 1, 2, or 3. Notarial lending only survives where there are no banks.

Now let us consider what happens if bankers provide a different service than banks. Let us suppose that there are two types of loans. They might be commercial and mortgage loans, or collateralized and reputational loans. Assume too that the technologies for certifying loan requests are distinct and that the information needed for certifying mortgage loans is not useful to certifying commercial loans. Borrowers still want to raise an amount  $s$  but this time they can do so either by pledging real collateral (with notaries) or moveable goods and their reputation (with a banker). The two types of loans could be substitutes (which they are presumably are at the margin), but if so, then we are simply back in the previous case. So let us suppose that the two types of loan rely on different information and serve different purposes.

One way that might happen would be if notaries provide services to agriculture while bankers served primarily industry. If once we controlled for population, the distribution of farms was independent from the distribution of industrial firms, then notarial lending would be irrelevant to entry by banks. It would be more reasonable to presume, however, that although banks provide few loans to agriculture the demand for the bankers' short term commercial loans will rise with the value of agricultural output, as manufacturing firms dependent on farming expand. The value of agricultural output would then positively correlated with the demand for mortgage loans and so would the demand for notaries' and bankers' services.

Let us make the extreme assumption that these two demands work in lock step. Hence whatever increases the demand for notaries' mortgages (an outward shift in  $f$ ) also increases the demand for bankers' commercial loans via  $f_b$ , the analogous density for commercial loans. In this

case, the incentives for bankers to enter are nearly the same as in the strict substitute case: where there are more notaries or a higher volume of loans, bankers have a higher incentive to enter. The one difference arises in the smallest market. In the strict substitute case bankers can enter only if they offer services at a price that is lower than that of notaries, in this case because the two markets are separate. The first banker enters when he sustain his business at monopoly prices. Thus, here  $N_b(z)$  is defined as the minimum number of loans that a banker would certify if he was a monopolist and stay in business.  $N_b(z) \geq N(z)$  because bankers have higher minimum efficient scale than notaries. Thus in the  $N, z$  positive quadrant, points below the curve  $N(z)$  are served by neither notary nor banker, points between  $N(z)$  and  $N_b(z)$  are served by notaries, while points above  $N_b(z)$  are served by bankers, as in the substitute case.

The implications for the data are also similar. The number of notaries at time 0 serves as a predictor of bank entry at times 1, 2, and 3, although the correlation is not 1 because banks do not enter all markets served by notaries. The number of notaries or number of loans at time 0 is also a predictor of the number of banks at times 1, 2,3. There is, however, one striking difference from the substitute case: notaries do not exit from the loan market when banks enter. The number of banks at time 1 is thus a predictor of notarial lending at time 1, because both notaries and bankers are influenced by the variations in the demand for loans across markets.

We must also consider how this market evolves in the absence of free entry into notarial services, a more realistic framework after 1800. After the French Revolution, regulations limited the number of notaries by rural canton to a maximum of five; in rural markets with more than five notaries, a process of buy outs removed the smallest businesses. In cities, the limitations on entry were if anything more stringent because the number of notaries in no way reflected economic activity or population. If a rural canton with a population of 20,000 could expect to have five notaries a city like Rouen with more than five times the population had only eight. By 1840 the

map of notarial position was fixed—though there always was free exit. Because the demand for notarial had presumably grown as the economy expanded and the population rose, one would normally have expected more notaries to enter, but the number of notaries was essentially fixed at levels determined by demand back in 1800.

How then would the notarial industry evolve from 1840 to 1899 given the limits on entry by notaries? In the free entry case, equilibrium values ( $m$  notaries supplying a total of  $mn(p, z)$  loans of average size  $z$  at a price  $p$ ) simply reflect demand because the supply curve is approximately perfectly elastic at the price  $p$ . But if the number of notaries is fixed and each notary has capacity constraints that imply that marginal cost is increasing in  $n$  and  $z$ , then the number of notaries in the market will affect supply conditions, and markets with more notaries will have more elastic supply conditions. As a result, although equilibrium values in the notarial market will still reflect demand, they will do so conditional on the number of notaries present.

Consider the case of two markets with the same population and the same distribution of individual demand  $f$ . Suppose that the first market has  $m_1$  notaries and the second  $m_2$  notaries, with  $m_1 > m_2$ . Then clearly the total loans  $m_1 n$  supplied in market 1 is greater than total loans  $m_2 n$  in market 2, and the average loan size in market 1 is smaller ( $z_1 < z_2$ ) since  $z$  is an increasing function of the price, which is lower in market 1. Similarly, if we observe two markets with the same number of loans and the same loan sizes, but a different number of notaries (say  $m_1 > m_2$ ), then demand must be greater in market 2. A regression that estimates bank entry on the basis of the total number of loans and the average loan size will be thus mis-specified. Instead we must group markets by the number of notaries, and then estimate the relationship between notarial loans and bank entry. Doing so allows us to have markets with the same supply curve. Variations in equilibrium values for each group will thus be a function of demand alone. In the long run, the number of notaries itself will be an imperfect indicator of demand, even if it is initially

exogenous, because notaries will leave markets with low demand. The key here is that beyond adjusting for the number of notaries in the markets we can still run the same tests provided that there is free entry for both notaries and banks.

More generally the reader should be bear in mind that our approach and our model are designed to predict the endogenous distribution of activity by bankers and notaries, not the consequence of exogenous shifts in demand or costs. The immediate reason for taking such a tack is that we lack good measures of demand that would affect one of markets more than the other. More generally analysis over a secular period has to accept that most observed changes are endogenous.

Which scenario is correct? To begin we can look at the links between the number of banks in a market of a given population and the number of loans made by notaries. One would not want to use the number of notaries because of concerns that entry was regulated and because notaries did other business so they could have exited the credit market without closing shop. The evidence in Figures 2 abc shows that both the number of banks and the number of notarized loans were positively related to population. That might well have been the case in 1840 even if banks were in fact superior substitutes, for if we believe Rondo Cameron banks were slow to diffuse in France. By 1865 and even more so by 1899 one should have observed that beyond some critical population banks would have replaced notaries once demand was large enough to allow banks to enter. The evidence, however, is that banks entered but notaries did not exit.

We push the analysis with three sets of statistical tests, beginning with simple cross section correlations reported in table 4. The correlation between the number of banks and the number of notarial loans (even adjusting for the number of notaries) is both positive and statistically significant in contrast to what the substitute hypothesis would predict, and in accord with the alternative that notaries and bankers provided different sets of services that were both in



higher demand in more economically active areas. To examine the hypothesis of a common underlying demand Table 5 reports regressions that include the population for the market town (rather than the total population of the market which would include outlying municipalities). While 5 out of 6 coefficients continue to be positive their statistical power disappears because municipal population provides a better measure of the underlying demand (in part simply because it is less lumpy than bank offices). In any case we still cannot generate a statistically significant negative coefficient.

We can go one step further by regressing the number of notarial loans on the number of banks, municipal populations, and our measure of wealth (per-capita property tax). The municipal populations and the wealth measure are a proxy for loan demand. The actual variables used in the regression are their logarithms. (Since markets can have no banks, the variable in the regression is the logarithm of 1 plus the number of banks.) The logarithmic transformations are reasonable since the logarithm is a monotonic function, and they in turn allow us to interpret the coefficients as elasticities.

We have run the regressions for a panel covering our markets in 1840, 1865, and 1899 cross sections. Earlier years have been omitted because the wealth measures and the number of banks are not available for years before 1840. The regressions are estimated using fixed effects to control for other unobserved differences between markets (Table 6). Once again, the coefficient of the number of banks is not negative, and the result is similar if we leave out the wealth and population (Table 6, regressions 1 and 3). One might worry about the endogeneity of the number of banks, but we have to keep in mind that the relationship here concerns a correlation in equilibrium between the notarial lending and the number of banks, so the endogeneity of the number of banks is not a cause for worry. In any case, if we rerun the regression using the number of loans in 1807 and the average size of loans in 1807 as instruments

for the number of banks, it turns out that the coefficient of the number of banks is even larger and seems statistically significant (Table 6, regression 5).<sup>1</sup> Since the instruments do not vary over time, the regression does have to be estimated using random effects, which does assume that the effects are uncorrelated with the other regressors. For the sake of comparison, we have added random effects estimates for the regressions with the number of banks, and with banks, population and wealth (Table 6, regressions 2 and 4). In no case is the coefficient of the number of banks negative, as we would expect if banks were superior substitutes for notaries.

Banks, it thus seems, were not superior substitutes for notaries. Their information and ability to pool risk and offer liquidity did not give them an edge up in the long term lending market. If they had, we would have found a negative coefficient in the panel and cross sectional regressions. The oft repeated claims about banks do not stand up to scrutiny, a result that fits what other skeptics about banking have argued (Demirguc-Kunt and Levine, Fohlin). As for the notaries, the service they provided in the market for long term loans must have been superior to the alternatives, perhaps because of the information they possessed. It is thus worth considering what they in fact did and what they accomplished.

### 3: The Clients of Notarial Markets

Traditional financial intermediaries such as notaries have often been seen as serving extremely limited clienteles. Those clienteles are typically the rich and powerful rather than the enterprising poor. Hence these credit markets fail to perform one of the key roles that has been ascribed to them in improving economic efficiency: overcoming the impact of wealth constraints

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<sup>1</sup> Both the average size of loans in 1807 and the number of loans in 1807 enter the regression as logarithms, and the average size of loans is set equal to the estimated total stock of loans in 1807 divided by the number of loans in 1807. We estimate the total stock by multiplying the total value of new loans in 1807 by their duration.

on the size of individual firm as well as permitting a variety of inter-temporal smoothing strategies. Evidence that traditional markets are tilted in favor of the rich abounds, from Latin America to Italy and even to England (Anderson 1969, Botticini 2000, Levy 2004, Ryan 2007). Hence, one often concludes that these markets were inadequate for growth because they failed to promote economic change.

But whether one examines England in the seventeenth century, Southern or Central Italy in the eighteenth, Yucatan or Rio de Janeiro in the nineteenth, these were all societies where wealth was highly concentrated. If loans had to be secured with land, it makes it difficult to untangle the connection between credit market institutions and wealth inequality (it could be that poorly functioning credit markets created and nurtured wealth inequality or vice versa). Moreover, as Gérard Dellile (2003) has argued for Southern Italy, the political equilibrium of these societies was dependent upon restricting access to credit. The view that we get from France is radically different. It is the task of this section to show that notarial credit markets were open to a very broad fraction of the population; that they moved resources from individuals with excess capital to those with positive demand; and that they changed with the economy; finally that their geographic overlap made them more competitive than the historiography suggests.

In making these arguments we will leave Paris out, for several reasons. To begin, its experience after the French Revolution was radically different from the rest of the country: notaries in the capital simply failed to recover from the shock (Hoffman et al. 2000). Second, the dates of our detailed micro samples for Paris do not exactly correspond to those of the countryside. Third, Paris was an increasingly unequal part of the country (Piketty et al 2006). New markets arose including markets in the equity of publicly traded corporations and limited partnerships with tradable shares and in private investments through limited and general

partnerships. The same markets also offered investment opportunities in debt both public and foreign. We will return to Paris in section 5.

The heart of the evidence comes from the gender, occupation and residence of the borrowers and lenders whose loans were registered with notaries. While such detailed information was always included in the notarial contracts themselves, the clerks of the *Contrôle des actes* that collected the tax on notarial contract were not always so assiduous. Hence the data we have on the social distribution of credit for the eighteenth century could be improved upon. However, starting with 1807 we have a wealth of information on the characteristics of lenders and borrowers. It should be noted that the ‘democratic’ nature of our findings for the nineteenth century are repeated in the eighteenth century in all those markets where we did examine notarial data to trace the social dimensions of the credit markets (Postel Vinay 1998, Rosenthal 1993, 1994).

Even without examining the details of who borrowed and lent, it is clear that these markets were large. In the midpoint of our sample -- 1840 -- we estimate that there were 2.3 million outstanding loans in France worth about 1251 francs each. But it is less their value than their number that matters here. Both in these data and in long run samples, the frequency with which borrowers recur is low (though lenders reappear more frequently). A conservative estimate of participation might assume two loans per borrower; if we ignored lenders entirely that would lead to 1.15 million borrowers for a population of 34.9 million people or slightly less than 9 million households (Table 1). In other words there some 13 percent of French households were indebted. If, as most estimates suggest, half of French households had no collateral, then a quarter of the households who might have been able to borrow had in fact done so with some sort of a mortgage. Given that we have left out lenders, it is clear that this market reached a very large

fraction of the population. Our next task is to document that those in the market were not simply the top of the social heap.

### 3a. Women and the Credit Market

Women have long been important players in credit markets. The reasons for which women might participate in credit markets are myriad. As is now well understood pre-industrial demography was sufficiently uncertain that many women became widowed while still raising small children. Many were then required to step into shoes of the head of the family firm until their children grew up and turned to credit markets to try to meet the difficult situation that the death of the primary earner had created or to expand the business. To some extent because of egalitarian inheritance laws that prevailed in a large part of France before the Revolution and everywhere afterwards, and to another extent because of the tradition of marriage contracts, women found themselves in charge of substantial assets. Either as demanders of credit or as suppliers of capital women might have relied on counterparties as relatives either because they were forced to by family norms or because information intermediaries failed to serve them adequately. Over the long run the extent to which women participated in credit markets is a good sign of how open they are.

Over the whole of our six samples (and taking into account the relative paucity of the pre-revolutionary data), about 11 percent of borrowers and 17 percent of lenders were women (Table 5). By that we mean women were the primary borrower or lender. Women who appeared along with their husbands were not counted in this group even if they played the important role of being the first cosigner for a debt that was legally their husband's responsibility, or if the collateral was

their personal property.<sup>2</sup> If we examine only those bureaus where the main town had a population less than 5,000, the share of women borrowers fall to just below 10 percent, for lenders it drops to 13.5 percent. Given that most adult women were married and likely to appear with their husbands rather than alone these numbers are large. Weighting the loans by their value has little effect although it appears that women both took out and made loans that were slightly larger than men's. Clearly the heavy presence of women suggests that these markets were to some extent 'open.'

Over time there is little discernable change in the share of women borrowers until the last cross section when the share of loans jumps to more than 16 percent. The rise for women as lenders seems to have been more regular along the 19<sup>th</sup> century with a 2 percent gain between 1807 and 1840, a 5 percent gain between 1840 and 1865 and 8.5 percent jump by 1899 by which time they had more than doubled their share of the number of loans. By value the change is much smaller and like for borrowers concentrated at the end of the period.

There are two interpretations to the time trends. The first argues that this was a simple consequence of demography. Over the nineteenth century, men in France experienced few gains in life expectancy while women saw theirs increase quite a bit (in part due to declines in fertility). As a result, the proportion of women who spent part of their lives as widows increased. For credit markets what matters is that they had control of their wealth (dowries and inheritance and half the community property) and a life interest in much of their husband's estate (Bourdieu et al 2008, Piketty et al 2006). That their share of all lenders rose at the end of the period is simply a reflection of the increase in their relative wealth as one might presume would happen with any other group in society. The alternative would be that women are more conservative investors than

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<sup>2</sup> There is another practical reason to do so, the scribe of the fiscal system rarely noted wives of men who appeared as lenders hence the married household category is badly censored among lenders.

men and that they preferred to have centuries' tested local financial assets intermediated by people they knew well rather than invest in relatively new fangled publicly traded stocks and bonds.

### 3b The Social Distribution of Lenders and Borrowers.

The reported occupations of borrowers are at once frustratingly detailed and depressingly opaque. On the one hand, civil servants made fine distinctions in their occupation, and artisans also provided extraordinary detail (textiles workers not only provided information about what stage of the production process they carried out but also what kind of fiber they used). On the other, the Revolution created a whole new identity that of the *propriétaire* which covers anyone with some property—and can include both individuals rich enough to live off their land rents and farmers who owned some land but most of whose revenue came from entrepreneurial and labor income. Moreover the category was not limited to the countryside but individuals who styled themselves as proprietors abound in cities. Thus proprietors share a shifting boundary with farmers (though not with laborers or domestics) another one with business people in cities (though again typically not with employee or civil servants). They also share a boundary with another highly ambiguous category that of the “rentier” (a person living off of land and capital income).

Even though the occupational data have more serious weaknesses than the information about gender, they are nonetheless perfectly adequate to assess whom the market served. Tables 6 and 7 show the distribution of loans by broad socio-economic category. (A similar table with the distribution of loan funds was assembled and leads to the same results.)

The most obvious fact is that the Revolution led to a permanent shift in reported occupation with a massive 15-20 percent gain in the category of individuals who styled themselves as proprietors, rentiers, or nobles, or without a profession. That category experiences a second 5 percent jump among lenders between 1840 and 1865 and relatively continuous growth among borrowers from 27 to 46 percent among lenders. And these trends do not depend on whether we focus on the whole sample or only smaller bureau. One might have expected the growth of larger towns to lead a greater share of the proprietor category—but the restricted sample shows much the same patterns.

If proprietors grew, those reporting an occupation in agriculture declined from 40 percent in 1807 to 30 percent in 1865 and 19 percent in 1899. While some of this may simply reflect more data censoring (a land owning farmer would have had the option of reporting himself as a proprietor, as a farmer or as farmer-proprietor), the decline swamps the growth in the proprietor category, leaving little doubt that more loans were going outside of agriculture after 1865 than around 1807: as the economy's structure changed so did the structure of lending. The borrower categories making the biggest gains were commerce, civil servants and construction. Manufacturing remains a relatively constant 15 percent. When we consider lenders, however, trade and industry experienced nearly as sharp a decline as agriculture, but the consequences are quite different because in 1807 there were almost three times as many borrowers who were in agriculture as lenders while in crafts and industry the numbers were about half. Over the course of the nineteenth century it seems there were net loans to industry because its members made fewer and fewer loans. The other category that made gains was banks and bankers. While they had been trivial in 1807 and tiny in 1840 and 1865, they accounted for 8 percent of the loans made in 1899 for the whole sample and 5 percent in the smaller bureaux.



Both lenders and borrowers did nonetheless come from a wide variety of occupations, including some rather far down the socio-economic ladder. The lower classes (laborers, and domestics) received up to 10 percent of the loans in any cross section while they were lenders in 5 to 9 percent of the loans. If we break up this category more finely, it is clear that laborers dominated that category's borrowing while domestics dominated lending. The large category of agriculture includes lots of wine growers, who in regions like Burgundy and Languedoc often owned only a limited amount of land. Hence these markets were accessible by borrowers and lenders of limited means, and the distribution of loan size reflects this as well. In 1740 and 1780 10 percent of all loans in our sample were for less 50 *livres* or two months wages for a skilled worker and in 1807 the same threshold was 100 francs, (the 25 percent threshold being 97 and 170).

Many of these small loans went to individuals of limited mean like laborers, and domestics. If we bear in mind that there were other poor households like wine growers in agriculture, small shopkeepers in commerce and cobblers among artisans, our measures understate the democratic nature of the markets. Obviously in larger cities that were more unequal, loans went primarily to the rich and they averaged several times per capita income (Table 1 panel A and B).

### 3c. Matching like and unlike

It is common to evaluate how credit markets function by examining how many borrowers match their lenders characteristic (e.g. Rothenberg 1985). The fewer common characteristics they share the more diversification the market provides and the better its institutions are at overcoming asymmetric information. From 1807 to 1899 about a quarter of the loans were between individuals in the same socio economic category as displayed in tables 6 and 7, most of those

were loans within the agriculture and within the proprietor's category. If we exclude proprietors, the share of loans off the diagonal (among individuals in different categories) increased from less than 80 percent before 1840 to more nearly 90 percent. Had we weighted the loans by size the increase would have been larger yet.

Another measure of the effectiveness of these markets comes from the geographic distribution of loans. Figure 2 plots the cumulative distribution of the distance between borrowers and lenders' residences as measured by the distance from one municipality to another (see also Table 8). While municipalities are, most of the time, not very big and the distance from one to another rarely exceeds 5 km, our measure over estimates co-residence because it will give the same value of zero to individuals who live in the same village and individuals who live in different hamlets but in the same municipality. Bureaus were composed of anywhere between one (in big cities) to twenty municipalities, but the distance from one bureau to another was rarely more than 15 kms. So we propose to interpret distance in the following way; distance of zero, as transactions where borrowers and lenders were likely to have known a good deal of each other; where distance is positive but less than 10km, as transactions where borrowers and lenders might have known each other only slightly but because they lived in the same bureau they were both well known to local intermediaries. Transactions over distances greater than 10 km we surmise would have required information transfer between intermediaries of different bureaus; more personal relationship among lenders and borrowers; or a very high quality of security.

From an efficiency point of view, more distant transactions are at greater risk of adverse selection (because lenders have worse information about more distant borrowers) or of moral hazard (because monitoring is poor), but they offer better diversification and more timely transactions by giving any one individual access to a larger set of counter parties. Larger settlements because of the sheer population and because of a greater diversity of activities are

likely to have relative more efficient markets without resorting to inter bureau transactions than smaller ones. Nevertheless they are also likely to suffer more from transaction costs at the local level because a larger population worsens asymmetric information. Table 8 reports the fractions of transactions at different levels of distance, because of the scarcity of residence information we pool the data through 1807 (most of it coming from that last cross section); because of our concern for population size we report these distributions both for the whole sample and for bureau with main population less than 5000.

For the whole data set, nearly half of all transactions occurred among individuals who lived in the same municipality and three fourth within the same bureau. If we restrict ourselves to more rural ones about 40 percent were within a municipality and the same three quarter within the bureau. By the standards of the vast interregional mortgage lending of the United States, French credit markets look decidedly parochial. Yet we must bear in mind that France was a long settled economy without a frontier, hence there was little need for large scale movements of capital from one place to another. That 25 percent of the loans travelled at least 10 km and 5 percent at least 40 suggests that on the quantity side mechanisms existed to integrate these markets over space. Because the loans between individuals at a distance one from another tended to be larger, the share of funds that traveled more than either 10 or 40 km were larger than the share of loans.

More importantly this distribution of loans suggests that local information was quite valuable both in securing a supply of loanable funds and in finding borrowers who would be likely to service and repay their loans. The market was broad enough that it required intermediaries. As we noted in section 2 in 1807 or earlier the only group that provided such information services were notaries. However, over time individuals who families had often been involved either in wholesale trade or as notaries opened banks. Our data on the identity of lenders

and borrowers clearly shows that prior to 1865 banks played a tiny role in the mortgage market. Save for a massive set of loans between the Bouault family a banking firm in Dijon and two dozen Swiss lenders that were signed in Nuits St Georges in 1840, banks and bankers are extremely scarce in the data, even though by then there were hundreds of bank offices in France. Successful entry by banks in the mortgage market would have to wait for a new institution: the Crédit Foncier de France.

#### 4: The ‘End’ of Notarial Credit and the Rise of the Crédit Foncier de France

Between 1829 and 1862 the number of bank offices in France outside Paris increased from 606 to 1875, it would rise yet again to more 2500 by 1899 (Table 9). Beyond Paris as well, the municipalities in our stratified sample had 206 bank offices in 1829 and that would reach 387 by 1865 and 417 in 1899 (by which point 80 percent of the all bureaus had at least one bank). Because our sample is stratified reflects a higher diffusion of banks than the national sample, yet between 1829 and 1898 the fraction of cantons with a bank jumped from 7 percent to 35 percent an impressive gain. Nevertheless banks were not making mortgage loans prior to 1865 Of the 24,000 loans in our cross sections for 1807 and 1840 for which we have lenders’ occupation not even 400 are by bankers, banks, individuals in finance or multi-owner firms of any kind. These loans amount to less than 1 percent of all the notarized loans’ value.<sup>3</sup> In fact the huge and totally anomalous 12 year 1.1 million franc loan that we noted above made to the Bouault has a greater stock value than the 1.8 million francs lent in front of notaries by our catch-all bank sector. Banks were prospering by providing commercial loans and other financial services, but before

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<sup>3</sup> The finance category is dominated by bankers but also includes stock brokers and insurance agents; the multi-owner firm category includes banks, insurance companies and a wide variety of firms whose line of business could not be ascertained.

1865 they were not spreading as important alternatives to notaries. It is not that mortgage bank had not been tried in France. There had been two rather unsuccessful attempts to do so, one shortly after the Revolution and another in the late 1820s. Both failed because they found no way to overcome their informational disadvantages and stuck with a portfolio of very weak loans, they collapsed as soon as credit conditions worsened (Hoffman et al, 2000 ch 8).

Notaries' informational advantages were persistent as long as the most valuable information about a debtor's credit worthiness remained private information. French law implied that a debtor that secured a loan against a specific asset was junior to all (secured and unsecured) creditors who had contracted before him. Thus the value of a collateral lien depended on far more than the outstanding liens on a particular asset. Since this was true for both commercial and mortgage debt, it is not surprising that most financial intermediaries (notaries *and* bankers) were deeply imbedded in their local communities. Hence the argument that informational asymmetries made it difficult for bankers to compete may seem suspect. One might be tempted to give significant credence to an alternative hypothesis namely that bankers' sources of funds (deposits) were unsuited to making long term mortgage loans in an environment where the central bank was unwilling or unable to play the role of lender of last resort. Yet, as mentioned earlier, there was free entry in the non-corporate bank sector. Anyone could raise equity from limited partners in commandites or in joint stock share issuing commandites. Hence the liability structure of banks was endogenous and banks may well have decided not to raise long term capital because there were no rents to be extracted from the mortgage industry. One should bear in mind that there were at least 10,000 notarial offices in France and although the three to five notaries in a given

canton might have come to some cozy rent sharing agreement, is far less obvious that such agreements could be sustained over a larger geographical space.<sup>4</sup>

It is also likely that bankers and notaries accumulated different information and kept it private. If bankers had good information about a borrower's income from the flow of bills and receipts through his account, this information remained private; much the same can be said about notaries information about collateral values and in particular the set outstanding loans that had not been registered. For a bank wanting to make a foray into mortgage lending it had to either forge an alliance with notaries or focus on those clients whose liabilities were likely to have been registered at a high rate. The later strategy could only be deployed in the largest and with the richest of clients.

The creation of a national mortgage bank, the *Crédit Foncier de France*, offers us a important glimpse into banks' difficulties with mortgage credit. This institution has received less attention from economic historians than its sister firm the *Crédit Mobilier* but was a lot more successful (Gerschenkron 1962, Cameron 1967). In 1852 its founders received an authorization to form a limited liability corporation that would issue both shares and bonds on the Paris Bourse to make long term mortgage loans. While by the end of the 1850s there were many corporate banks that issued publicly traded equity, its monopoly on issuing mortgage backed securities remained intact well beyond World War I (Allinne 1984).

As we discussed in *Priceless Markets*, the *Crédit Foncier* quickly became the dominant mortgage issuer in Paris –by 1869 we estimated, then that it held over half the outstanding mortgages in the city. Our interest here lies with the country side, but the sample for of loans we

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<sup>4</sup> We are still accumulating information about the number of notaries in France prior 1810, there were relatively sparser in the North than in the South. Starting in the 1820s the government progressively reduced the number of offices to a maximum of 5 per canton in rural area but some areas like Normandy only had three, cities continued to have more than 5 (from 121 in Paris to a dozen in Avignon). The reform was largely complete by 1840

collected for Paris in 1899 makes a digression worthwhile. That sample is a random 20 percent sample of all the loans registered in that year. It confirms the Credit Foncier's dominance: the bank issued 25 percent of the mortgages amounting to 28 percent of the value of loans and 73 percent of the stock. While in the 1850s its loans had been on average five times as large as that of other lenders in the city and in the 1860s still two and a half times large, by 1899 that difference had shrunk to one a half time. Although the CFF made a minority of the loans, it no longer selected particularly large borrowers. The key difference in the loans made by the CFF was the length of the loans (67 years relative to slightly more than 7 years). The other development was the rise of a competitive fringe of bank and insurance company loans. Although these were relatively rare (1.5 percent of loans) they were large and amounted to 4 percent of the value and 7 percent of the stock; with an average maturity of 43 years these loans were much closer to those of the CFF than to the traditional loans that still accounted for 75 percent of all new contracts. In Paris, over the first half century of its existence, the CFF seems to have overcome any significant differences in the quality of its information relative to other lenders. Its handsome returns, however, seem to have spurred the entry of competitors like insurance companies. The importance of these alternative large lenders is understated because insurance companies were also major owners and developers of real estate. Although competition may have seemed muted it did result in a decline in the CFF's share of the stock of loans in Paris between 1865 and 1899 at a time when its share was growing everywhere else.

In the countryside, differences in average loan size in the 1850s and 1860s had been enormous, with the CFF making loans on average ten times larger than those of other intermediaries. This was the result of a deliberate strategy designed to limit the effects of asymmetric information on the bank's non-Parisian portfolio. By 1899, fifty years after the bank first opened its doors, its loans outside Paris were on average four times larger than those made by

private persons. By doing so it could bear a relatively high cost of investigating both the borrower and his or her collateral with great care. To put it simply, the CFF was not serving lenders who would not have qualified for traditional loans, rather it was picking off the very safest clients from notarial markets and offering them loans whose conditions made them more desirable than those of traditional markets.

Nevertheless, the top part of the loan distribution absorbs much of the value of loans, and its focus on large loans did not prevent the CFF from becoming an important player in local credit markets. In the decade and half between its founding and 1865, the CFF's loans had grown from nothing to 5.5 percent of the value of all loans. By 1899, they had jumped to more than 10 percent. But the CFF's huge advantage over other potential lender's lay not in the size of loans it could make but in their duration. In 1865, the CFF was making loans for 20 to 50 years, when traditional loans ranged between one and ten years. The CFF's combination of a weighted average term of 31 years and amortization schedule must have been attractive compared to traditional loans with a weighted average term of four years and a balloon payment. The CFF's advantages continued to grow. By 1899, its weighted average term was of 60 years while the traditional market only managed 6. These long durations have a tremendous impact on our stock calculations since they imply that the CFF had 29 percent of the stock of loans in France 1865 and 54 percent in 1899.<sup>5</sup>

By 1865, if we take the measure that is most favorable to the innovator (stock of loans), the CFF had become the dominant lender in Paris, and although it had a substantial presence in cities with 17 percent of the stock, it had not made much of a dent in the countryside with only 7

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<sup>5</sup> If one had access to detailed data on outstanding loans the CFF's dominance would be less extreme. Indeed for the figures of stock as we measure them to be equivalent to outstanding debts the CFF would have had to have the same volume of loans for the same maturity for the prior 60 years (but we know it was not founded until 1851 and grew steadily). The bias is far more severe for CFF loans than for traditional loans that grew less quickly and had relatively short durations. We are currently assembling data to more accurately estimate the stock of CFF loans. But in this paper biasing the CFF's size upwards only helps to make the point that traditional markets were important.



percent. By 1899 it had 47 percent of the stock in cities and 40 percent in the countryside. Clearly this is very strong evidence in favor of bank based lending. Indeed the ration of the stock of mortgage debt to GDP doubled between 1840 and 1899 and the CFF was holding nearly all of the increase (Table 1 panel B).

Nevertheless, this conclusion has to be tempered by several observations. First, the decline in the traditional market debt to GDP ratio from 22 to 18 percent is almost entirely explained by Paris. In the capital traditional loans fell by 44 percent (in the rest of France they grew by 20 percent), between 1865 and 1899 while the CFF debt stock jumped from 7 to 24 percent of GDP. By 1899 traditional markets resumed their growth and totaled 24 percent national income. . Even a half century after the arrival of the CFF, traditional credit markets remained a central component of mortgage credit, and they remained a particularly important in the more socially sensitive parts of the market (the small loans demanded by the middle class).

One may well want to lay the blame for the persistence of these traditional intermediaries at the door of the CFF's monopoly, but we think that to be a very partial explanation. The CFF's returns depended on the margin between the yield that it had to offer on its bonds and the yield of its mortgage securities. On the one hand, government regulation meant it could not move that spread very much, hence it did had little incentive to restrict access to loans. On the other, it had every incentive to limit default and thus to focus on low risk borrowers. Its expansion thus depended on how quickly it devised mechanisms to collect reliable information about borrowers and their collateral. Its monopoly may have made it less aggressive in seeking out such mechanisms but we should not forget that the notaries were the holders of the information it wanted. In Paris, we have argued that the CFF forged a direct alliance with the capital's notaries because it could promise a massive increase in contract fee if notaries cooperated (that the mortgage business in Paris had been stagnant for some time probably helped strike a deal). In the

countryside, however, the CFF could not do so because it simply did not have the administrative means to monitor the hundreds of thousands of loans made there. Hence it focused on borrowers with large amounts of collateral.

Finally, the rise of the CFF was made easier by other economic changes, notably the decline of agriculture in the economy, increased urbanization, and increased wealth inequality. These three processes were clearly interrelated, yet in each case they reduced the informational burden on ‘modern’ intermediaries. Indeed each of these concentrated the CFF’s potential borrowers into a smaller group over time. The decline of agriculture and the rise of manufacturing concentrated the demand for investment capital in a smaller number of entrepreneurs. Increased urbanization made it more valuable to have branches in the major cities that could acquire information about real-estate conditions and potential borrowers. Increased wealth concentration (in 1900 the richest 1 percent of decedents accounted for 55 percent all assets in French estates up from 35 percent in the 1820s) allowed the CFF to provide financial services for a very large fraction of all wealth by serving relatively few people. The CFF’s strategy only reinforced these trends because it lowered the cost of capital in cities more than in the countryside and for the very rich more than for anyone else. To the extent that there was a part of the financial market that was working against the further concentration of wealth it was notaries and their traditional bilateral contracts.

## 5. Conclusion

\_\_\_\_\_The notaries served a broad fraction of the population, including women and individuals far down the social–economic ladder. Perhaps a quarter of households with property had taken out a notarial loan, and the sums that notaries mobilized were large: in 1840 the stock of notarial loans amounted to nearly a quarter of GDP. Until the rise of the *Crédit Foncier* in the late

nineteenth century, notaries were the source for mortgages. They and they alone arranged the long term loans that banks were unable to furnish, and they funded industry as it arose. In doing so, they helped integrate financial markets and move capital across lines of class and occupation. They were thus not archaic intermediaries, whom banks, with better information and an ability to pool risk, could simply sweep aside. Banks, it turns out, simply did not have superior information and they were not substitutes for notaries. If anything, they were complements. The statistical evidence suggests as much, as does the fact that bankers themselves invested with notaries. And in the end, one cannot blame France's slow industrialization on a lack of banks.

The importance of these conclusions extends beyond the economic history of France alone for they speak to issue of the role that institutions play. In English financial history, many have been surprised to find little evidence of any impact of institutional change on growth—a classic case of G. Clark's claim that institutions are unimportant (Clark 2007; Sussman and Yafeh 2006). Yet at the same time, certain innovations seem to have a huge effect on financial development (the rise of the consol, for example, or London Stock Exchange). How can one reconcile these two disparate views?

France can serve as a useful point of comparison here. It already had high levels of per-capita debt in eighteenth century (Table 1). England may have too, but because of common law, it has no archival record of private transactions, and financial activity prior to the arrival of 'modern' institutions cannot be quantified. As a result, new 'modern' institutions seem to be invented, but impact of the new institutions is misleading because there were other ways of doing things before, which in England go unrecorded. The apparent lack of any relationship between financial innovation and economic growth is equally misleading, because it too ignores private transactions that left no trace in the English archives. And as the French case shows, these older private transactions could be extremely important, well into the nineteenth century.



## Appendix Sources and credit data construction

Thanks to generous support from the Sage Foundation, we have managed to gather data on some over two hundred thousand loans spread out over 160 years and 108 separate markets in 6 cross sections: 1740, 1780, 1807, 1840, 1865, 1899. The markets were chosen to form a stratified sample of French towns and cities according to their population; the sample includes Paris; three other large urban centers (Lyon, Rouen, Toulouse); 13 medium sized cities such as Amiens with populations between 20,000 and 50,000; and 40 smaller cities with populations between 5,000 and 20,000; and 61 towns with populations under 5000. Our evidence, it should be stressed, comes not simply from the cities and towns themselves but from the surrounding countryside as well.

In addition to the credit data, we have also collected data on financial intermediaries, populations, economic development, bankruptcies, wealth, inequality, human capital, and social capital in each of the 108 markets. Here we will describe our sources and how we estimated the per-capita stock of outstanding debt in each market.

To estimate this stock, we used records of loan registration that survive as far back as the early eighteenth century. Lenders had to have their loans registered with a local registration office and pay a tax on the transaction. If they did not do so, they would have difficulty enforcing their loans in court in case of default, and they therefore had a powerful incentive to register the loans and report truthfully the terms of the loan contract. The registration offices were located in towns and cities but they registered transactions for the surrounding countryside as well. Although the registration was reorganized late in the French Revolution, the nature of the tax and the size of the areas covered by each office hardly changed over time.<sup>6</sup> Typically each office covered an area that was nearly the same as a nineteenth-century French *canton*, a small administrative unit averaging some 150 square kilometers in size.

For each market and cross section, the registration records gave us the number of new loans made, the types of loans, their size, and, in most cases, their duration (the number of years before the loan had to be repaid). In the eighteenth century, data on durations in certain types of loans had to be gathered directly from the original loan contracts, which survive in the archives of notaries, the legal officials who drew up loan contracts and also arranged loans.<sup>7</sup>

To calculate the outstanding stock of debt, we took the new loans registered in each market in the years of our six cross sections and multiplied the value of each loan by its duration. The sum of these products is our estimate for the loan stock. The calculation assumes that the market is in a steady state, but a detailed investigation of the credit market in Paris shows this method is a good approximation. We could also calculate the fraction of loans of each type and single out particular sorts of debt, such as annuities.

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6. Before the French Revolution, the registration was known as the *contrôle des actes*; after the Revolution, it was the *enregistrement des actes civils publics*.

7. In a small number of cases where records were destroyed or were unavailable we had to seek other data in the notarial archives or in judicial records. That was the case, for example, in Caen, where the records were destroyed during the Normandy invasion, and in Paris, where registration did not exist in the eighteenth century.

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Figure 1

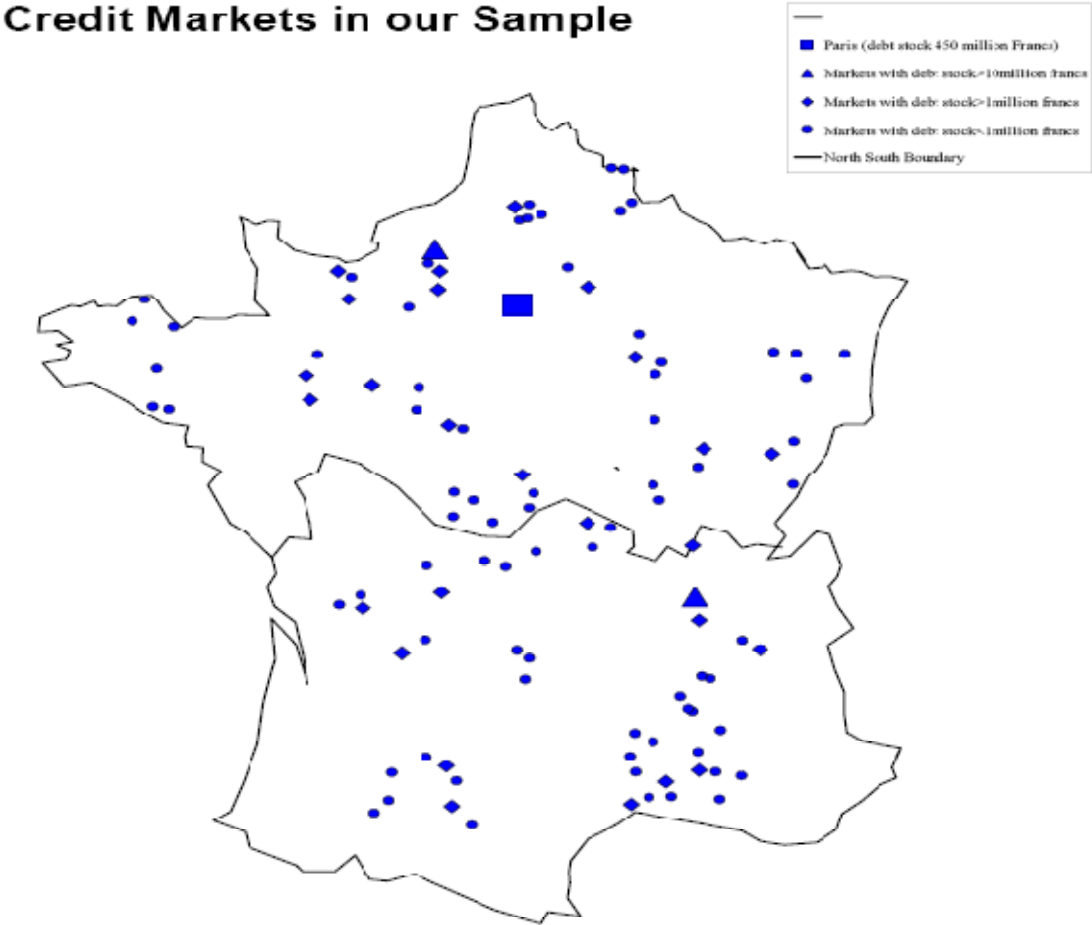




Table 1, Panel A :The aggregate market for notarial loans1740-1840

	Acts			
	1740	1780	1807	1840
	Loans made that year			
Paris	5896	8986	7196	6531
70000<<Paris	1759	3620	3954	10297
10000<<70000	106923	87401	55176	64873
Other bureaux	343270	282369	378243	571130
France	457848	382376	444569	652831
	Value of Loans (million livres/francs)			
Paris	44	143	114	108
70000<<Paris	3	14	17	56
10000<<70000	102	83	79	135
Other bureaux	82	122	242	517
France	230	362	453	817
	Stock of Loans (Contracts * Duration)			
Paris	19576	55465	31750	29855
70000<<Paris	7383	33639	18904	49331
10000<<70000	1270525	584334	206338	279827
Other bureaux	2102312	1687015	1162804	1954877
France	3399797	2360452	1419796	2313890
Loans/Person	0.14	0.09	0.05	0.07
	Stock of Debt in million livres/francs (Value* Duration)			
Paris	556	884	504	496
70000<<Paris	11	130	83	279
10000<<70000	1267	626	319	637
Other bureaux	569	806	844	2263
France	2403	2446	1750	3675
Stock/GDP	0.21	0.19	0.13	0.23
	Duration (years)			
Paris	13	6	4	5
70000<<Paris	4	9	5	5
10000<<70000	12	8	4	5
Other bureaux	7	7	3	4
France	10	7	4	4
	Average Loan size			
Paris	7402	15941	15881	16600
70000<<Paris	1508	3819	4388	5487
10000<<70000	954	949	1434	2082
Other bureaux	239	433	640	905
France	503	948	1018	1251
Average/GDP/POP	1.10	2.06	2.20	2.70

Table 1, Panel B: 1865 and 1899

	Acts					
	1865		1865		1899	
	All	Traditional	CFF	All	Traditional	CFF
Paris	5045	4368	677	4614	3435	1179
70000<<Paris	12507	12500	7	15931	15331	600
10000<<70000	65930	65718	212	51381	50106	1274
Other bureaux	370036	369775	261	181820	180050	1770
France	453519	452361	1157	253746	248922	4824

	Value of Loans (million livres/francs)					
Paris	95	55	40	173	124	49
70000<<Paris	96	95	0	158	142	16
10000<<70000	236	227	9	286	261	25
Other bureaux	545	541	4	477	448	29
France	972	919	53	1093	975	118

	Stock of Loans (Contracts * Duration)					
Paris	31165	10855	20310	118695	39702	78993
70000<<Paris	61233	61017	216	161381	142836	18545
10000<<70000	321820	314255	7565	491461	473699	17762
Other bureaux	1583252	1571681	11571	1620701	1614954	5748
France	1997469	1957808	39662	2392238	2271190	121048
Loans/Person	0.05	0.05	0.00	0.06	0.06	0.003

	Stock of Debt in million livres/francs (Value* Duration)					
Paris	1472	280	1192	4445	1187	3258
70000<<Paris	489	479	10	1597	691	907
10000<<70000	1227	953	274	2732	1586	1147
Other bureaux	2581	2385	196	4252	2531	1721
France	5769	4097	1671	13027	5995	7032
Stock/GDP	0.26	0.19	0.08	0.45	0.21	0.24

	Duration (years)					
Paris	16	5	30	26	10	67
70000<<Paris	5	5	32	10	5	57
10000<<70000	5	4	31	10	6	47
Other bureaux	5	4	46	9	6	59
France	6	4	31	12	6	60

	Average Loan size					
Paris	18796	12611	58700	37446	36143	41242
70000<<Paris	7654	7633	46000	9898	9255	26336
10000<<70000	3580	3457	41438	5560	5211	19285
Other bureaux	1473	1463	16444	2624	2489	16361
France	2143	2031	45926	4308	3918	24456
Average/GDP/POP	3.7	3.5	79	5.7	5.2	32

Table 2: Descriptive Statistics

1. Loan characteristics (values in 1840)			
Characteristic		All markets	Without Paris
Average loan size (francs)		3860	1847
Median loan size (francs)		---	500
Average loan duration (years)		4.62	4.68
2. Values of variables in selected periods			
Variable Name	Description/Units	Mean	Standard Deviation
Per-capita stock of loans in 1740	Livres	54.00	110.22
Per-capita stock of loans in 1780	livres	70.03	159.90
Per-capita stock of loans in 1807	francs	53.09	82.76
Per-capita stock of loans in 1899	francs	270.69	294.68
City population (in 1840)	Population of city where registration office located	19853	85734
Banks (number in 1840)	Number of banks	4.46	21.06

Source: See appendix for sources used.

Note: For detailed description of the variables, see the text and the appendix. The table shows the per-capita stock of loans for 1740, 1780, 1807, and 1899. Values for other variables are shown for the first and last dates they are available only. Monetary amounts in 1740 and 1780 were in livres, which equaled 0.989 francs, the currency unit created during the French Revolution. To get a sense of the value of the amounts involved, in 1740 an unskilled day laborer earned 1 livres a day in Paris; in 1840, his wages had climbed to roughly 2.4 francs a day; and by 1899, they were nearly 5 francs a day. We did not compute median loan sizes for all markets including Paris because of the different sampling strategy used with the Paris records. The average loan durations is calculated weighting durations by loan sizes.

Table 3: Regressions of the year the first bank in a market opened and the number of banks in the market in 1840 on lending in 1807

Dependent variable	Ln(1 + number of banks 1840)	Ln( 1 + number of banks 1840)	Number of banks 1840	Year first bank opened
Paris included?	Yes	No	No	No
Estimator	Tobit regression	Tobit regression	Negative binomial	Tobit regression
Constant	-7.58 (8.13)	-7.55 (-7.25)	-9.58 (9.32)	1960.48 (110.16)
Ln(Per capita stock of loans 1807)	0.38 (2.40)	0.38 (2.39)	0.31 (1.93)	-8.60 (-3.03)
Ln(Per capita Property Tax 1840)	-0.06 (-0.18)	-0.06 (-0.19)	-0.10 (-0.30)	11.13 (1.74)
Ln(Municipal population 1841)	0.77 (5.80)	0.76 (5.43)	1.00 (7.13)	
Ln(Municipal population 1807)				-11.33 (-4.46)
Pseudo R <sup>2</sup>	0.34	0.31	0.24	0.07
N	108	107	107	107

Source: See appendix.

Note: The tobit regressions with ln(1 + the number of banks) as dependent variable are left censored at zero; the tobit regression with the year the first bank opened are right censored at 1899. The per-capita stock of loans and property tax were calculated using the 1841 population of the local canton, a area that was virtually identical with the area served by the local tax office. The canton included the municipality where the tax office was located plus surrounding towns and villages, and the cantonal population was thus larger than the municipal population. T-statistics are in parentheses.

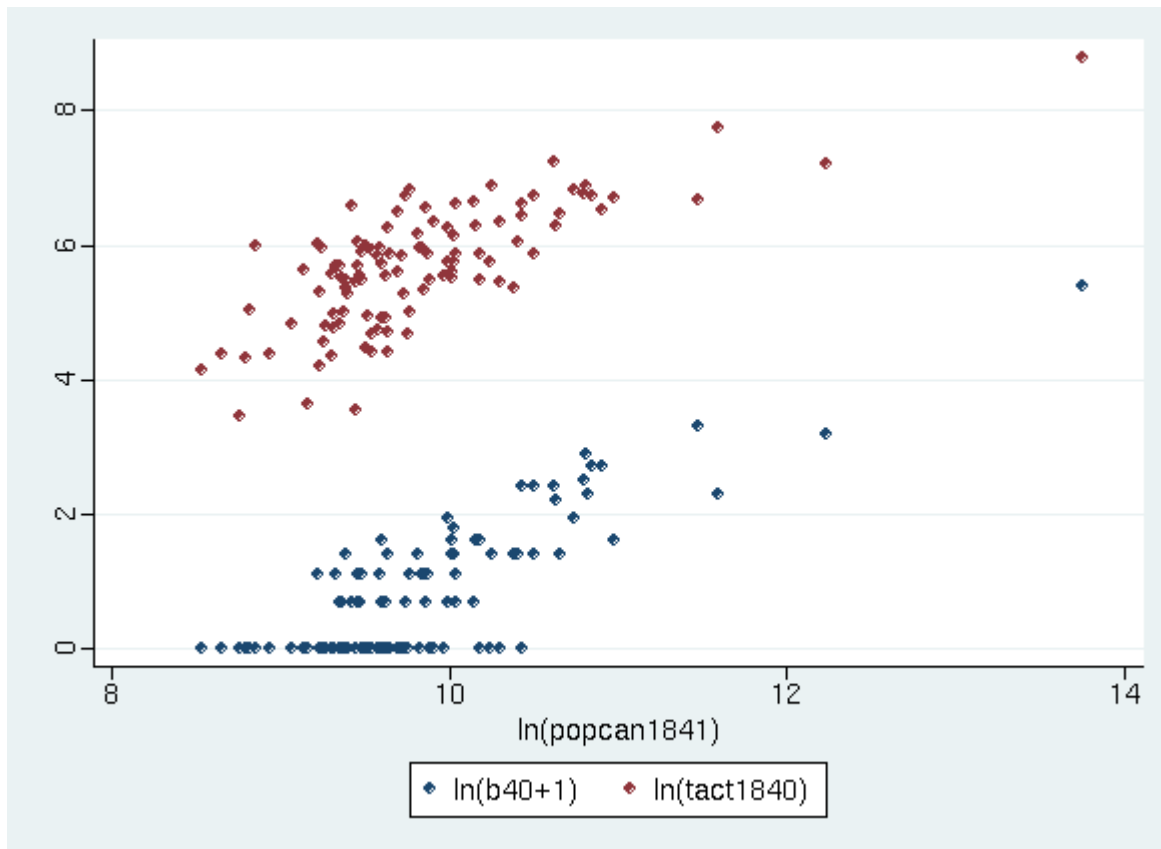


Figure 2a: The logarithm of the number of loans made by notaries in 1840-- $\ln(\text{tact}1840)$ —and the logarithm of the number of banks plus 1 in 1840— $\ln(\text{b}40+1)$ —versus the 1841 cantonal population— $\ln(\text{popcan}1841)$ .

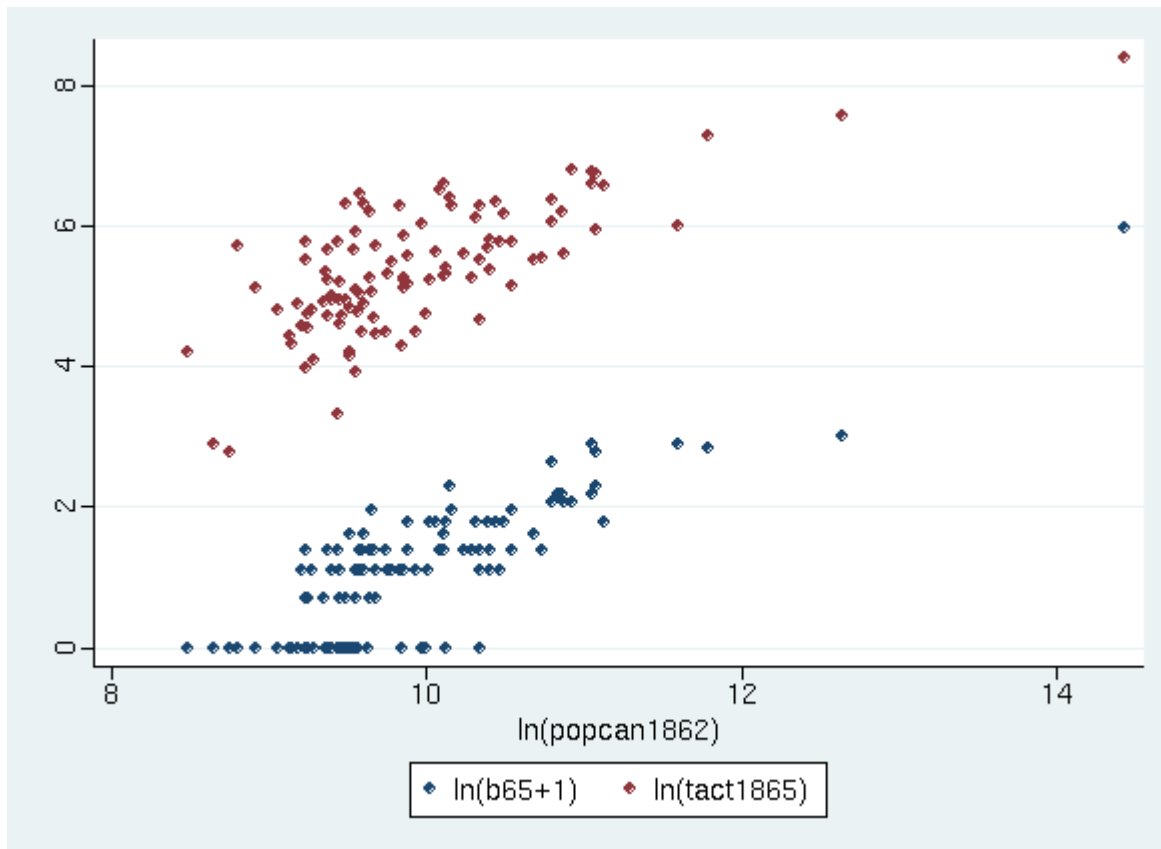


Figure 2b: The logarithm of the number of loans made by notaries in 1865-- $\ln(\text{tact}1865)$ —and the logarithm of the number of banks plus 1 in 1865— $\ln(\text{b}65+1)$ —versus the 1862 cantonal population— $\ln(\text{popcan}1862)$ .

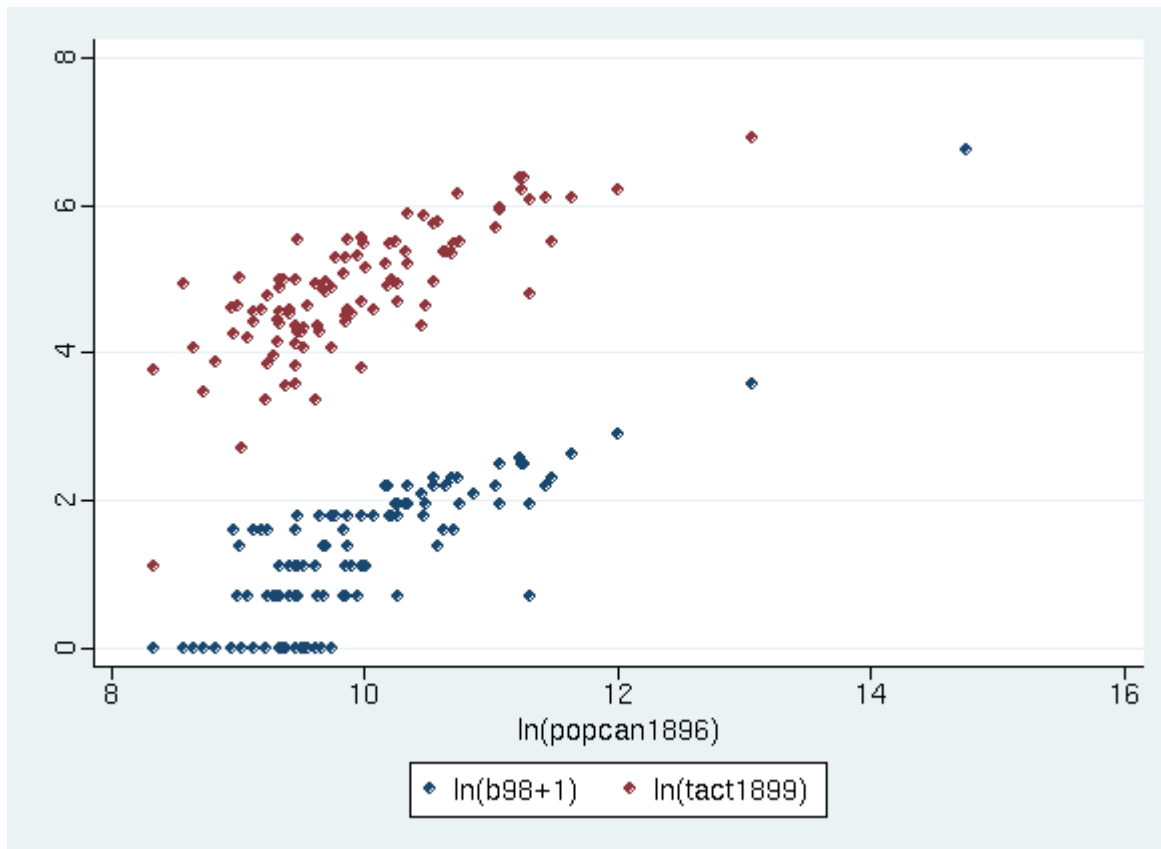


Figure 2c: The logarithm of the number of loans made by notaries in 1899-- $\ln(\text{tact}1899)$ —and the logarithm of the number of banks plus 1 in 1898— $\ln(\text{b}98+1)$ —versus the 1896 cantonal population— $\ln(\text{popcan}1896)$ .

Table 4: Cross sectional regressions of the number of notarial loans on the number of banks without additional explanatory variables

Cross section	1840	1840	1865	1865	1899	1899
Number of notaries	2-5	6 or more	2-5	6 or more	2-5	6 or more
Coefficient of $\ln(\text{number of banks} + 1)$	0.37	0.46	0.31	0.58	0.45	0.58
Standard error	0.18	0.07	0.13	0.07	0.08	0.12
Adjusted $R^2$	0.06	0.50	0.08	0.60	0.31	0.44
N	50	47	56	40	63	28

Source: See text.

Note: The explanatory variable in each regression is the logarithm of the number of notarial loans. The number of banks enters the regression as 1 plus the number of banks in the market at the time of the cross section. For the 1899 section, the number of banks was measured in 1898. To fix the number of notaries for each regression, we first divided each cross section into two groups of markets: those with 2 through 5 notaries, and those with 6 or more notaries. We then ran the regressions separately for each group and each cross section. The number of markets was too small to allow us to keep the number of notaries in each regression perfectly constant. All the regressions also included a constant term. Standard errors are in parentheses.



Table 5: Cross sectional regressions of the number of notarial loans on the number of banks with the municipal population as an additional explanatory variable

Cross section	1840	1840	1865	1865	1899	1899
Number of notaries	2-5	6 or more	2-5	6 or more	2-5	6 or more
Coefficient of ln(number of banks + 1)	0.14	0.06	0.005	0.26	0.13	-0.11
Standard error	0.19	0.11	0.14	0.18	0.11	0.27
Coefficient of ln(municipal population)	0.35	0.43	0.38	0.25	0.35	0.47
Standard error	0.14	0.10	0.13	0.13	0.09	0.17
Adjusted R <sup>2</sup>	0.16	0.63	0.17	0.60	0.44	0.56
N	50	47	50	39	63	28

Source: See text.

Note: The regressions and the variables are as in Table 1, except that we have now added the logarithm of the population of the largest municipality in the market as an additional explanatory variable.

Table 6: Panel Regressions 1840-99

Regression	1	2	3	4	5
Specification	Fixed effects	Random effects	Fixed effects	Random effects	Random effects, instrumental variables
Coefficient of:					
ln(number of banks + 1)	0.10	0.46	0.09	0.16	0.85
Standard error	0.07	0.05	0.07	0.06	0.24
ln(municipal population)			0.26	0.42	0.02
Standard error			0.11	0.05	0.15
ln(average per capita wealth)			-0.06	-0.06	-0.03
Standard error			0.08	0.07	0.09
N	309	309	302	302	302

Source: See text.

Note: The dependent variable in each regression is the logarithm of the number of notarial loans. Regressions 1 and 2 included a constant term, time effects, and the logarithm of the number of banks plus 1. Regressions 3, 4, and 5 added the logarithm of the number of the population of the largest municipality in each market and the logarithm of per capita wealth, which was measured by using per capita property tax receipts. The municipal populations and bank numbers were as in Table 2. The instrumental variables in regression 5 are the logarithm of the number of loans in 1807, and the logarithm of the average stock per loan in 1807, where the total stock of loans is value of new loans times their estimated duration. As explained in the text, the average stock per loan is a measure of average loan size. Since these instrumental variables do not change over time, a fixed effects estimator is ruled out.

Table 7: Women and multi-owner firms among notarial credit

Whole sample with reported gender							
Un weighted							
	ALL	1740	1780	1807	1840	1865	1899
Women Borrower	0.112	0.078	0.106	0.119	0.099	0.112	0.166
Women Lender	0.176	0.111	0.124	0.130	0.153	0.204	0.304
Institutions Lenders	0.011	0.000	0.001	0.001	0.002	0.008	0.052
Weighted Share Women							
	ALL	1740	1780	1807	1840	1865	1899
Women Borrower	0.143	0.115	0.106	0.141	0.129	0.127	0.169
Women Lender	0.208	0.163	0.170	0.172	0.189	0.194	0.241
Institutions Lenders	0.105	0.000	0.001	0.004	0.026	0.079	0.199
Only Bureaux <5000							
Unweighted							
	ALL	1740	1780	1807	1840	1865	1899
Women Borrower	0.098	0.051	0.101	0.104	0.087	0.101	0.148
Women Lender	0.136	0.069	0.091	0.096	0.133	0.165	0.238
Institutions Lenders	0.005	0.000	0.001	0.000	0.001	0.004	0.025
Weighted							
	ALL	1740	1780	1807	1840	1865	1899
Women Borrower	0.152	0.064	0.105	0.110	0.226	0.099	0.169
Women Lender	0.166	0.100	0.157	0.144	0.168	0.143	0.193
Institutions Lenders	0.072	0.000	0.003	0.000	0.009	0.074	0.131

Table 8: The social distribution of borrowers  
All markets reporting ( percent of Columns)

Borrowers	All	1740	1780	1807	1840	1865	1899
Agriculture	30.8	33.7	38.1	40.9	34.3	29.6	19.0
Crafts and Industry	14.7	11.8	16.1	15.3	15.6	13.4	15.5
Lower Class	5.5	7.7	11.5	5.7	6.5	4.3	3.6
Commerce & Services	12.1	14.7	16.1	9.8	9.3	11.1	16.9
Civil Servants	2.8	6.3	3.1	1.7	2.5	2.3	3.9
Construction	4.3	1.4	2.4	2.4	3.9	5.3	5.7
Transport	1.7	1.1	2.1	1.3	1.5	2.0	1.7
Proprietors	25.7	15.9	5.0	22.2	25.3	30.0	30.2
Banks and Banquers	0.6	0.1	0.1	0.0	0.4	0.6	1.3
Other	2.4	7.3	5.7	0.7	1.1	2.1	3.6
Number of observations	70100	2841	5066	7091	18156	24073	12873

ONLY BUREAUX WITH MAIN POPULATION <5000

Borrowers	All	1740	1780	1807	1840	1865	1899
Agriculture	36.4	49.1	49.2	41.4	35.4	34.7	30.6
Crafts and Industry	14.0	13.4	15.8	14.8	15.6	12.3	13.7
Lower Class	8.2	7.8	11.3	9.6	10.2	6.5	5.9
Commerce & services	9.1	15.6	12.8	6.5	9.0	7.0	12.5
Civil Servants	2.2	1.6	2.2	1.1	2.2	2.2	2.9
Construction	4.0	3.4	2.2	2.3	3.0	5.9	3.5
Transport	1.9	2.5	2.9	1.7	1.4	2.2	1.5
Proprietors	22.7	0.3	1.4	22.2	22.0	27.8	27.2
Banks and Banquers	0.4	0.0	0.1	0.0	0.9	0.1	0.5
Other	1.5	6.3	2.2	0.4	1.1	1.4	2.2
Number of observations	17882	320	1623	1794	4788	6294	3063

Table 9: The social distribution of lenders  
All markets reporting ( percent of Columns)

Lenders	All	1740	1780	1807	1840	1865	1899
Agriculture	12.0	8.2	16.5	15.7	10.5	14.9	6.6
Crafts and Industry	10.8	9.5	16.1	15.8	10.5	10.1	8.4
Lower Class	5.8	2.4	7.5	4.7	7.4	6.7	2.8
Commerce & services	18.3	25.9	31.3	22.7	18.7	15.1	14.5
Civil Servants	5.8	10.4	7.2	5.3	6.9	4.1	5.7
Construction	2.1	0.7	2.5	2.7	1.8	2.6	1.6
Transport	1.1	0.5	0.8	0.8	1.4	1.1	1.1
Owners/Rentier/Nobles/NP	34.8	16.0	7.0	27.8	33.8	39.2	46.8
Banks and Banquers	3.2	0.3	0.1	0.2	2.1	3.1	8.0
Other	6.1	26.1	11.0	4.4	7.1	3.1	4.4

Number of observations      68865      3249      4871      6753      17569      22850      13573

ONLY BUREAUX WITH MAIN POPULATION <5000

Lenders	All	1740	1780	1807	1840	1865	1899
Agriculture	15.3	10.3	22.0	16.6	12.9	17.6	10.6
Crafts and Industry	10.6	9.7	10.5	14.5	11.5	9.5	9.4
Lower Class	6.5	2.2	5.4	5.9	9.5	6.7	3.4
Commerce & services	16.3	20.6	32.7	21.0	14.1	13.0	13.6
Civil Servants	5.8	7.9	9.6	5.3	6.6	3.8	6.0
Construction	2.6	1.0	2.7	2.0	2.1	4.0	1.3
Transport	0.9	0.4	1.3	0.6	1.0	1.0	0.9
Owners/Rentier/Nobles/NP	35.2	16.1	7.6	29.1	37.7	38.9	46.0
Banks and Banquers	2.1	0.0	0.1	0.0	0.9	2.6	5.1
Other	4.8	31.7	8.2	5.0	3.6	2.9	3.8

Number of observations      17968      504      1769      1735      4615      6102      3243

Figure 3: CDF of distance between borrower and lender's residence

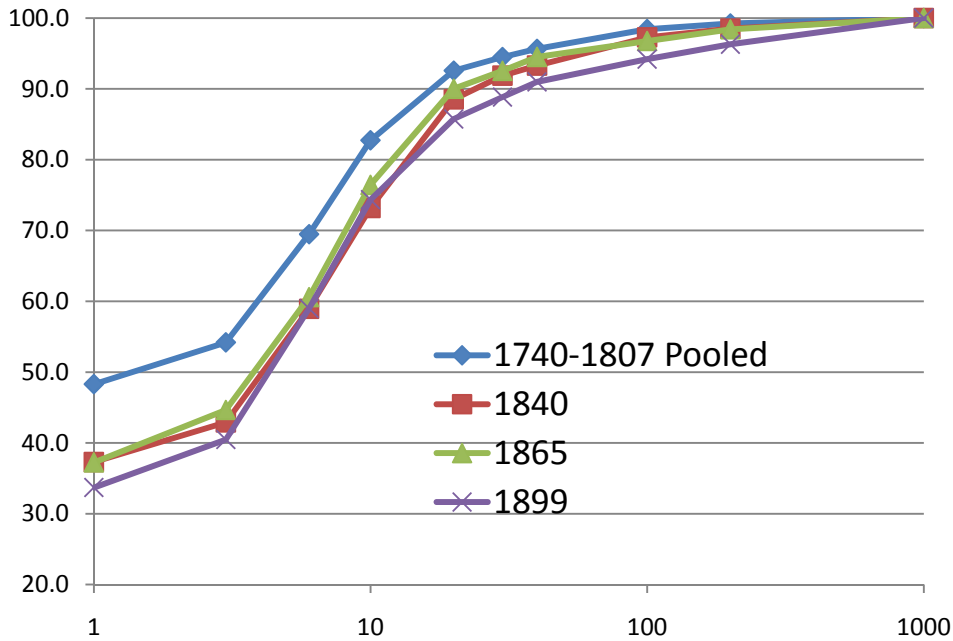


Table 10 Distance between borrower and lender residences

KMs	All bureaux				bureaus < 5,000			
	early	1840	1865	1899	early	1840	1865	1899
0	52.4	39.7	47.3	47.6	48.3	37.3	37.2	33.7
3	4.0	4.3	3.9	4.7	5.9	5.6	7.4	6.8
6	10.4	11.2	10.3	10.0	15.3	16.0	15.9	18.5
10	11.9	12.6	12.8	10.9	13.3	14.3	15.9	15.4
20	11.3	16.6	13.1	9.9	9.8	15.3	13.6	11.4
30	3.1	6.0	3.7	3.6	1.9	3.3	2.5	3.1
40	2.0	2.4	1.8	1.5	1.2	1.4	2.0	2.1
100	3.0	4.3	3.4	3.8	2.8	4.0	2.2	3.2
200	0.7	1.2	1.8	3.0	0.8	1.2	1.7	2.1
More	1.1	1.7	1.9	5.2	0.8	1.5	1.6	3.7
N	8986	15236	20262	11275	2844	14971	20262	11275

Table 11: the diffusion of bank offices in our sample and in France

	Number of Bank offices			Fraction of cantons served	
	Paris	Sample	France	Sample	France
1829	154	206	597	0.38	0.07
1834	121	220	601	0.43	0.10
1840	216	262	1042	0.50	0.13
1845	193	274	1194	0.55	0.16
1851	168	224	1233	0.60	0.18
1855	202	252		0.61	
1862	332	327	1875	0.69	0.27
1865	387	339		0.71	
1875	573	387	2212	0.79	0.33
1886	727	414	2425	0.81	0.36
1889		389		0.79	
1898	846	417	2545	0.80	0.35

Note: the “sample” column refers to the 107 towns in our data other than Paris; the “France” column also does not contain data for Paris. Blank cells occur because the data were not collected.

Source: Almanach du commerce de Paris, des départements de la France et des principales villes du monde by Jean. de la Tynna continué et mis à jour par S. Bottin, (1829-45). Annuaire général du commerce, de l'industrie, de la magistrature et de l'administration ou Almanach des 500000 adresses, Paris, Firmin-Didot frères (1851 and 1855). Annuaire-Almanach du commerce et de l'industrie ou Almanach des 500000 adresses, Paris, Didot-Bottin (1862-1898).