"Another look at credit markets and investment in China and Europe before the Industrial Revolution"

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A half a century ago, the rise of capital markets was central to the account of Europe's economic success in the eighteenth and nineteenth centuries. European economic historians dutifully sought and found the roots of such institutions in medieval Italy and then traced their transplantation northward. By the mid-eighteenth century England had more banks and a larger stock market than any other country in the world, a neat temporal coincidence with the Industrial Revolution. That smaller more trade oriented, more politically open polities developed higher levels of financial sophistication, only served to reinforce the appeal of the account because it linked economic development, finance, and liberty. Countries that failed to develop banks or exchanges were given bad marks because they lacked financial markets and possessed repressive governments (Cameron). At first glance this narrative has tremendous power, both across Europe and beyond. If France and Spain for instance, fare poorly by this standard, China is obviously a complete failure as is Latin America.

Yet this tidy narrative has problems--problems that the last three decades of research in European financial history have made all too obvious. There are three fundamental problems. First, financial structure seems to be of limited import to growth, that is whether one has large or small banks, and large or small capital markets, what matters more is the aggregate size of the financial market. Second, finance most often follows rather than leads growth; when processes of structural change arise they create demand for financial services and where political constraints are not over whelming these demands are met either because old intermediaries adapt or because new ones arise. Not all financial transactions are mediated by banks or exchanges. Finally, as we know from twentieth-century experiences of state-led growth, what matters is investment and that finance is only one mechanism for increasing investment.

Nevertheless our revisionism is modest. If we are arguing that capital markets are probably not the main source of divergence between Europe and China, we do not question the existence of this divergence. In fact from our point of view, in the economic context between the two extremities of Eurasia, Europe had won an important round by 1700. By then Europe had gained an ascendance that would be not be challenged by

China until the last quarter of the twentieth century. It is our contention, however, that we need to understand differences in this important factor market precisely because that allows to eliminate one hypothesis about the causes of divergence.

We therefore consider credit markets in the broader context of all financial transactions and investment practices. Doing so has three important advantages. It allows us to account for the relatively small differences in economic performance across economies with quite different financial structures. It also allows us to account for the relatively high investments made in China prior to industrialization. Finally, it leads us to be more precise about the advantage Europe gained from the early creation of capital markets. But we must begin with the history of European credit markets.

1: Comparative Financial history and the National Contexts

For many scholars there is a direct link between financial structure—the specifics of the design of a country's financial system and economic performance. During the 1970s and early 1980s the successes of the German, and in particular, Japanese economy had many scholars advocating a 'bank' based system, in which very large banks simultaneously held a large fraction of firms' equity and provided them with long and short-term loans. This system, it was argued, allowed firms to focus on long-term development plans rather than short-term profits. Then, in the late 1980s, the Japanese economy slowed down dramatically and a few years later the US economy began to boom. Sure enough, a new set of scholars became advocates of a 'market' based system that emphasizes publicly traded equities at the expense of long-term debt. Such a system's strength is that it allows monitoring of firms and the pricing of risk. The collapse of the high technology equity market in 2001 has bolstered a third view (Levine et al). It argues that finance matters far more than financial structure. What matters is how much capital moves through the financial system because that affects the capacity of a society to take advantage of high return opportunities. Financial structure matters less when the total financial system is large because both bank and market based system adapt to new opportunities. When the financial system is small, however, it seems to be both more vulnerable to shocks and less responsive to opportunities.

Historically, the debate over whether large banks are better than large equity markets may seem utterly irrelevant. After all there were no large, German style, banks in 1800 and save for the shares of semi-public entities like trading companies and canals, no equities were traded on secondary markets. Even bond markets heavily favored public issues. Yet there is a similar set of arguments involving the financial institutions in place at the time in the leading countries and their absence in other places. The argument that Europe grew more slowly in the 1990s than the U.S. because it lacked a NASDAQ style equity market is logically identical to the argument that France's pallid performance in the 18th century was due to its lack of a centralized capital market or network of banks. England boomed because it had both the London capital market and the country bank system (Neal). If we step back another century, the Netherlands' economic success has been attributed to its equity market (that funded local shipping, local governments and the VOC) and to its short debt market (that funded the States General and many private activities) (Gelderblom and Jonkers).

Each of these narratives is perfectly adequate within the confines of nationalistic history. Americans can croon about their markets and performance in the 1990s and ask the rest of the world: Why are you not like us? The Japanese could do the same some thirty years ago, and Germans as well for both their post war miracle and their rapid industrialization after 1860. Even Belgians can point to their Société Générale as the first universal bank and its contribution making them the first continental industrial power in the 1830s (Van der Wee). The British can gloat over the eighteenth-century London bond market, the Dutch about their seventeenth-century short term debt market. And so on.

Persuasive as these narratives seem to be for national cases, they are not very useful for comparative economic history. The inference claiming that the German financial system was superior to the British system after 1870 cannot be made simply because Germany was growing faster. Indeed it is not clear that Germany's faster growth was caused by its financial structure (Cf. Gerschenkron). It is not clear that had Britain adopted German finance it would have grown faster (Collins). More damning yet, in these narratives economic success and financial success are coincident rather than causally connected. To take but two examples, little of British industry was financed directly or indirectly by the London capital market; the bulk of the resources raised there

went to fight wars in Europe and a little to expand the empire (Dickson). Similarly, large German-style banks mostly shied away from small and medium-sized firms (Folhin, Guinanne). To put it bluntly, there is little evidence that either Britain's Industrial Revolution or Germany's industrialization depended on what has been extolled about their financial systems. But they each required a financial market of some kind.

Beyond the nationalistic comfort of such narratives, there is another reason for their persistence: scholars of countries without 'superior' markets have largely accepted the narrative. Given that the economic history of France in the 18th and 19th century has largely been the economic history of its failure relative to England, there is no reason to challenge the connection between the London capital market and British industrialization or to investigate the extent of a financial market in France. Had an alternative market existed it could only fit into the narrative if it was inferior to the English capital market. If French credit markets offered a similar level of assistance to the economy then it could not explain France's relative failure. The same account could be given for many a continental country.

2. Europe: Credit Market or Credit Markets

Our consideration of financial must thus be very catholic allowing us to capture both the complementarities across different markets for capital and their substitutability. This effort has been made easier by a recent shifted in focus from financial change at the national level to a more pan-European scale. The first element of this reconsideration takes a very broad sweep of history by examining interest rates on public bonds (Tracy, Epstein). In the late Middle Ages interest rates on government bonds in Northern Europe were typically above 10%, while in the financially developed part of Europe Italy they had fallen closer to 5%. By the mid-eighteenth century, interest rates were between 4 and 6% everywhere in Western Europe. To be sure, the variation across countries and over time is marked and coincides more with the adoption of new financial institutions, but the long-term trend is unmistakable.

The importance of public debt prior to the nineteenth century does not result from any involvement of European states in development projects but from political competition. This competition involved extremely expensive warfare that required

resources. The drive to secure resources for war made governments the most important promoters and destroyers of capital markets. Pre-industrial states were small in many ways. They were small as a fraction of their economies, and their peace time budgets limited relative to the cost rulers wanted to devote to war (Hoffman &Rosenthal). They were also small because rulers did not have the capacity to increase their revenues quickly. Some were also geographically or demographically smaller than others. The way sovereigns viewed finance, as Epstein has argued, was deeply entwined with the decision to enter or exit international competition. As long as they perceived their participation international affairs as temporary, they tended to rely on expedients such as short term finance and made little effort to develop long term financial markets as a result their long term cost of finance was high (Epstein). Over time, more and more rulers came to the conclusion that conflicts in Europe were long, extremely expensive, and that a move from expedients to long-term finance was necessary.

Nevertheless all sovereigns relied heavily on credit markets to fund their military expenses. Their reliance took two opposite forms: support and predation. Some states, like Venice early on, structured their borrowing in ways that supported the expansion of the financial system (Muller); later, the States of Holland's heavy reliance on the obligation market gave a boost to the short term debt market in Amsterdam (Fritschy, Gelderblom and Jonkers), and more famously the development of the consol in the UK create a liquid short term debt instrument was an important element in the growth of local banking (Neal). Everywhere financial intermediaries who entered into the business of public finance extended their reach to private issues as well and vice versa. There was a darker side as well, including Charles II's famous seizure of goldsmith bankers' assets (North and Weingast), the French crown's trump trials of financiers (Desert), and the repeated failure of Spain to develop a domestic debt markets and its devaluation of the currency under the Hapsburgs (Drelichman). In each case sovereigns who were facing significant needs for cash, decided to secure such resources by preying on financial markets and in particular on financial intermediaries. In the short run, this allowed rulers at the very least to cancel debt and at times to secure actual resources. The more pernicious consequence was that it made the financial market far less efficient. Leaving aside the dubious social returns of investments made by European rulers, over the long

run they were more favorable than hostile to markets and their borrowing provided an important impetus to credit markets in Europe. Interestingly enough this impetus was typically strongest in smaller politically active polities (Epstein).

Since European states did not invest in development (be it education or infrastructure), capital markets were important vehicles for investment. In most places, families were small and poor vehicles for resources transfers beyond direct kin. In most places, public investment was quite limited—neither cities nor guilds within cities or any higher level of government made much investment in productivity enhancing public goods. Furthermore where such investment occurred as in the case of transport infrastructure in the Low Countries or England, it depended heavily on the existence of private bond markets to fund improvement (Bogart, Tracy). While private credit markets were to some extent subject to the whims of political economy, they were also ubiquitous and in a large swatch of Europe began to grow in the Middle Ages.

Parallel to government bonds, there emerged a market for private credit. Traces of these markets can be found at least a millennium ago. Debt contracts from the Middle Ages survive in abundant numbers in Southern Europe (where thanks to Roman law contracts tended to get written down). While there has been considerable interest in debt contracts related to inter-regional trade (letters of exchange, commenda), these are but a fraction of the more standard debt contracts (Greif, Williamson, Gonzales de Lara). In fact, when the documentary evidence becomes sufficient to allow us to guess at quantitative magnitude, it becomes clear that local markets were the really important ones for private debt. There is good reason to think that local capital markets best suited pre-industrial Europe. Most firms and farms were tiny, and economies of scale were quite limited, hence there was little need to aggregate large pools of capital. In contrast, information technologies made it difficult to communicate the creditworthiness of borrowers across space or to monitor loans at a distance.

One of the oldest markets we can track is that for private perpetual annuities. In these contracts the borrower decided when the debt would be repaid and simply paid the interest charges at specified intervals. In most of Europe these contracts were notarized or registered at local courts and thus survive in abundance and give us the key

information about interest charges. In England where there are no notaries, other sources have given us considerable evidence on the same type of contracts known as rent charges.

Private bond yields experienced the same secular decline as public bonds—if anything the decline was stronger. In the late Middle Ages interest rates on private debt in Northern Europe were well above 10% and in Italy charges were higher than those on the public debt market. From 1500 to 1750 a remarkable process of convergence took place such that by the mid eighteenth century interest rates were between 4 and 5% everywhere in Western Europe. Even where public interest rates were above 5% (as in France) private yields were lower (Hoffman, Postel-Vinay, and Rosenthal 2001; Velde and Weir). Although the timing of the decline varied from place to place (earlier in the Low countries, later in England and France), the pattern is unmistakable and has little to do with the specifics of the capital market structure. All across Europe yields declined because capital markets grew. They grew at the local level (Hoffman, Postel-Vinay and Rosenthal) as financial intermediaries reduced information asymmetries and they grew inter-regionally as well (Neal rise of Fin cap). In other words, markets grew because capital became more abundant and more secure, and finally because financial intermediaries became sophisticated. The last of the development is of concern to us here because it occurred before most of Europe had any German style banks or a hierarchal bank network like England's country-city bank system.

Rent charges and perpetual annuities were the lowest interest bearing securities around. They were regulated by usury legislation that although rooted in canon law, had long been a matter of state policy. Despite usury legislation, there existed a very large set of alternative securities where yields were much higher. These included short term debt where interest was disguised as a discount, book credit where prices were inflated to reflect the lack of cash payment and a host of other IOUs where the cost of credit to the borrower was heightened by transaction fees. While by the eighteenth century 5% per annum was thought to be an acceptable charge, polemicists railed against credit arrangements that would lead to 10 or even 20% per annum in credit costs. Even in the nineteenth century, fixed fees for loans combined with a general negative relationship between the size of loans and their maturity could easily lead to a doubling of credit cost between inter-quartile ranges of loans. Indeed some costs varied by loan size but not by

duration (taxes) or they did not much even by loan size (registration fees), since small loans tended to also be shorter term loans, costs could rise quickly (Hoffman, Postel-Vinay, and Rosenthal). Nevertheless what matters here is that these markets existed and that they were large.

In England it is easy to show that credit markets have existed for centuries, but evidence on their size is harder to come by. Indeed, the British did not institute lien registries or notarize their debt contracts. During most of the Industrial Revolution, banks were either sole proprietorships or partnerships and we have only limited evidence about the volume of their credit or their capital. Hence we are left to guess at the magnitude of the mortgage market, the private IOU market and even the bank intermediated commercial debt market. Fortunately, on the continent because most of these contracts were notarized we can estimate their importance. Recent work on France shows that notarized credit was quite important even if it was only a fraction of the market. On an annual basis some 400,000 debt contracts were notarized in France around 1740 (Hoffman, Postel-Vinay and Rosenthal 2005). Estimates of the stock of such debt to GDP suggest that it was about one fifth—better than what some developing economies can manage today with a far more 'sophisticated' set of financial intermediaries (Haber). Given that notarized debt does not include either short term private IOUs or commercial debt it is a significant underestimate of the size of the credit market in France. That these types of markets were responsive to demand is evident. Private debt to GDP jumped from 20% to nearly 34% from 1740 to 1780. New instruments were developed and financial integration improved as can be seen from a more rapid rise of lending in larger cities than elsewhere in the country. It may be that the private English financial system was better developed by the 1740s than what has been found for France but as noted above the case rests far more on presumption than on evidence.

The notarized credit suggests that scholars might consider turning the bank-credit connection upside down. England had the most concentrated distribution of real estate wealth anywhere in Europe (Lindert). This implies that a standard mechanism for enterprise was simply unavailable to most Britons: the mortgage. Yet by the eighteenth century England was well engaged in a capital intensive structural transformation from an agrarian to a manufacturing economy. Because land was so mal-distributed, it had to

develop alternative credit instrument: the obvious one was short term commercial debt. It, in turn, required development an information system capable of keeping track of the IOUS, hence commercial banks. When industrialization came to the continent the demand for commercial banks was less because their existed an alternative debt market that was superior for making long term investments: the mortgage market. Banks entered when there was enough demand for commercial debt for commercial purposes. This is precisely the pattern one finds in Northern French towns like Troyes, Elbeuf or Louviers all of which have banks *and* active mortgage markets and where manufacturers are important borrowers in the early phases of local development. In the South notaries did one better and simply integrated the short term market in their activities, thereby delaying the arrival of banks.

That France had a market which favored brokered transactions through notaries, while England favored intermediated debt is clearly a product of their different histories. Rather than emphasizing these differences, scholars should be attuned to the fact that both types of markets proved responsive to demand and to shocks. This view allows us to resolve the relative performance of the British and French economies, in ways that more traditional analyzes cannot. Although institutions in the two countries were quite different, and at times one did pull ahead of the other (as England did in the 1770s or France in the 1950s), these advantages were temporary and small. Over the past two centuries France has either been ahead or behind Britain by at most 25% of English GDP per capita. This is paltry compared to the gap between China and Europe which has been near 90% GDP per capita in the past half century. It may well be that the French system was more adaptive, because France suffered far greater shocks between 1700 and 1918 than did Britain, yet over these two centuries their per capita income growth rates were virtually identical. While Britain had a larger financial market on the eve of WWI, France was also among the leaders (Rajan and Zingales). Consider the alternative, namely that the only institutions capable of funding growth are banks. In this case why didn't England's path diverge more from France's?

Responsiveness to changes in demand is not the privilege of one kind of credit system, although adaptation may well be different, in some adaptation may be through entry, in other by change within existing intermediary firms, and in yet other through the

entry of new intermediaries. The tale of British finance is in fact precisely a tale of piece-wise adaptation. For instance the City banks of London did not exist in the 17th century; neither did country banks (Neal, Quinn; Neal and Quinn). Instead, goldsmith bankers offered deposit services to Londoners, and in the rest of England merchants offered commercial services. The City banks arose in response to the greater role of London in public finance and international trade. Then the country bank system was put in place during the period of structural change; industrial equities were quoted on either regional or national exchanges only after their firms had achieved substantial scale: the investments had already been realized. In the French case, we observe the same phenomenon of piece-wise adaptation. In the eighteenth century one can surmise (Rosenthal) that increasing commercialization was partly at least responsible for the rise of the fixed obligation contract within the notarial system. Then in the first half of the nineteenth century notarial credit markets in places that industrialized like Lyon, Troyes, or Ste Marie les Mines boomed, while in other places they languished. More adaptation soon followed. In many of these places wholesale merchants turned themselves into banks and connected themselves to Paris. Rondo Cameron not withstanding, there were 725 bank offices in France in 1829, by 1851 on the what is supposed to be the eve of French industrialization, the number had nearly doubled to 1360 and it would rise to better than 3,000 in 1898 (Annuaire Didot-Bottin, Lescure). To be sure few of these banks were corporations and few of them were large. And to be sure, given the relative differences in the size of the two countries, England always had a massive advantage in coverage. But to blame the Bourbon or Orleans governments is simply silly. The number of bank offices outside Paris grew by a factor of five over from the 1820 to then end of the century. In the capital, a market for shares in limited partnerships emerged in Paris in the 1830s (because it was informal and did not involve shares in corporations, it has been neglected). Finally, banks diffused rapidly from the mid 1830s onward. At bottom we may say that France had a limited financial system in the nineteenth century because industrialization was slow rather than industrialization was slow because of constraints on finance While it is true that there were strict restrictions on listing on the Bourse or on forming joint stock banks into the 1870s, there were important escape valves. Individuals could freely enter into private banking and there was an active curb market for shares. If

France did not have the best financial institutions, it certainly avoided the worst and when demand for finance increased there was a significant supply response.

Our structured account of European financial history suggests that the Europe-wide decline in interest rates probably reflected an improvement in property rights and the increased sophistication of financial markets. From European evidence alone it would seem that financial market development is a necessary condition for making investments feasible. But when we move to China where families and kin groups were large and where both central and local governments were active in making investments, it seems more reasonable to suggest that European financial market development was sufficient to increase investments, but not necessary.

3. China: Sound or Silence?

The two common places about capital markets in pre-industrial China are that they did not exist (Elvin) or that they were prohibitively expensive. Scholars are fond of citing evidence that suggest that credit costs were on the order of 10% per month or 100% per year—in effect ten to twenty times higher than in Europe. If this is so, then the financial market cannot be large, and investment will be severely restricted. The argument about China's failure seems complete even before we consider the historical evidence, but it is completely wrong. Our ambition in this section is threefold. First, we want to dismiss the notion that inter-temporal markets did not exist in China—unless one's notion is they should be identical to those in Europe or perfect price mechanisms. We also want to show that certain important sources of demand for credit either did not exist or were dampened. Finally, we would like to sketch how capital market institutions appear to have functioned. Given the current state of the literature, the last step is tentative at best. Nevertheless, the first two steps will help make sense of the contradictory information that we currently possess and the third points us toward where more research needs to be done.

There was active trade in land (although in a contractual form that is from the European perspective rather odd). Land was traded most often as part of a rent-to-buy contract, that allowed not only the seller but his heirs to repurchase the land—paying fair value as well as for improvements. This type of transaction was open to opportunism

when land prices changed abruptly because the terms upon which the land could be repurchased were ambiguous and buyers at times found themselves making subsequent payments to sellers. The legal code was amended to try to make the distinction between sales that were final and sales that were subject to repurchase. (Macauley 1999) While these types of contracts can seem odd in the twentieth century, in a large swatch of Europe the land market included a right of repurchase of land that had been transmitted through the line of descent—in France this was know as *retraits lignager* (Beaur, Vardi), in the Netherlands as *nasting* . To the narrow minded, these contracts appear inefficient but are they any odder than leases based on three consecutives lives, or the 99 year lease with subtenants that was common practice in Britain? Other contracts seem to have functioned as sales with a repurchase option known in France as vente a réméré. The 'seller' transmitted his land to the 'buyer' for a fixed number of years in return for a capital sum. If the capital sum was not repaid in time, the 'buyer' became the owner. Whether one considers these contracts sales or loans, they are in any case inter-temporal contracts. In China these conditional sales contracts became extremely common by the eighteenth century, especially along the southeast coast in Fujian province. Because of the uncertainty regarding various local customs on the duration of time during which land could be redeemed and at what prices, the government made considerable efforts in Fujian to set general rules, but people continued to insist on following a wider range of rules than deemed acceptable by the state. (Macauley 1999)

The evidence, if fragmentary, leads to two important conclusions that suggest important amendments to the way the empire is usually thought to have dealt with asset markets: repressively and uniformly. Instead it is clear that the state could not or did not care to impose uniformity, and that its intervention might well have been market affirming in that clarifying the rules of conditional sale. Certainly it aimed to reduce the likelihood of litigation and thus the transaction costs of participating in this market as Thomas Buoye has also recently observed (Buoye 2004). At the very least we can conclude that assets markets have existed for a long time in China.

In economic history, existence is not proof of importance. It may well be that Chinese asset markets were small—either because the transactions costs of participating in these markets were very high (a matter to which we return below) or because demand

for such transactions was low. In the European section we suggested there was widespread demand for credit for a variety of reasons. Here we suggest that some of this demand was simply lacking in China and that, more than any other factor, explains the limited presence of credit markets in China. Furthermore, this low level of demand has economic rather than cultural motivations and the economic motivations largely derive from the spatial scale of the Chinese polity.

The first great absence to notice is that of the state as a source of demand for loans. The Emperor simply did not borrow. While European empires were founded and survived on oceans of finance, the Chinese empire rested upon debt free solid ground until the intrusion of Europeans into its internal affairs. The empire had three kinds of expenses all of which might have led to borrowing. They include military campaign to preserve or enlarge the borders of the realm, domestic administration, and economic development projects. All of these would have led to debt in European cases, yet they did not in China.

Chinese rulers faced two sets of military expenses, steady ones that involved the defense of the empire and extraordinary ones when the empire had to be defended from an invader or reassembled after a collapse. Most of the time, the empire was able to maintain a distinct military advantage (or at least a balance of power) without maintaining extremely large armies. Outlying populations were thin and often not organized to put serious pressure on the empire. Periodically however, the groups beyond the empire's control coalesced into massive invading armies. These types of threats typically brought dynasties to their knees but they occurred rather infrequently, typically after at least a century or two of stable rule. The incentive to rely on credit to pay for military expenditures rarely lasted long enough to stimulate the formation of new institutional mechanisms of credit. Hence Chinese rulers in general were more likely to take the same option as 'despotic' rulers in Europe, to predate on the currency or individuals who had large amounts of liquid wealth. The one major exception to this situation occurred in the Song dynasty when the state was under seemingly constant military pressure from rival states; during this period the state established monopolies over many goods and the licenses they sold to merchants for these trades in turn could be used to receive credit. (Mu Kunhe 2002). Strikingly, the state's reliance on commercial

sources of revenues did not last much longer than the dynasty itself. In general, when a dynasty was stable, the value of credit to military affairs was small and like the Roman, Ottoman, or Napoleonic empires it preferred to run its campaigns out of current revenues.

Domestic administration was also funded out of current revenues and this is hardly surprising. Given that these costs over the whole of the Empire were likely to be quite stable, there was no reason to shift their burden over time, in particular given the glacial pace of growth. As long as problems of civil unrest, environmental catastrophe or other types of problems were local or provincial rather than empire wide, borrowing made little sense. Instead, the empire could easily shift resources from peaceful or prosperous provinces to unstable or famished ones. Using geography as a means of providing insurance rather than time was probably more efficient and had the desirable goal of binding the provinces together.

What then of development projects? The empire made major investments in water control, the settlement of the western and northern frontiers, and more prosaically in the diffusion of agricultural and handicraft techniques. Here again the empire seems to have made a conscious choice to trade over space rather than over time. As a result it put in place a system of administration where lower levels of government shouldered heavy burdens in terms of local administration and infrastructure management, they also did not borrow. When either the burdens became too large or the projects required significant inter-regional coordination, the central administration stepped in and provided needed resources. To do so, it sometimes levied additional temporary taxes; it also moved resources from well settled areas to frontiers in the same way that in times of famine it moved grain from surplus to deficit areas. The scale of the empire was a key element in creating alternative means of funding investment: taxation and transfers between regions (state-led rather than market-led redistribution).

The capacity to move resources over space rather than time as well as the low frequency with which dynasties found themselves threatened meant that the empire did not borrow. In fact the eighteenth-century Imperial Household Administration even set up pawnshops and acted as a lender. (Wei Qingyuan 韦庆远. 1989). As a result, China was left without the government as an important source of demand for credit. It was also left

without the myriad financial crises engendered by rulers who could not honor their short or long-term financial commitments. We will consider implications of these fiscal differences for economic growth in the next chapter.

A second important source of demand for credit in Europe—financing of trade—was met in China in different ways. As we already mentioned, government monopoly licenses were used as credit instruments in the Song dynasty. By Ming times when government monopolies were far fewer, merchant networks formed. Together with kinship networks, these merchant groups appear to have satisfied many credit needs informally, that is without formal contracts brought to courts on a frequent basis. As we discussed in Chapter XX, the spatial scale of the empire gave an early impetus to long distance trade, in particular along the coast and the major rivers, but also along the Grand Canal and overland. This trade was sustained by the persistence of the empire after it declined in Europe with the break up of the Roman Empire, it was also sustained by complex merchant networks. These networks fulfilled multiple functions but one of the more important ones was to provide institutions to facilitate trade in an environment where space alone made the formal enforcement of contracts quite difficult.

It is also likely that these networks were the primary vehicle for procuring investment resources outside of long-distance trade simply because they had a comparative advantage in enforcement. Prior to mechanization, firms were small and their capital limited, and in China (as we argued in Chapter XY) its rural nature again reduced its capital requirements. Hence the commercial and industrial sector, while a source of demand for investment funds was no doubt a smaller source of demand for credit in the pre-industrial era than it was in Europe.

Lack of demand for credit, however, did not imply lack of investment. It is important to recall that rice, while perhaps more labor intensive than wheat, is a land saving crop and one of the principal mechanism for saving land is water control. Rice is therefore an infrastructure intensive activity. This infrastructure requires a steady stream of investments for maintenance. Furthermore, as environmental historians are fond of reminding us, water control systems are inherently unstable; further investment is inevitable to deal with the ever changing ecology of water. As rice spread north, and up some hill sides in the south, it is likely that investment per acre increased rather than fell.

One might imagine either public or private investment in water control, and one could imagine funding the investment either through capital transactions or out of current revenues. In the Chinese case most of the investment in water control was public and it was carried out with current revenues. Periodically, the state also invested considerable sums to store grain for extraordinary relief of famines and more frequent seasonal hardships due to fluctuating grain supplies. In the eighteenth century especially, the state spent large amounts of money to store millions of tons of grain for both urban and rural people across the empire. Sometimes special temporary surtaxes were levied to help pay for major stocking efforts, as well as for water control projects and road building.

We can now return to the usual evidence used to dismiss the role of capital markets in China, namely that the cost of credit was near 100% a year for most of the loans on which there is readily available information on interest rates. Recall that in Europe, by the eighteenth century rates were between 4 and 8% a year and loan costs above 1% a month were often cited as prima facie evidence of usury. This evidence at first glance seems to overturn our position and suggest that the market supply of credit was very limited in China. To begin, we know that these interest rates cannot be rates of return because they would encourage investment simply through savings and by the kin group systems that we know existed. The only way to rationalize 100% as a rate of return is to argue that the Chinese population's discount rate was radically different than that of European. Indeed if the Chinese population was sufficiently impatient they might be willing to forego doubling their wealth in a year in favor of current consumption. The evidence on investment rates since 1979 argues that the supply response to high rates of return is massive, and that the Chinese are probably no more impatient than Europeans. Only if Chinese today and those of two centuries ago have radically different attitudes toward consumption could we assume that a very high discount rate had prevailed in the past. While that is possible it seems unlikely in a society willing to make large and long-term investment in water control structures. While some of those were carried out by the imperial bureaucracy, others were far more local in nature, and individual peasants had to invest to maintain their paddy fields. While these investments had a high return, it was certainly nowhere near 100% per year. It seems more reasonable to take these rates as indicating credit costs, which includes both the return to the lender and transaction costs.

Among the transaction costs we must consider are those related to weak property rights. There is no reason to believe that property rights over real assets were sufficiently insecure that owners required massive returns to make investments. Yet another possibility is that property rights to creditors were extremely weak. The evidence in favor of this explanation comes from the contractual evidence on the kinds of lending that prevailed. Long-term debt was frequently set up as a sale with repurchase option, which put the land in the effective possession of the creditor; in pawnshops the lender also assumed control of the pawn. In these two contracts the creditor takes possession on the *initiation* of the loan—suggesting there were limits to property rights in China. Nevertheless one should emphasize that the recent work on law in China does not suggest that the state was as outwardly hostile to either debt or private contracts as it has been made out. Furthermore, the kind of transaction costs associated with leaving assets in the hands of the creditors are not counted in the proverbial range of 100% per year. Weak property right will not do.

The puzzle can be resolved in part by taking into account the arguments we made above, namely that the aggregate demand for credit was relatively low. Hence financial intermediation was limited. Furthermore given that most investment was mediated through family networks or other local institutions, one has to wonder what kind of borrowers were showing up at the doorstep of local lenders. From the point of view of a lender who does not have social obligation to make a loan, a borrower who makes a request must be evaluated on the basis of likelihood of repayment. That depends on a variety of different elements such the individual's wealth and the purpose to which he/she intends to puts the funds. If interest rates are on the order of 10% a month, an individual with a significant amount of wealth is unlikely to borrow, rather he/she will sell assets to raise required funds. Hence most likely individuals who want to borrow have limited personal means and they are most likely few in numbers. Willingness to lend then depends on the likely return to a loan.

Given the very high interest rates, economic logic suggests that the borrowers who were in the market were not those with very high return projects but those who were very unlikely to repay. Indeed individuals who were members of well functioning kin groups and had good projects would clearly have been funded by their groups. These

groups could pool resources to realize projects (Pommeranz & Overseas Chinese), they could also evaluate and monitor the behavior of their members. Borrowers were then either members of kin groups that had fallen on hard times, or who had bad projects, or both. In each of these cases the borrower was quite likely to default; in fact if we consider a 100% a year interest rate on loans and a discount rate as 0.92, it would suggest default rates were above 40%.

Such high risk borrowers exist everywhere, and they pay high rates of interest. Suffice it to consider the interest costs of pay-day loans in the US today. But it is important to stress that wherever we can observe a larger market, the total amount of money involved in these transactions is small, most investment and lending takes place at far more reasonable terms, and in most of history the number of people who were borrowers in these settings was small.

Our summary of China suggests two possibilities. The first is that we have yet to uncover the credit markets of pre-industrial China. There is another possibility namely that there was actually sufficiently little demand for credit that even markets as informally organized as those of notaries or mortgage attorneys did not arise—but a great deal more searching needs to be carried out. It is clear, however, that investment resources flowed in other ways. To begin with, the state took a much more proactive role than nearly everywhere in Europe. It is also clear that kin groups and extended families, which played an important role in international trade and credit in Europe were far more important over all in China than in Europe As a purely agrarian economy, the cost of not developing credit markets was small, in particular if we recall that much of the resources raised in such markets in Europe went towards the social dubious perfection of the art of war. Nevertheless as European economies began their structural transformation away from agriculture, the role of capital markets increased. If capital markets are not responsible for the initial divergence, could they be responsible for China falling further behind? The next section attempts to answer this question.

4. Surprising Futures.

As we noted, in 1500 only a few intrepid souls might have guessed that capital embodied in machines held a massive promise for increasing economic growth. As late as the end of the eighteenth century—by which time the Industrial Revolution was well under way—economists and policy markets in Europe still viewed the problems of agricultural productivity, handicraft manufacturing, and growth through specialization as central. Adam Smith's pin factory was capital saving rather than capital using (by taking advantage of the division of labor, each worker only needed a fraction of the tools (and skills) that he would have needed in the unspecialized production process). Hence, even in Europe the financial institutions that prevailed at the end of the eighteenth century were not designed for industrialization and it was not until the 1820s with the founding of the Dutch (soon to be Belgian) Société Générale that a financial institution designed to promote industrial development was created. To the extent that European capital markets favored industrialization it was by chance rather than design. Yet when industrialization began to raise capital requirements for firms, capital markets were there and over the course of the first half of the eighteenth century slowly embraced manufacturing.

In China, there were no banks, at least none that European could recognize. There was no obvious mortgage market or securities exchange; the multi-owner firm had dubious legal standing. This could well have been a major stumbling block because by the 1880s when industrial firms began to firm, their scale was radically larger than that which had prevailed a century earlier. Creating an industrial base by importing Western technology would require some institutions that allowed capital to be concentrated for productive purposes.

Let us first evaluate the inter-linkages between finance and growth, not in the nineteenth century but in the late twentieth. Again when reforms started in the late 1970s China had no financial system, all the banks were controlled by the state and neither assets nor liabilities had much meaning since ultimate property of all claims again rested in the state. Since then there has been massive progress at creating private property in capital (real estate or enterprises); there has also been a massive increase in investment, but financial claims remain problematic. Though stock markets have opened they have not become independent financial vehicles (the state still controls many firms, only a fraction of whose shares are traded), the banking sector is still largely government owned

and insolvent. In short, financial reform has lagged far behind growth and the development of other markets. It is no surprise that policy experts have long criticized the Chinese leadership for leaving the financial system without true reform. For two decades now the financial sector has been the usual basis for predictions about the demise of rapid growth in China. Yet China continues to growth and it continues to do so with a financial system that should have collapsed time and again. While we do not want to suggest that China's financial system is healthy, nor do we want to suggest that ignoring the problem is a good idea, it is hard to believe that investment rates would much higher in the absence of problems. With investment rates that reach 40% of GDP at times and GDP growth at 8% or more it is hard to imagine that improving institutions could have a huge effect. To put it bluntly, China is not hampered by the problem of finance. Yet it may well be that as Chinese income grows, the inefficiencies of an insolvent financial system will weigh more heavily on the country. It is more likely, however, that these problems will get addressed over time.

This section pursues the consequences of the 'imperial' investment system on China's ability to industrialize in the 19th century. Our argument is threefold. At the largest level, the lack of a public system of credit no doubt made it difficult for the Chinese state to meet the increased political threats from Europe and Japan. In this respect it was in the same boat as the Ottoman Empire and other polities that wanted to resist European expansion. On a more economic level, we want to dismiss any claims that China's industrialization was hampered by cultural factors that limited the expansion of capital markets. There is considerable evidence that where political constraints were not overwhelming, both credit and asset markets developed in the 19th century just as they have flourished since 1979. These markets reflect the capacity of Chinese people to adopt European practices to their own purposes, but this adoption is mediated through a process of adaptation, hence Chinese financial institutions were likely to be different from those that prevailed in more industrialized countries. Finally we want to argue that even traditional structures of investment were not incompatible with the development of industrial capacity.

When the Qing Empire faced foreign gunboats during the first Opium War (1839-1842), its responses were inadequate. To its surprise a small expeditionary force of

Europeans were able to take Canton's harbor and threaten other ports, bringing the state to its knees. The Emperor now faced the realization that China had fallen far behind technologically and that this was having profound effects on its independence. To be sure the Western invaders, unlike the earlier Mongols or Manchus did not take over the country. Instead they imposed a heavy indemnity, which was funded by loans taken out in Europe. The loans themselves were funded by Chinese customs receipts—hence the invaders simultaneously opened China to trade and taxed that trade. For many, China should have emulated Japan, and embarked on a large-scale reform effort.

To fund both economic and military modernization was beyond the means of the Qing fiscal infrastructure. Hence a program of reform would have required a massive change in fiscal capabilities. We discuss fiscal issues in another chapter; here suffice it to note that the Emperor was not averse to development projects, nor was borrowing limited to war indemnities. In fact the Chinese national debt grew over the nineteenth century, however, no local credit market for that debt developed. Hence local financial intermediaries in Beijing or Shanghai, never experienced the boost in demand for services that occurred in Italian city states during the Renaissance, in Amsterdam in the 17th century, in London or Paris in the 18th century and in other capitals later. There are two important elements to this boost. First, government bonds were convenient ways to hold reserve funds for private financial intermediaries. In the absence of these bonds, reserves had to be held in cash, which reduced the leverage of financial intermediaries. Second, those bonds that were held by the public created demand for services, both at the investment stage (through client lists), and at the resell stage. An active government debt market allowed financial intermediaries to take advantage of economies of scale. In the absence of government debt, the private market had to develop on it's on.

The Qing government was not the only entity that was concerned with European technology. Quickly private entrepreneurs were interested in importing machinery from the West to take advantage of cheap Chinese labor. This process was most acute in the Shanghai textile industry starting in the 1890s, but it was restricted neither to that industry nor to that city. The textile industry is sufficiently well documented that it can serve to illustrate both the success and limits of China's adaptation to western technologies. To be sure Shanghai with its international concessions was an unusual part

of China. Nevertheless it was transformed from town to leading industrial center because the Chinese were willing to take advantage of economic opportunities and to adapt Western ideas to their own purposes, sometimes at the behest of government, sometimes at their own.

Chinese textile mills, at first spinning and then later weaving, were owned under a variety of legal devices, included one that looked very much like special charter regimes for European firms. Others were more straightforward sole proprietorships or corporations—in each case, however, much as in Europe only one family assumed control (Goetzman and Koll). From 1890 to 1922, when Japanese investment in textiles surged, for the whole of China, the number of firms in cotton textiles grew from 1 to 95 and capacity expanded from 35,000 to 1.2 million spindles. The story for weaving factories is similar: there were 27 factories in 1922 and with more than 7,000 looms (Ding). More than half these factories were Chinese owned. One might think that the industry developed rapidly, because of legal innovations that transplanted the corporation to China, or because of the rise of new financial institutions, but more research will be needed to confirm these possibilities. It is indeed quite possible that the traditional Chinese partnership was a quite convenient legal device for most industrial enterprises

Indeed, Shanghai in the late 19th century looks a lot like an emerging market. A stock market was created in the 1880s, then a bubble ensued and when it burst the market shuttered for a time. Both native and foreign banks were willing to make short term loans. Finally, a corporate code was enacted in 1904. Yet these reforms may have been less important than one might think as Goetzman and Koll suggest. Indeed, more work will be needed to determine precisely what advantages Chinese businessmen found in corporations and other Western legal devices. We do know that the number of firms that registered as corporations was limited for several reasons. These reasons are ubiquitous in the early twentieth century and not limited to China: limited liability was not a major issue, the desire to issue stock to raise capital was tempered by the desire to retain control, and the well established partnership form may have made access to loans easier.

In fact, entry into textiles was certainly as rapid while the stock market was closed than when after it re-opened. The passage of the 1904 Code did not usher a flood of new incorporations or entry to textile manufacturing. While there was some demand for

Western legal institutions it was not nearly as high as the demand for Western technology. The failure of the stock exchange echoes the failure the first Sao Paulo exchange, both institutions were created in a boom but share were so closely held that once the boom collapsed there was no business on the exchange (Hanley). In the case of Sao Paulo, the market reopened within a decade as share and in particular bonds became more widely held. In the case of Shanghai the market remained shuttered for three decades. While this is clearly a failure for the exchange, the massive growth of the city points to China's alternative means of securing finance.

These were largely family connections and banks. Family connections were important for all sorts of capital, but where they proved insufficient, firms could turn to banks. These banks were primarily located in the international concessions. While some were foreign owned (most famously HSBC), others were Chinese. The Chinese banks limited their investment choices to those within China, while foreign banks based in China, at least during the early 1930s, the period for which there is data, invested in securities and debt issues in their home countries as well. (Ching-yi Chung, 2004**)** Although both Chinese and foreign banks showed some preference for making loans to firms whose offices were located in the concessions, they also made loans to purely Chinese enterprises.

Shanghai was China's early twentieth century success story. It is also the success story of the early twenty first. The first story cannot be told without understanding the role of the international concession and thus of the imposition of Western law on some portion of Chinese soil. It also cannot be told without taking into account the existence of Chinese investment pathways. Beyond Shanghai we have two excellent examples of such adaptation. The first is in salt mining. The industry required the digging of deep well (a form of fixed capital) to collect brine and then much working capital, to evaporate the water from the brine and more capital to commercialize the salt. It also required labor that and management services. Nevertheless these firms appear to have been relatively small. In this industry, the Chinese deployed partnerships with shares (Zelin 342) that resemble in many ways the German GMBH. Because the specific contracts that survive seem to be heavily tilted to the last decade of the 19th century or the early twentieth century, it is not clear to what extent the clauses they contain draw solely upon native legal tradition or

represent some legal importation to deal with the changing circumstance of China. Nevertheless these multi-owner firms had been in existence at least since the eighteenth century, and the technical nature of the enterprise seem to have changed little. While they were to some extent lineage based, the latter evidence shows conclusively that both control and income rights could and were possessed by individuals and these rights could be sold. By economic standards these firms were very successful, they endured, they invested and their output grew rapidly (Zelin 1990). There seems to be little specific to salt mining that would explain the choice of organizational form save that the investments were durable and large. To the extent that industrial investments were of the same kind, lineage based firms were an available response—neither the corporation nor capital markets were necessary.

The second is the remarkable tale of the Yutang pickle factory in Jining (Pomeranz). Like salt mines, it was a family firm. Like salt mines it was remarkably long lived, having been founded in the 1770s. Unlike many eighteenth-century condiment makers, it grew to be very large by the early twentieth century. Its detailed history, as recounted by Pomeranz, contains many elements that are unavailable either for the Shanghai textile mills or the salt mines of Sichuan. Founded by migrants from Jiangsu, it was sold to a partnership of locals in the early 19th century that grouped individual from at least two lineages. Further in 1827, management was turned over to an employee, and it remained managed by a non-family member for the rest of the century. In the 1870s members of the main lineages decided to reduce their investments in Yutang and buy some land; in response the general manager found new equity partners and issued interest bearing notes to raise capital. Then around 1900, the two original lineages took the firm 'private' buying out all other investors, and one lineage assumed control. The firm then branched out of the pickle business into local finance. The reader should for an instance consider replacing all location names with English or French ones and pickles with textiles and all the sudden the Yutang story looks unexceptional.

There is of course an alternative reading of each of these three cases, one that puts more emphasis on the political connections of the players. These were important both for early textile mills and for the Yutang Co. It might also be useful to point out that nearly half of all investment in Chinese industrial textiles was foreign by 1922. Similarly, unlike

in the US or in Germany, Chinese investors in salt mines did not vertically integrate in chemistry (Levenstein) . But that would miss the central point of the examples. China was not an enterprise desert, nor was the legal structure truly limiting to the formation of large enterprises. It may not have had a capital market prior to the 1880s but each of the examples suggests that there were important pathways for investment. As has been the case in the last three decades, these pathways can act as very powerful motors for investment when circumstances allow. If we consider the very troubled history of China from the 1850s to the 1930s, that it managed to begin to industrialize is perhaps more of a feat than is typically acknowledged.

Conclusion

We began with a view of capital market structure as critical to economic outcomes and we have in effect come full circle. Rather than a structure as paramount we have advocated the recognition of different types of markets in different places and different mechanisms for producing investment. While it is likely that some financial structures are more efficient than others, the lens of history is not clear enough to allow us to discern which ones those are. To the extent that we want to explain the key differences in capital markets across space we have to move to more fundamental processes. To begin there is politics—that traditional empires do not borrow, does have important consequences. But there is also inequality in the distribution of wealth—highly unequal societies are unlikely to create mortgage markets and more likely to create reputational debt markets Equally important are relationships between and within households or extended kin groups because these connections can and do act as internal capital markets.

Finally there is the all important issue of demand. The Chinese empire with its internal peace and agrarian emphasis did not have much demand for credit markets. Europe with its violent politics driving governments into debt and manufacturing into cities had a higher demand for capital markets. When industrialization began, Europe's advantage would have been short lived except for the tragically difficult dozen decades from 1850 to 1970 that China experienced. This is in part because China could and in

many ways did imitate the West, and it is also in part because China could deploy different mechanisms to create structural change—mechanisms that did not depend on capital markets

In the end it is clear that European capital markets developed more rapidly and were more efficient that those that prevailed in China. It is also clear that by the late eighteenth century the structural transformation that began in Northwest Europe was not happening in China. Yet those two events were not connected, save through the long run impact of the differential scale of political institutions in China. Both the dampening of capital markets and a focus on rural handicraft manufacturing were unintended consequences of China's empire.

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