Transition of Credit Institutions

Theory and Evidence

by

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Abstract

Economic development is characterized by the expansion of interpersonal trade which requires the institutions for contract enforcement. In order to sustain trade at a greater scale, a society needs to develop the formal institutions that can enforce contracts between strangers. Hence, economic development can be characterized by the development of formal institutions.

My PhD dissertation seeks to identify factors that cause the transition from the kinship based or informal institutions to the law based or formal institutions. In order to compare the process of transition in a now developed country with that in a developing country, one case study from early modern England and one from colonial India are considered.

In the context of early modern England, my thesis identifies such a transition in the credit and the legal institutions. I find that the increase in social heterogeneity in early modern England rendered the informal institutions ineffective and induced people to move to the formal institutions for resolving disputes. Consequently, formal institutions developed following a 'learning by doing' mechanism. I develop a theoretical model that attempts to capture the historical accounts of this process, and generates some testable implications which I test using the archival data from The National Archive, England. The historical evidence is consistent with my model's predictions.

The study on early modern England, in my dissertation, is complemented by a study on Nattukottai Chettiars, a major banking caste from South India. In the first quarter of the twentieth century some of the Chettiar Bankers switched from caste based banking to joint stock banking. I analyze this transition using a theoretical model, and provide historical evidence in support of my analysis.

A general pattern of transition emerges from the case studies. The informal institutions have advantage in processing information flowing through the community networks. A society moves from the informal to the formal institutions when the informal institutions lose that edge. In the English case, the informal institutions lost the edge because of increasing social heterogeneity while in the Indian case the improvements in communication technology caused the transition.

Table of Contents

| Al | ostra | ct ii |
|----------|-------|---|
| Ta | ble o | of Contents |
| Li | st of | Tables |
| Li | st of | Figures |
| Ac | cknov | vledgments |
| 1 | Intr | oduction |
| | 1.1 | ${\rm Motivation} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots 1$ |
| | 1.2 | Structure of the Thesis $\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots 2$ |
| | 1.3 | Conclusion |
| 2 | Inst | itutions |
| | 2.1 | Definition of Institutions $\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots 7$ |
| | 2.2 | Formal and Informal Institutions |
| | 2.3 | Informal Institutions and Inefficiency 14 |
| | 2.4 | Norms |
| | 2.5 | Institutional Transition |
| 3 | Hist | corical Background and Institutional Learning |
| | 3.1 | Overview |
| | 3.2 | Social Heterogeneity in England |
| | 3.3 | Decline of Informal Institutions |
| | 3.4 | Learning by Legal Institutions |

Table of Contents

| | 3.5 | Developments of Contract Law in Early Modern England 3 | 39 |
|---|----------------|---|--------------|
| | | 3.5.1 Overview | 39 |
| | | 3.5.2 Introduction of Assumpsit | 12 |
| | | 3.5.3 Assumpsit for Nonfeasance | 12 |
| | | 3.5.4 Assumpti for Money | 4 |
| | | 3.5.5 The Principles of Legal Innovations | 15 |
| | 3.6 | Competition between Royal Courts | 17 |
| | 3.7 | Informal Institutions: The Court of the Mercer's Company . 4 | 49 |
| | 3.8 | Concluding Remarks | 52 |
| 4 | Imp | provements in Legal Institutions and Volume of Litiga- | |
| | tion | ι5 | 54 |
| | 4.1 | Motivation | 54 |
| | 4.2 | Model | 57 |
| | | 4.2.1 The Stage Game | 57 |
| | | 4.2.2 Improvements in Institutions and Likelihood of Liti- | |
| | | gation \ldots \ldots δ | 34 |
| | | 4.2.3 Choice of Jurisdiction | 38 |
| | 4.3 | Empirics | $^{\prime}7$ |
| | | 4.3.1 Litigation Data | $^{\prime}7$ |
| | 4.4 | Alternative Hypotheses about the Litigation Curve 8 | 36 |
| | | 4.4.1 Economic Explanations | 36 |
| | | 4.4.2 The Procedural Explanation |)1 |
| | | 4.4.3 The Social Capital Explanation |)2 |
| | 4.5 | Concluding Remarks |)2 |
| 5 | Tra | nsformation of Credit Organizations: Caste Bankers in | |
| | \mathbf{Col} | onial India |)6 |
| | 5.1 | Motivation $\ldots \ldots \ldots$ |)6 |
| | 5.2 | History of Banking in India |)8 |
| | 5.3 | Agency Problem | .3 |
| | | 5.3.1 Overview | .3 |
| | | 5.3.2 Model | 9 |

Table of Contents

| | | 5.3.3 | Improvement | in Com | muni | catio | on. | | | | | | | 127 |
|----|-------|---------|--------------|---------|-------|-------|------|---|---|---|-------|--|---|-----|
| | | 5.3.4 | Weakening of | Comm | unity | Net | work | | • | | | | | 131 |
| | | 5.3.5 | Wage Compa | rison . | | | | | • | • | • | | | 136 |
| | 5.4 | Lender | Borrower Rel | ations | | | | | • | • | • | | | 138 |
| | 5.5 | Conclu | ding Remarks | | | | | | | • | • | | | 141 |
| 6 | Con | clusion | ι | | | | | • | • | • | | | | 143 |
| Bi | bliog | raphy | | | | | | | • | • | | | • | 146 |

List of Tables

| Prisoner's Dilemma | 9 |
|--|--------------------|
| Rural Urban population as percentage of total population $\ .$. | 26 |
| First charters of incorporation in England and Wales | 27 |
| Estimates of Agricultural variables (England in 1500=1) | 28 |
| Forms of action in the central courts, 1560-1640 | 85 |
| Social Analysis of the litigants, Common Pleas, 1606 \ldots . | 85 |
| Estimates of Agricultural production (England in 1500=1) | 88 |
| Growth of Banking in India | 112 |
| William Jackson's tour of inspection, 1893 | 114 |
| Monthly salary structure of Indian Bank, 1912 \ldots | 137 |
| | Prisoner's Dilemma |

List of Figures

| 2.1 | Institutional Dynamics | 19 |
|------|--|-----|
| 3.1 | Time series of legal developments | 49 |
| 4.1 | Rate of litigation in Central Courts during early modern pe- | |
| | riod | 78 |
| 4.2 | Rate of litigation in Borough Courts during early modern | |
| | period | 79 |
| 4.3 | Litigations in Common's Plea | 81 |
| 4.4 | Rate of Litigations in Common's Plea | 82 |
| 4.5 | Total number of Cases originating from London | 83 |
| 4.6 | Fraction of Cases originating from London | 84 |
| 4.7 | Woolen cloth price: $1500-1544$ | 89 |
| 4.8 | Woolen cloth export: 1500-1544 \ldots | 90 |
| 4.9 | Other exports from London: 1600-1640 | 91 |
| 4.10 | Shortcloths export from London: 1600-1640 | 92 |
| 4.11 | Total real customs duty and subsidy on cloth exports from | |
| | Hull: 1600-1640 | 93 |
| 4.12 | Total real customs duty and subsidy on cloth exports from | |
| | Exeter: 1600-1640 | 94 |
| 4.13 | Silver equivalent of craftsman's wage: 1500-1700 | 95 |
| 4.14 | Philanthropy in '000 current pounds: 1500-1650 | 99 |
| 4.15 | Philanthropy (in real terms): 1500-1650 | 100 |
| 4.16 | Poor relief(in real terms): 1500-1650 | 101 |
| 4.17 | Social rehabilitation(in real terms): 1500-1650 | 102 |

List of Figures

| 5.1 | Distribution of clans across villages | 118 |
|-----|---|-----|
| 5.2 | Number of passengers in South Indian railways | 128 |
| 5.3 | Number of passengers in the Burma railways | 129 |
| 5.4 | Expansion of Post and Telegraph System | 130 |
| 5.5 | Land Distribution among Chettiars in Burma, circa 1940 $$ | 134 |
| 5.6 | Rice and Paddy Export From Burma, 1870-1930 | 135 |

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Chapter 1

Introduction

1.1 Motivation

Institutions are rules devised to shape and constrain human behaviors. These rules are designed by societies, but beyond the control of the societies' individual members. Institutions can be informal, based on community or kinship ties, or formal, based on legal codes. The transition from informal to formal institutions represents an important phase of economic development. This study proposes a theory of such transition, and substantiates the theory using evidence from two historical examples.

Formal institutions can enforce contracts between anonymous agents, i.e., strangers. Informal institutions are enforced by community courts, which cannot adjudicate cases between agents from communities unfamiliar to the courts. Therefore, the scope of trade under informal institutions is limited by the community identities of the traders. However, informal institutions can support inter-community trade and there are many examples from history where they have successfully enforced contracts between members of different communities. People from different communities are not necessarily *strangers*, and inter-community contract enforcement by informal institutions is possible where long-standing trading relationship exist between the communities.

Where there are no formal institutions to enforce contracts between strangers, an individual's scope of trade is largely determined by his community identity. Individuals need sufficient network ties in order to do business. Consequently, under informal institutions, traders tend to stick to their family trade, and to not explore other trades which may be better suited to their inherent abilities. This tendency creates inefficiency under informal institutions.

This thesis examines the conditions under which people move from informal to formal institutions, using one case from early modern England, and another from 20th-century India. In the first case, an analytical model is presented to show how an increase in social heterogeneity leads to the weakening of informal institutions, and consequently, how formal courts become the preferred venue to handle dispute resolution. The model generates some testable implications which are consistent with historical evidence from 16th- to 18th-century England.

The second case study looks at an indigenous banking group called Nattukottai Chettiars. In the early 20th century, some of the Chettiar bankers switched from caste-based to joint-stock banking. The thesis identifies the conditions that prompted this transition.

1.2 Structure of the Thesis

Following the introductory first chapter, the thesis is divided into four main parts, beginning with the second chapter, which introduces and defines the concepts of institutions used in this study. My definition of informal institutions differs slightly from the existing literature. I also discuss how the interaction between norms and institutions affects institutional transitions.

Chapter three presents stylized historical facts from early modern England. It also details the improvements in the institutions of contract law between 1500 and 1700, proposing a framework of learning by the formal legal institutions. The chapter also explains differences in the kind of learning that took place in the informal and the formal courts.

1.2. Structure of the Thesis

The fourth chapter elaborates on a theory of institutional transition with an analytical model. In the model, randomly matched agents sign credit contracts. The debtor invests the money and his effort in a risky project where the probability of failure depends on the amount of effort put in by the borrower. If the project fails, the borrower defaults, and the lender decides whether to go to the court for redress. The lender also decides on the type of court to appeal to: formal or informal.

The model finds that, as social heterogeneity increases, people are more likely to go to the formal courts. As more people access the formal institutions, those institutions improve following a learning-by-doing mechanism. Improvements in the formal institutions affect litigation in three ways: formal courts become more attractive than the informal ones, and more people turn to the formal courts; borrowers are encouraged to invest more effort, resulting in fewer defaults (and subsequently, less litigation); and lenders are encouraged to go to court in cases of default. One of the testable implications of this model is an inverted U-shaped litigation curve which is consistent with the archival data. I then discuss several alternative hypotheses to explain the inverted U-shaped litigation curve, and provide reasons why they are not compelling.

In chapter five, I explore institutional transition in the context of colonial India. I look at the case of Nattukottai Chettiars, one of the most powerful caste-based banking groups in India. Despite the fact that their credit contracts were not enforceable in British courts, they achieved a 98 percent repayment rate. Their kinship-based business organization, and their use of social sanction to ensure repayment were the keys to their success. In the first quarter of the 20th century, they switched from caste-based banking to joint-stock banking.

The chapter provides a theory of this transition, based on a principalagent framework. The bankers (both joint-stock and caste-based) had overseas operations, for which they employed agents. Business success depended

1.2. Structure of the Thesis

on the agents' honesty, which the bankers monitored rigorously. Under the caste system, the monitoring function was fulfilled by community-wide information sharing, whereby a banker could get information about an agent from other bankers. Under the joint-stock system, by contrast, each banker had to monitor their own agents. In an age of poor communication technology, caste bankers had an advantage in being able to get information from their caste network. But this advantage faded as communication technology improved in the early 20th century. Eventually, joint-stock banking emerged as a more profitable business structure. The chapter elaborates on this transition.

The models presented in the thesis generate implications that are testable using both primary and secondary historical data. I collected the primary data from the National Archives, England, in May and June of 2008. The data are related to English court records from 1500-1700. I use docket rolls, which are index files of cases that reached the advanced stages. A typical entry in a docket roll would show the names of the plaintiff and the defendant, and the place where the dispute originated. Docket rolls are excellent sources for constructing a time series for the volume of litigation. The rolls are conserved in the archive under the series name CP 40. This series only covers the Court of Common Pleas. I have included details of the data in the relevant section.

The archival data are supplemented by digitized primary and secondary data. Digitized data mainly came from two websites: 'The Arts and Humanities Data Services (AHDS)', and 'Global Income and Price History network'(GIPH). From AHDS, I used the data set Metropolitan Market Networks: London, its region and the economy of England c.1300-1600. This data set includes sample cases from Common Pleas over the time period 1300-1500. The coverage of the data set is not very extensive. It has data for three time points, one year for each century. However, the data contain details for the cases recorded, including names, occupations, along with precise geographic locations of plaintiffs and defendants. They also

1.3. Conclusion

provide the reasons for disputes and the monetary value involved in each case. Hence, the data are good for understanding the type of cases coming to the common law courts, and the socio-economic position of the principals involved in those cases. From GIPH, I use the historical price series constructed by Gregory Clark. I use this data set to deflate different series in money terms, and to understand the movement of wages and prices over time. For the chapter on caste bankers, I used data from Digital South Asia Library.

1.3 Conclusion

Many studies explain the mechanisms of both formal and informal institutions. But few shed light on how and why institutional transition takes place. This thesis fits in that gap in the literature. Rather than explaining how a specific type of institution comes into being, I show how one set of institutions is chosen over others, and identify factors which lead to a particular choice. The process of such a selection can be termed social selection. Similar to the Darwinian mechanism, the fittest institution is chosen by the society. The mechanism of institutional transition described here is similar to the efficiency theory of institutions proposed by North and Thomas (1973). However, the efficiency theory does not hold very well in light of the historical experiences of different countries, where inefficient institutions do persist. My thesis does not claim that the mechanism of social choice leads to efficient institutions. In my examination of two historical case studies where people could choose institutions, I find that the choice sets were constrained by technological factors and by political institutions. Hence, the chosen outcome is a constrained optimum rather than universally efficient, and I try to show how the chosen outcomes change when the set of constraints changes.

The two case studies, set in different periods and countries, indicate a general pattern of transition. They show that the informal institutions thrive on their ability to process and channel information smoothly through community networks. Transitions occurred when for some reason that advantage became less important. In the English case, the main reason was increasing social heterogeneity; in the Indian case, it was improvements in communication technology.

The main contribution of this thesis is to provide a theory of the transition from informal to formal institutions, and to show, using evidence from historical examples, how this mechanism works. This theory has important implications for development economics, as it can be extended to identify factors which obstruct the process of institutional transition in less developed countries. This understanding can help explain differences in the quality of institutions in various countries, which, in turn, can help explain income differences between countries.

Chapter 2

Institutions

2.1 Definition of Institutions

Douglass North, in his seminal work on institutions, offered this definition:

the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. In consequence they structure incentives in human exchange, whether political, social, or economic. (North, 1990, pg 3)

The institutions that shape and regulate everyday life are designed and enforced by social organizations such as states and communities. Therefore, institutions as rules are different from rules of nature, which are completely exogenous to human influence.

Transaction costs are essential to North's concept of institutions. Processing information, measuring the value of goods being exchanged, and enforcing property rights are all costly functions. Institutions, in North's view, are rules designed to minimize transaction costs.

Consider a situation where a seller meets a buyer. Relevant institutions allow the buyer to verify the seller's legal authority to sell the goods, and allow either party to take action if they believe they have been cheated in the exchange. If there were no institutions, the parties would have to fulfill these steps themselves, and the transactions costs would be much higher. For example, if someone wants to sell their car, legal institutions make it easy for a buyer to see the ownership papers and verify that the seller has the right to sell the car. Without a structure to systematically confer ownership rights, and keep records, it would be almost impossible to carry out this or any similar market transaction.

There is now a consensus among economists that institutions play a key role in shaping the course of the economy (Rajan and Zingales, 1998; Acemoglu et al., 2001; Rodrik et al., 2004). If institutions - which are mere rules - are important for economic performance, why don't poor countries adopt the laws of developed nations? The most obvious answer is that influential political interest groups in poor countries do not wish to see those institutions adopted. Parliamentary enclosure in 18th-century England is a famous example of such a mechanism (McCloskey, 1991; Clark, 1998; Allen, 1982). This is why a country ruled by feudal lords is unlikely to adopt land reform legislation.

But even if two places adopt the same set of rules, their performances will be conditional on factors such as local cultures, norms, and belief systems. For example, Indian states that adopted similar legislation to execute land reform ended up with different outcomes (Bardhan, 1974, pg 256). Hence, institutions are more than mere rules written into law.

Greif's definition of institutions addresses these issues:

"An institution is a system of rules, beliefs, norms, and organizations that together generate a regularity of (social) behavior"Greif (2008)

Greif's definition accounts for variations in the effectiveness of institutions by including a role for factors such as beliefs, norms, and organizations. The purpose of institutions is the same as in North: ensuring the regularity of behavior. Greif also shares with North the idea that institutions are man made, non physical, and beyond the control of individual agents.

Greif appears to embrace a broader definition than North's. Nevertheless, these two definitions converge under some conditions. If institutions are thought of as optimal rules, designed by government to maximize some social welfare function, then the rules chosen in equilibrium become contingent on the society's prevailing norms, beliefs and political economy. Therefore, those rules become a function of the factors listed in Greif's definition. But the same cannot be said about the off-equilibrium position. Imagine an exogenous shock to the existing norms or belief system. Under Greif's definition, this shock would cause changes to the institutions. But not so under North's definition - there would be no change to the institutions until the government re-optimized and announced a new set of optimal rules. So the scope of Greif's definition is broader. The focus of my thesis is to analyze the transition from community-based to law-based contract enforcement, using North's definition of institutions. However, I discuss in detail the possible interaction between norms and institutions in later chapters.

2.2 Formal and Informal Institutions

Formal institutions are defined as systems of legal codes enforced by stateendorsed organizations such as courts, police, etc. Formal institutions are situation specific rather than individual specific, in the sense that formal codes focus on the nature of the unlawful activity rather than the reputation of the individuals involved in the activity. The definition of informal institutions is elaborated here using a typical one-time prisoner's dilemma game. Consider the following game:

Table 2.1: Prisoner's Dilemma

| | С | NC | | | | |
|----|-----|-----|--|--|--|--|
| С | 6,6 | 0,7 | | | | |
| NC | 7,0 | 1,1 | | | | |

Suppose both parties contract to play (C,C). But in the absence of any third-party enforcement, they are bound to play (NC, NC) which is the

dominant strategy equilibrium of the game. The strategy set (C,C) can be achieved as equilibrium if the game is played infinitely between two players. Repeated interaction achieves cooperative equilibrium through the threat of future punishment: if a player does not cooperate at period t, then his partner will adopt the strategy of non-cooperation for period t + 1 onwards. This threat induces cooperation if the player values future outcomes. But an infinitely repeated game is not a realistic assumption. Players may stay in the market for a long time, but may not play against the same opponents. The cooperative equilibrium can be achieved if players play different opponents under two conditions: first, information about an individual's past behavior is available to other members of the society; and second, norms allow a member to cheat their partner if the partner cheated in the past. There are a number of papers that discuss the possibility of such equilibrium under different conditions adopts a similar definition (Kandori (1992), Rosenthal and Landau (1979)), Dixit (2004).

In this game, an informal institution is the information network, and a norm or belief is the community member's punishment of a cheater, even if the member was not the one wronged by the cheater. This is how informal institutions are usually characterized in the literature, and they have two fundamental characteristics: an information network, and no third-party enforcement. The flow of information through community networks may help solve the problems of adverse selection and moral hazard in labor markets as well. Community-level information can be instrumental in screening candidates for employment (Cornell and Welch, 1996) and in monitoring employees once they are selected (Spagnolo, 1999) which may lead to an ethnic bias in the selection process even if the employers do not have explicit preference for any ethnic group.

Greif's definition of 'private order institutions' is similar to the definition of informal institutions in the existing literature:

[We often find] situations in which order prevails despite the lack of a third-party enforcer of that order. In such situations, the prevalence of order or its absence reflects the behavior of the interacting individuals rather than what transpires between them and a third party.(Greif, 2008, pg 8)

Hence, Greif's private order institutions are network systems which spread information about people's past behavior. People cooperate because news of their non-cooperative behavior will spread and adversely affect their future business prospects. In the case of the Maghribi Traders and the Community Responsibility System, these characteristics are found to exist.

Dixit's relation-based contract enforcement is also essentially the same as what we call informal institutions (Dixit, 2004). Under this system, cooperation is ensured by information flow about individuals' past behavior. In this model, traders are located on a circle. Each trader is randomly matched with another at two separate time periods. If a trader cheats during the first transaction, then there is a possibility that they will be punished the second time around. A trader is unlikely to be matched with the same partner twice, but the flow of information about past cheating behavior results in punishment. A match with a local neighbor is likely, and the closer the proximity of the match to the trader, the faster the information about the trader's past behavior flows. With these two assumptions, cooperation may arise in the equilibrium. The model yields a distance X, such that an agent behaves honestly if they are matched with somebody with a distance less than X from the agent.

(North, 1990, pg 46) uses the term 'informal constraints' to refer to traditional rules without explicitly mentioning the organizations responsible for enforcing them. He defines institutions as rules of the game and, under that paradigm, informal constraints are informal institutions which come from socially "transmitted information" and "culture". This definition is not limited to contract enforcement through the mechanism of information about individuals' reputations flowing through community networks. North also highlights a body of rules referred to here as customs. These rules are unwritten, and not enforced by the state. They can be either norms, or informal institutions enforced by community organizations.

A sizable share of the literature elaborates on medieval informal institutions. These scholarly works typically look at the systems of organization and belief which facilitated transmission of information and substituted for third-party enforcement. Greif discusses one of the most important examples of such a system of beliefs in his seminal paper on the Maghribi traders. Greif (1993) shows how the 'collectivist' belief system of this trading community facilitated the flow of information about individuals' past behavior, and payed lower *honesty-inducing wages* in comparison to the 'individualist' Genoese traders who also participated in the Mediterranean sea trade during the 12th century. Greif then extends this analysis to show that differences in belief structures lead to different economic outcomes in these societies.

Community Responsibility System (CRS) is another example of contract enforcement using community networks. The defining characteristic of the CRS is that the contracting parties come from different communities. The core of this mechanism is the flow of information about individuals' past behavior through community networks. Under the CRS, communities preserve their reputations by punishing members who cheat members of other communities. If the offender's community does not punish their member, then the entire community faces retaliation from the offended community. Deb (2007) provides a detailed theoretical analysis of this mechanism. There are several examples of the CRS in European history. Greif used this concept to explain contract enforcement between medieval German towns and the Hansa merchant guild. The tax reporting system in 14th-century Paris can also be explained through a similar mechanism (Slivinski and Sussman, 2009). Evaluation of the tax base by the tax authority was a costly affair, but the authority exploited a variant of the community responsibility system in order to encourage citizens to report any evasion by their fellow citizens.

The Law Merchant, the body of commercial law used to adjudicate cases between European merchants, was another example of informal institutions. The codes were based on European merchant customs. Milgrom et al. (1990) proposed a theory of the Law Merchant system. The assumptions of the model, however, are not true for most of the European Law Merchant courts, except for the one in the Champaigne Fairs. In their paper, they modeled the Law Merchant court as an organization that facilitates the free flow of information about traders' past behavior.

In the papers discussed above, informal institutions are modeled as organizations, or as systems of belief, which disseminate information. Crucially, such institutions exploit information about individuals, without recourse to third-party enforcement. The treatment of informal institutions in this thesis differs slightly from that in the literature discussed above. In my definition, the most important characteristic of informal institutions is that they are executed by a *centralized*, community-run organization. This marks a departure from the existing literature, which treats informal institutions as *decentralized* information-dissemination networks. The other characteristics, such as the use of personal information and social sanctions, are the same in both approaches. The medieval European guilds can be thought as an example of informal institutions which also performed arbitration duties. They relied heavily on the relevant information about individuals flowing in the community networks. According to this definition, the Law Merchant courts were examples of informal institutions as well, as they too depended heavily on information flowing through the community networks. In English Law Merchant courts, for example, if one litigant was an English citizen and the other one a foreigner, then half of the judges would be English and half would be from foreign communities (Holdsworth, 1907).

My definition of informal institutions thus includes community networks to disseminate information, and a centralized organization for processing the information. The existing literature, on the other hand, emphasizes decentralized dissemination of information about individuals' past behavior. Why is this distinction important? The existing literature presumes clearcut cases of cheating, established beyond doubt, where the spread of information is the key to ensuring honesty. But the reality is often less clear: often, the two parties in a dispute make contradictory claims. How, then, do other members of the society decide who is telling the truth? The central organization, like any other court, judges the evidence brought by the members, and decides whether the allegation should be upheld. Now, it is very possible that the court is more likely to believe an individual's evidence when that individual has a better reputation in the society. Such an explicit treatment of this kind of centralized organization may not be important when scholars are looking to establish the existence of a cooperative equilibrium, or to compare cultures. But when the goal is to compare informal and formal institutions, and to provide a theory of their transition, it is necessary to lay out the nature of the organizations under study in full detail.

I propose a centralized structure of informal institutions that enables me to compare them with the formal institutions, and to provide a theory of transition. However, the essence of my formulation does not differ from the standard treatment of informal institutions. Such informal organizations existed in pre-modern times, and still exist in less developed countries today. Informal organizations can be extremely efficient in enforcing contracts within their close proximity. But their effectiveness is limited by the community identity of the agents. They cannot enforce contracts with agents who are far from the community core. This limitation leads to inefficiency in informal institutions, which I discuss in the next section.

2.3 Informal Institutions and Inefficiency

I present a simple model to demonstrate the inefficiency inherent in informal institutions. Suppose that a final good X is produced with capital, supplied by an investor, and input x, supplied by a contractor. There are two communities, A and B. Each contractor is endowed with a skill factor at birth. Based on their ability endowments, contractors can be classified as High (H) or Low (L) type. One investor chooses a contractor partner, and invests capital in a project to produce one unit of the final good. They agree to divide the product such that the investor gets α fraction of the output and the contractor gets the rest. However, the production is subject to risk. The probability of success, p, depends on the inherent ability of the contractor. The probability of success is p_H if a high-type contractor is hired, and p_L if the contractor type is low. I also assume that $p_H > p_L$. If the project fails, both parties receive zero payoff. If it succeeds, then the contractor can steal successfully depends on the quality of institutions. The quality of institutions can be good or bad. If the institutions are good, then stealing is not possible. If the institutions are bad, stealing is possible at zero cost.

For simplicity, I also assume that investors are from community A only while a contractor may come from either community. There are two types of institutions for contract enforcement: formal and informal. The quality of the formal institutions is uniform for any transaction. The informal institutions are good for intra-community transactions, but bad for intercommunity transactions. In case of a contract failure, investors can move to their *own* community court or to the formal court. For our analysis, the informal court of community A is the relevant one. Under the informal institutions, the investor's payoffs when making contracts with different types of contractors are given below:

$$V_{AH}^{I} = \alpha p_{H} \tag{2.1}$$

$$V_{AL}^{I} = \alpha p_L \tag{2.2}$$

$$V_B^I = 0 \tag{2.3}$$

I assume, the reservation income for investors is \overline{u} . It is also assumed that, $V_{AH}^{I} > V_{AL}^{I} > \overline{u} > 0$. Therefore, under informal institutions, investors will prefer staying out of production to investing with an agent from community B. If the number of H type contractors in community A (n_{H}) is less than the number of investors (n_{I}) , then informal institutions clearly lead to inefficient outcomes. This is because $(n_{I} - n_{H})$ units of capital stay out of the production cycle. Good formal institutions can enforce contracts between an investor from A and a contractor from B. Hence, under good formal institutions, no capital remains unused, and total production is higher.

This simple model shows that, even if informal institutions can be effective in enforcing contracts within a community, their scope is limited by the community identity of the agents. This is more of a problem if there are complementary inputs, and each input is owned by members of different communities. Note that a community responsibility system cannot be a substitute for formal institutions, since a CRS requires that the contractors must come from certain specific communities whose members are known to the other contractor's community.

2.4 Norms

In addition to written rules and their enforcement, our understanding of the transition from informal to formal institutions must take into account changes in norms. Norms are "socially constructed behavioral standards that have been incorporated into one's superego (conscience), thereby influencing behavior by becoming part of one's preferences" (Greif, 2008, pp 37). Norms stop people from doing things which are against social conscience even if there is a low probability of detection. This is different from the belief that cheating will be punished. For example, there will be less theft in a society where respect for property rights is a well established norm. Economic analysis usually assumes self-seeking individuals as the units of analysis, making non-cooperation the prediction of the prisoner's dilemma game. Nevertheless, we regularly observe cooperative behavior in daily life. Although it is possible to include cooperation in an agent's preferences, until recently, there was not much research on the evolution of norms within the framework of standard economic analysis.

McCloskey critiqued the view that equates capitalist ethics with prudence, and elaborated on historical development of what she called 'Bourgeois Virtue'. She showed that virtues such as love, faith, hope, courage with temperance, prudence and justice became integral to the capitalist ethics of Western Europe (Mccloskey, 2006). Mokyr (2010) showed how changes in norms in 18th- and 19th-century England played an important role in ushering in the Industrial Revolution. For example, he showed that Englishmen became more gentlemanly. This change, in his view, was not merely the effect of efficient enforcement of property rights. It was rather that respect and honor for property rights grew stronger. These changing attitudes made business transactions easier, and prepared the ground for the Industrial Revolution. In order to explain economic development, therefore, it is important to understand the evolution of norms, and the interaction between norms and institutions. A recent strand of economics literature does just that, modeling the evolution of norms and their relationship with institutions. I discuss some of the relevant papers below.

This class of papers use the structure proposed by Bisin and Verdier (2001). This class of models assumes that there are two types of people in society: trustworthy and opportunistic. The distributions of each type evolve over time: one generation's value system is partly shaped by the previous generation's. Francois and Zabojnic (2005) and Tabellini (2008) model the evolution of norms and their interaction with the development of institutions. In both papers, trustworthy individuals incur moral cost if they cheat.

In Francois and Zabojnic (2005), an entrepreneur is matched with a contractor and gives the contractor a job. Contractors can be of the opportunistic or the trustworthy type. Opportunistic contractors always steals

2.4. Norms

the output while the trustworthy ones always remains honest. The contractor's type is determined by the socialization initiated by their parents and neighbors. The economy starts with an initial distribution of types. Then, following the mechanism of socialization, the distribution of types changes over time. Contractors are in excess supply, implying that only a fraction of them gets into business. The paper shows that an enhancement in productivity directly affects social norms by changing the parents' motivation to make their children like them, and thereby changing the distribution of types. The model predicts two steady states: one with a high proportion of trustworthy agents and high production; and the other with no trustworthy agents and no modern production. The model shows that, depending on the initial values and the degree of structural change, the economy may end up in a good or a bad equilibrium. The model shows that changes in technology may affect norms in positive or negative ways. However, this paper does not directly address the interaction between norms and institutions. In another paper, Francois (2008) showed that norms and institutions are substitutes. But norms are required to develop good institutions, and good institutions are likely to be developed when trade is unrestricted. In another paper Francois (2008) showed that, norm and institutions are substitutes. However, good norms are required to develop good institutions. Moreover, good institutions are likely to be developed when trade is unrestricted.

In the model proposed by Tabellini (2008),), traders are placed on the circumference of a circle. Any pair of traders is characterized by the distance between them. They play a typical prisoner's dilemma game. But in this case, players get non-material satisfaction from cooperation, which declines with the distance from their trading partners. A trader gets more satisfaction if they cooperate with a friend, and less if they deal with a stranger. There are two types in the society: good and bad. Each individual lives for two periods. In the first period, they get an education, and play a prisoner's dilemma type game. In the second period, they decide on how much effort to spend on their children's education. A child has a higher probability of becoming good if greater effort is spent on their education. As a result, the

decision to invest effort into children's education determines the type distribution in the society. A change in the incentive structure faced by parents affects the children's education decision, and thereby affects social norms. Tabellini showed how improvements in institutions can affect social norms through this channel.

2.5 Institutional Transition

Why do institutions change? North offers a theory in terms of 'relative price change.' Examples include "changes in the ratio of factor prices (i.e., changes in the ratio of land to labor, labor to capital, or capital to land), changes in the cost of information, and changes in technology" (North (1990), p 84). This is consistent with the transaction cost approach, because changes in any of these factors will affect transaction costs. In order to explain the evolution of institutions, North stresses the interaction between the institutions and the organizations responsible for enforcing them. This approach underscores the importance of a country's political economy in explaining its institutional transitions.

The interaction between resource endowment, political institutions, economic institutions, and economic performance is well captured by the following flow chart reproduced from Acemoglu (2008) In this scheme, insti-



Figure 2.1: Institutional Dynamics

tutional change is represented as a dynamic system. An economy starts with an initial value of political institutions, and a distribution of resources. These in turn determine the *de jure* and *de facto* political power. The structure of political power determines economic institutions for that period, and political institutions for the next period. Economic institutions for that period determine the economic performance of that period, and the political institutions for the next period.

This structure provides an important insight into how institutions evolve. The evolution can happen incrementally, or there may be major and sudden events in history which change the course of institutional evolution. For example, the invention of new technologies (e.g., in the Industrial Revolution), the opening of new trading opportunities (e.g., with the discovery of America), or demographic shocks (e.g., the Black Death) can drastically change the distribution of resources, and thus change the steady state values of institutions. Political institutions may also change drastically following revolutions or political movements. Therefore, differences in initial conditions can explain why some countries have better institutions than others. And any number of human and natural factors may determine the type of institutions adopted in a specific place. Examples of natural factors include the disease environment (Acemoglu et al., 2002), the terrain characteristics (Nunn and Puga, 2007), initial factor endowments (Sokoloff and Engerman, 2000); similarly, cultural factors are also important (Weber, 1930; Greif, 1993; Tabellini, 2006).

Most studies explain why different institutions were chosen in different countries, but few focus on the evolution of institutions over time, within particular countries. New studies that help us understand the factors that lie behind this evolution will have important implications for development policies. This dissertation aims to fit in this gap.

The process of transition from informal to formal does not occur through informal institutions turning into formal institutions. Rather, the transition is characterized by society's favoring of one over the other. At a lower level of development, people interact within their kin groups, and informal institutions provide effective dispute resolution services at low cost. As economies grow, mobility increases, and people start doing business outside

2.5. Institutional Transition

their kin networks. Informal institutions become ineffective, inducing people to switch to formal institutions for most disputes. While informal institutions may still be operative for closely knit groups, they are no longer the main forum for dispute resolution. In my framework, agents are rational, utility-maximizing individuals who weigh the payoffs from dispute resolution in informal courts against the payoffs from formal courts. Generally, all societies start with informal systems, then eventually switch to formal courts in response to economic, technological or demographic changes. The next chapters elaborate on two case studies, one from England and one from India, to illustrate this point. I find that in the English case, greater geographical mobility caused the transition while in the Indian case, improvement in communication technology was the main catalyst for the transition.

Chapter 3

Historical Background and Institutional Learning

3.1 Overview

Informal institutions are effective in enforcing contracts when the traders come from the known community. This is why informal institutions were ubiquitous in early societies characterized by limited trading. The effectiveness of informal institutions is seriously challenged when societies become heterogeneous. A society moves from informal to formal institutions when its members find the latter to be more effective. Therefore, in any instance of institutional transition, two factors are important: the objective social conditions that reduce the effectiveness of informal institutions; and the formal institutions' potential to adapt to changing conditions. The second factor is related to the possibility that formal institutions can learn. This chapter elaborates on both these factors in the context of early modern England.

English society started becoming more heterogeneous from the 16th century, a change driven by increasing urbanization and waves of continental migration. The increasing heterogeneity weakened community-based forums for dispute resolution, prompting people to move to the formal courts for resolving disputes. As more people started using the formal facilities, those institutions began to improve. This chapter describes improvements in the English legal system during this period, and maps those improvements to the rudiments of an analytical model of learning. The chapter also describes how formal and informal institutions learn differently. Informal institutions' use of personal information is the main difference, one which gives informal institutions an edge in small, homogeneous societies. Relying on personal information, informal institutions see each litigant as a separate entity. This approach prevents informal institutions from developing a general legal formula which is applicable to everyone, irrespective of their social reputation. And, I argue in this chapter, the imperative to treat each litigant as a separate entity impedes the informal institutions' learning process, making them less effective in the long run. To support this argument, I look to documents from both formal and informal courts from early modern England.

Section 2 documents the increasing heterogeneity of early modern English society. Section 3 documents the adverse effects of increasing heterogeneity on the informal system. Section 4 provides an analytical structure for the improvements to the legal institutions. Section 5 elaborates on developments in contract law in early modern England. Section 6 provides an account of the competition between the royal courts - competition which facilitated legal development. Section 7 analyzes and compares the formal and the informal courts' learning, using documents from both type of courts from early modern England.

3.2 Social Heterogeneity in England

Between 1500 and 1700, England experienced an increase in social heterogeneity due to extensive rural urban migration along with waves of continental migration. This section details the process of migration and the resulting increase in social heterogeneity.

There were two major waves of immigration to England from the continent during the early modern period. Most immigrants were Protestants fleeing persecution. The first wave arrived in the 16th century from Flanders. The Flemish were joined by Walloons and Huguenots from France. Writing in the 17th century, Edmund Howes expressed appreciation for the foreigners by listing the innovations attributable to them. A similar view was expressed by Sir John Wolley, an MP who spoke in parliament in favor of allowing the foreigners to do business in London. These instances were not exceptional; time and again, the economic benefits of foreign migration to England were recognized by local and national authorities. In Colchester, James I's Letters Patent of 1612 emphasized

how beneficial the strangers of the Dutch Congregation there have been and are unto the said towne, as well in replenishing and beautifying of it, as for their Trades which they daily use their, setting on work many our poor people and subjects both within the said town and in other places thereabouts....

Foreigners played crucial roles in reviving the economies of Colchester and Norwich during the 16th century by introducing new technologies for cloth production (Goose, 2005a, pg 136-138). The most famous example was the "new draperies", a technology for woolen cloth production brought by Flemish refugees, which was hitherto unknown to English producers (Coleman, 1969). It is worth noting that foreigners worked in a variety of occupations. An incomplete list made in May 1593 records 1,862 foreigner masters and journeymen in London and its suburbs, working in 143 trades (Goose, 2005a, pg 144). These examples show that the immigrants did not stay at the fringes of the English economy.

Immigration from the continent was not an entirely new phenomenon to England. But immigrant communities got a kind of formal recognition in 1550 when the 'Stranger Church of London' was founded by Edward VI (Goose, 2005). Establishment of the Stranger Churches points to the growing importance of immigrants, whose numbers were growing in London and in other parts of England. Censuses carried out in the mid-16th century indicate that there were approximately 6,000-7,000 foreigners in London and its suburbs (Goose, 2005) – about 10 percent of London's population of 70,000 (Boulton, 1987, pg. 32). Significantly sized immigrant communities played important roles in the south and east of England, in towns like Norwich, Canterbury, Colchester, Sandwich, Maidstone, Southampton, Great Yarmouth and King's Lynn.

The second wave of immigration arrived in the later part of the 17th century when the Huguenots started to migrate from France. Migration remained high throughout the 17th century following a series of anti-Protestant measures taken by the French authorities (Cottret, 1985, pg 8-16).

Rural urban migration was another important source of increasing social heterogeneity. Migrants to urban areas from rural parts of England were no more "insider" than their continental counterparts. In early modern English usage, the words 'stranger' or 'alien' referred to people from other countries, while the word 'foreigner' might refer to Englishmen from other parts of England (Cottret, 1985, pg 1). Evidence from several English towns supports the hypothesis of greater geographical mobility during this period. For example, in one Worcestershire village, 80 percent of the 75 surnames disappeared from the parish records between 1666 and 1750. Similarly, nearly three-quarters of Canterbury residents who served as witnesses in court cases between 1580 and 1640 were immigrants to the city. Moreover, evidence from apprenticeship records suggest that a good deal of the artisan immigration to London in the 16th century came from places far from London (Stone, 1979, pg 146-148).

The aggregate picture of migration within England is captured by data on urbanization. Traditionally, a region is defined as urban if its population exceeds a certain threshold limit, although defining the threshold population level is tricky. De Vries, for example, adopted a rather conservative definition of 10,000 people. By that definition, there were only five urban centers in England and Wales in 1500, and 11 by 1700 (De Vries, 1984). The threshold of 10,000 paints a picture of limited urbanization in early modern England. A threshold of 5,000 better captures the changes in urbanization over time (Wrigley, 1985).

| Year | Urban | Rural Agricultural | Rural non agricultural |
|------|-------|--------------------|------------------------|
| 1520 | 5.5 | 76.0 | 18.5 |
| 1600 | 8.0 | 70.0 | 22.0 |
| 1670 | 13.5 | 60.5 | 26.0 |
| 1700 | 17.0 | 55.0 | 28.0 |
| 1750 | 21.0 | 46.0 | 33.0 |
| 1801 | 27.5 | 36.25 | 36.25 |

Table 3.1: Rural Urban population as percentage of total population

Source: Wrigley (1985)

Nevertheless, both studies indicate that there was a significant increase in urbanization.

Another way to measure urbanization is to look at the incorporation status of towns. Incorporation "in its basic content . . . usually specified the five marks of corporatism that confirmed the city or borough as a legally constructed fictional person. In this guise, the freemen, burgesses and citizens who voluntarily participated in this person could act collectively as single body" (Withington, 2005). The corporate body had to pay a nominal rent to the crown for possession of its territory and jurisdiction. In exchange, it had the authority to set up and run economic (e.g., markets, fairs), judicial (e.g., courts) and political institutions. It was also responsible for granting the right to do business within the city's territory. During the 16th to 17th centuries, England saw rapid growth in incorporation. Here is table 3.2 reproduced from Withington (2005).

Table 3.2 shows the number of charters granted in each year. Hence in order to find the number of chartered cities in a particular year one needs to find the cumulative total. For example, before 1500 there were 41 charters while in 1500, 3 charters were granted. Hence, the number of chartered cities in 1500 is 44. Both these approaches to measuring urbanization come to the
| Year | Number of Charters |
|-------------|--------------------|
| pre-1500 | 41 |
| 1501 - 20 | 3 |
| 1521-40 | 4 |
| 1541-60 | 44 |
| 1561 - 80 | 22 |
| 1581 - 1600 | 26 |
| 1601-20 | 39 |
| 1621-40 | 15 |

Table 3.2: First charters of incorporation in England and Wales

same conclusion: early modern England experienced a steady increase in urbanization. This increase would mean that anonymous agents were transacting more frequently, rendering the communal institutions ineffective. The aggregate picture of greater mobility is also supported by some micro evidence as well. Merchants in early modern England moved across the country to expand their businesses. In Bristol, for example, London merchants established themselves in the town's industrial center, offering better credit terms than their Bristol-based competitors. At the same time, Bristol merchants like Paul Whitypoll, the younger Robert Thorne and George Monox shifted their headquarters to London (Sacks, 1993).

Urbanization requires an agricultural surplus to feed the urban population that does not work in agricultural jobs. Accordingly, any shift towards urbanization must be preceded by an increase in agricultural productivity, a pattern commonly referred to as an "agricultural revolution". Recent evidence suggests that an early agricultural revolution occurred in 16thcentury England (Allen, 1999, 2000).

The reason behind this surge in agricultural productivity is unclear. Unlike the enclosure movement, there was no across-the-board technological or institutional reform during that time. Some areas of England experienced higher growth than others. Southern and Eastern England registered higher

| Table 3.3: Estimates of Agricultural variables (England in 1500=1) | | | |
|--|------------------|----------------|--------------|
| Year | Total Production | Output/ worker | Output/ head |
| 1300 | 1.65 | .80 | .83 |
| 1400 | .92 | .92 | .92 |
| 1500 | 1.00 | 1.00 | 1.00 |
| 1600 | 1.23 | .76 | .70 |
| 1700 | 1.78 | 1.15 | .85 |
| 1750 | 2.25 | 1.54 | .92 |
| 1800 | 2.47 | 1.43 | .68 |

Source: Allen (2000)

agricultural yield between 1400 and 1600. This higher yield can be attributed to improved agricultural practices in these regions which were later diffused over England. These practices included extensive use of leguminous plants, use of multiple plows, and use of horses instead of oxen. It was also the case that in the southwest and east of England the customary tenancy arrangements gave way to a more contractual system (Hopcroft, 1994). The fact that the tenants were the residual claimants under this arrangement created incentives for improving efficiency at the margin. Hence, this resulted in an efficient outcome.

3.3 Decline of Informal Institutions

Increasing heterogeneity made it difficult for the informal institutions to resolve disputes effectively. This led to a huge increase in the volume of litigation in the formal courts. Data on litigation is presented in the next chapter. The increase in litigation can be interpreted as the rise of formal institutions, as they replaced the informal ones. However, it is difficult to find evidence systematically documenting the decline of informal institutions. Some indirect evidence is provided in this section. Typical examples of community-based dispute resolution can be found in the diaries of contemporaries. In 1664, the apprentice Roger Low wrote about one such dispute over a debt:

William Hey came to me to have me go with hime to Wiggan to cast up some accounts betweene hime and Mr. Trotty about the buyinge and sellinge of beasts; so I promised to go in the eveninge... (Muldrew, 1996)

There possibly cannot be any systematic documentation of this kind of dispute resolution. However, the attitude of contemporaries towards formal litigation provides some clues. They were disturbed by the great increase in litigation, regarding it as a breakdown of neighborly values. Disputes between members of the society were not a new phenomenon. But in earlier periods, there was greater reliance on communities, kin and friends, rather than on formal courts, for resolving disputes. The idea of bringing a dispute to the formal courts ran against community norms, which were reflected in pamphlets and other writings, warning people against going to law (Muldrew, 1996). The same sentiment is reflected in the guilds' directives to their members, urging them not to go to the courts of law, and instead to resolve disputes in guild courts (Lyell, 1936, pg 44, Rawcliffe, 1991, pg 106). This is an important and relevant piece of history. The guilds had monopoly power over the production rights, and therefore exercised a considerable amount of control over their members. A dissenting member could be barred from the trade. But in spite of the guilds' direction, their members still found the formal courts more effective. Guilds had to take extra measures, such as issuing explicit directives to prevent their members from going to the formal courts. This lends support to the hypothesis that the formal courts were becoming more effective than their informal counterparts.

Clergymen too preached against going to court. Muldrew quotes minister Henry Wilkinson. Writing in 1625, he emphasized the active roles that neighbors and friends should play in facilitating credit contracts: neighbors, he said, should facilitate negotiations with creditors; on the other hand, they

should "solicit the debtor to keep his promise" (Muldrew, 1996).

The point is made that the formal legal system emerged as a major competitor to the informal institutions. Contemporaries saw more than a mere change in the choice of court - they saw a major shift in social norms, and a breakdown of neighborly values. In the next two paragraphs, I provide a brief account of two better documented informal institutions in early modern England.

Law Merchant, or *Lex Mercatoria*, refers to the body of laws followed by merchant communities across Europe. Despite some regional differences, the general structure of the law was the same everywhere. During the late medieval and early modern period, fairs and markets were the major sites of business dealings all over Europe. The Law Merchant courts were based at fairs and markets and were distinct from the state law. In England, the towns of Winchester, Stourbridge, London, Bristol, and many others had Law Merchant courts. Law Merchant tradition and its mechanism in the Champaigne Fair have been analyzed by Milgrom et al. (1990).

Speedy justice, and the use of community-level information for adjudication were two distinguishing features of the Law Merchant. They were often referred to as piepowder courts, due to their quick administration of justice - "while the dust fell from the feet" (Scrutton, 1909, pg 9). Because of the rapid nature of business in the Law Merchant courts, it is difficult to find documents detailing court proceedings. In the few documents recovered, rarely was a case reported as showcasing a particular rule.

Besides the fairs, Law Merchant was also applied to courts in some English trading centers known as Staple Towns. There were eleven such towns in England, one in Wales and four in Ireland. These "staple courts" used the Law Merchant instead of common law. The organization of these courts was characterized by communality. If aliens were involved in a litigation, the jury would be formed by two alien merchants, one of whom came from the north and the other from the south (Holdsworth, 1907).

The other major informal forums for dispute resolution were the trade and merchant guilds. The guilds are known for their organized efforts to protect monopoly rights of production. On another level, guilds were effective as alternative institutions for dispute resolution. The guild courts regularly resolved disputes between their members. In doing so, they were in direct competition with the common law courts. I mentioned earlier that many guilds imposed fines on their members for bringing cases to the common law courts before submitting them to their affiliative guilds. The fines hints at the possibility that the lower costs of using guild courts were not sufficient to compensate for the better quality of common law courts.

The Law Merchants declined during the late medieval period while the guild system declined during the 17th-18th centuries, although incorporation of new craft guilds continued during the 17th century. The guilds found it increasingly difficult to keep 'foreigners', or non members, out of the trade. For example, following the fire of London, the Act of 1667 allowed people who were not freemen of London to work and enjoy the privileges of the freemen. In a number of cases, guilds went to the courts in order to prevent non-members from doing business. By the 18th century, legal opinions varied on the guild's monopoly power. This was reflected by the fact that in a number of cases the local counsel's opinion was taken regarding the validity of by-laws that established the guild's monopoly power (Lipson, 1956, pg 348-350).

However, the evidence presented above may not be a conclusive proof of the decline in the informal institutions for dispute resolution. Guilds had monopoly power over production, and their decline is usually attributed to the changing political economy of England (Hickson and Thompson, 1991). Nevertheless, with more 'foreigners' in the trades than before, the guilds' power to resolve disputes must have been declining. Section 7 provides

3.3. Decline of Informal Institutions

some direct evidence from the Mercers' court to describe the guilds' role in dispute resolution. But before that, I look at another area of indirect evidence to trace the decline of informal institutions: civic ceremonies which were ceremonies typically observed by craft guilds and civic bodies. These can be seen as the main forums for circulating and processing the personal information that was essential for the operation of informal institutions. Any decline in civic ceremonies can be interpreted as a signal of the declining strength of community-based institutions.

Participation in civic ceremonies was costly, and community members often complained that the expenses were burdensome (Davidson, 2006; Berlin, 1986). Participation costs for these ceremonies can be interpreted as investments in the social network, and so the level of support for civic ceremonies would depend on the returns from those investments. Community-based informal institutions could only resolve disputes involving members of the same community. In more heterogeneous societies, where inter-community contracts would be more common, the returns from investments in the social network would be lower. As a result, people in more heterogeneous societies would have less incentive to invest in social networking and, consequently, would spend less on civic ceremonies. In the next few paragraphs, I review popular participation in some of the important civic ceremonies in early modern England.

Corpus Christi was one such ceremony which was actively celebrated by the guilds. The feast of Corpus Christi, which literally means "the body of Christ", was celebrated in England for the first time in 1325 (James, 1983). In the 15th century, the ritual spread widely across England, and became predominantly urban. On the day of Corpus Christi, a mass would be followed by a procession through the town, in which it was mandatory for guild members to participate. The guilds would walk in the procession in an ascending order of wealth - members of less important crafts would walk in the front, followed by wealthier and more important crafts. In many towns, the procession was accompanied by pageants on moving wagon platforms. Typically, guild members would stage dramatic representations of scriptural scenes and themes. In some towns, full length plays, known as Corpus Christi cycles, were enacted. Intact cycles survive from Chester, Coventry, York and Wakefield (James, 1983).

Corpus Christi was not the most important ceremony in London, where midsummer shows and the Lord Mayor's show marked the high points of the city's ceremonial calendar. John Stow, writing in 1598, mentioned that reconciliation of disputes was an important aspect of the festivals:

These were called Bonefiers as well good amitie amongest neighbours that, being before at controversie, were there by the labour of others, reconciled, and made of bitter enemies, louing friends, as also for the vertue that a great fire hath to purge the infection of ayre.(Survey of London, John Stow pp 103-4, cited in Berlin (1986))

The midsummer show would consist of a candlelit procession and pageantry performed by guild members. The midsummer show was later replaced by the Lord Mayor's show, which was unique to London, celebrating the commencement of the Lord Mayor's term.

James (1983) points out that civic ceremonies were important for social integrity. But the norm of participation in civic ceremonies can be seen as crucial for sustaining informal institutions. This explains why participation in those ceremonies was made mandatory by community councils. Members of the community would find such mandates burdensome when the effectiveness of the informal institutions was on the decline. Craftsmen's unwillingness to bear the cost of ceremonies was a common issue in the civic life of early modern England. In 1561, for example, the painters of York pleaded for exemption from their duties in Corpus Christi. This was no exception - such appeals were common in 16th century York (Davidson, 2006). Similar complaints are found in contemporary documents from Chester, Bristol and Lincoln (Berlin, 1986). A logical consequence of such complaints would be the discontinuation of civic ceremonies, and between the 16th and 17th centuries many were discontinued. Corpus Christi cycles disappeared from a number of towns. From the study on Coventry we find that by 1547, the processions of St. George's day, Ascension, Whitsun and Corpus Christi were discontinued. Summer processions also came to a halt around the same time, and the sacred plays were last staged in 1591. By the 17th century, the formal communal procession had disappeared from the streets of Coventry (Phythian-Adams, 1972). The only ceremonial form that survived was the one that marked official inaugurations. In York, Corpus Christi was discontinued around 1570 (Palliser, 1972).

In London, the ceremonial calendar underwent changes between the 15th and 16th centuries as well. Throughout the 16th century, the midsummer show was halted a number of times, and eventually disappeared despite revival attempts in 1541, 1564, 1569 and finally in 1585 (Berlin, 1986). The Lord Mayor's show assumed the highest place in the ceremonial calendar from the 16th century. The show continued for a long time but was stripped of elaborate pageants, and lost its former glory in the beginning of the 18th century (Withington, 1926).

These pieces of evidence should be interpreted with caution, because the decline of ceremonies could have been prompted by an economic downturn. However, this explanation cannot be true for London because the city's economy never declined during the period of this inquiry. An economic explanation could have more merit for towns like York, which went into decline in the second half of the 16th century. However, the tradition of Corpus Christi started in York in 1376 and survived many economic, social and religious turmoils (Davidson, 2006). So, the business cycles of local economies are not a good enough explanation of the irreversible decline of ceremonies in English towns.

3.3. Decline of Informal Institutions

Another important component of informal institutions is the kinship networks which also declined in England during the period 1500-1700 (Stone, 1979, pg 123-150). In a detailed analysis of kinship in early modern England, Stone (1979) showed that the degree of kinship changed considerably for different strata of the society. Between 1500 and 1750, kinship ties and clientage assumed a subsidiary role for the landed class. One piece of evidence for the declining role of kinship ties, put forward by Stone (1979) was the fact that claims to cousinhood in the subscription of letters occurred far less frequently in the late 17th and 18th centuries than in the 16th century. Kinship networks continued to be important for achieving economic success, but they were increasingly limited to the closer relatives. The practice of open-ended hospitality, a hallmark of aristocratic culture in early modern England, went into decline during this period. Hospitality used to be shown not only to extended family members, but to any friend, or even to casual passers-by of gentlemanly status. The decay of gigantic and hugely expensive funeral rituals was another important change in the aristocratic lifestyle (Stone, 1979, p 124-125). One can imagine that such occasions, like civic ceremonies, played important roles in information diffusion. For this reason, the decay of aristocratic hospitality and pompous funeral rituals can be seen as a reflection of the declining community network among aristocrats. However, this trend was not limited to the aristocratic class; the decline in the importance of kinship ties in social lives was more general. Stone (1979) goes on to show how the nuclear family emerged as the unit of the society, and consequently, how distant relatives became unimportant in the lives of people of the middle social ranks.

For the lowest social rank, consisting of peasants, artisans, and the poor, the direction of change in kinship was not obvious. In some respects, community control increased, while in other aspects it weakened. Community control over the economic lives of peasants under the open field system, and over moral issues in general, intensified. However, the high degree of geographic mobility in the late 16th and 17th centuries considerably weakened kinship associations. In about 1600, a nationwide poor-relief system was instituted which was based on local compulsory taxation and run by the parishes. By the end of the 17th century, this system became a fully functioning organization that relieved kin, conjugal families and neighbors of their previous sense of obligation to provide support for community members (Stone, 1979, pg 146-148). The formalization of poor relief can be seen as a factor that reduced the importance of a support system based on community or family identities, and contributed to the further weakening of informal institutions.

3.4 Learning by Legal Institutions

This section introduces the rudiments of an analytical framework to analyze learning by the legal institutions. This introduction will help us understand the specific interpretation of learning that is used in the next chapter. In this section, I analyze the learning mechanism, and discuss the differences in learning between the formal and the informal courts. Litigation can be seen as a signaling game, in which the evidence produced by the litigants can be interpreted as signals. The legal authority decides what type of evidence is sufficient to prove a claim. And the legal authority establishes the range of admissible evidence in such a way that the guilty find it costly to mimic the innocent's signals, and the litigation ends up in a separating equilibrium. As an example, consider a case where a plaintiff claims that the defendant is obliged to pay the plaintiff some money. Suppose the court requires the plaintiff to produce a signed contract paper as proof of the contract. Assuming that document forgery is not a viable option, the plaintiff who falsely claims such an obligation will find that signal to be prohibitively costly.

In this sense, legal codes can be interpreted as rules for admissible evidence. The legal authority's objective is to establish rules that achieve the separating equilibrium. There are two possible pooling equilibria: one in which the guilty can mimic the innocent's signals, and the other in which both the guilty and the innocent find those signals too costly to send. These two equilibria characterize two types of errors that can limit the effectiveness of a judicial system. One error is where the guilty party is acquitted, and the other is where the innocent party is convicted.

These errors can occur in the system if the legal authority does not know the true cost of signals sent by different types (guilty or innocent) of litigants. Such errors can also occur when the costs of signaling change due to changing technology and/or social factors. If the court does not adapt to these changes by adjusting its set of admissible evidence, then the economy may end up in a pooling equilibrium. Accordingly, in this study, improvement in the legal system is characterized by learning about changing costs, and making corresponding adjustments to the set of admissible evidence. The point can be illustrated by the example of the "wager of law", a provision of the medieval debt laws allowing a debtor to bring 10 oath helpers to the court. Their testimony to the defendant's honesty was considered a sufficient proof of the defendant's innocence. This signaling mechanism should work well in a small, cohesive society where the cost of false testimony is high. In such a society, a guilty defendant would find it difficult to gather enough people who would give false testimony, and so a standard of proof such as the "wager of law" should be able to separate the guilty from the innocent. But in a more heterogeneous society, it becomes easier to get "professional" oath helpers who will give false testimony for money. As a result, this evidence standard cannot separate the guilty from the innocent. Therefore, when a society becomes more heterogeneous, its legal authority should improve the legal system by raising its acceptable standard of proof. In the next section, I discuss how, in an attempt to improve contract laws, the provision of wager of law was bypassed.

It is important at this stage to remember that informal institutions are characterized by their ability to process information at the level of individuals, and use that information effectively in the adjudication process, while formal institutions are based on legal codes which are universally applicable to everyone. I mentioned how social and technological factors can change the cost of signaling over time. But the cost of signaling can be different

3.4. Learning by Legal Institutions

across cultures, communities and, more importantly, across individuals. For example, some individuals maintain a high moral cost of lying while others find it easy to lie. When community courts possess this level of information about community members, the standard of proof is non-uniform; for example, the testimony of a highly regarded member may be treated as strong evidence, while a written contract submitted by an ill-reputed agent may be treated with great caution. None of this is true under formal institutions, where the standard of proof is the same for all litigants.

The cost of signaling can be thought to have a systematic part which is determined by technological or social factors, and an idiosyncratic part which is specific to individual litigants. An analytical expression is used below to explain the mechanism. Suppose, for individual *i* cost of bringing evidence *k* is given by $C_{ik} = c_k + \epsilon_i$. The communal court can observe C_i completely when *i* belongs to the same community, and cannot observe anything when he belongs to a different community. This is consistent with the informal court's ability to process information about individual community members. But I assume that informal courts cannot observe ϵ_i and *c* separately. This implies that the informal courts see each individual as a separate entity, being completely oblivious to the systematic component of signaling cost. I argue that this imperative to treat individuals as separate entities is a cultural belief held by the communities, one which has important implications for community courts' learning potential.

The possibility of learning arises when the systematic component of the signaling changes over time. A formal court learns about the changes from past cases. In England, the precedent-based system of the common law tradition facilitated this process. Because of the belief structure that I just mentioned, the informal court cannot learn about the changing values of c_k . Informal courts have an advantage when the community is small and homogeneous. In that case, only community members come for dispute resolution. The informal court knows each litigant's signaling cost (C_{ik}) while formal courts know the systematic component only (c_k) . Informal institutions start

losing the edge when the society becomes more heterogeneous; community courts have no information about the cost of signaling for people outside the community. But where the informal court's operation is limited, the formal court is, on an average, effective in judging cases involving members of different communities, because it knows c_k .

Informal courts have full information about community members, which they use to provide effective adjudication services. Community courts can therefore be thought of as embodying a cultural belief that the cost of signaling is individual specific, and that there is no systematic component. Informal courts' success in adjudicating matters within communities substantiates this belief. However, because of the success of that belief, community courts do not develop lengthy legal practices and processes, where evidence is throughly examined and proceedings are recorded in detail. As a result, they face problems when the systematic component starts to shift with technological changes. Formal institutions, however, because of their lack of access to full information about community members, do develop more thorough practices, which help them learn about changes in the systematic component of signaling cost. Therefore, in the long run, and at a greater scale of operation, formal institutions can provide more efficient judicial services.

3.5 Developments of Contract Law in Early Modern England

3.5.1 Overview

The last section describes litigation as a signaling game, and outlines the rudiments of the learning model. This section describes the improvements in contract law between 1500 and 1700, and maps those improvements to the learning model underlying the institutional improvements. In order to explain the improvements, it is necessary to describe the writ system that characterizes the common law tradition. A writ can be seen as a formula that

was used to classify cases into particular types of dispute. In the common law tradition, a complaint placed before the court needed to fit into one of the existing writs. The writ system had some archaic features which were not always compatible with the kind of contractual situations arising during the early modern period. These problems severely restricted the applicability of the common law system. This section details the steps taken to solve those problems.

There were a few original writs issued by the chancery and some additional 'judicial writs' issued by the central courts. Broadly speaking, there were three forms of legal actions available: real, personal and mixed. Real actions only dealt with real property issues. Personal claims dealt with complaints regarding debt, a personal duty, or personal damages. The mixed action dealt with cases that combined the other two forms. Debt and Covenant were the main writs for adjudicating contractual disputes. However, the standard of proof was quite rigorous for these writs, as a sealed and properly signed deed was required to prove the existence of the contract. If a plaintiff could not produce a deed, the defendant could avail themselves of the "wager of law" provision that I discussed earlier. The application of the Debt writ was further restricted by the requirements of sum certain and quid pro quo. The latter clause required a real exchange between parties. The sum certain clause required that a certain value of contract be negotiated at the time of its making. Plaintiffs had to show that the contract had these characteristics before a case would be accepted under the Debt writ. There are some obvious problems with these requirements.

This requirement of *quid pro quo* was particularly problematic if there was a third party benefiting from the transaction. For example, if A promised B (who was a doctor) money for the treatment of C, then quid pro quo would not apply. Consequently, if A did not pay B after the treatment, then B could not sue A under the Debt writ.

3.5. Developments of Contract Law in Early Modern England

All these restrictions worked well in the context of a closed and less heterogeneous society. The very concept of a covenant developed in a medieval society in which most obligations flowed from the social hierarchy (Milsom, 1981, pg 325). The ploughman who did not plough was summoned to his Lord's court, not sued in a common law court. And the social hierarchy was prevalent in the medieval interpretation of law. In a modern contract, however, parties are equal. So dealing with modern contracts requires a different interpretation of legal formulae. As commerce started to flourish in the 16th century, traditional interpretations of contract law were ineffective in dealing with the increasing volume of contracts. Consequently, the fundamentals of medieval contract law started to change in order to support the greater variety of business transactions (Teeven, 1990, pg 27).

The first best solution to these problem would be to introduce new writs to deal with the new types of situations. This idea was expressed in a maxim of the famous medieval legal scholar, Bracton: *Tot erunt formulae brevium quot sunt genera actionum* - there may be as many forms of action as there are causes of action (Maitland, 1941). Unfortunately, that solution was not available to the royal courts. An interest group of Barons felt threatened by the growing popularity of the royal judicial system, since running an effective manorial court of justice was important for maintaining their positions in the political power structure. In 1258, they managed to impel Henry III to prohibit the chancery clerks from issuing new writs, in what became known as the Provisions of Oxford. By the end of 13th century, it was an accepted norm that chancery clerks could not issue a writ if the plaintiff's case did not fit into one of the existing forms of action.

Hence, legal professionals opted to pursue the second best solution: finding innovative ways to fit cases into the straitjacket of existing writs. Their main approach centered on the writ of Trespass. In order to bypass the formalities associated with the writs of Debt or Covenant, lawyers focused on the damage subsequent to a contract rather than on the contract itself. Trespass was ideal for this purpose, and *assumpsit* was its offshoot. The rise of *assumpsit* and considerations constitutes the most important legal innovation of early modern England.

3.5.2 Introduction of Assumpsit

The writ of Trespass was supposed to provide remedy for any harm caused by the defendant. In order to use it as a remedy for contractual problems, lawyers tried to convince the judges that the breach of contract caused harm to the plaintiff. This approach was particularly useful when it was difficult to get a sealed deed for the contract. The case of Bukton v. Townsend(1348)depicts an early use of *trespass* as remedy for contractual problem. In the English legal history this is known as the case of the Humber ferryman (Simpson, 1975, pg 210). The plaintiff had entrusted his mare to the ferryman for transport over the river Humber. The ferryman overloaded the boat and, somehow, the mare was killed. Clearly, the ferryman failed to deliver the contracted service, namely, to transport the mare. But the plaintiff did not have a sealed deed, making it costly and difficult to prove the existence of the contract. So the plaintiff's lawyer abandoned the usual way of dealing with a breach of contract - Debt or Covenant. Instead, they decided to sue for the damage the plaintiff suffered as a result of the transaction. This led to the use of the writ of Trespass, which the judges allowed. The term assumpsit was first used in a case in 1373. An assumpsit is interpreted as an undertaking, in the sense of an assurance (Simpson, 1975, pg 215). The writ of *assumpsit* was an offshoot of the writ of Trespass in that it also dealt with damages caused by the non-performance or mis-performance of a contract. The details of this writ and its use are discussed below. After its introduction in the 14th century, assumpsit went into oblivion for a period, only to reappear in the 16th century when King's Bench started offering assumpsit as the major remedy for contract failure (Teeven, 1990, pg 35).

3.5.3 Assumpsit for Nonfeasance

Using Trespass for breach of contract was a bumpy process. The justices of common law court were not unanimous about its application. The use

3.5. Developments of Contract Law in Early Modern England

of assumpsit for contracts was introduced in three phases: assumpsit for misfeasance, assumpsit for nonfeasance, and assumpsit for money. Misfeasance entails a direct harm caused by the defendant, making it a natural candidate for the writ of Trespass. Less obvious was the use of the writ of assumpsit for nonfeasance, and it took longer to be introduced. According to medieval legal theory, Trespass could not be used if the defendant had not done something to cause the harm. In 1400, in Walton v Brinth, a carpenter had undertaken to build a house but failed to do so. He was sued under the Trespass writ but the court found no liability. The first time Trespass was used to deal with nonfeasance was in the decision of Watkin's Case in 1425 (Simpson, 1975, pg 225-226). The defendant undertook to construct a mill before a fixed date but failed to do so. The plaintiff brought a writ of Trespass. The defendant objected on the ground that Covenant was a more fitting writ in the case. A majority of the court voted in favor of allowing the writ of Trespass. However, the decision was not unanimous. Martin, J. dissented, making a statement now famous in English legal history: "If this action can be held up on these facts, then for every broken covenant in the world one shall have a trespass." Chief Judge Babington upheld the majority view and gave examples of possible cases where nonfeasance could lead to damage, for example, flood damage caused by failure to repair a ditch (Teeven, 1990, pg 31).

The first case to allow *assumpsit* for nonfeasance was *Orwell v. Mortoft* in 1505. A buyer had paid for a load of barley, then sued the seller for not delivering. The court allowed *assumpsit* for nonfeasance to act as a remedy for an informal covenant. However, the plaintiff in this case could have availed the writ of Covenant, the more conventional writ for contract enforcement, since there was a pre-payment. This view was reflected in a judge's remark in 1505 about a hypothetical situation: "If I covenant with a carpenter to make me a house, and he does not make it by that day, now I have a good action on my case because of the payment of my money, and yet it sounds only in covenant; and without payment of money in this case, no remedy."

3.5. Developments of Contract Law in Early Modern England

Cases of nonfeasance were relatively rare in the early 16th century. The volume of cases increased considerably only from the mid-16th century (Milsom, 1981, pg 333). Nevertheless, the use of assumpsit for nonfeasance changed the language of legal formulation. This was evident in *Pickering* Thoroughgood (1533), a case involving sale of malt with part advance payment, where the seller failed to supply. The traditional remedy for such a case would be the Debt writ. The plaintiff chose to use assumpsit instead. Because of this choice, the language of the case was formulated differently from a typical Debt case. The plaintiff alleged that the defendant had "bargained and sold to the plaintiff forty quarters of malt . . . and assumed and promised to deliver it accordingly." The plaintiff did not sue for the recovery of the malt and the value of the malt. Instead, he alleged higher damages. since he had been forced to buy the malt in the market at a higher price. The price of the malt was 11 6s. and 8d, whereas the damage claimed was 20. The plaintiff won the case. However, the defendant's main defense was that the writ of Debt was applicable to the case, and that the allowance of assumpsit would amount to overlapping of writs, which was not allowed under the medieval legal tradition (Simpson, 1975, pg 289).

3.5.4 Assumpsit for Money

The next logical step in the development of legal innovations was the use of assumpsit for money, termed indebitatus assumpsit. The earlier use of assumpsit involved cases concerning non-performance or mal-performance. This means that at its early stage, the writ of assumpsit provided remedy for people who paid money but did not get the work done properly. In the next stage of development, assumpsit was used to recover unpaid money. But this meant that assumpsit encroached on the area covered by the Debt writ. The use of assumpsit for unpaid money shifted focus to the damage caused by the non-payment. In order to bypass the rigorous requirements to prove the existence of a contract, this clause focused on the breach of promise. The first example of such a clause occurs in the plea rolls of King's Bench in 1530. But it was only after 1540 that use of this count became popular (Ibbetson, 1982).

The requirements associated with the Debt writ created hardship for plaintiffs. The provision of the wager of law was one which I described earlier. That provision worked well in a small, closed society, where false testimony could bring a costly social sanction upon the oath helpers. But in the more heterogeneous society of early modern England, this provision proved to be an easy escape route for defaulters. Because of this problem, plaintiffs and their lawyers were keen to sue borrowers under *assumpsit* in cases where sealed documents did not exist. This again created the problem of overlap, because, under the common law tradition, other writs could not be used where the Debt writ (or any other conventional writ) existed. This became an issue of contention between the King's Bench and the court of Common Pleas, an issue which is detailed in the next section.

3.5.5 The Principles of Legal Innovations

The development of contract law during the 16th century centered on the legal enforceability of promises. In the medieval legal tradition, the definition of contract was based on bilateral agreement. Under the tradition, it was difficult to prove the existence of a contract without a sealed deed, and a contract was most enforceable when a sealed deed existed. But during the early modern period, it became more costly to acquire a sealed deed. Most contracts were made between traders, on the fly. In the absence of a sealed deed it was easy for a defendant to signal innocence, mainly because of the provision of the *wager of law*. The introduction of *assumpsit* freed plaintiffs of this problem, as it radically changed the notion of contract by making promises enforceable.

Once promises were enforceable, there was a need to differentiate between general and contractual promises. A philanthropic promise, for example, should not be legally enforceable. The developments described in the last section can be seen as attempts to avoid the pooling equilibrium where the cost of signaling is too low for both guilty and innocent defendants. Those legal innovations freed plaintiffs from the impractical requirements of bringing evidence. In a sense, the courts were enforcing non-formal contracts or promises to perform certain things. But then plaintiffs could come up with *cheap talk complaints* not backed by any objective evidence. If that were allowed, the system could end up in the other pooling equilibrium, where both types of defendants would find it too difficult to signal innocence. That risk gave rise to the doctrine of consideration. Consideration can be loosely interpreted as the material motivation behind making a promise. It made a promise binding. Hence, when *assumpsit* was used to enforce informal contracts such as promises, consideration became extremely important. For example, if person X promised to pay carpenter Y some money in consideration of a table that Y would make, then the table became the consideration behind this promise, and the promise would then be legally binding.

The idea of *consideration* is similar to the doctrine of quid pro quo. But quid pro quo was particularly problematic in cases involving a third party, where the person who promised to pay was not the beneficiary. The notional similarity of quid pro quo and consideration often created problems. Problems arose when assumpsit was used to recover debt. If a seller of some goods sues for payment, then the goods are the natural consideration for the buyer's promise to pay the money. But in this way, consideration overlapped with quid pro quo. This would suggest that the Debt writ was available and, if so, then under the traditional view, assumpsit could not be allowed. However, after Slade's Case in 1602, assumpsit was allowed even when Debt was available. This change, which resulted from competition between the royal courts, is discussed below. The earliest example of consideration being linked with assumpsit in law reports can be found in 1557 (*Joscelin v. Shelton*)(Simpson, 1975, pp 318). From around 1560, the clause of consideration started to appear regularly.

3.6 Competition between Royal Courts

Improvements in the English common law system were not the result of interventions by some legal authority in order to maximize social welfare. Instead, they came through the competition between two royal courts: Common Pleas and King's Bench. This section provides a brief account of the legal battle that led to the developments detailed in the last section. Why is this piece of history important in this study? Because it shows that the legal innovations resulted from courts competing for more cases. This increase in the volume of cases implies that an increase in social heterogeneity, and the resulting increase in the size of the potential market for litigation, prompted legal development, rather than the other way round-better legal institutions attracting traders from different communities increasing the social heterogeneity.

In this section, I provide a brief account of the royal system of justice in England. In early 12th-century England, we find mention of two royal courts: the court of the King in the Exchequer, and the court of the King in the Eyers (Teeven, 1990, pg 1-2). The court in the Eyres would go out on the circuit at least every seven years to deal with financial rights of the crown, as well as with the disputes of private subjects - disputes known as the "common pleas". Because of the irregularity and inconvenience of the moving courts, a fixed court was established to deal with common pleas in 1178. This later became known as the court of Common Pleas. The King's Bench was of much older origin. It can be traced back to the royal court where the king himself would adjudicate cases of great importance, and those which were directly related to the king. However, this court, termed coram rege, did not have any formal organization until the 13th century. The formalized King's Bench came into being in 1234 during the rule of Henry III. Initially, the scope of King's Bench was limited but later it was extended to deal with a greater variety of cases (Turner, 1977).

3.6. Competition between Royal Courts

Common Pleas had a monopoly over Debt disputes. King's Bench had no jurisdiction over Debt cases and therefore was keen to use the writ of assumpsit for judging Debt cases. Assumpsit, as discussed earlier, proved to be somewhat more effective in judging Debt cases. Consequently, both of the central courts were accepting cases using the writ of *assumpsit*. But Common Pleas was particular about the formulation of the writ so that it did not overlap with the writ of Debt; there was a clear attempt to show that a case involved something more than the scope of the Debt writ. Common Pleas did not want to lose the newly emerging market for contractual remedies by not granting aassumpsit at all. But at the same time, it did not want to loose its monopoly over Debt by indiscriminately allowing assumpsit. King's Bench, on the other hand, was keen to exploit this opportunity, and by the end of the 16th century, it was overtly allowing the assumpsit writ even in straightforward cases of Debt (Milsom, 1981, pg 348). This more permissive approach increased the pressure on the court of Common Pleas.

However, the progress of King's Bench was not smooth either. In 1585, Exchequer Chamber was established to review decisions of King's Bench. Exchequer Chamber twice reversed decisions to allow assumpsit in lieu of Debt: in 1595 and in 1596. But King's Bench continued to allow assumpsit. Then Slade's Case came to Common Pleas in 1602. The plaintiff, John Slade, sold some crop to the defendant, Humfrey Morley, who promised but did not pay 16. John Slade claimed that his total damage amounted to 40 and filed lawsuit in King's Bench. Initially, King's Bench allowed assumpsit. Eventually, because of its controversial nature, the case was heard by a group of judges from both King's Bench and Common Pleas. Finally, Common Pleas allowed the use of assumpsit in lieu of Debt (Teeven, 1990, pg 45). In figure 1, I present the time series of legal development in the sixteenth century England.

In this section, I discussed the outlines of the analytical structure of the learning process by the formal courts. Litigations were interpreted as sig-



Figure 3.1: Time series of legal developments

naling games where the judicial authorities establish the requirements for the signals people need to send in order to prove their innocence. As the costs of sending signals change with time, the court needs to choose different signaling requirements in order to avoid the pooling equilibria. I then discussed the legal improvements that took place in early modern England, and mapped those changes to the analytical structure. In the next section, I discuss the proceedings of an informal court, and distinguish its mechanism of learning from that of the formal court.

3.7 Informal Institutions: The Court of the Mercer's Company

In this section, I focus on learning by informal institutions. Informal institutions are commonly enforced by community-level organizations, such as guilds. We have well preserved records from the guilds of late medieval England, and in this section I examine learning by one guild's court - the court of Mercers' Company - between 1473 and 1526. This period coincides with the beginning of my period of interest, the 16th to 18th centuries.

Mercers, the producers of woolen cloth, were one of the most politically influential groups in late medieval England. In this paper, I look mainly at the dispute-resolution mechanism of the guild's court. Detailed accounts of the proceedings of the Mercers' guild were published in the book "Acts of the Court of the Mercers' Company" (ACMC) (Lyell, 1936). The book covers a period of 74 years, 1453-1527, and includes 39 entries for disputes - 37 between mercers, and just two between a mercer and parties belonging to another profession. This record supports the notion that people who are far from the community's cultural core do not go to the community court. Informal courts were in direct competition with the formal courts, and I have already illustrated cases where the guilds issued directives to their members against going to the formal courts. Mercers' Company was no exception (ACMC, pg 43-44) But even though the guild was against the idea of mercers going to the formal courts against fellow mercers, in order to preserve communal harmony, it encouraged its members to go to the formal courts against other professionals (ACMC, pg 44).

Most of the cases that came to the Mercers' court between 1473 and 1526 were contractual; only 15 percent were non-contractual. Less than 1 percent involved land disputes. The average value of the contracts involved in the disputes was 38, a large amount considering that the daily wage of a craftsman in 1500 was 3.5 pence. The rhetoric of court language always upheld communal harmony and the sense of brotherhood among members. There are many instances in the court records where the parties agreed to accept one or two guild officials as arbitrators. Clearly, then, the arbitrators' personal identities and their social proximity to the litigants played an important role in the judgment process. And the importance of the litigants' social identity in the adjudication process also indicates the importance of personal information in the adjudication process. Some names appear in the court records more than once. For example, mercers John Shelly and William Pratt were brought to the Mercers' court in 1458 (ACMC, pg 60). John Shelley broke the head of William Pratt because William defaulted on a promise to pay money. In 1475, John Shelley's name appeared in the court records again when his brother Thomas Shelley complained against him. John Shelly went to the royal court against his brother without the guild's

permission and had him arrested. John Shelley was found guilty and fined 10. Interestingly, Thomas Shelley was also fined 5 for verbal abuse(ACMC, pg 85)

Comparing records from the Mercers' court with those from the court of Common Pleas reveals the difference in the pattern of learning. For a typical entry in the Mercers' court, I look at a case in 1523 between John Burton and Hugh Clopton (ACMC, pg 568). Burton loaned 100 to Clopton. When the promised date of repayment passed, Burton complained to the Mercers' court. It turned out that Burton and others had persuaded Clopton to undertake the responsibility of the orphans of a late alderman of London, Nicholas Shelton. The value of this undertaking was 520. Clopton promised to pay Burton his 100 as soon as Burton would free him from the responsibility of these orphans.

The clerks of the Mercers' court documented the final findings and the verdicts, but did not mention any of the evidence presented before the court. Nor did they mention any legal principle used for adjudicating the case. This superficial record is not exceptional - all the cases reported in the book are similar. The fact that the Mercers' court did not record the evidence suggests that it had full information about the cost of signaling, obtained through the community-level network.

Conversely, common law courts recorded all the evidence and arguments of the counsels. These details can be found in the Year Books and contemporary legal reports. One such report surviving from the 16th century is the "Reports of cases by John Caryll", which was compiled by John Caryll circa 1523. I discuss one sample case from this report (Baker, 1998) in which one party was a mercer. The case appeared in Common Pleas in the Hilary term (i.e., between January and April), 1505. The defendants were William Dyne, a mercer, and his wife, from London. The plaintiff was Thomas Langstone from Stowe, Buckingham. Langstone complained that the defendants were withholding 46 from him. The report consists of the details of the case. The main arguments of the counsels of both sides are presented in the report. The report also records the discussion between Justice Vavasour and Chief Justice Frowyk. All this was standard procedure for documenting legal proceedings. Detailed reports such as this made an important contribution to the process of learning by formal institutions.

The legal process was lengthier in common law courts than in the guild courts. The case just mentioned, for example, started between January and April, and ended in Autumn. The legal process consisted of multiple hearings - standard procedure in the common law courts. Compared to this process, guild courts were much faster. In the records of the Mercers' court covering 50 years, there were only two instances where a case had a follow up. Lengthy legal process implies higher costs of litigation for litigants going to the formal courts. However, this lengthy procedure entailed documentation which facilitated learning in the long run.

Informal courts provide faster and more cost-effective services than their formal counterparts when the society is closed. This is because in a closed society, informal courts can access information about individuals through community networks. Because of this access to information about individuals, informal courts can deliver verdicts quickly. This celerity, however, implies a weak learning mechanism on the part of the informal courts. Formal courts, in contrast, cannot rely on community networks for information processing. Consequently, formal courts typically depend on a lengthy legal process. In the short run, this lengthier process implies higher costs for the litigants. But in the long run, the additional process creates greater learning opportunities for the formal court.

3.8 Concluding Remarks

This chapter proposes the rudiments of an analytical framework to understand how formal legal institutions learn. Lawsuits can be treated as signaling games, where litigants try to signal their innocence. Court authorities establish the standard of proof in such a way that cases end up in

3.8. Concluding Remarks

a separating equilibrium - that is, where signals sent by the innocent cannot be mimicked by the guilty. However, the costs associated with different signals changed over time. As a result, legal authorities had to learn about the changes in signaling cost, and update the set of admissible evidence.

I argue that informal courts had an advantage when the society was small and cohesive. This is because informal courts have better information about community members. However, informal courts had a cultural belief that each litigant should be seen as a separate entity, and this belief prevented informal courts from coming up with a general legal formula. This belief also limited the scope of learning by the informal courts. Formal courts, on the other hand, had a disadvantage in the short run, because they did not have personal information. But they did better when the environment became more complex and heterogeneous, because they developed a better learning mechanism. This point is illustrated in the current chapter by looking at evidence from court records from both formal and informal courts in early modern England.

The chapter details the evidence from the history of early modern England that lends support to the model to be presented in the next chapter. To be precise, this chapter finds the following:

- Social heterogeneity increased in early modern England following the rural-urban and continental migration.
- Community based institutions went into decline during the same time.
- Formal contract laws went through some significant improvements.

The next chapter presents an analytical model which describes the impact of improvements in legal institutions on the volume of litigation. The prediction of the model can be tested using data from early modern England. In the second section of the next chapter, I test the prediction of the model using archival data.

Chapter 4

Improvements in Legal Institutions and Volume of Litigation

4.1 Motivation

Economic development is characterized by expansion of the interpersonal trade, which requires institutions for contract enforcement. Such institutions can be formal or informal. Under informal institutions, the scope of trade is limited by the community identities of the traders. For this reason, in order to sustain trade at a greater scale, societies need to develop formal institutions that can enforce contracts between strangers. Throughout history, some societies developed formal institutions while others did not. This chapter analyzes the process of transition from informal to formal institutions.

In the last chapter, I showed that social heterogeneity increased considerably in early modern England, reducing the effectiveness of informal institutions. At the same time, formal institutions improved. This chapter presents a model explaining how an increase in social heterogeneity can reduce the effectiveness of informal institutions, leading to more cases brought to formal courts. It also presents a model of the effect of institutional improvements on the volume of litigation, and tests the results using archival data.

4.1. Motivation

There is a consensus among scholars that differences in the quality of institutions explain a large part of the income differential between countries (Rajan and Zingales, 1998; Acemoglu et al., 2001; Rodrik et al., 2004). Therefore, this analysis contributes to the understanding of the process of economic development. A significant segment of the literature argues that social heterogeneity, measured in terms of ethnic fractionalization, adversely affects the institutions that distribute public goods (Easterly and Levine, 1997; Alesina et al., 1999). This chapter goes against this conventional wisdom, and shows that social heterogeneity can be instrumental in the development of formal institutions.

This chapter analyzes the transition from informal to formal institutions, in relation to two broad strands of literature: theoretical papers analyzing the general mechanisms of formal and informal institutions; and papers analyzing specific community-based institutions. Kandori (1992) developed a theoretical model to explain how the social sanction mechanism can sustain cooperation. The papers by Francois and Zabojnic (2005), Dixit (2004) and Tabellini (2008) also take a theoretical approach, analyzing the interaction between rule-based enforcement and relation-based enforcement (or norms). Their definition of relation-based enforcement is close to the definition of informal institutions in this thesis. (The difference between the definitions was discussed in chapter two.)

This chapter looks at historical data from early modern England to support the results of the model, an approach akin to the papers analyzing the mechanisms of specific community-based institutions. Deb (2007) provides a theoretical model for a general analysis of the community responsibility system. A significant number of the papers which look at specific communitybased institutions focus on medieval Europe (Greif, 1993; Greif et al., 1994; Greif, 2004; Slivinski and Sussman, 2009). In a similar paper, the persistence of the caste system in India is explained as an effective mechanism for contract enforcement (Freitas, 2006). This chapter can also be read in the context of papers which explain the workings of community-based institu-

4.1. Motivation

tions in developing countries (Ghatak, 1991; Besley et al., 1993; Munshi and Rosenzweig, 2006). And this chapter's reference to the English legal system also links it to literature analyzing the evolution of the common law system (Rubin, 1977; Goodman, 1978; Gennaioli and Shleifer, 2007).

Another closely related section of the theoretical literature deals with the evolution of norms and how that evolution can be affected by institutions and policy decisions (Francois and Zabojnic, 2005; Francois, 2008; Tabellini, 2008). Using theoretical models, the authors show how norms evolve in a country following technological or institutional changes. Another body of scholarly work looks at the same question in the context of pre-industrial England. Mccloskey (2006); Clark (2007); Mokyr (2010) show how a different set of norms developed in England in the 18th century as people became more gentlemanly and more law abiding. They claim that England's success in the 19th century was not only the result of better technology and institutions, but was also due to the development of norms compatible with an industrial society. This chapter links these strands of literature as well.

The previous chapter elaborated on the increase in social heterogeneity in England between the 16th and 18th centuries. It also provided some evidence for how that change weakened community ties, and subsequently informal institutions as well. As trading involved dealing with more and more strangers, people started using common law courts more often than before. Economic transactions also changed, as more dynamic contractual relations between traders gradually replaced the traditional transactions in land, and the hierarchical contracts between lords and their serfs. As a result, the formal courts faced new challenges, and responded by making improvements. The main developments in contract laws related to changes in the types of evidence that could be admitted as a proof of contract. In the medieval legal tradition, contracts without sealed and properly signed contract papers were difficult to enforce. But the nature of business transactions in early modern England was such that getting sealed deeds was prohibitively costly. In the last chapter, improvements in contract laws in early modern England were discussed in detail. The "Provision of Oxford" in 1258 made it difficult to change the existing laws. For this reason, the improvements mostly took the form of reinterpreting existing legal provisions. The improvements in legal standards in England between 1500-1700 led to better contract enforcement. As chapter three showed, better enforcement meant a higher probability of conviction when a broken contract was brought to the formal court. In this chapter, I develop a model to look at the impact of the improvement in the quality of institutions on the volume of litigation. I then show that the archival data lends support to the theoretical results.

This chapter is arranged as follows. Section 2 presents a settlementlitigation game between a borrower and a lender, showing that as the quality of institutions goes up, the volume of litigation first rises, and then declines. Section 3 illustrates, with archival data from early modern England, that the volume of litigation showed a similar pattern in the period 1500-1700. The last section discusses several hypotheses that can alternatively explain the inverted U-shaped litigation curve. I find that none of the alternatives clearly generates the curve.

4.2 Model

4.2.1 The Stage Game

Each period, a stage game is played consisting of three main substages: lending, repayment (or default) and litigation in case of default. The quality of institutions improve over time, and the same stage game is repeated in different time periods under different levels of institutional quality. Hence, at period t, the stage game is played with the institutional quality θ_t and $\theta_{t+1} \ge$ θ_t . In this section, I assume that formal court is the only forum for resolving disputes. In the next section, the choice of jurisdiction is incorporated into the model.

In order to generate litigation in equilibrium, there must be some information asymmetry between the litigants. Otherwise, they will always settle

4.2. Model

out of court, provided they have a mechanism to enforce out-of-court settlement. In theory, it is possible to assume any of three forms of information asymmetry: a better informed defendant (Bebchuk, 1984; Nalebuff, 1987), or, the plaintiff is more informed (Reinganum and Wilde, 1986), or, there is a double sided information asymmetry (Schweizer, 1989). All these papers look at tort cases where a defendant causes damage to a plaintiff, and where the litigants have asymmetrical information about the extent of damage. In some cases, the plaintiff has more information about the damage (e.g., imagine a car accident), while in some others the defendant has more information (e.g. imagine an oil company spilling oil into the sea).

This chapter analyzes debt litigation cases, in which there is unlikely to be any information asymmetry over the extent of damage. Instead, I assume that there is information asymmetry over the merits of the evidence. A more general set up should entail double-sided information asymmetry, with each party knowing the quality of their own evidence, but not that of their opponent. However, Schweizer (1989) assumes that each litigant can face a good or a bad state, and that they have information asymmetry over the realization of the states. The model does not yield closed form solution which can be used to generate testable implications. Therefore, the model proposed by Schweizer (1989) can not be used in this case. I assume onesided asymmetry where the plaintiff knows about the quality of the evidence and the merits of the case but the defendant does not. Can this assumption be justified? The plaintiffs bear the risk in a credit contract, in the sense that they stand to lose if the borrower defaults on the loan. The plaintiff bears the burden of proof too, and is the one who makes sure that the contract is properly signed, that legal procedures are properly observed, that there is a witness to the contract, etc. Thus, it is realistic to assume that the plaintiff has better information about the quality of evidence.

I assume that an index of the merit of the case can be constructed, and that is denoted by σ : a higher σ case has higher chance of winning in the court for the plaintiff. I assume that the plaintiff knows the merit of the case, (i.e the value of σ) while the defendant only knows the distribution of $\sigma = F(\sigma)$.

The first part of my model is a settlement-litigation game which closely follows Reinganum and Wilde (1986), who also assume a better informed plaintiff. However, Reinganum and Wilde pursued a different research question. They showed how the allocation of litigation costs between plaintiff and defendant affects settlement decisions. In their analysis, the quality of institutions is fixed, whereas my analysis aims to study the impact of institutional improvement on litigants' behavior. The litigation settlement game is played in the following sequence:

Timing:

- 1. One lender is matched with a borrower and lending takes place.
- 2. The lender observes σ the merit of an eventual case in court.
- 3. The borrower uses the borrowed fund and his effort (E) on a project.
- 4. The project has two possible outcomes: the success or the failure. Probability of success is E. Ex-post, the success and the failure are observed by both the borrower and the lender.
- 5. If success, the borrower returns the money and gets a profit = M
- 6. If failure, the project produces 0 return and the borrower does not return the money.
- 7. Then the lender offers a settlement demand S based on the observed value of σ . If the borrower accepts that, the game ends there, if not then it goes to the next stage.
- 8. If the borrower rejects the settlement offer the lender files a lawsuit. If the lender wins he gets R and if he loses he gets nothing.

The model is solved in a backwards fashion, so the settlement-litigation game is solved first. The litigation game under the formal and the informal systems is almost the same except for some cost terms which do not appear in the game under the informal system. For this reason, I solve a general game, and treat the informal system as a special case of the game.

Litigation-settlement game

The probability of conviction is given by $\theta_m \sigma$, where θ_m is the quality of institution, m = I, F. This assumption implies that plaintiffs with higher σ enjoys higher probability of winning. θ_m characterizes the power of the court to enforce contracts, and is exogenously given to the litigants.

The expected return for the plaintiff with evidence quality σ in the event of litigation is $\theta_m \sigma R - c_p$, where c_p is the cost of litigation for the plaintiff. If the plaintiff's settlement demand is accepted then the plaintiff gets S. On the other hand, expected payoff of the defendant is $-\theta_m \sigma R - c_d$ in case of litigation and -S under settlement. Again, c_d is the cost of litigation for the defendant.

The plaintiff chooses the level of settlement demand. We write this strategy as depending on the plaintiff's private information, $S = s(\sigma)$. It is a function that specifies a settlement demand for each possible level of σ . The defendant chooses whether to accept a settlement demand or not. The probability of rejecting a demand S is denoted $\beta = r(S)$, which is a function of S, and bounded between 0 and 1. The defendant does not know the true $\sigma(\sigma \in [\underline{\sigma}, \overline{\sigma}])$, he must form some belief about the quality of evidence from the settlement demand S. It is assumed that he forms a point belief about true σ on the basis of the settlement demand S. The belief function is defined as $\sigma^e = b(S)$, which assigns a unique type of plaintiff (i.e. a unique quality of evidence) (σ) to each settlement demand. Given the belief function, the expected payoff for the defendant is,

$$V_D = \beta(-\theta_m b(S)R - c_d) + (1 - \beta)(-S)$$
(4.1)

60

Expected pay off for plaintiff with evidence quality σ is

$$V_P = r(S)(\theta_m \sigma R - c_p) + (1 - r(S))S \tag{4.2}$$

The necessary and sufficient condition for a separating equilibrium to exist is characterized by a triple (b^*, r^*, s^*) if

- 1. Given the beliefs b^* , the probability of rejection r^* maximizes the defendants expected wealth.
- 2. Given r^* , s^* maximizes the plaintiff's expected wealth, and
- 3. The belief is correct, $b^*(s^*(\sigma)) = \sigma$

The model in Reinganum and Wilde (1986) yields an equilibrium probability of litigation. The probability of litigation is derived below by solving the game. In the next section, that probability is plugged in the general model I develop in this paper to analyze the transition from informal to formal institutions.

Next, a candidate for a separating equilibrium is constructed following Reinganum and Wilde (1986). Consider first the decision problem facing the defendant. Clearly, V_D is differentiable and concave in the defendant's decision variable β . Differentiating V_D with respect to β yields the following first order condition

$$\frac{\partial V_D}{\partial \beta} = -\theta_m b(S)R - c_d + S \tag{4.3}$$

If $S > \theta_m b(S)R + c_d$ then $r^*(S) = 1$. If $S < \theta_m b(S)R + c_d$ then $r^*(S) = 0$. If this is 0 then the defendant is indifferent between litigation and settlement. Consider an interior solution in which $r^*(S) \in (0,1)$. Then $s^*(\sigma)$ must satisfy $\frac{\partial V_D}{\partial \beta} = 0$. After incorporating the consistency condition $b(S) = \sigma$, the condition $\frac{\partial V_D}{\partial \beta} = 0$ yields,

$$s^*(\sigma) = \theta_m \sigma R + c_d \tag{4.4}$$

61

4.2. Model

But settlement demand must maximize the plaintiff's expected pay off. Hence, if $r^*(S)$ is differentiable then $s^*(\sigma)$ must solve

$$\frac{\partial V_P}{\partial S} = r^{*\prime}(S)(\theta_m \sigma R - c_p - S) + 1 - r^*(S) = 0 \tag{4.5}$$

Combining (4) and (5) yields a first order differential equation.

$$-r'(S).C + 1 - r(S) = 0 (4.6)$$

where $C = c_p + c_d$. Solution to this equation yields $r(S) = 1 - \gamma e^{-S/C}$. A boundary condition is imposed which states $r(\underline{S}) = 0$, where $\underline{S} = s^*(\underline{\sigma}) = \theta_m \underline{\sigma} R + c_d$ is the settlement that would be demanded by the plaintiff with the worst possible quality of evidence ($\underline{\sigma}$). For example, consider the case where there was no written contract or third party witness of the contract. Then the testimony of the plaintiff is the only evidence that can be produced before the court. The condition implies that if the plaintiff makes an offer based on such evidence, then the defendant always rejects the demand, and the case ends up in the court. This makes the probability of rejection function,

$$r(S) = 1 - e^{(\underline{S} - S)/C} = 1 - e^{-\theta_m R(\sigma - \underline{\sigma})/C}$$
(4.7)

Reinganum and Wilde (1986) proved that the following triple (b^*, r^*, s^*) is the unique separating equilibrium: define $\overline{S} = \theta_m \overline{\sigma} R + c_d$ and $\underline{S} = \theta_m \underline{\sigma} R + c_d$. Then we have,

(a) $r^*(s) = 1$ for $S > \overline{S}$; $r(S) = 1 - e^{(\underline{S} - S)/C}$ for $S \in [\underline{S}, \overline{S}]$ and $r^*(s) = 0$ for $S < \underline{S}$;

$$(b)s^*(\sigma) = \theta_m \sigma R + c_d \text{ for } \sigma \in [\underline{\sigma}, \overline{\sigma}]$$

 $(c)b^*(S) = \overline{\sigma} \text{ for } S \geq \overline{S}; b^*(S) = (S - c_d)/\theta_m \text{ for } S \in [\underline{S}, \overline{S}]; and b^*(S) = \underline{\sigma}$ for $S < \underline{S}$

They showed that there is a unique equivalence class of separating equilibria, in which out of the equilibrium belief may differ, but the policies $r^*(.)$
and s^* are the same as described above.

Effort Decision by the Borrower

From this subsection onwards the model incorporates the decision problems and comparative statics which were not considered in Reinganum and Wilde (1986). Results from the last section are plugged into this general model.

Consider the borrower's decision. After funds have been borrowed, the borrower decides on the level of effort to exert. That level of effort determines the probability of success for the project. If successful, the borrower gets M. If unsuccessful, the litigation game starts. In the equilibrium characterized in the previous section, the borrower is indifferent between litigation and settlement, and thus mixes over these two strategies, putting strictly positive probability on each. He pays $\theta_m \sigma R$ if matched with a plaintiff with the evidence quality σ . But when the borrower takes the effort decision the true σ is not known. Since the value function is linear in the payoff, all the borrower cares about is maximizing the expected value of the payoff. The value of this σ is independent of his effort decision. Consequently, we can consider the average level of evidence quality σ (denoted by μ) that the borrower would expect to face in the trial game. Hence, he expects that if the game goes to trial he would pay $\theta_m \mu R$. The cost of effort is given by $\frac{E^2}{2}$.

$$EM + (1-E)(-\theta_m \mu R) - \frac{E^2}{2}$$
(4.8)

The first order condition yields,

$$E^* = M + \theta_m \mu R \tag{4.9}$$

From this we get the probability of failure $1 - M - \theta_m \mu R$. Hence, as θ_m increases probability of failure falls. But the increase in θ_m has positive effect on the probability of litigation upon default.

4.2.2 Improvements in Institutions and Likelihood of Litigation

The game detailed in the previous section is played within each period. But as shown in the last chapter, the quality of institutions improves over time. This section shows how the improvements make an impact on litigation. The probability of litigation is a product of the probability of failure, and the probability of litigation given failure:

$$\Pi = (1 - M - \theta_m \mu R) \int_{\underline{\sigma}}^{\overline{\sigma}} (1 - e^{-\theta_m \frac{R}{C}(\sigma - \underline{\sigma})} f(\sigma) d\sigma$$
(4.10)

where the probability of failure is given by $(1 - M - \theta_m \mu R)$ and the probability of litigation given failure is given by $\int_{\underline{\sigma}}^{\overline{\sigma}} (1 - e^{-\theta_m \frac{R}{C}(\sigma - \underline{\sigma})} f(\sigma) d\sigma)$. Without the loss of generality it can be assumed that $\underline{\sigma} = 0$ and $\overline{\sigma} = 1$. Define $\alpha = \int_0^1 (1 - e^{-(\theta_m R \sigma/C)}) f(\sigma) d\sigma$ and $\eta = (1 - M - \theta_m \mu R)$. Hence $\Pi = \alpha.\eta$. Hence,

$$\frac{\partial \Pi}{\partial \theta_m} = \alpha \frac{\partial \eta}{\partial \theta_m} + \eta \frac{\partial \alpha}{\partial \theta_m} \tag{4.11}$$

and,

$$\frac{\partial^2 \Pi}{\partial \theta_m^2} = \frac{\partial \alpha}{\partial \theta_m} \frac{\partial \eta}{\partial \theta_m} + \alpha \frac{\partial^2 \eta}{\partial \theta_m^2} + \eta \frac{\partial^2 \alpha}{\partial \theta_m^2} + \frac{\partial \eta}{\partial \theta_m} \frac{\partial \alpha}{\partial \theta_m}$$
(4.12)

Now,

$$\frac{\partial \eta}{\partial \theta_m} = -\mu R < 0 \tag{4.13}$$

and,

$$\frac{\partial^2 \eta}{\partial \theta_m^2} = 0 \tag{4.14}$$

$$\frac{\partial \alpha}{\partial \theta_m} = -\int_0^1 (-R\sigma/C) e^{-(\theta_m R\sigma/C)} f(\sigma) d\sigma > 0$$
(4.15)

and,

$$\frac{\partial^2 \alpha}{\partial \theta_m^2} = -\int_0^1 (R^2 \sigma^2 / C^2) e^{-(\theta_m R \sigma / C)} f(\sigma) d\sigma < 0 \tag{4.16}$$

At an interior optimum, expression (11) equals 0. This yields the follow-

ing condition,

$$\alpha(-\mu R) + \eta(\int_0^1 (R\sigma/C)e^{-(\theta_m R\sigma/C)}f(\sigma)d\sigma) = 0$$
(4.17)

It is not possible to obtain a closed form solution without specifying an explicit distribution for sigma. ¹ Clearly, many candidate distributions could be posited here to obtain a solution, but since we have no idea of the precise form of $f(\sigma)$ in reality, we proceed as follows: rather than pinning down a single distribution, we analyze the properties that any interior solution, denoted θ^* ; must possess irrespective of the distribution that is chosen. This allows us to proceed with more generality. Consequently, any interior solution, θ^* , must solve:

$$\int_{0}^{1} (R\sigma/C) e^{-(\theta_m R\sigma/C)} f(\sigma) d\sigma = \frac{\alpha(\mu R)}{\eta}$$
(4.18)

Next, I check the second order condition to show the optimum is a maximum.

$$\frac{d^{2}\Pi}{d\theta_{m}^{2}} = -2\mu R \int_{0}^{1} (R\sigma/C) e^{-(\theta_{m}R\sigma/C)} f(\sigma) d\sigma - \eta \int_{0}^{1} (R^{2}\sigma^{2}/C^{2}) e^{-(\theta_{m}R\sigma/C)} f(\sigma) d\sigma < 0$$
(4.19)

That means probability of litigation curve attains the maximum at $\theta_m = \theta_m^*$ which solves $\frac{d\Pi}{d\theta_m} = 0$. This result yields the first proposition,

Proposition 1 The probability of litigation curve shows an inverted U shape when plotted against the quality of institutions.

The inverted U shape suggests that the probability of litigation increases for low values of θ and decreases for high values. From equation (11), we have seen that $\frac{\partial \Pi}{\partial \theta_m}$ can be decomposed in two parts,

$$\alpha \frac{\partial \eta}{\partial \theta_m} = -\mu R \int_0^1 (1 - e^{-(\theta_m R \sigma/C)}) f(\sigma) d\sigma$$
(4.20)

¹Note that $\theta \in [0, 1]$. At $\theta = 0, \frac{d\Pi}{d\theta_m} > 0$. At $\theta = 1, \frac{d\Pi}{d\theta_m} < 0$ for sufficiently high R and/or M. This ensure that an interior optimum exists

and,

$$\eta \frac{\partial \alpha}{\partial \theta_m} = (1 - M - \theta_m \mu R) \int_0^1 (R\sigma/C) e^{-(\theta_m R\sigma/C)} f(\sigma) d\sigma$$
(4.21)

The first expression is negative and the second one is positive. For low values of θ , the part $\int_0^1 (1 - e^{-(\theta_m R\sigma/C)}) f(\sigma) d\sigma$ assumes low value. This reduces the magnitude of the negative part. On the other hand, the lower values of θ increases both the factors in equation (21), making the positive part stronger. For the higher values of θ the opposite happens. The negative part gets reinforced, while the positive part gets relatively weak. Both these factors results in an inverted U shape.

The probability of litigation curve is shaped by two forces: decreasing probability of failure, and increasing probability of litigation given failure. In order to understand the mechanism more clearly, let us look at the second order condition. The mathematical result suggests that the second factor increases at a decreasing rate. Equation (12) can be rearranged as:

$$\frac{\partial^2 \Pi}{\partial \theta_m^2} = \alpha \frac{\partial^2 \eta}{\partial \theta_m^2} + \eta \frac{\partial^2 \alpha}{\partial \theta_m^2} + 2 \frac{\partial \eta}{\partial \theta_m} \frac{\partial \alpha}{\partial \theta_m}$$
(4.22)

The term $\frac{\partial^2 \Pi}{\partial \theta_m^2}$ is unambiguously negative. There are two forces operating here: the probability of failure (η) and the probability of litigation given failure(α). With an increase in θ , the probability of failure decreases. The intuition for this is easy to understand. The factor η captures the moral hazard problem. As the institutions improve, the borrower faces a greater expected penalty in the event of failure. As a result, the borrower puts more effort into reducing the probability of failure. The second factor, the probability of litigation given failure, derives from the defendant's ability to reject the settlement demand. When the quality of institution goes up, the settlement demand goes up, and the equilibrium strategy of the defendant is such that the probability of rejecting the settlement demand goes up as well. In the next few paragraphs, I explore the reasons behind these strategies. 4.2. Model

Consider the conditions that make the term $\frac{\partial^2 \Pi}{\partial \theta_m^2} < 0$. The probability of failure (η) is linear in θ . This makes the first term in equation (18), $\frac{\partial^2 \eta}{\partial \theta_m^2} = 0$. The second term in the same equation becomes negative because $\frac{\partial^2 \alpha}{\partial \theta_m^2} < 0$. Moreover, the third term is also negative because $\frac{\partial \eta}{\partial \theta_m}$ and $\frac{\partial \alpha}{\partial \theta_m}$ are of opposite signs. I have already outlined the intuition behind $\frac{\partial \eta}{\partial \theta_m} < 0$. Hence, the conditions $\frac{\partial \alpha}{\partial \theta_m} > 0$ and $\frac{\partial^2 \alpha}{\partial \theta_m^2} < 0$ play key roles in determining the sign of $\frac{\partial^2 \Pi}{\partial \theta_m^2}$. The next paragraph details the intuition behind this condition.

The probability of litigation with each particular contract is equal to the probability of rejection of a settlement offer. It turns out that the probability of rejection, as derived in section 2.1.1, increases as the amount of the settlement demand increases. The likelihood of rejection prevents the plaintiff from making an unreasonable demand. The plaintiff makes a higher demand only when circumstances are favorable; that is, only when the quality of institution is adequate, as captured by the probability of conviction. As the quality of institutions improves, settlement demands go up and, as a result, the probability of litigation goes up, but at a decreasing rate. The possibility that a settlement demand might be rejected puts pressure on the plaintiff. In other words, the defendant's ability to reject an offer disciplines the plaintiff and keeps settlement demands in check. This is the intuition for the first order condition. Consider now the intuition behind the second order condition.

The condition $\frac{\partial^2 r^*}{\partial \theta^2} < 0$ implies that $\frac{\partial^2 \alpha}{\partial \theta_m^2} < 0$. This second order condition tells us that when the quality of institutions is low, the magnitude of the resulting increase in the probability of rejection is higher than it is when the quality of institutions is higher. Consider two hypothetical situations. In one θ increases from 0.1 to 0.2, and in the other it increases from 0.8 to 0.9. The first order condition $(\frac{\partial r^*}{\partial \theta} > 0)$ tells us that in both situations, the settlement demand will increase and, consequently, the probability of rejection will also increase. The second order condition tells us that the magnitude of the increase will be greater in the first situation; this can be interpreted as the defendant playing more aggressively. It is possible to think

67

of an underlying behavioral assumption to account for this difference in the magnitude of increase. In the second situation, the court heavily favors the plaintiff, while in the first situation, the defendant has a great advantage in the legal battle. In the baseline of the first scenario, 90 out of 100 verdicts go in favor of the defendant, while in the second scenario, only 20 out of 100 favor the defendant. Consequently, the defendant plays more aggressively in the first situation, knowing that if the settlement breaks down, and the case goes to court, the defendant has a higher chance of winning. Even if the defendant increases the probability of rejection in both situations, the magnitude of the increase is lower in the second one.

4.2.3 Choice of Jurisdiction

In the last section, the agents were not given a choice between the formal or informal courts. But it is important to incorporate that decision into the model. In the previous chapter it was argued that, in the context of early modern England, the fundamental source of exogenous variation was the increase in social heterogeneity which resulted in the movement from informal to formal institutions for resolving disputes. As the formal courts got more cases, they improved following a learning-by-doing mechanism. So the movement from informal to formal was instrumental in improving the quality of the formal courts.

In this section, the model is extended to incorporate the choice of jurisdiction. The fundamental difference between a formal and an informal court was the use of information about the individual litigants. Hence, the quality of the informal court depended on the social positions of the litigants. Next, the model is applied to the same question - the impact of better institutional quality on the volume of litigation. And then the next few paragraphs characterize the informal courts.

The use of information about litigants' personal characteristics for adjudication distinguishes informal institutions from their formal counterparts. The probability of conviction under informal institutions depends on the litigants' personal characteristics. These characteristics can be summarized as social distance from the community core, an idea which warrants more discussion.

Informal institutions in early modern England were often run by groups of individuals who enjoyed good reputations within the community. These people represented the cultural core of the community and upheld the communities' cultural values. Priests played this role in the church. In the realm of guilds and merchant law, courts empowered merchants to play this role. The quality of adjudication crucially depended on the cultural distance between the litigants and the adjudicators. In cases where the cultural distance was large, adjudicators would posses less information about the litigants and their dispute. In order to mitigate this problem, the courts of Law Merchants would appoint judges who were culturally close to the litigants. It has already been mentioned in chapter three that when litigation involved foreign merchants, juries would include two foreigns merchants, one from the north and the other from the south (Holdsworth, 1907). To measure the social distance between an individual litigant and the cultural core, one needs to specify the social coordinates of the people at the core as well as those of the litigants. Several variables can act as proxies for social distances. An important section of the literature uses genetic distances as a proxy for differences in culture, habits, customs and conventions across regions, and tries to find the impact of such differences on economic outcomes (Guiso et al., 2004; Giuliano et al., 2006; Spolaore and Wacziarg, 2009). Genetic distance can be thought as a proxy for social distance, as well. However, measuring social distance in the context of early modern England is beyond the scope of this chapter.

The farther an individual is from the community core, informal institutions are in judging a case involving that person. Suppose d_i is the social distance of person i from the core. The probability of conviction in a litigation concerning individuals i and j:

$$\theta_{ij}^I = f(d_i, d_j) \tag{4.23}$$

In this model, θ^{I} is defined as the quality of informal institutions. Because θ^{I} is a probability, it must be the case that $0 < \theta^{I} < 1$. Moreover, $f_{i}, f_{j} < 0$. It does not matter whether *i* is plaintiff or defendant– it is not the case that informal courts are biased against those who are far from the community core. The assumption simply means that the closer the litigants are to the core, the greater the amount of information the judges have about them and, consequently, the higher the probability of conviction. Therefore, plaintiffs who are close to the community core prefer the informal over the formal courts, whereas defendants who are closer to the community core prefer the formal courts.

I assume that before a contract is made, the lender commits to a specific form of court. There is a cost associated with this decision which prevents the lender from reversing the decision ex post. Next, I specify the commitment devices for both types of courts. For the formal courts, the procedure used to create written contracts served to effect commitment. Common law courts looked for specific types of evidence which could only be secured if specific steps were observed when the contract was created (e.g., procuring a seal on a contract, and writing the contract in a specific syntax). Since those steps were costly, they acted as commitment devices.

Informal institutions in early modern England, on the other hand, were run by communities. Litigations in community court were fast, and almost costless. But community membership was a prerequisite for accessing the court, and membership was costly to maintain. Participation costs in communal ceremonies can be interpreted as the cost of community membership. This expenditure acted as the commitment device for informal institutions. But unlike expenditures in the formal courts, these membership costs were not related to specific contracts. Members had to incur these costs whether

4.2. Model

or not they became parties in litigations. Membership worked as insurance against possible disputes. One of the premiums for this insurance took the form of expenditures for communal ceremonies, which were often fixed amounts set by the communities. I discussed in the previous chapter how craftsmen complained about the burden of these contributions. Hence, in the model presented below I consider these costs to be fixed and denote them by κ .

Plaintiffs do not know the value of the social distance of their business partners (borrower) when making commitment decisions. The process involves risk, since the actual social distance of one's partner can be different from what was expected. Suppose that, ex ante, a plaintiff opts for formal institutions. But expost they find that their partner's social distance is less than expected. As a result, the payoff would be better if the plaintiff could switch to the informal court. The commitment costs associated with each type of court are not infinite. Does a prospective plaintiff have incentive to invest in both types of commitment devices in order to minimize risk? In this model, the plaintiff is risk neutral. Therefore, their evaluation of risk is based on the average social distance, which is the same basis used to make the decision to invest in one type of jurisdiction. Therefore, the plaintiff does not have incentive to invest in both systems given that the cost of commitment is not too small. If it is too small even the risk neutral agent find it worthwhile to invest in both. Here I assume that the cost of commitment is large enough to prevent such diversification. However, the situation could be different if the plaintiff is assumed to be risk averse. Then we may find conditions under which they would find it worthwhile to invest in both types of courts.

The litigation game follows almost the same pattern played under both formal and informal institutions, but the game under the informal system has one extra parameter: the social distance of the litigants. In the formal system, the merits of the case are unknown to the litigants at the stage when they decide on the dispute resolution forum. Under the informal sys4.2. Model

tem, both the merits of the case and the social distance of the borrower are unknown to the plaintiff at that stage. Therefore, the plaintiff chooses the particular dispute resolution forum before knowing the true values of σ and the social distance of the borrowers (d_j) are revealed to him. The plaintiff evaluates and compares both formal and informal forums based on the payoffs available from each. Not knowing the true value of either σ or d_j , he calculates the expected value of the probability of conviction. I assume that θ^I is linear in social distances, and d_j and σ are independent. I also assume that d_j can assume values from an interval $(\underline{d}, \overline{d})$ to make sure that $0 < \theta^I < 1$ is satisfied. However, linearity is just an simplifying assumption. The result derived here is robust to non-linear specifications. Hence, the perceived quality of informal institutions for plaintiff i is given by

$$E[\theta_i^I(d_j)\sigma] = \theta_i^I(\nu)\mu \tag{4.24}$$

where ν is the average social distance, and μ is the average level of the quality of evidence.

If the project is successful, the lender gets R. If not, the lender gets V_P , the expected payoff for a plaintiff. The lender's expected payoff under different types of institutions is given by

$$V_L^m = E_m^* R + (1 - E_m^*) V_P \tag{4.25}$$

where *m* denotes the type of institutions, formal or informal. So, m = I, F. Hence, E_m^* is the effort level chosen by the borrower under institutions type *m*. V_P is the pay off for the lender under litigation, when he becomes the plaintiff. At the time of making the choice of jurisdiction, the plaintiff does not know the type of evidence that will be available. So, they calculate their expected payoff based on the average evidence (μ). This is given by

$$V_P = r(\mu)(\theta_m \mu R - c_p - \widehat{S}) + \widehat{S}$$
(4.26)

where \hat{S} is the settlement demand that the plaintiff with average evidence can get, r is the probability that the defendant will reject the settlement demand, and the dispute will go to court. From (4),

$$\widehat{S} = s^*(\mu) = \theta_m \mu R + c_d \tag{4.27}$$

Hence,

$$V_P = -rC + \theta_m \mu R + c_d \tag{4.28}$$

where $(c_d + c_p) = C$. From (7) I get,

$$r(\mu) = 1 - e^{-\theta_m \mu R/C}$$
(4.29)

Therefore,

$$\frac{\partial r}{\partial \theta_m} = -(-\frac{R\mu}{C})e^{-\theta_m\mu R/C} \tag{4.30}$$

Next, the impact of institutional improvement on the lender's pay off is derived.

$$\frac{\partial V_L}{\partial \theta_m} = \frac{\partial E^*}{\partial \theta_m} (R - V_P) + (1 - E^*) \frac{\partial V_P}{\partial \theta_m}$$
(4.31)

$$\frac{\partial V_P}{\partial \theta_m} = -C \frac{\partial r}{\partial \theta_m} + \mu R = \mu R (1 - e^{-\theta_m \mu R/C})$$
(4.32)

Hence,

$$\frac{\partial V_L}{\partial \theta_m} = \frac{\partial E}{\partial \theta_m} (R - V_P) + (1 - E)\mu R (1 - e^{-\theta_m \mu R/C}) > 0$$
(4.33)

This is true because $\frac{\partial E^*}{\partial \theta} = \mu R > 0$, and $R > V_p$. This has to be true, as the return to the lender from success must be greater than the return from litigation. For this reason, the sign of the expression is positive. The plaintiff is always better off if the judicial system works better.

We have already seen how the lender chooses to commit to a particular dispute resolution forum, and how the commitment to the informal court takes the form of investing in the social network. The lender i decides to

invest in the social network if

$$V_I^i - V_F \ge \kappa \tag{4.34}$$

where κ is the cost of investment in the social network, V_F is the return from using the formal courts, and V_I^i is the return from using the informal system. It is assumed that κ is fixed. Note that the return from informal institutions is specific to the lender *i* while the return from using the formal institutions does not depend on the social distance of the plaintiff. The investments in the social network typically include expenditures for communal ceremonies. The payoff to the lender under a particular institution changes positively with positive changes in the quality of that institution. The quality of informal institutions is given by equation (20), which shows that quality is negatively related to the social distances of each of the litigants. But when the plaintiff chooses to commit to a particular type of court, they do not know the true social distance of the borrower. It is already shown (equation 22) that, ex ante, the plaintiff calculates the average quality of the informal institutions based on the average values of social distance (ν) and evidence quality (μ).

 V_I^i decreases with increase in d_i . Hence, equation (32) implies that, $\exists d_i = \tau^*$ such that the plaintiffs with distances $d_i > \tau^*$ will opt for the formal court. People with distances less than τ^* will opt for informal court. τ^* is solved by solving the following equation

$$V_I^i - \kappa - V_F = 0 \tag{4.35}$$

It is evident that, among other things, τ^* is a function of average social distance ν . Define, $Z = V_I^i - \kappa - V_F$

$$\frac{d(\tau^*)}{d\nu} = -\frac{Z_{\nu}}{Z_{\tau^*}}$$
(4.36)

Now,

$$Z_{\nu} = \frac{\partial V_{I}^{i^{*}}}{\partial \nu} = \frac{\partial V_{I}^{i}}{\partial \theta_{i}^{i}} \cdot \frac{\partial \theta_{i}^{I}}{\partial \nu}$$
(4.37)

Because cost of litigation is negligible in informal courts, $\frac{\partial V_I^i}{\partial \theta_I^i} > 0$ is always true. Moreover, $\frac{\partial \theta_i^I}{\partial \nu} < 0$ Hence, $Z_{\nu} < 0$. For similar reason, Z_{τ^*} is also negative. Hence, $\frac{d\tau^*}{d\nu} < 0$. From this I get the next proposition,

Proposition 2 As the average social distance increases, τ^* goes down, and less people make use of the informal court.

The intuition behind the proposition is straightforward: increasing social heterogeneity adversely affects the quality of the informal institutions. As a result, only people who are relatively closer to the community core use informal courts. The rest use the formal system. But as more people use them, formal courts improve following a learning-by-doing mechanism.

The average social distance (ν) is a measure of social heterogeneity of the society as a whole. But, as social heterogeneity increases and more people leave community courts for formal courts, the people who remain with the communal courts are those who are closer to the community core. The greater concentration of plaintiffs close to the community core in the informal courts increases the relative frequency of conviction. Does the perceived quality (for the plaintiff i) of the informal courts increase in this process? If it does, then the perceived quality should depend on τ^* and the equation used to derive proposition 2 should change as well. However, perceived quality does not matter; in the informal court, the probability of conviction in any given case depends only on the social distances of the litigants. The plaintiff's perception of institutional quality depends on their own and the defendant's distance, and not on the distances of other plaintiffs accessing the court. Defendants are randomly matched with plaintiffs in the lending stage and, therefore, the average distance is a good predictor of the social distance of a potential borrower. The social distances of other

plaintiffs should not affect the calculation of the perceived quality of the informal court.

Now, consider the impact of the improvement in formal institutions on the volume of litigation. In this case, an increase in θ affects both Π and N. At the optimum point,

$$\frac{dN\Pi}{d\theta_m} = \Pi N_\theta + N\Pi_\theta = 0 \tag{4.38}$$

Suppose, $\theta = \theta^{**}$ solves equation (36). Hence, The second derivative is given by,

$$\frac{d^2 N \Pi}{d\theta_m^2} = N \Pi_{\theta\theta} + \Pi N_{\theta\theta} + 2N_{\theta} \Pi_{\theta}$$
(4.39)

From equation (36) I find that at the optimum, $N_{\theta} = -\frac{N\Pi_{\theta}}{\Pi}$. Plugging this condition in equation (37) yields,

$$\frac{d^2 N\Pi}{d\theta_m^2} \bigg|_{\theta_m = \theta^{**}} = -2 \frac{N\Pi_{\theta}^2}{\Pi} + N\Pi_{\theta\theta} + \Pi N_{\theta\theta} (4.40)$$

I have already shown in the last section that $\Pi_{\theta\theta} < 0$. Hence, the sufficient condition for $\frac{d^2 N \Pi}{d\theta_m^2} < 0$ at the optimum is $N_{\theta\theta} \leq 0$. From this, I get the next proposition

Proposition 3 Suppose people can choose between the formal and the informal court. Then the volume of litigation curve shows the inverted U shape when plotted against the quality of institutions if $N_{\theta\theta} \leq 0$

What does the condition $N_{\theta\theta} \leq 0$ mean? It has been already shown that as the quality of the formal institutions improves in relation to the quality of informal institutions, more people move to the formal institutions $(N_{\theta} > 0)$. The condition $N_{\theta\theta} \leq 0$ means that the switch from the informal to the formal institutions happens at a non-increasing rate.

Social heterogeneity in early modern England increased due to rural-urban migration. How is this condition related to the pattern of migration? This

4.3. Empirics

condition holds true if, with an initial improvement in formal institutions, a large number of litigants decides to move to the formal courts and, with subsequent improvements, a relatively smaller number of litigants switch. The model predicted that when the relative quality of the formal institutions improved, people who were at the fringe of the community would be the first to move to the formal institutions. As the quality of formal institutions improves further, people nearer the core start switching to the formal courts. Hence, the condition $N_{\theta\theta} \leq 0$ is true if there is a greater mass of population at the fringe and a relatively smaller mass at the community core. One can imagine that new migrants stay at the condition is true if there is a relatively larger migrant population compared to the number of original residents.

Was the pattern of migration in early modern England consistent with the condition $N_{\theta\theta} \leq 0$? Most of the data in this study come from central courts in London, a city which definitely experienced a pattern of ruralurban migration. London grew rapidly from the middle of the 16th century, its population increasing from 70,000 in 1550 to 400,000 in 1650 (Boulton, 1987, pg 107). The city's growth rate was much higher than England's natural rate of population growth at that time. For this reason, it is safe to infer that the greatest share of the city's increasing population came from people arriving from outside London. It would take time for these migrants to get near the cultural core of the community. With this migration pattern, one would expect to find a big tail and a relatively smaller community core. Therefore, the condition $N_{\theta\theta} \leq 0$ was likely to be true in the context of early modern England.

4.3 Empirics

4.3.1 Litigation Data

In the previous section, the model predicted an inverted U shape for the litigation curve. This section looks at the archival data to see if the

4.3. Empirics

prediction holds true for early modern England. The data come mainly from the central courts in London, as well as from a few borough courts, and cover the period 1500-1700. They consist of primary data which I collected from the National Archives in England, as well as some secondary data from published sources (Muldrew, 1998). In early modern England, there were two central courts in Westminister, London: Common Pleas and King's Bench. Records from the borough courts come from King's Lynn, Bristol, Exeter, Shrewsbury and Great Yearmouth - all important trading centers. The data presented here are consistent with the prediction of the model. The litigation counts show a big increase starting from 1500, which reached a peak and then starting to decline in the 17th century. This pattern existed for all of the courts.



Figure 4.1: Rate of litigation in Central Courts during early modern period



Figure 4.2: Rate of litigation in Borough Courts during early modern period Source: Muldrew (1998)

Figure 1 and figure 2 present the litigation data from Muldrew (1998). They depict the rates of litigation, calculated by dividing the number of court cases by the number of households. For the borough courts, the total number of households within the borough was taken into consideration. For the central courts, the total number of households in England is used as the denominator in the calculation. The total volume data show the same pattern, indicating that the volume of litigation was not just reflecting the population dynamics.

Next, primary data are presented which were collected from the National Archives in London in May and June of 2008. There are two main source materials for studying English legal history: plea rolls and docket rolls. Plea rolls are files containing all the details of the cases brought to Common Pleas

4.3. Empirics

and King's Bench, except for the judgment. Docket rolls were files used when cases entered an advanced (pleading) stage. A short description of the case would be recorded in the roll, typically providing the names of the litigants or their attorneys, along with the place where the dispute took place. One entry in the roll would represent one case. The information contained in docket rolls is brief, but useful for constructing the time series of litigation. The docket rolls are referred to as CP 60 in the National Archives catalog. There are 1,183 rolls covering the period 1509-1859. Almost 90% of them appear between 1509 and 1722, which is the period of interest for this study. Case information was recorded by a court clerk known as a "prothonotary," and docket rolls are often known by the names of the prothonotaries who created them. In the secondary data, the samples were drawn at fifty year intervals. The primary data I collected are at twenty year intervals. Figure 4 shows the absolute volume of litigation. In Figure 5, the litigation volume is divided by the population figure to show that the result is not driven by the population. 2

In the model, the cost of litigation is constant for all locations. However, in reality, one would expect the costs to increase with the distance from the court. In the model, litigants compare the costs of the formal and the informal courts. The court of Common Pleas was in London. The farther a litigant lived from London, the less likely they would be to use the formal court. Litigants from distant places would only go to the central court when the high quality of that court compensated for the higher cost entailed in the distance. Docket rolls record the place where the contract originated. I looked at the number of cases originating from London, and the relative importance of London cases as a fraction of total cases.

 $^{^{2}}$ In our model the quality of the legal process has been equated with the probability of conviction. However available data does not allow us to show if the rate of conviction was indeed rising during this period. Hence, we can only do qualitative analysis of institutional improvement. Also, it is not possible to infer anything about the selection mechanism of the cases i.e. if a particular type of debt cases (or litigants) was coming to the courts



Figure 4.3: Litigations in Common's Plea

Figure 6 shows the absolute number of cases originating from London. Figure 7 presents those numbers as a fraction of the total number of cases brought to the court. Both graphs show a similar pattern. The peak in the total number of cases occurs in the mid 17th century, which is the same as the total litigation curve (Figure 3). Figure 7 depicts an inverted U shape as well, but the peak occurs much earlier than the aggregate data in Figure 6 - around the middle of the 16th century.

How do we interpret these data? The absolute number of litigations originating in London show the same shape as the aggregate figure, with the peak occurring in the mid-17th century. However, the peak for the fraction of cases originating in London occurs around one hundred years earlier. The picture is consistent with the story of institutional improvements. Bringing



Figure 4.4: Rate of Litigations in Common's Plea

a case from a distant place was costly. Consequently, in the 16th century, the court of Common Pleas was dominated by cases originating in London. As the formal system improved, the higher quality of the formal courts began to compensate for the higher cost of bringing a case from outside London. When the quality of the formal institutions became sufficiently high, cases from outside London outnumbered cases originating in London. And from the mid-16th century onwards, cases from London constituted a small fraction of total cases.

We have seen how the aggregate volume of litigation changed in early modern England, but we have yet to analyze the type of litigations and the social rank of the litigants. These two issues are discussed below. The next table presents the type of lawsuits coming to the central courts. The data



Figure 4.5: Total number of Cases originating from London

come from (Brooks, 1986, pg69).

Table 1 shows that the bulk of the cases concerned debt. However, some of the cases under the trespass writ involved assumpsit. So, a significant share of the trespass cases could be debt cases as well. In order to understand the social dynamics of litigation it is important to analyze the social positions of the litigants. During the period 1560-1640, men of the rank of gentleman or above constituted a minority of the litigants: between 25 and 30 percent of all Common Pleas litigants and 20 to 25 percent of all King's Bench litigants (Brooks, 1986, pg 59).

It is also important to take a look at the social ranks of the plaintiffs and the defendants separately, in order to see whether formal courts were used



Figure 4.6: Fraction of Cases originating from London

by a specific class of people. An analysis of the social classes of the litigants in the year 1606 is summarized in table 2 (Brooks, 1986, pg 61). In the table, 'High' refers to people with a rank of gentleman or above, while 'Low' refers to ranks below that of gentleman. The table clearly shows that most of the litigation involved low ranking people. Those who did not engage in physical labor were considered gentleman. However, this definition was not rigorously followed in court documents; litigants who simply claimed to be gentlemen were recorded as such. Even so, only a small fraction of litigants were recorded as having a high rank. Stone (1966) mentions that only 5 to 10 percent of early modern England's population belonged to the higher ranks, which were comprised of the lesser gentry, the county elites and the peers. County elites included squires, knights and baronets, while the peers included barons, viscounts, earls, marquises and dukes. Table 2 shows that

| Table 4.1: | Forms of | action | in the | central | courts, | 1560 - 1640 |
|------------|----------|--------|--------|---------|---------|-------------|
|------------|----------|--------|--------|---------|---------|-------------|

| | 1560 | | 16 | 1606 | | 1640 | |
|------------------|--|------------------|---|-----------------|---|-----------------|--|
| Debt Trespass | $egin{array}{c} { m KB} \\ 19\% \\ 55\% \end{array}$ | CP 67% 16% | $\begin{array}{c} {\rm KB} \\ {\rm 46\%} \\ {\rm 22\%} \end{array}$ | CP 80% 6% | $egin{array}{c} { m KB} \\ { m 80\%} \\ { m 5\%} \end{array}$ | CP 88% 3% | |

KB: King's Bench

CP: Common Pleas

a significant portion of lawsuits (38%) in 1606 were between members of different social classes, suggesting that plaintiffs from one class were not afraid to bring defendants from another class to court.

Table 4.2: Social Analysis of the litigants, Common Pleas, 1606

| | | | Defendants | |
|------------|------|-----------|------------|----------|
| | | High | | Low |
| Plaintiffs | High | 176(12%) | | 227(16%) |
| | Low | 317 (22%) | | 691(49%) |

From this analysis, two important points are worth highlighting. First, an increasingly large majority of the cases brought to the central courts were debt cases. Second, access to the central courts was not limited to any specific social class. The culture of litigation was quite widespread.

Finally, let's take a brief look at the cost involved in the litigation process in the royal courts. Attorney fees were the major component of the cost, amounting to 3s. 4d per term in the seventeenth century. There were also other types of court fees depending on the legal process involved in the case. For example, mesne process (the process of summoning the defendant) in the King's Bench was based on latitat (a legal provision for summoning a litigant to the court). This cost the litigant 4s. 1d.; the sum was divided between the prothonotary (22d.), the judges (4d.), the attorney (20d.), and the seal office(Brooks, 1986, pg 236).

4.4 Alternative Hypotheses about the Litigation Curve

The model of the transition of institutions presented in the previous section predicts an inverted U shape pattern for the volume of litigation when plotted over time. This section deals with several hypotheses that provide alternative explanations for the inverted U shaped litigation curve. These alternatives can be divided into three categories: economic, procedural, and cultural. An economic explanation links the shape of the litigation curve with economic factors such as economic growth. A procedural explanation is based on changes to legal procedures that are not related to the quality of institutions. A cultural explanation implies changes to norms.

4.4.1 Economic Explanations

Economic explanations link economic activity with litigation. Brooks attributed the rise in the volume of litigation to the expansion of economic activities (Brooks, 1986, pg 93-96). And Muldrew, while discussing the litigation curve for Exeter, suggested that

we can *reasonably assume*trends in the fluctuation of the rate of litigation were a result of general economic vitality of the town's entire economy (Muldrew, 1998, pg 226). (italics mine)

Theoretically, the correlation can go either way. One possibility is that a certain fraction of total contracts always breaks down, and a certain proportion of broken contracts ends up in the courts. If this is true, then as the economy expands, the volume of litigation increases too. This mechanism underlies the hypothesis framed by Brooks and Muldrew. However, it is possible to frame the relationship between economic prosperity and litigation in the opposite way as well. Credit expands when the economy expands.

But when the economy shrinks, then people fail to repay debt, and this leads to a greater volume of litigation. So the direction of the correlation between economic activity and litigation is unclear. However, both explanations imply that economic activity and litigation are monotonically related, with the direction of change either positive or negative depending on which explanation we accept. The hypothesis proposed by Brooks and Muldrew can explain the litigation curve only if the economic indicators between 1500 and 1700 show an inverted U shape as well.

There is no direct measure of national income available for early modern England. But economic conditions must have been good enough to sustain the large population. In the empirical section, it was shown that the volume of litigation is described by an inverted U shaped curve even after being deflated by population. Therefore, economic activity, as indicated by population, cannot explain the litigation curve.

Urbanization is another proxy for economic expansion. It was shown in chapter 3 that urbanization increased throughout the period. But the increase was continuous, while the volume of litigation curve changed its curvature. So urbanization cannot explain the downward part of the litigation curve. Another proxy for economic expansion is agricultural productivity. Since agriculture was the economic mainstay of medieval England, trends in agricultural production comprehensively capture the overall economic condition. Allen's research on early modern England (presented in table 1) shows that agricultural production rose steadily between the 16th and 18th centuries. So again, this measure of economic activity does not provide a good explanation for the litigation curve.

Woolen cloth was England's major export product during the early modern period, so plotting the quantity exported can be an appropriate way to measure economic activity. I could not find an individual data source covering the entire period between 1500 and 1700. However, I was able to piece together two different data sources - one covering 1500-1544 (Mitchell,

| le 4.3: Estim | ates of Agricult | ural production (Engla | nd in 1500=1) |
|---------------|------------------|------------------------|---------------|
| = | Year | Total Production | , |
| | 1300 | 1.65 | |
| | 1400 | .92 | |
| | 1500 | 1.00 | |
| | 1600 | 1.23 | |
| | 1700 | 1.78 | |
| | 1750 | 2.25 | |
| | 1800 | 2.47 | |

Source: Allen (2000)

Tab

1988, pg 358) and the other covering 1600-1640 (Fisher, 1950; Stephen, 1969). The data sets are not directly comparable as they are expressed in different units, and cover different geographical regions. The data presented in Mitchell (1988) represents national statistics while Fisher (1950) and Stephen (1969) present statistics for several ports such as London, Bristol, Hull, Sandwich, and Dartmouth. I used these pieces to find a general trend. The data covering 1490-1544 are presented in Figure 7. The units of woolen cloth in this figure are expressed in thousands of a standard size, which was approximately 24 yards by 1.5 to 2 yards. It is important to know if the quantity and price of the export product show opposite trends. The wool cloth price data from Clark (2005) is also plotted in figure 8.

Fisher (1950) yields the number of *short cloths* and the value of other goods exported from the port of London during the period 1600-1640. The values are expressed in pounds, which I have deflated using the real price index calculated by Officer (2009). The time series for other exports shows (Figure 9) an upward trend while the figure for short cloths exports (Figure 10) shows a slightly downward trend.

Next, I present data on cloth exports from various English ports as reproduced from Stephen (1969). The paper provides the total amount of the tax collected from the export of *old draperies* as well as the subsidy paid



Figure 4.7: Woolen cloth price: 1500-1544

on the export of *new draperies*. The data are presented in thousands of pounds, which I deflate using the retail price index in order to obtain the real value of the taxes and subsidies paid on these exports, which can be thought of as a proxy for total cloth exports. There is no uniform trend across the ports. I chose to present the data from Hull, which was the most important port, and from Exeter, for which I have already presented the litigation records. Hull shows a strong upward trend while the data from Exeter show a moderate upward trend with some big swings.

Next, I present wage data in Figure 13. Because the litigation data come from urban courts, I look at craftsmen s' wages. The movement in wages also shows an upward trend. Wages can be thought of as a proxy for marginal productivity of labor. This figure shows that there were steady increases in



Figure 4.8: Woolen cloth export: 1500-1544

craftsmen s' wages over time, suggesting a consistent increase in economic activity. It is, however, worth noting that the growth rate of wages declined a little during the last quarter of the 17th century. Nevertheless, the level of wages showed an increasing trend throughout our period of interest.

The economic explanation put forward by Brooks (1986) links the higher volume of litigation with the higher volume of interpersonal trade. The implicit argument in this hypothesis is that a certain proportion of contracts breaks down, and a certain proportion of the broken contracts ends up in court. As a result, when the volume of trade increases, the absolute number of broken contracts coming to the court goes up as well. The opposite happens when the volume of economic activity goes down. But I find that most of the economic indicators suggest that the economy of England steadily ex-



Figure 4.9: Other exports from London: 1600-1640

panded during the period 1500-1700. Therefore, the economic explanation, while consistent with the rising part of the litigation curve, cannot explain the decline in litigation during the 17th century.

4.4.2 The Procedural Explanation

The Statute of Gloucester of 1278 prevented the royal courts from hearing civil cases concerning values less than 40 shillings (Teeven, 1990, pg 3). Forty shillings was a lot of money in the 13th century, and the royal courts remained an unusual forum for dispute resolution. Then, in the 16th century, prices rose, and the real value of 40 shillings dropped, creating more disputes over sums greater than 40 shillings. Brooks (1986)(pg 97) suggests that this change led to an increase in the number of cases in the royal courts. But this explanation cannot explain the inverted U shaped litigation curve, for



Figure 4.10: Shortcloths export from London: 1600-1640

two reasons. First, it fails to explain why litigation declined during the 17th century, when prices rose steadily. Second, the volume of litigations in the borough courts increased in similar proportion to the increase in the royal courts. But if the statute was responsible for the increase in cases at the royal courts, then one would expect to see a corresponding decline in the number of litigations in the borough courts.

4.4.3 The Social Capital Explanation

The term social capital is a generic term, embracing a wide range of ideas. However, the most common use of this term captures the sense of social trust, or social cooperation (Putnam, 2001; Bowles and Gintis, 2002). Changes in the level of social capital would be reflected in the volume of disputes, and consequently in the volume of litigation. Hence, the rising or



Figure 4.11: Total real customs duty and subsidy on cloth exports from Hull: 1600-1640

the declining trend in litigation can simply be a result of the changes in the level of social capital.

Eighteenth-century England experienced an unprecedented change in its technological frontier with the Industrial Revolution, which ushered in a paradigmatic shift in production technology, accompanied by widespread changes to social norms. Changing norms implies changes in the volume of social capital. This section tests the alternative hypothesis that norms started to get better from the seventeenth century, and the decline in litigation is simply the result of better norms.

Cultural change in 18th-century England is discussed thoroughly in the literature. Mokyr (2010) illustrates how honesty and cooperative behavior



Figure 4.12: Total real customs duty and subsidy on cloth exports from Exeter: 1600-1640

were highly valued. He finds that gentlemanly conduct was instrumental in signaling a person's good reputation, which helped them expand their trading[business?] opportunities. Clark (2007) (pg 176-199) also finds a general change in social values, with people becoming more gentlemanly. He points to the rise in literacy rates as well as to changes in attitudes towards violence. To illustrate the latter change, Clarke quotes the diarist Samuel Pepys, from an October, 1660 entry:

Out to Charing Cross, to see Major-general Harison hanged, drawn, and quartered; which was done there, he looking as cheerful as any man could do in that condition. He was presently cut down, and his head and heart shown to the people, at which there was great shouts of joy....From thence to my Lord's, and



Figure 4.13: Silver equivalent of craftsman's wage: 1500-1700

took Captain Cuttance and Mr. Shapely to the Sun Tavern, and did give them oyesters. [Samuel Pepys' Diary, quoted in (Clark, 2007, pg 182)]

Pepys' dispassionate account of a horrific public execution illustrates the attitude of the English middle class towards violence during the 17th century. But changing attitudes in the 18th and 19th centuries are reflected in government decisions that abolished various forms of cruelty. After 1789 women were no longer burned at the stake for crimes such as counterfeiting and petty treason. In 1770, the popular London pastime of visiting Bethlem Hospital to gawk at lunatics was restricted to those with admission tickets issued by a governor. Cock fighting and bull baiting were outlawed in 1835. Public executions were ended in 1869. Slavery was abolished in the early 19th century (Clark, 2007, pg 182-183).

What made these changes possible? And more importantly, can a change in norms consistently explain the litigation curve illustrated in the last section? Mokyr explains the changes in norms in terms of technological advancement and the consequent expansion of trade opportunities. He argues that politeness was equated with law-abiding behavior, and was considered a signal of an honest agent. Polite and honest conduct was a key to commercial success; traders needed to signal that they observed certain cultural codes and respected certain values (Mokyr, 2010, pg 522).

The model implicit in Mokyr's analysis suggests that people refrained from opportunistic behavior out of concern for the long term interests of their businesses. Opportunistic, unethical behavior was punished through denial of future business opportunities. The model is characterized by a reputation mechanism and a supporting social sanction method which sustain cooperative social behaviour. There are two implicit assumptions in this model: first, formal institutions were costly to use; and second, there was some informal network operating in 18th-century England that could spread information about one's non-cooperative behavior. Why are these assumptions important for the model? Because if there is an effective legal system in place where justice is delivered at low cost, people need not send signals ex ante about their character in order to get business contracts. The existence of cost-effective legal institutions guarantees that the cost of going to court is low for anyone who has been cheated, given that there is a high probability that cheaters get punished. Therefore, there is no need to screen out potentially dishonest partners by assessing signals of gentlemanly behaviour, such as dress codes or politeness. The second assumption ensures that a social sanction mechanism works against cheaters. Mokyr supports the first assumption by pointing to declining litigation in the 18th century, as well as to the fact that sealed contracts were giving way to informal agreements (Mokyr, 2010, pg 522). To support the second assumption, he cites the sudden proliferation of clubs, associations and societies in 18th-century England (Clark, 2000). Clark attempted to construct a time series of clubs by recording the earliest known reference to a club (Clark, 2000, pg 127).

He found an increasing trend in the number of clubs over time. In 1803, a parliamentary report recorded 9,672 societies with more than 704,000 participants. Mokyr views the information system formed by the club networks as instrumental in upholding the norms for honoring contracts (Mokyr, 2010, pg 529).

Let us now examine if the factors mentioned above – the declining cost effectiveness of the formal system and the rise of club network- can consistently explain the inverted U shape of the litigation curves. I hold that these mechanisms, if true, can only explain the downward part of the curve. The litigation curve slopes upward during the 16th century, yet in Mokyr there is no suggestion that technological changes led to diminishing social capital during that time. The second factor supports the idea that the decline in litigation is attributable to an increase in social capital, as measured by club membership. This means of measuring social capital was proposed by Putnam (2001). Clearly, club networks could play a role in information dissemination. But the timing of the sudden expansion of club networks does not match the decrease in litigation. The evidence suggests that the number of clubs in London started to increase from the late 18th century, while the sharp decline in the volume of litigation occurred around the early 17th century. Therefore, information networks formed by clubs cannot explain the decline in litigation. Moreover, during the late 17th to early 18th centuries, social capital deriving from family ties declined. The English middle class shifted from jointly consumed to more individuated forms of consumption outside the home. Also, the number of illegitimate births increased five fold between 1650 and 1800 (de Vries, 2008, pg 178-179).

In support of the first assumption – declining cost effectiveness of the formal system – Mokyr mentions that people were using less formal contracts during the eighteenth century . proof of the weakening formal institutions during the 17th century. Chapter 3 details the legal improvements in early modern England. It was shown that legal innovations adopted during this time supported less formal contracts. So the trend towards use of more informal contracts can be attributed to improvements in the formal institutions.

The literature described above portrays the adoption of a more gentlemanly culture in 18th-century England. In order to illustrate this point, Clark (2007) and Mokyr (2010) quote texts written in the 18th and 19th centuries. This is a good way to understand the prevailing value systems of those times. However, this method is not very effective in demonstrating whether values were systematically changing over time. It is difficult to compare the norms revealed through texts written by two authors separated by a century. This difficulty underlines the need to construct an index of 'gentlemanliness' which can be compared over the years. To this end, philanthropy data from early modern England are presented in the next few paragraphs. Note that the data are problematic. First, the data may involve some selection bias, since they come mainly from wills prepared by the relatively wealthy segment of society. Second, philanthropy may be driven by religious motives, and may fail to reflect the society's generally prevailing value system. Despite these concerns, the philanthropy data present a crude measure of social responsibility and social norms, and they offer the advantage of being available over a long time span. The data presented here are from Jordan (1959) who collected them from the counties of Bristol, Buckinghamshire, Hampshire, Kent, Lancashire, London, Norfolk, Somerset, Worcestershire and Yorkshire. The data are divided into five categories: help for the poor; social rehabilitation; municipal betterments; education; and religion.

Jordan presented the data in nominal terms, which I deflate using the retail price index calculated by Officer (2009). I present the data on aggregate philanthropy both in current pounds (Figure 14) and real terms (Figure 15). Both the real and nominal figures show some similarities. They showcase a drop in aggregate philanthropy between 1500 and 1550, followed by a consistent rise until 1620, when both the curves reach their peaks. Then there is a sharp drop. However, the drop in the real philanthropy figure between
1500 and 1550 was much steeper than the drop in the nominal terms. This can be attributed to a steep increase in prices during this period.



Figure 4.14: Philanthropy in '000 current pounds: 1500-1650

The trend indicated by the philanthropy data is inconsistent with the social capital explanation. If we accept that philanthropy data are a good proxy for social norms, then the data presented above show that litigation increases as norms improve, and decline when norms worsen. However, the charity data are comprised of several categories, with religious philanthropy dominating the scene. But religious charity may result more from the pressure from the religious organizations than from any changes to social norms. With that concern in mind, I looked at the poor relief and the social rehabilitation components of the charity data. These are further divided into sub-categories. For example, social rehabilitation is sub-divided



Figure 4.15: Philanthropy (in real terms): 1500-1650

into prisons, loans, workhouses and stocks, apprenticeship schemes, sick and hospitals, and marriage subsidies. Poor relief is broken into sub-categories of outright relief, almshouses, charity general, and charity for aged people. In the following figures I present the aggregate data for these categories. Both data sets are deflated using the price index mentioned above

The poor relief curve (Figure 16) shows a pattern similar to the aggregate philanthropy curve (Figure 15). Unlike the other charity curves, the social rehabilitation curve (Figure 17) starts from a lower value around the early 16th century, and then takes the inverted U shape. The sharp drop in individual charity during the mid-17th century might be linked with the introduction of comprehensive poor laws in 1598 and 1601. These acts placed the responsibilities for managing the labor force of poor vagrants, and for arranging their food and shelter, on the churchwardens and overseers of the



Figure 4.16: Poor relief(in real terms): 1500-1650

poor in every parish (Slack, 1990, pg 18-19). I already discussed in chapter 3 how the poor laws freed individual citizens of the moral obligation to help the poor by institutionalizing poverty management. Therefore, the decline in charity could be a direct result of the poor laws. However, if we accept charity as a good proxy for improving norms, then none of these graphs lend support to the hypothesis that improvements in norms led to the decline in litigation. The values for charity moved together with the volume of litigation, suggesting that as norms improved, people got into disputes more often than before. The opposite happened when norms worsened: people litigated less. This contradicts the norms-based explanation of the volume of litigation.



Figure 4.17: Social rehabilitation(in real terms): 1500-1650

This section, however, does not rule out changes in the norms of 18thcentury England. The writings of contemporaries suggest that values were changing. The society also experienced technological and institutional changes. So it is reasonable to expect that the society's value system changed significantly, and that these changes had an impact on the effectiveness of existing institutions. Nevertheless, this current chapter tries to make the point that institutional transition, rather than a change in norms, is the main reason behind the inverted U shaped litigation curve.

4.5 Concluding Remarks

This paper analyzes the transition of institutions from informal to formal. In the model, the quality of formal institutions does not depend on

4.5. Concluding Remarks

the characteristics of the litigants, such as their cultural distance from the community core or their reputation in society. The quality of informal institutions, however, crucially depends on the reputations of individual litigants in the community. The flow of such information is smooth in a relatively closed society. Informal institutions are operated by community-based organizations which cannot easily access information about people who are culturally very different from the rest of the community. The increase in social heterogeneity results in less effective informal institutions. Therefore, agents' social distance from the community core is negatively related to the quality of informal institutions. This implies worse informal institutions in a society with greater degree of mobility.

In the model, people choose and commit to the forum of dispute resolution at the time of signing contracts and before the project's success or failure is known. People compare the value of contracts under informal institutions with their value under formal institutions. The value of informal institutions is negatively related to the social distances of both litigants. An individual knows their own social distance from the community core, but not the social distance of their potential business partner. Therefore, people base their decision on average social distance. An increase in social heterogeneity leads to higher average social distance and lower quality of informal institutions. As social heterogeneity increases, people start using formal facilities, which improve following a learning-by-doing mechanism.

The theory has a major testable prediction: improved formal institutions will lead to an inverted U shaped litigation curve. I present supporting evidence from early modern English history. Both primary and secondary data are provided to show that the litigation curve takes the shape that is predicted by the theoretical model. Improvements in the formal institutions correspond to a decline in the informal institutions. It is difficult to get data on the informal institutions of early modern England. I look at data on civic ceremonies as a proxy, and the evidence from that period suggests that the number of social ceremonies declined, or lacked popular participation.

4.5. Concluding Remarks

The most important source of exogenous variation in my model is social heterogeneity. In early modern England, social heterogeneity was created by urbanization and continental migration. The thesis suggests that a higher degree of heterogeneity is positively related to the development of formal institutions. I discussed an important section of the literature which argues that institutional performance is worse in more heterogeneous societies (Easterly and Levine, 1997; Alesina et al., 1999). The authors show that ethnic diversity adversely affects the distribution of public goods. However, the fundamental result of my thesis is that there can be situations where social heterogeneity leads to the development of better formal institutions. In other words, the relation between between social heterogeneity and institutional performance need not be universally negative. In the long run, it is possible for a heterogeneous society to develop better institutions.

The applicability of the theory developed in this chapter is also contingent on the structures of both formal and informal institutions in particular places. The literature on ethnic fractionalisation and economic performance deals with a very specific set of institutions, mainly those providing public goods. Public goods are usually provided by some level of government. Therefore, transition is not a relevant issue here. Also, most of the papers compare situations across different countries, and do not capture the dynamics of informal institutions within individual countries.

Another important question is the persistence of informal institutions in less developed countries. Increased social heterogeneity can alternatively give rise to the *Community Responsibility System* (CRS), thereby strengthening the informal system. For example, the Indian caste system can be seen as a contract enforcement mechanism based on the CRS (Freitas, 2006). The caste system is a persistent informal system which is thought of as an impediment to social progress in India. Again, the persistence of a particular informal system such as the caste system depends on the characteristics of specific informal institutions. My conjecture is that in places where the degree of social mobility across communities is low, the CRS is a more likely outcome. In the case of early modern England, the degree of social mobility was higher than in a typical caste-based society. People could choose trades other than their family trades, through apprenticeship. In many societies, social mobility was not as restricted as it is under the caste system. So the analytical framework presented in this paper can be used to explain institutional transition in other societies.

Chapter 5

Transformation of Credit Organizations: Caste Bankers in Colonial India

5.1 Motivation

The goal of this thesis is to identify the conditions that bring about the transition from kinship-based institutions to law-based institutions. The case study on Chettiars, a major banking caste from colonial India, forms an important part of the thesis. This chapter is closely related to Greif's seminal paper on the Maghribi traders (Greif, 1993). Greif showed how culture plays an important role in determining economic outcomes. His paper is part of a rich body of literature which looks at the interaction between culture and economic well being (Weber, 1930; Clark, 2007; Mccloskey, 2006; Tabellini, 2006). In Greif's paper, culture is treated as an exogenous parameter which selects the equilibrium. This chapter, on the other hand, shows how culture interacts with technology and institutions, and evolves. It attempts to identify the conditions under which some of the Nattukottai Chettiars, an indigenous banking group from India, switched from collectivist caste banking to individualist joint-stock banking. I use the words collectivist and individualist as Greif (1993) defined them. This chapter is also related to the body of work which looks at the persistence and evolution of the caste system in India. Freitas (2006) models the caste system as an effective mechanism of contract enforcement, and tests the model's predictions using historical data. (Munshi and Rosenzweig (2006)) showed how the in-

5.1. Motivation

teraction between the traditional caste system and the forces of globalization affects the schooling decisions for children in India. They found that boys are sent to local language schools, and become employed at blue-collar jobs through the caste network. In the early 1990s, globalization created numerous white-collar jobs in India which required knowledge of English. These positions could not be attained through the caste referral system. Consequently, families began sending their daughters to schools with English as the medium of instruction, in order to enable them to become eligible for these jobs. In another study, Munshi and Rosenzweig (2009) showed how the caste system restricts the mobility of labor in rural India.

A caste is a hierarchical subdivision in Hinduism, the religion of the majority in India. The caste system is a hierarchical social structure of society in which a person's occupation is typically determined by their caste. Nattukottai Chettiar (in short, Chettiar) was a caste from South India that specialized and acquired a leading position in the indigenous banking business in colonial India. Other banking communities operating in South India in the second half of the 19th century included the wealthy Kammas in the delta tracts of the Telegu country; the Vaisya bankers of Andhra; various Komati families in Rajamundy, Amalpur and Razole; and the Kalladaikurichi Brahmans of Tirunelveli districts. But none of them was as successful as the Chettiars. British officials attributed this success to the Chettiars' stronger community ties (Ray, 1995). The Chettiars managed to ensure a remarkably high repayment rate on the loans they extended. One banking expert of colonial India noted:

In the case of 136 firms doing business in Chettinad to the extent of 11 crores of rupees (Rs, 110,000,000) the bad debts come to only Rs. 4.3 lakhs (Rs 430,000) which works out to .5% of the total volume of business. (Rudner, 1994, pg 95)

Despite their success with caste banking, some of the Chettiar bankers switched to joint-stock banking during the first half of the 20th century. This decision represented a transition from a communal form of business organization to an individualistic form of organization. The transition began with the establishment of the Indian Bank in 1906. A second major Chetti bank - the bank of Chettinad - was established in 1929 by Raja Annamalai Chettiar. Besides modern banking, the Chettiars also ventured into industries such as sugar, cement and textiles (Sridevi, 2005, pg 267, 261). There were at least five banks and six insurance companies established with Chettiar capital during the first part of the 20th century (Menon, 1985).

The relationship between bankers and their agents was central to the banking business in colonial India. The caste network of the Chettiar bankers effectively solved the principal-agent problem inherent in the bankeragent relationship. The network gave the caste bankers a comparative advantage in processing information about agents and it was crucial for ensuring the agents' honesty. Caste banking lost its comparative advantage when modern communication technology improved and social ties within the caste weakened during the first quarter of the 20th century. In this chapter, I find that in response to these changes, the caste bankers started switching to joint-stock banking. I analyze the process of transition using a theoretical model. In order to analyze this process, one needs to understand two key relationships: banker-agent, and banker-borrower. In the following sections, these relationships are modeled, and historical details are provided that lend support to the hypotheses generated from the model.

Section 2 provides an overview of the history of banking in India. Section 3 illustrates the banker-agent relationship, and section 4 is an analysis of the relationship between a bank and its borrowers.

5.2 History of Banking in India

Banking groups in India can be traced back to the 13th century. Multani financiers and Jain bankers used to issue drafts against revenue assignments distributed by Sultan Balban (1266-1286) to the victorious Turkish aristocracy. By the second half of 14th century, the Delhi-based bankers had a widespread network of agencies to realize their dues and remit the proceeds.

In the 16th century, a big portion of the Indian subcontinent was administratively integrated under the Mughal rule, which facilitated both maritime and inland trade. This extensive trading network required a supporting network of money exchange. Before the inception of exchange and central banks, this job was successfully handled by indigenous banking groups which extended their businesses on the basis of kinship networks. Throughout the 17th and 18th centuries, the banking groups expanded their business outside India, and emerged as one of the most important ethnic banking groups, along with the Chinese and the Arab Jews. The account of the history of banking in pre-colonial India presented here follows Ray (1995).

In the 18th century, the British gained economic and political control over India. Indigenous banking groups played a major role in the military expansion of the East India Company. Indian banker Jagat Seth's support for British general Clive played a crucial role in Britain's first important military victory at Plassey in 1757. The colonial powers appreciated the important role of the banking groups in remitting resources from headquarters to the battlefields. The British, by virtue of their punctual repayments, won the confidence of the bankers. A partnership comprised of three major banking houses - the house of Manohardas of Banaras (North India), Arunjee Nath Tarawady of Surat (West India), and Kashmiri Mal-Lala Bachraj (North India) - transferred large amounts of funds from Eastern India (where the British had already gained control) to Western India, to allow the British to fight against the Marathas (Ray (1995)). The process of mobilizing funds through the bankers' network eventually proved instrumental in the British victory.

Despite the close commercial relationship between the British and the indigenous banking groups, stereotypes about the indigenous moneylenders (and merchants in general) were prevalent in popular Western belief as well as in official colonial documents. The indigenous banking groups were seen as irrational, fragmented and often "coldly preying upon their cultivators' clients, luring them further and further into debt and finally sucking them dry of surplus, property and liberty" (Rudner, 1994, pg 36). These stereo-types were heavily inscribed into the colonizers' mind set. The colonial administration never incorporated indigenous commercial practices into the realm of colonial law and administration. However, indigenous banking instruments remained important and effective in Indian commercial life, even without legal enforceability under colonial law. The colonizers failed to understand the complexity of the sanctioning method of the Indian banking groups. Nonetheless, the indigenous banking groups assumed an important role in the commercial life of colonial India. A government report on Naut-tukottai Chettiars stated:

It was established in 1901 by Sir Edward Law [the member in charge of finance in the Viceroys Council] that (British) Banking capital available in India for trade purposes was less that 10 million [approximately Rs.80 million], after making allowances for the share of the capital of exchange banks which was held outside India; the amount required was estimated as 12 million [Rs. 96 million].

On the other hand,

According to (Chettiar evidence in the Report of the Madras Provincial Banking Enquiry Committee), the capital of the Chettiars had increased from Rs.100 million in 1896 to Rs. 800 million in 1930 and the capital employed by them (including borrowed capital) at home and in Madras came to Rs.750 million (cited in (Rudner, 1994, pg 38)).

The quote reveals the significant position occupied by the Chettiar bankers in the colonial Indian economy. Adding the working capital of other major banking castes like Marwaris, Parsis or Baniyas to these amounts shows that the Indian capital available for trade was much higher than the British funds available. This piece of evidence suggests that the networks of indigenous bankers were central, rather than peripheral, to the economy in early colonial India.

The first 50 years of the colonial period saw a structural change within the indigenous banking sector in India. Under colonial rule, the socio-economic parameters of India changed as a strong state with different cultural values emerged. Such a state could not accommodate traditional practices such as the social sanction mechanism used by communities in the realm of law. Moreover, increasing geographical mobility adversely affected communities' ability to punish dissenting members. Under these conditions, only the groups with the strongest social ties could survive. Ray (1995) finds that traditional leaders in the banking business (specially *hundi* business) such as old Surat, Banaras, Patna and Murshidabad shroffs were being replaced by new groups, such as New Marwari, Gujarati, Multani, and Nattukottai Chettiars, who had stronger community ties.

A brief account of the history of joint-stock banking in India will provide a more complete picture of the banking business in the colonial period. The first joint-stock bank was established in 1809. It took 20 more years for the next one to appear. In Madras (Chennai), the major colonial center of Southern India, there was a abundance of joint-stock banks at the beginning of the 19th century, of which only one survived: the Government Bank, established by Lord Bentinck in 1806. In Bombay (Mumbai), the first jointstock bank was established in 1836. By 1843, all three presidencies - Bengal (Eastern India), Bombay (Western India), and Madras (Southern India) had government-backed presidency banks.

Joint-stock banking flourished in the mid-19th century. The Bank of Bengal had 17 branches spanning the north and middle of India. The bank treated its branches as autonomous profit-generating units, and closed down unprofitable branches (Bagchi, 1989, pg 189). The Bank of Bombay, after recovering from an initial setback, also expanded. During the first quarter of the 20th century, it had 12 profitable branches (Bagchi, 1989, pg 203). The Madras Bank's fortunes were unstable. Its 17 branches in 1901 dwindled to 14 by 1914.

The Presidency Banks adopted a conservative approach in opening new branches (Bagchi, 1989, pg 202). The rest of the space was filled in by privately owned joint stock banks. The rest of the market was served by privately owned joint-stock banks. Joint-stock banking boomed in the first decade of the 19th century, but was crushed by the economic collapse of the 1830s. A second boom came in the 1860s, followed by another series of bank failures. The third boom came in 1905. The spread of joint-stock banking in the early 20th century is summarized below (Goldsmith, 1983)

| Year | Joint Stock Banks | Nidhis and Chit Funds |
|------|-------------------|-----------------------|
| 1920 | 351 | 213 |
| 1925 | 463 | 282 |
| 1933 | 1236 | 152 |
| 1939 | 1369 | 113 |

Table 5.1: Growth of Banking in India

The third column of Table 1 provides statistics on Nidhis and Chit funds. These were cooperative credit societies which operated like semi-formal organizations, in which enforcement worked through social sanction. In the absence of a time series on the operation of the caste bankers, the statistics on Chit funds provide an indication of the extent of informal credit arrangements in India. Nidhis began in South India in 1858 as mutual loan societies based on monthly subscription, for periods from four to seven years. Their assets could only be lent to the members, and at the end of the period the fund was wound up and profits redistributed (Baker, 1984). It is worth noting that the number of organizations declined over time, hinting at a decline of informal credit arrangements. The next section models the agency problem faced by banks, and finds conditions under which a caste banker decides to switch to joint-stock banking.

5.3.1 Overview

Bankers in colonial India depended heavily on agents; to clients, they were the face of the bank. Banking agents in colonial India worked as branch managers, deciding which loans to approve. The relationship between a bank and its agent is a classic case of the 'principal-agent' problem, where the agents have incentive to cheat, and the principals look to design mechanisms to prevent cheating. The agents in colonial India would work like a branch manager – deciding on which loan to approve. Banks would often suffer from dishonest agents as an agent's dishonesty would negatively affect the bank's reputation in the market.

Any dishonest conduct on the part of agents would adversely affect clients' confidence in the bank, and hurt the bank's reputation along with its business prospects. For example, in 1892, the Mercantile Bank of India was the victim of a massive fraud. Those involved received prison sentences, but the bank suffered losses in the region of £75,000, not to mention the damage to its reputation (Green and Kinsey, 1999, p 12). Under these circumstances, it was important for the British officials to constantly monitor agents' activities. An inspection of bank branches by a senior official was a tested method of monitoring joint-stock banks. A glimpse of William Jackson's itinerary in 1893 illustrates the importance of monitoring. William Jackson was a board member of the Mercantile Bank of India. His main task was to review lending decisions (Green and Kinsey, 1999, pg 24).

One cannot fail to notice that the branches were located in big cities, suggesting that monitoring in remote areas was not feasible for the British banks. Nattukottai Chettiers, on the other hand, had their own community network to monitor their overseas agents. Chettiers operated in East and South Asia, especially in Ceylon (Sri Lanka), Burma (Myanmar), and Singapore. They had a rigorous apprenticeship-based system for employing agents. The use of the apprentice system to solve the principal-agent

| Date | Branch visited | Date | Branch visited |
|----------|----------------|--------------|-----------------------|
| April 15 | Bombay | July 7 | Batavia |
| April 19 | Calcutta | July 31 | Penang |
| May 12 | Penang | August 16 | Colombo |
| May 16 | Singapore | September 5 | Madras |
| May 31 | Hong Kong | September 12 | Calcutta |
| June 9 | Shanghai | September 22 | Bombay |
| Mid-June | Singapore | October 10 | London, board meeting |

5.3. Agency Problem

Table 5.2: William Jackson's tour of inspection, 1893

problem is thoroughly discussed in the literature (Chwe, 1990; Carlos and Nicholas, 1993). A Chettiar banker would choose an apprentice from his family or from another Chettier family. The apprentice would be sent to a branch office in Ceylon or Burma. After working there for three years, he would hand over responsibilities to a new apprentice agent, and return to his master in Tamilnadu, India. The process of handing over charges would typically take six months. Then the apprentice might start a new business, or get another term of appointment with his old employer (Rudner, 1994, pg 116-118).

This three-year cycle was part of an efficient information-transmission system. There were a few thousand Chettiar bankers working in the overseas operations in Burma and Ceylon. Taking India- and Burma-based business together, there were around 2,882 Chettiar bankers in 1930 (Rudner, 1994, pg 74). The apprenticeship system resulted in a constant circulation of apprentices between the Chettiar headquarters in India and their overseas locations.

The circulation of apprentices facilitated a constant flow of information between headquarters and peripheral offices. This system allowed a Chettiar banker to get up-to-date information about their overseas offices from other bankers, even while the Chettiar's own agent was away for three years.

The Nattukottai *panchayats* and temples played effective roles in the mechanism of information dissemination. A *panchayat* is a traditional Indian civic body for dispute resolution. The Chettiar *panchayats* were not part of an overarching body overlooking disputes arising within the Chettiar community. Rather, they were fragmented, localized and sometimes specific to a small geographical area. Nevertheless, the norms followed in different places were more or less the same (Rudner, 1994, pg 128). The Nattukottai Panchayats played active roles in resolving disputes by hosting general community meetings which were effective means of disseminating information (Rudner, 1994, pg 127,118,124). It is important to note that from the beginning of the 20th century, panchayats started losing their importance (Mahadevan, 1978), a change which lends support to the theory provided below.

Temples were also at the center of the Chettiar society, complementing the panchayats' role of information dissemination. The panchayat meetings were often held at the temples (Rudner, 1994, p 127). Temples played an important role in the life of apprentice agents as well. Rudner illustrates the importance of temple visits in the professional life of a Nattukottai (alternatively called Nakarattar) Chettiar agent:

On arrival at his destination port, the agent worshiped at the local Nakarattar Temple, and dispatched telegrams to his family, to the proprietor, and to the agent he was to replace at his firm's business office. He then proceeded on the next leg of his journey to reach the business office.....On arriving at his office, he was welcomed by all the resident Nakarattars, eager for news from Chettinad. His arrival was celebrated by a short commensal meal and was followed by a collective visit to the local temple for worship (Rudner, 1994, pg 117).

The *Nakaravitutis* (*vitutis* belonging to Nakarattars,) were another set of institutions important for the purpose of communal meeting. Nakaravitutis provided communal housing for the Chettiars at the business loca-

tions. Business meetings were held at these locations, and the buildings had temples and guest rooms as well. The services provided included lodging, meals, mailing facilities, travel arrangements, baggage clearing at local custom houses, and arrangement for absentee prayers. The *Nakaravitutis* were entirely financed by elite members of the Chettiars as well as by less prominent Chettiars who had an interest in local business (Rudner, 1994, pg 125).

The preceding paragraphs illustrate the point that the *temple-panchayat* complex was critical in the process of information dissemination because of the active role it played in hosting social and business meetings. The temples and *panchayats* were the nerve centers in the information networks. The joint-stock banks could not rely on this kind of network. Instead, they had to rely on modern communication methods such as railways and the telegraph. More importantly, unlike Chettiars, joint-stock bankers could not rely on fellow bankers to share information. Figures on the number of joint-stock banks and the number of joint-stock bank failures during the 20th century indicate that the joint-stock sector was fiercely competitive. In contrast, caste banking was based on a cooperative model

Caste bankers received information mostly through the caste network, while joint-stock banks could only access information by using communication facilities such as the telegraph and railways. The caste bankers, however, could also use modern means of communication. In their early stages, these modern forms of communication were not very effective in transmitting information to and from remote places. Moreover, telegrams could only be sent in English, and to interpret them, Chettiar bankers had to hire interpreters, potentially compromising the confidentiality of sensitive business information. There are other more obvious costs associated with using either of these two channels, such as the cost of railway tickets, and of sending telegrams. Information from the caste network was a public good, and so the cost of using it was not based on quid pro quo. Nevertheless, caste members had to pay to maintain the information network. The role of

temples in disseminating information has already been discussed. Contributions to temples can be interpreted as a cost of accessing information using the caste network. Of course, temple contributions were mainly driven by religious values, and not by any explicit motivation to sustain the information network. Nevertheless, such norms sustained the flow of information within the community. A Chettiar banker could only access the information flowing through the community network if he regularly participated in temple ceremonies. So, temple contributions can be seen as an indirect fee for access to information. In chapter three, civic ceremonies in early modern England were interpreted in a similar way. Next, I provide a brief account of the temple network.

The temple network was extensive and was spread throughout Chettinad, the Chettiars' home district. The Nattukottai Chettiars were divided into nine descent groups. Each group was indexed by its membership in a temple clan, which was further subdivided into sub-clans. Hence, each family was directly affiliated to the temple of its ancestral clan. However, a family might live in a village where the temple was different from their ancestral (clan) temple. Typically, an individual would show allegiance to both the clan temple and the village temple. However, it was the village temple, rather than the clan temple, that was important in daily social life. The next figure (figure 1) shows the distribution of villages across the temple clans

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Figure 5.1: Distribution of clans across villages

In the above distribution (Figure 5.1), the total number of villages is 280, while the Nattukottai Chettiars lived in 98 villages. This implies that there was considerable overlap of clans across villages, and that people of different clans visited the same village temples.

The principle for temple contributions closely followed the 'ability to pay' approach, with rich merchants contributing more. There was an annual head tax per family (*pulli vari*). The richest members also had to pay a tax called asti vari *asti vari* (Rudner, 1994, pg 198). A sample account from an Ilayathakudi temple in 1939 shows that it had an enormous annual

budget amounting to Rs.115,487 (Rudner, 1994, pg 196). To see how large an amount this is, the annual wage of a Chettiar agent in the 1930s is a useful reference point: between Rs.933 and Rs.3,500 (Rudner, 1994, pg 116). By this standard, the annual budget of this one temple was indeed large.

Given the public good nature of information within the caste network, the problem of free riding might arise. How did the Chettiars solve this problem? Social sanction of free riders is a possible mechanism. Besides that, each banker had stakes in the other bankers' business, which limited the extent of free riding. Inter-linkages between the Chettiar families worked through various channels. In addition to marriage ties, Chettiar firms invested money in other firms (Rudner, 1994, pg 100), and families allowed their sons to work as apprentices in other firms (Rudner, 1994, pg 115). Moreover, temple meetings can be seen as the principal mode of information dissemination. These meetings were treated as rituals that were integral to Chettiar business practices. Therefore, for the Chettiars, information sharing became an internalized norm.

5.3.2 Model

The previous section elaborates on the importance of the agency problem in the banking sector in colonial India. It also details the structure of the caste information network. This section models the relationship between bankers and their agents, and how banks solved the principal-agent problem. The assumptions of the model are supported by specific historical evidence.

Suppose that there are n bankers, who vary in terms of their wealth, and their business abilities. The bankers recruit agents who mediate between the bankers and the borrowers. A borrower can be of two types: good and bad. The borrower takes the money and invests it in a project. The outcome of the project is uncertain. If it fails, the borrower does not return the money. If it succeeds, then only the good borrower returns the money, but the bad borrower does not. This means that the bad borrower always defaults on the loan, whereas the good borrower defaults only when the project fails due to some natural cause. Suppose the probability of failure from natural causes is 1 - p. The good borrower returns the money with probability 1 if there is no natural disaster. The bad borrower never returns the money. So, the probability of repayment by borrower type k, (k = g, b) is given by

$$q_g = p \tag{5.1}$$

and,

$$q_b = 0 \tag{5.2}$$

If the borrower defaults, the banker cannot decide whether the borrower was bad, or whether there was a natural shock. The probability of a natural shock is exogenously given. Hence, the only thing that a bank can do is monitor its agents' efforts in selecting borrowers. An agent can put in high or low effort. High effort is costly for the agent, but the probability of selecting a good borrower is high if the agent puts in high effort. In other words, bankers want the agents to put in high effort while the agents find it costly to put in effort. Accordingly, the banker deploys a monitoring mechanism. If an agent is caught putting in low effort, they are punished. The probability of getting caught depends on the quality of the monitoring technology, which in turn depends on the transmission of information about the agent's behavior. Bankers compare payoffs between two forms of organization: caste-based and joint-stock, and choose the one that yields the highest payoff.

An agent who exerts high effort gets wage w, but also bears a utility cost x. If an agent chooses low effort, there is a probability η that the shirking will be detected. If detected, the agent pays a penalty of κ . If undetected, the agent enjoys the wage w. The punishment cost is assumed to be constant. The implication of this assumption is discussed later. So, high effort is chosen if

$$w - x \ge \eta(-\kappa) + (1 - \eta)w \tag{5.3}$$

Hence in equilibrium the high effort inducing wage is given by,

$$w = \frac{x}{\eta} - \kappa \tag{5.4}$$

Equation (4) shows that an improvement in monitoring technology leads to a reduction in the honesty-inducing wage. The bankers then choose agents. The quality of monitoring is not the same at all locations. Monitoring quality depends on the flow of information between the branch and the headquarters. The flow of information depends on various factors, including communication technology, and the social network. If communication technology improves, then both the caste bankers and the joint-stock bankers benefit. However, any changes in the social network only affect the information flow for the caste bankers. Consequently, I define

$$\eta = f(\delta, \tau, \nu) \tag{5.5}$$

where δ represents geographical distance, τ is the coefficient for communication technology, and ν is the indicator of social network. Because η represents the probability of detection, it must be the case that 0 < f(.) < 1. Moreover, $f_1 < 0$, f_2 , $f_3 > 0$. There are two modes of monitoring possible: caste and joint stock. A caste banker can monitor using the caste network and modern communication, while a joint-stock banker can only use modern communication. It is further assumed that if a banker can monitor one agent better using one of those modes of monitoring, then this is true for all other agents as well. Equation (4) shows that the wage rises as η falls, and equation (5) shows that η is a function of geographical distance, communication technology, and the social network. Suppose that communication technology and the social network are held constant in a given period. Then η becomes a function of geographical distance only. Each agent *i* is identified by his distance from the headquarter, δ_i . By hiring a new agent, the bank earns a return r which is assumed to be constant, and pays a wage w_i which is a falling function of $\eta(\delta_i)$. Assumption of constant r for any distance is not very realistic. But even if r varies with distance (e.g. distant places

are less serviced by other banks, and hence higher return from there) the qualitative result does not change.

A banker will continue to employ agents until the marginal return from the agent equals the opportunity cost of not appointing one. Suppose the opportunity cost of the banker's time for managing one more branch is 0. Then, a banker would recruit agents until the distance D^* such that

$$w(\delta_i = D^*) = r \tag{5.6}$$

and, the total profit for a banker is given by

$$v_B = \int_0^{D^*} (r - w_i) di$$
 (5.7)

Equation (6) can be rewritten as,

$$R = r - w(\eta(D^*, \tau, \nu)) = 0$$
(5.8)

Equation (8) yields,

$$\frac{\partial D^*}{\partial \tau} = -\frac{R_\tau}{R_{D^*}} = -\frac{-w_\eta \eta_\tau}{-w_\eta \eta_{D^*}}$$
(5.9)

After simplification, this yields,

$$\frac{\partial D^*}{\partial \tau} = -\frac{\eta_\tau}{\eta_{D^*}} > 0 \tag{5.10}$$

The sign of the expression is negative because improvement in communication technology increases the quality of monitoring $(\eta_{\tau} > 0)$ while any increase in geographical distance reduces the quality of monitoring $\eta_{D^*} < 0$. Following similar steps one can show that,

$$\frac{\partial D^*}{\partial \nu} = -\frac{\eta_\nu}{\eta_{D^*}} > 0 \tag{5.11}$$

From these results, the next proposition follows,

Proposition 4 Improvements in communication technology, or increase in the coverage of social network will allow the banks to establish branches farther from their headquarters. Therefore, profit increases as monitoring technology improves. Hence, communication technology and social network operate like substitutes in the decision process of the bankers for expanding business.

From this analysis of the decision to expand business, I now shift focus to the caste member's decision about the form of business organization: jointstock or caste banking. A joint-stock company in the colonial period was a limited liability company registered under the British company act. It has been argued here that opting for caste banking was not just a cultural legacy. Rather, it was a rational approach to mitigating the information problem. Bankers chose caste banking because they could rely on the community network for monitoring agents. In an environment where receiving information from distant places was costly, this proved to be a cost-effective mechanism.

But the comparative advantage of caste banking eroded in the late 19th century as a massive expansion of communications technology and infrastructure, including railways and the telegraph, reduced the costs of processing information for the joint-stock bankers.

When bankers choose between the two forms of organization, they compare the payoffs under each one. The main difference lies in the quality of monitoring. The monitoring technology is assumed to be such that if a banker can monitor an agent better under joint-stock banking (than under caste banking), then this is true for all agents. Then, a member of the banking caste opts for joint-stock banking if

$$w_{JS} < w_C \tag{5.12}$$

Two things can be different between a caste banker and joint stock banksmonitoring technology(η) and punishment for a shirking agent (κ). Hence, the condition can be rewritten as,

$$\frac{x}{\eta_{JS}} - \kappa_J < \frac{x}{\eta_C} - \kappa_C \tag{5.13}$$

This condition can be further simplified to,

$$\frac{1}{\eta_J} - \frac{1}{\eta_C} < \frac{\kappa_J - \kappa_C}{x} \tag{5.14}$$

In the model, the cost of punishment for a cheating agent is assumed to be exogenous to the banker. This is not an unrealistic assumption, given that the level of punishment for a cheater was determined by community norms, and was beyond the control of individual bankers. Does it matter to the model if the caste banker can determine the magnitude of the punishment cost? It should not, as long as there is a finite upper limit to that cost, since the caste bankers will always choose the maximum cost. Therefore, κ_C can be interpreted as the maximum level of punishment that can be inflicted by the caste banker. The maximum cost a cheater could expect was the cost of social sanction. This cost must not be too large, since the people who would execute the punishment would be related to the cheater through kinship ties.

Improvement in communication technology influences the decision to adopt joint-stock banking by affecting more than one parameter of equation (14). It affects the values of both η_J and η_C , as the quality of monitoring technology would improve for both of the types. Moreover, improvements in transportation facilities allow agents to find employment outside their communities, making community sanctions less effective. Hence, κ_C decreases with improvement in transportation facilities, making the adoption of joint stock-banking more likely.

Now, consider the banker's decision to spend resources on communication technology. This is important, because if information transmission was free, there would be no reason to switch between the modes of business organization. I assume that each banker has a fixed amount of resources available to spend on monitoring, which increases with the banker's wealth and size of business. Hence, big bankers spend more money on monitoring their agents. Also suppose κ_C does not change with improvements in communication technology.

The fundamental difference between joint-stock banks and caste bankers is that the former cannot use the social network for monitoring. Hence, they spend all their available money on communication technology. However, using the community network for monitoring is not free. It has already been illustrated that temple contributions can be interpreted as the cost of accessing the caste network. The taxation policy followed within the caste was close to the *ability to pay* principle - with richer members paying more. Suppose that bankers are indexed by their wealth. A banker l is wealthier than the banker l-1. The temple contribution is fixed by the caste *panchayat*. Suppose that for banker l, amount of endowment for spending on monitoring is γ_l and the amount of temple contribution is fixed at c_l . The banker can spend the rest of the money $(\gamma_l - c_l)$ on monitoring using communication technologies such as railway and telegraph.

A specific functional form for the monitoring technology is assumed to further elaborate on the decision process. It has already been specified that η is increasing in τ and ν , and decreasing in δ . Define,

$$\eta_m = \frac{\tau y_m + I_m \nu}{\Delta + \delta} \tag{5.15}$$

where the subscript m = C, J denotes whether its a joint stock or caste based organization. I_m is an indicator function such that $I_C = 1$ and $I_J =$ 0. This indicator makes sure that monitoring under caste-based banking uses both modern technology and the caste network, while joint-stock banks only monitor with modern communication. The variable y_m represents the amount of money spent on modern communication by organization type m. Δ is just a big number that makes sure that η never gets bigger than 1, even if δ is close to 0. Given this functional form, equation (14) can be rewritten as

$$\frac{\Delta+\delta}{\tau y_J} - \frac{\Delta+\delta}{\tau y_C+\nu} < \Gamma \tag{5.16}$$

where $\Gamma = \frac{\kappa_J - \kappa_C}{x}$. For a banker *l*, this condition can be rewritten as,

$$\frac{1}{\tau y_J^l} - \frac{1}{\tau y_C^l + \nu} < \frac{\Gamma}{\Delta + \delta}$$
(5.17)

This can be further simplified to,

$$\frac{\nu - \tau(y_J^l - \tau y_C^l)}{\tau y_J^l (\tau y_C^l + \nu)} < \frac{\Gamma}{\Delta + \delta}$$
(5.18)

It has already been specified that $y_J^l = \gamma_l$, and $y_C^l = \gamma_l - c_l$. Hence, equation (18) can be rewritten as,

$$\frac{\nu - \tau c_l}{\tau y_J^l (\tau y_C^l + \nu)} < \frac{\Gamma}{\Delta + \delta}$$
(5.19)

This condition implies that a caste member opts for joint stock banking if τc_l is sufficiently larger than ν . This condition is true when spending c_l on communication technology yields much higher information content than what can be had from the caste network. This can be true under these conditions: if τ is high, c_l is high, and/or ν is less effective. In other words, caste members are more likely to opt for joint-stock banking if communication technology improves and/or the social network weakens. If transportation facilities reduce the effective cost of social sanction (κ_C), then this condition is more likely to be met. This analysis leads to the following proposition:

Proposition 5 Improvements in communication technology positively affects the likelihood of adopting joint stock banking.

The next section provides historical evidence to determine whether these conditions were satisfied in early 20th century India, starting with the history of improvements in communication technology. Then, I discuss the weakening community ties among Chettiar bankers. Both factors increased the likelihood of joint-stock banking.

5.3.3 Improvement in Communication

The Indian economy in the late 19th century underwent a massive expansion of communication facilities with the construction of railroads and telegraph lines. Railway construction under colonial rule can be divided into three phases: the old guarantee system (1843-1870); the era of state construction (1871-1880); and the new guarantee system (1880-1924) (Thorner, 1951). The railway network expanded significantly from 1880-1914. Railway track increased from 15,764 to 59,585 km and the number of passengers increased from 22 million in 1871-74 to 392.2 million in 1910-14 (Headrick, 1988, pg 74). However, these are aggregate statistics covering all of India. The Chettiar bankers ran their business from Chettinad in Southern India while the centres of their operations were in Burma and Ceylon. Hence, looking at the expansion of communication facilities in these regions is important for this study.

The data used here is from "Digital South Asia Library".³. The data used here are from "Digital South Asia Library". I specifically looked at the passenger carriage on the Madras railway. A few clarifications about the data are needed. The passenger statistics for the period 1883-1912 present data for Madras and Southern Mahratta railways coupled together. However, South Mahratta railways did not begin operating until 1883. So, for time periods 1868-1883, only Madras railways data is used to represent the extent of railways operation in South India. There are two gaps in the data set. Data is unavailable for the periods of 1878-1880, and 1887-89. Moreover, for the period 1881-1894, passenger statistics exclude people who used sea-

³http://dsal.uchicago.edu/statistics/

sonal tickets, while all other data points include that data. I use both types of data together, without any adjustments, because the number of people with seasonal tickets was an insignificant proportion of the total number of passengers. For example, data exists for both types for the year 1895. The number of passengers including seasonal ticket holders was 9,484,000, while the number of passengers excluding seasonal ticket holders was 9,483,742. Hence, using both types of data together for understanding the time trend should not be a problem.



Figure 5.2: Number of passengers in South Indian railways

The graph (Figure 1) shows that passenger traffic increased almost continuously throughout the period. There was a decline for a short period in the 1890s. But then there was a steep increase starting from 1901. It is important to look at railways in Burma, where Chettiar banking operations were concentrated and where, traditionally, river transport was more important. Railway expansion was at a rudimentary stage in the 1870s - the first operation, *Irrawady Valley State Railway*, started in 1877, covering only 163 miles. Another line, Sittang Valley State, started operations in 1884. In the subsequent years, more divisions were opened. Then in 1896, all the lines amalgamated to form Burma State Railways (Nisbet, 2005). The data show a steady increase in passenger traffic during the period, with the curve getting steeper around 1900.



Figure 5.3: Number of passengers in the Burma railways

During this time, telegraph networks expanded at a rapid pace as well. All major joint-stock banks had telegraphic user names. These code names needed to be registered with the telegraph department. The Mercantile

Bank of India, for example, had the code name "Paradise". The construction of an extensive telegraph network in India started in 1853 (Headrick, 1988, pg 121). The telegraph was instrumental in the British victory against the rebellion of 1857-58. In 1883, the department of telegraph merged with the postal department (Headrick, 1988, pg 121), allowing numerous small post offices to handle telegrams, which were forwarded there, by mail, from the nearest telegraph office. Consequently, after 1883, the number of post offices can be added to the number of signal offices to get a complete picture of the telegraphic network in India. Because of this shift in policy, there was a discrete jump in the size of the network in 1883. The growth in the number of telegraph offices is presented in Figure 4.



Figure 5.4: Expansion of Post and Telegraph System

5.3.4 Weakening of Community Network

The model predicts that bankers are likely to choose the joint-stock form of organization if the community network weakens. Social networks are likely to weaken in an environment where mobility increases due to improvements in transportation infrastructure. This section provides some evidence of the weakening community ties of the Chettiars during the first half of the 20th century.

In the early 20th century, Chettiar leaders expressed concerns about the decaying social capital within their community. One relevant document comes from the first All Burma Chettiar conference held in Rangoon in 1924. In the presidential address, T S Nagappa Chettiar expressed his worries about declining cooperation among the Chettiars (Mahadevan, 1978). He also criticized the trend of taking intra-caste disputes to formal courts. (Previous chapters described that same anxiety among English craft guilds in the 16th century.) This comment suggests a general pattern of weakening community institutions. Some of the resolutions passed in that meeting are important for understanding the issue of weakening social ties Mahadevan (1978):

- 1. It was decided that a modern joint stock Chettiar Bank should be established. The director and shareholders of the said bank must be Chettiars.
- 2. Chettiar bankers were urged not to charge excessive interest rates from their fellow Chettiars.
- 3. The commercial banks in Burma were urged to lower their interest rates on their loans to Chettiars, since the same was much higher than the rates prevailing in the banks in Calcutta and Madras.
- 4. It was resolved that the tenure of the agents of the Chettiar firms in Burma would be reduced from three to two years.

5. Consideration on the resolution as to whether disputes amongst the Chettiars be settled within the community, viz., through the medium of the Chettiar Panchayats, or outside the community, was postponed to the next conference.

These resolutions reveal important aspects of the Chettiar business organization and their community ties. The first one directly expressed the aspiration of the Chettiars to go with the joint-stock business model. Clearly, the reason was not the need for capital from outside the caste. If that was the case, they would not have restricted shareholders to the Chettiar caste. Rather, the move to create a joint-stock bank was probably motivated by the perceived organizational advantage of that form of banking. The second resolution points to the fact that Chettiar bankers were routinely charging other Chettiar bankers high interest rates - higher than what community norms allowed for intra-Chettiar transactions. What does that imply? Interest rates reflect the risk associated with a particular borrower. A caste banker had better information about, and control of the behavior of, other caste members. Therefore, the intra-caste interest rate should be lower than the market rate. An increase in the intra-caste interest rate was possibly a reflection of weakening social ties leading to less information about fellow caste members.

The third resolution tells us that the interest rate charged by the British banks to Chettiars was higher in Burma than in Madras and Calcutta. This points to the lack of arbitrage, even though Chettiars were present in all these places. It shows that the Burma-based Chettiars could not access funds from banks in India through their kin networks in India. A difference in transaction costs is a possible reason behind the interest rate differential. But this seems unlikely as all these locations were British colonies, and hence not subject to trans-border monetary transactions. Therefore, the lack of arbitrage can be attributed to the weakening of caste networks.

The move to reduce the years of tenure for agents can also be seen as a signal of weakening community ties. It shows that bankers began depending more on their agents' information than on the system of information circulation through the community. A three-year system would work fine if there was a constant turnover of agents from different bankers, and efficient information sharing within the community. However, if the network did not function smoothly, then each banker would need his own agent to return sooner. The way that Chettiar business was run made the physical return of the agents quite important. Use of the telegraph system was not a perfect substitute. The information that could be sent using telegraph was limited by the need to be brief, and was therefore insufficient for getting the full picture of the business in the overseas locations. Moreover, the messages were sent in English, and the Chettiars had to hire outsider translators to read them; sensitive information could not be sent that way.

The last item postponed the question of adjudicating the intra-caste disputes in *panchayat*, i.e., the community court. The postponement implies that there was no unanimity on the issue, meaning that a sizable section of the caste wanted intra-caste disputes to be resolved in formal courts.

The set of resolutions reveals a general pattern of weakening social ties. Further evidence of the Chettiars' weakening social ties is available from the Ceylon court records. The period between 1901-1935 saw an increase in Chettiar litigation in Ceylon. Weerasooria (1973) discusses cases that were brought to the formal courts in Ceylon by the Chettiars. Of those, 10 were brought against other Chettiars.

Why did the Chettiars' class solidarity weaken during the early 20th century? One possible reason could be intra-caste income disparity. A time series on that disparity would be ideal for illustrating this point. In the absence of such data, I look at a snapshot view of Chettiar land-holding distribution in Burma, circa 1940, which sheds some light on this issue. The data is taken from Mahadevan (1978).



Figure 5.5: Land Distribution among Chettiars in Burma, circa 1940

The graph presented above shows a skewed land distribution, hinting at a possible intra-caste conflict of interest, and a hierarchical structure within the Chettiar caste. Another reason could be the Chettiars' involvement in speculative trading. The fundamentals of speculative trading are not compatible with the cooperative, information-sharing model of caste banking. The Chettiars became involved in speculative trading in the late 19th century. The opening of the Suez Canal in 1869 ushered in a new era of trade between Europe and Asia. South Asia began to cater to Europe's demand for rice, and Burma emerged as one of the major exporters. Acreage of paddy cultivation increased continuously from 1870-1930 (Rudner, 1994, pg 85). The price of paddy also increased until 1926. The expansion of cultivation required credit, and Burmese moneylenders did not have enough capital to meet the demand. Consequently, Chettiars assumed a central role in the Burmese credit market. In time, Chettiars penetrated the rice and timber markets. In the 1890s, Chettiars from Calcutta entered Burma, and began exporting rice to India and Ceylon. They also established rice
mills in Arakkan (Mahadevan, 1978). In the next diagram (Figure 6), the growth of rice exports from Burma is presented using data from Hwa (1968), pg 201.



Figure 5.6: Rice and Paddy Export From Burma, 1870-1930

Chettiar rice traders did not work merely as middlemen between farmers and European traders. They emerged as competitors of the European rice traders (Furnival, 1948).Rice trading involved forward trading, making speculation an integral part of the business practice. Speculation is not consistent with information sharing. One can imagine that the rise of speculative business made caste members more competitive with each other and that, consequently, the caste network shared less information. This would make the network less effective. The business operations of rice traders typically depended on modern communication methods such as telegrams. A prominent rice trader, M.M. Palaniappa, conducted his whole business using telegrams, receiving information on price fluctuations from different centers. He employed clerks to read and translate the messages for him, and also employed delivery boys to bring them at his own cost (Sridevi, 2005, pg 148).

The English tradition of education, and the individualist culture associated with it, may also have contributed to the weakening of the collectivist culture. Here it is important to note that only the elite members of the Chettiar community moved to joint-stock banking. Most of them had received an English education. For example, Rajah Muthiah Chettiar, the first director of the Indian Bank, was educated at the British-run Presidency College in Madras, where he was taught by graduates from England (Nagarajan, 1989).

5.3.5 Wage Comparison

The next important consideration is the difference in wages between these two forms of organization. The model predicts that the organization with better monitoring technology pays lower wages. It is difficult to track wage data before and after the transition of an individual bank. The closest comparison that can be performed is between the wages of a caste bank and a joint-stock bank run by Chettiars. I compare the salary structure of the Indian Bank with the Chettiar caste banks. But before looking at the wage data, it is important to understand the employee structure of the two forms of organization. An agent of a Chettiar banker was appointed for three years. The salary would be negotiated between the agent and the proprietor. In the 1930s, an agent's salary ranged from 800 to 3,000 (varakans for a three year period (one varakan = Rs. 3.5)(Rudner, 1994, p 116). Besides the chief agent, the bulk of the work in a Chettiar agency was carried out by a staff (kattu kanakkupillai) consisting of a first assistant (mudalal), a subordinate staff (aduthal), a cook (camaiyalkaran), and an errand boy (*pettiyadi paiyan*). Large firms would also appoint a court clerk (*kirani*) and a cashier (Rudner, 1994, pg 118).). The errand boy was more of an apprentice who would be provided food and housing, but no salary. His biggest payoff was the opportunity to learn the tricks of the business. No evidence could be found of the salaries of the other employee categories.

Turning to the joint-stock banks run by the Chettiars, I present data on the salary structure of the Indian Bank in 1912. The employee structure is quite different from the caste banks, making precise matching of position names difficult. However, we can at least get an idea of the salaries drawn by the joint-stock bank's employees (see next page). The data are taken from Seshadri (1982).

| Employee Category | Monthly $Salary(Rs)$ |
|----------------------------------|----------------------|
| Secretary | 750 |
| Senior Officer | 220 |
| General Assistant | 150 |
| Agents | 100 |
| Officers | 75 |
| Head Clerk | 50 |
| Senior Clerk | 50 |
| Accountant | 50 |
| Loan Clerk | 40 |
| Clerk in charge of fixed deposit | 35 |
| Clerk-accountant | 30 |
| Ledger Clerk | 25 |
| Shorthand typist | 25 |
| Savings Bank Clerk | 25 |
| Ordinary clerk | 25 |
| Clerk in charge of day book | 20 |
| Bill collectors | 9 |
| Peons | 9 |
| Waterman | 8.5 |
| Watchman | 8 |
| Sweeper | 8 |
| Scavenger | 4 |

Table 5.3: Monthly salary structure of Indian Bank, 1912

5.4. Lender Borrower Relations

There were many more types of employees in the joint-stock bank than in a Chettiar agency, and a precise salary comparison cannot be done. However, I compare the salaries of the position called 'agent' in the Indian Bank with the similarly named position in the caste-based bank. As I have already mentioned, a Chettiar agent would receive 800-3,000 varakans for three years. This amounts to Rs.933-Rs.3,500 per year. An agent in the Indian Bank was paid Rs.1,200 per year. In Chettiar banks, agents' salaries varied with the banker's wealth. The founders of the Indian Bank were major businessmen, with high stature in the Chettiar community, who would pay higher salaries to their agents. Hence, the upper limit of the caste bankers' agents' income would be appropriate for comparison. However, I perform the wage comparison for the entire range. Next, I deflate wage data by price. Since I do not have a good price index, I use rice prices for deflating the nominal figures. The price data is from the Rangoon market in 1912 and 1930. Prices from Rangoon are a good proxy, even if the agents were located in India, as India was the major importer of Burmese rice. The price of rice was Rs.160 per 100 baskets in 1912, and Rs.75 in 1931. One hundred baskets contained 46 pounds of rice (Mahadevan, 1978). Prices started to drop in the 1930s. In 1930, the price of rice was 130. Given the unavailability of data for subsequent years, an average of 1930 and 1931 prices is taken to deflate nominal data. This is to make sure that a low price year has not been chosen.

The calculation shows that an Indian Bank's agent's annual salary was 750 baskets of rice, while an agent of the caste banker would get 878 to 2,926 baskets. This result is consistent with the prediction of the model.

5.4 Lender Borrower Relations

This section elaborates on the nature of the Chettiars' lending business, and determines whether it had any effect on the Chettiars' decision to move to joint-stock banking. The Chettiars in Burma and Ceylon extended loans for agricultural activities. In Burma, the interest rates charged by the Chettiars (15% to 25%) were much lower than the Burmese moneylenders' rates (48% to 365%). The Chettiars' lower rates reflected their ability to understand good risks. Local agents would get risky customers, which led them to charge higher rates that included a risk premium (Sridevi, 2005, pg 83).

The Nattukottai Chettis' credit business was based on extensive use of the credit instrument called *Hundi*, the traditional name for the bill of exchange. Hundis were instrumental in transferring money from one place to another. Nattukottai Chettiars used them to finance trade transactions. Rudner provides an example of how the hundi system worked (Rudner, 1994, pg 93). Suppose that a paddy merchant bought a shipment of paddy at a local market in Burma. Instead of paying with cash, he could pay by drawing a *hundi* on his account in a local Nattukottai Chettiar office in Rangoon. The local Nattukottai Banker would cash the *hundi* at a discount rate of 1-3%, and would take the railroad receipt of the paddy shipment. The local agent would send the *hundi* and the railroad receipt to his main office in Rangoon with the instruction to debit the merchant's account. In order to regain the railway receipt and take possession of his paddy from the banker, the merchant had to maintain a deposit account with the Rangoon banker in a satisfactory manner.

The Chettiars would typically use four basic hundis: Dharshan hundi, Nadappu Hundi, Thavadani hundi, Pay order hundis. The Dharshan hundi was a close substitute of a demand draft. The Nadappu Hundi and the Thavadani hundi would be drawn on different types of accounts with a Nattukottai banker. These were similar to saving certificates. Pay order hundis were used as receipts given in lieu of dowry payments made during a marriage ceremony (Rudner, 1994, pg 93).

The major overseas operations of Nattukottai Chettiars were in agriculture. They extended loans for rice cultivation in Burma, and for rubber and tea plantation in Ceylon. What explains the concentration of lending operations in agricultural activities? One explanation is the use of land as collateral. Land would get transferred to Chettiars if the borrower de-

5.4. Lender Borrower Relations

faulted on a loan. Transfer of land to Chettiars, who were foreigners, created a huge political turmoil in Burma. The "Lower Burma Land and Revenue Act, 1876" contributed significantly to the problem of land possession by Indian immigrants in Burma. The act allowed freehold of agricultural land by anyone after occupation and payment of land revenue for 12 years. This act allowed Chettiars to occupy land in Burma whenever debtors defaulted on loans (Mahadevan, 1978). The Chettiars always claimed that they never wanted to take possession of land and that they were forced to do it because of loan defaults. Raja Annamalai Chettiar voiced the same concern:

The Chettiars have no interest in usurping the land. We have been involved in moneylending for generations together. We are not agriculturists. Even if land yielded gold, we would still prefer moneylending and business (Sridevi, 2005, pg 96).

Land as collateral was not acceptable to joint-stock banks for two reasons. First, the property right of land was not well defined; most of the land was traditionally held without any legally executable document. Second, due to the first factor, the land market was not well developed. This created a two-fold problem. First, it was difficult to obtain land through a legal process when the debtor defaulted on a loan. Second, it was difficult to sell the acquired land. This is why, for a banker, land would not be lucrative collateral. The Burma Nattukottai Chetti Association mentioned three ways of acquiring land when a creditor default on a loan: voluntary sale in settlement of debt; court sale under money decree; and court sale under mortgage decree (Mahadevan, 1978). The so-called 'voluntary' sale must have been enforced by the social sanction mechanism imposed by the Chettiars. One can imagine that if the creditor did not transfer the land, they would no longer be able to get a loan from any Chettiar banker and, as a result, could not afford cultivation. This is a costless method of realizing the value of unpaid debt. This method clearly was not available to joint-stock bankers. It is not a surprise that only Chettiars extended agricultural credit in the early 20th century. Similarly in Ceylon, Chettiars specialized in loans to farms and plantations.

5.5. Concluding Remarks

However, Chettiars would not prefer to own land in lieu of unpaid debt, since in the absence of an effective land resale market, owning land would decrease their liquidity, which would be detrimental to their money lending business. Nevertheless, in 1930, they owned 570,000 acres of land in the 13 rice-growing districts of Burma. This was 6% of the total land in that area, and 19% of the total land in that area occupied by non-agriculturists (Mahadevan, 1978). Land ownership is a major reason why the Chettiars actively participated in the rice trade. If land could not be sold, then the second best option to maintain liquidity was to engage in rice trading. I have already shown how Chettiar participation in trading activities weakened the cooperative structure of their business organizations.

5.5 Concluding Remarks

This chapter provides an explanation for the organizational evolution of the caste bankers. The business organization of one prominent banking caste from Southern India, Nattukottai Chettiars, changed in the early 20th century: they shifted from caste-based banking to joint-stock banking. The explanation for the change lies partly in the improvement of communication technology. Caste banking heavily depended on the caste network for its operations. The caste network was an effective channel for information dissemination, which was essential for ensuring the agents' honesty. As communication technology improved, and as several factors caused the social ties of the caste network to weaken, joint-stock banking proved to be a more profitable form of business for many of the Chettiar bankers.

The fundamental motivation for this thesis is to provide some understanding of how societies develop formal institutions. In the previous two chapters, I discussed the development of formal credit institutions in preindustrial revolution England. This chapter complements the previous ones by shedding light on the transition of credit institutions in a less developed country. The case studies have some similarities. In the English case, an increase in trade and urbanization were the main factors behind the transition. In the Indian case, increasing trade was not enough to cause the transition the rigor of the caste system allowed the caste-based organization to prevail. Instead, this chapter identifies improvements in communication technology, along with the rise of speculative trading, as the major factors behind the transition in India. This study has some important policy implications with regard to the question of the persistence of informal institutions in less developed countries. Understanding the reasons for persistence should help governments design more effective policies.

Chapter 6

Conclusion

The research presented in this dissertation contributes to the understanding of how societies move from informal to formal institutions. I provide analytical models to break down the choices people make between formal and informal dispute resolution forums, and I identify the factors that lead people to choose formal over informal institutions. I provide case studies using historical data and show how that evidence is consistent with the predictions of the models.

In chapter three, I focus on early modern England, from 1500-1700. It was a time of increasing urbanization and, with that, increasing social heterogeneity which rendered informal institutions ineffective. As a result, more and more people turned to formal institutions, which improved following a 'learning-by-doing' mechanism. This chapter provides the rudiments of a learning model for formal legal institutions, and distinguishes differences in how formal and informal institutions learn. Informal institutions have an advantage in small, cohesive societies, since community organizations have a great deal of information about their members. But community courts lose that advantage when societies expand. Then, the comparative advantage shifts to the formal courts because of their greater ability to learn. The model of learning is supported by evidence from both formal and informal court records.

The model presented in chapter four shows that as social heterogeneity increases, informal institutions become less effective, and people increasingly turn to formal courts for resolving disputes. Consequently, formal courts improve following a learning-by-doing mechanism. The model predicts a bell-shaped litigation curve. I present supporting evidence from early modern England. Plotting the volume of litigation over time yields an inverted U-shaped curve. Improvements in institutions affect litigation in three ways. First, better institutions discourage defaulting on loans. But they also encourage lenders to move to formal court in the event of default. These factors work in opposite ways. Finally, better formal institutions attract people away from informal institutions, increasing the volume of litigation in formal courts. The interaction of these forces leads to the bell-shaped litigation curve.

Chapter five analyzes the case of Nattukottai Chettiars, the banking caste from India. In the early 20th century, they started moving from caste-based to joint-stock banking. My research aims to uncover the factors responsible for this transition. I find that with improvements in communication technology, the caste information network lost its advantage. Moreover, Chettiars' involvement in speculative trading weakened their social ties, which further contributed to their decision to adopt the more modern form of banking.

These two apparently unrelated case studies contribute to the understanding of the transition from formal to informal institutions. In both cases, the factors responsible for the transition reveal a general pattern. Informal institutions thrive on information at the level of individuals - information which flows smoothly through community networks. When community networks function effectively, informal institutions do better than the formal ones. Formal institutions gain the advantage when that flow of information through community networks is interrupted, or when formal institutions gain access to better technology for transmitting information. In early modern England, increasing geographical mobility disrupted the information flow through community networks by making the society more heterogeneous. In the Chettiar case, it was the improvements in communication technology which put caste banking in a relatively disadvantageous position. So the general pattern that these cases reveal is that increasing social mobility and improvements in communication technology have detrimental effects on informal institutions.

Besides the contribution towards the understanding of the general question of institutional transition, the case studies contribute to the understanding of some historical issues from England and India. The period of English history that I cover leads into the age of Enlightenment and the Industrial Revolution. Hence, the study contributes to the literature of the Enlightenment. Similarly, different caste-banking groups and their operations, origins, and evolution, as well as their relationship with the colonial powers, are issues of major interest in Indian historiography. The case study on Nattukottai Chettiars shed some light on those issues.

It would be interesting to compare the experiences of transition in these two countries. Such a comparison might be a useful contribution to a more general understanding of why institutions develop differently in different countries. Today, formalization of institutions is much more comprehensive in England than in India. Future work would focus on identifying the parameters which assume different values for different countries and, therefore, affect the process of institutional transition in different ways.

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