Chapter 8 Building a State: Genoa's Rise and Fall

Many countries today are facing the challenge of building states that effectively promote political stability, curtail political violence, and foster economic prosperity. Late medieval Europe witnessed a wave of attempts to create such states, particularly in the form of the city-states of northern Italy (see, for example, Waley 1988). No micro-analytical examination of this process of state-building has been conducted and its lessons has not been uncovered.

This chapter examines the state-building process in the city-state of Genoa, which emerged from obscurity to become one of the wealthiest cities in Europe but whose history was characterized by frequent intracity political violence and relative economic decline. The chapter provides a microanalytical examination of the historical process of state-building in Genoa while explicitly recognizing the need to study the polity as an equilibrium outcome in which actors can choose between predatory and economic behavior.

Two perspectives dominate the study of the relationships between political institutions and economic prosperity, neither of which adequately accounts for Genoa's experience. The first perspective assumes the existence of a predator-ruler, a ruler with a monopoly over coercive power. According to this view, promoting prosperity entails building institutions that enable the ruler to credibly commit to respecting property rights.[1] This perspective cannot be applied to the city-state of Genoa, which had no de facto ruler with or without a monopoly over coercive power at the time it was established.

The second, neo-Hobbesian, perspective on state-building assumes that the state reflects attempts by economic agents to advance their interests, as "the state produces order," and provides other public goods that benefit them (Hardin 1997, p. 23). Achieving these benefits requires institutions that mitigate the agency problems inherent in relationships between economic agents on the one hand and politicians and bureaucrats on the other (see Buchanan 1999; Barzel 2002).

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[1] See, for example, North (1981), Levi (1988), North and Weingast (1989), Root (1989), Olson (1993), Greif, Milgrom, and Weingast (1994), Barzel (2002), and Greif (2004b).

Economic historians have implicitly invoked this perspective to explain the rise of the Italian city-states that were established as republics. The prevailing view, articulated by the great historian of the commercial expansion of the late medieval period Robert Lopez, is that these city-republics were "governments of the merchants, by the merchants, for the merchants" (1976, p. 71). Yet the political violence that was endemic in late medieval Italian cities often occurred among those who were otherwise engaged in economic activity (Martines, 1972; Tabacco 1989). This suggests the limitations of this view and the need to study the process of building an effective state as one of institutional development that causes individuals who can engage in either economic or predatory behavior to become merely economic agents.

Genoa's experiment in state-building suggests the importance of studying these processes while recognizing that they entail a transition from one set of self-enforcing institutions to another. State-building usually does not begin with a clean institutional slate but arises from a situation in which there are institutions that influence the behavior of potential and actual political actors, that is, actors who can muster coercive power. Often central to these institutions are political actors in the form of social structures (organizations), such as clans, tribes, aristocracies, religious groups, castes, communities, and armed groups. These structures and the rules, beliefs, and norms that generate political and other behavior within and among them, constitute institutions that influence political behavior. The institutions that generate behavior among social structures inherited from the past are part of the initial conditions in state-building processes.

Because in the initial stages of a state-building processes the state does not have independent resources, the support of the social structures inherited from the past is crucial. The initial challenge of building an effective state is to motivate these social structures to mobilize their economic and military resources to accomplish the tasks the state must undertake to foster political stability and economic prosperity.

The difficulty in providing such state-coordinated motivation is that joint mobilization of resources to tasks that were not undertaken before may well undermine the self-enforcing institutions that govern the relationships among these social structures. It can undermine them without providing a Pareto-improving institutional alternative, particularly because once cooperation increases the available economic resources, these resources can be used to muster

military ability. Anticipating or fearing that this might be the case, the social structures will be willing to mobilize their resources only for tasks that will not reduce their welfare given the existing institutions. The resulting *coordinating state*, in which each social structure can decide whether to mobilize its resources on behalf of the state, therefore has limitations. Its ability to act is limited, because a social structure will contribute only to tasks that do not alter the capacity of others to use their coercive power ex post to expropriate the resulting gains or gain additional powers and resources, thereby leaving the social structure or its leaders worse off.

Without countervailing considerations or an institutionalized commitment to their welfare, the initial social structures will be only limitedly motivated to jointly mobilize their resources for tasks that have not been undertaken before. Hence building an effective state requires creating new institutions that empower it to impose an ex post allocation of gains.[2] Yet a powerful state can alter the distribution of resources and shift institutional and other powers away from the social structures inherited from the past. If these social structures are to help the state gain this power, they must believe that the state's power will not be used ex post to reduce their welfare. Even if the resulting state is effective and promotes order and prosperity, it does not necessarily mean that particular social structures will benefit. Thus it is necessary to create a limited state or government.

Social scientists have long recognized the problem in creating a *powerful yet limited* government, one that is given sufficient power to institute behavior but is prevented from abusing its power. The experience of Genoa indicates that creating even a limited government with power over the social structures inherited from the past is insufficient for creating a stable, effective state. Achieving this goal requires a strong yet limited state whose institutional foundations undermine the capacity of the social structures inherited from the past, or new ones that the state's functioning entails, to use coercive power against it or capture it for their benefit.

Genoa's effectiveness in mobilizing resources, promoting prosperity, and containing political violence depended on the extent to which its spontaneous and designed institutional foundations responded to this challenge. Genoa's institutional foundations— that is, institutions

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[2] Recall that those higher up an institutional hierarchy have power over others in the sense of being able to dictate the institution that generates behavior among them. See section 2.1.3.

that generated behavior among actual and potential political actors—reflected the constraints implied by institutional elements inherited from the past on the set of new self-enforcing institutions and the degree to which they motivated and enabled social structures inherited from the past to mobilize their resources and create a limited government.

The dynamics of the institutional foundations of Genoa were shaped by exogenous shocks, the degree to which these institutions were self-undermining, local learning that led to their refinement, and the institutional ramifications of their unintended consequences. Initially, under the consulate system, Genoa was a coordinating state with a limited ability to mobilize resources among its clans. Indeed, the institutional foundations of this state were self-undermining. Particular historical circumstance and learning induced and enabled the Genoese to create a more effective and powerful, yet limited, state. Economic prosperity and political stability were the result. Yet Genoa's institutions were still self-undermining, because the clans inherited from the past were reinforced and motivated to retain extrastate coercive power.

Genoa's rich historical records, dating back to the Republic's establishment, facilitate this analysis. Annals written by contemporaries offer a detailed account of the period, beginning with the First Crusade (1096–99). The *Codice Diplomatico della Repubblica di Genova* (hereafter CDG) contains numerous political and commercial documents from as early as 1056. Cartularies of scribes, which include private contracts, such as commercial agreements, real estate transactions, wills, and marriage contracts, are also available from this period. Together these primary sources provide unusual resources for analyzing Genoa's history. I used them extensively, in addition to the many excellent secondary sources.[3]

The structure of the chapter is as follows. Section 8.1 provides the relevant historical details and describes the importance of two clans, the Manecianos and the Carmadinos, to Genoa's state-building process. Section 8.2 provides a model of interclan relationships aimed at

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[3] Regarding the value of Genoa's historical sources, see in particular Face (1980); Abulafia (1977, pp. 6-24); Epstein (1984, pp. 5-24); and the introduction to GS. The excellent work by Genoa's historians, including Gabriella Airaldi, Eugene Byrne, Franco Cardini, John Day, Gerald W. Day, Steve Epstein, Richard D. Face, Diane Owen Hughes, Hilmar C. Krueger, and Teoflio Ossian de Negri, has contributed much to our knowledge of Genoa. This chapter builds on but at times disputes their analyses. See Greif (1994c, 1995, 1998c, 2004a) for these disputes and the many important details omitted from this chapter.

capturing exploring possible institutions that governed these clans' relationships. Section 8.3 combines the model's insights with the historical evidence to analyze the consular system, which provided the institutional foundation of Genoa from 1099 to 1154. Section 8.4 discusses the endogenous dynamics and the exogenous factors that first reinforced and then undermined this system between 1154 and 1194 leading to prolonged periods of civil war. Sections 8.5 and 8.6 examine the subsequent institution of the *podesteria*, which restored interclan cooperation in the short run but undermined political order in the long run. Section 8.7 summarizes the chapter's conclusions regarding Genoa and reflects on the European and Muslim worlds' experiments in state building in the Genoese mirror. To facilitate the presentation, technical details are relegated to the appendices.

8.1 Contracting for a State

During the late medieval period, Genoa emerged from obscurity to become one of the largest and wealthiest cities in northern Italy.[4] Initially, Genoa's economy was based mainly on piracy (including organized large-scale raids). Later its economy was based on "privileged" long-distance trade. This trade was privileged in the sense that the Genoese merchants benefitted from commercial privileges abroad, in the form of ports, quarters, customs reductions, and legal rights that reduced the risk and costs associated with trade and provided the merchants with a competitive advantage over other merchants.

Rulers along the Mediterranean shores gave privileges to political units whose naval and military forces merited their support or neutrality.[5] Gaining support or neutrality in this manner became common in the eleventh century, following the decline of the Muslim and Byzantine military and naval forces that had dominated the Mediterranean. Because naval and military power were important for gaining privileges abroad, the commercial success of a particular

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[4] Genoa's rise, like that of northern Italy in general, cannot be accounted for by technological and economic factors (Pryor 1988; Reynolds 1929, 1931; Krueger 1987; Greif 2004a).

[5] See Heyd (1868, 1885); Lopez (1938); Luzzatto (1961, pp. 73 ff.); Hicks (1969, pp. 49-50); Day (1988, pp. 5-6); Jacoby (1997); and Greif (2004a).

group of merchants depended on their state's ability and motivation to provide the necessary power.

In eleventh century Genoa, there was no state to organize forces to protect the city's merchants from piracy or to obtain privileges for them abroad. Although Genoa was part of the Holy Roman Empire, for various reasons, including the civil war in Germany, the Empire was in no position to provide the Genoese with naval or military support.[6]

The residents of Genoa stood to benefit from organizing themselves politically and mobilizing their own military and naval forces. They had much to gain from appropriate governance of a (political) transaction: mobilizing economic and military resources in order to benefit from the provision of a public good in the form of public order and privileges. Indeed, shortly after 1096 the Genoese organized themselves politically and established a commune—a temporarily sworn voluntary association—headed by consuls who were elected in the *parlamentum* (the gathering of all Genoese with "full rights") for a limited period of time (*Annali* 1099, vol. I, p. 9).[7]

The historical records reveal the economic motivation beyond this social contract. A consul had to swear "not to diminish the honor of [the] city, nor [its] profit[s]" and to labor for "our city, with regard to movable and immovable goods" (CDG, vol. I, no. 20).[8] The Genoese annals provide detailed information on Genoa's economic gains from having sent a fleet and an army for the First Crusade (*Annali* 1101-02, vol. I, pp. 20-21). That economic considerations motivated establishing and joining the commune is reflected in the fact that the ultimate

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[6] See Tabacco (1989, chapter 4); Schumann (1992, chapter 4); and Airaldi (1983).

[7] See Hyde (1973, pp. 29-52); Donaver (1890); Lopez (1937); Vitale (1951, p. 17; 1955, vol. I, pp. 3 ff.); De Negri (1986, pp. 232-234); Hughes (1978); and Day (1988, pp. 72-73). Genoa's Bishop (later an archbishop) lost his de facto political autonomy shortly after the commune was established (Epstein 1996, pp. 33-34).

[8] Regarding the Genoese consulate, see Vitale (1955), De Negri (1986), Pertile (1966), and Epstein (1996). Waley (1988, pp. 35 ff.) presents a general discussion of the city-republics in northern Italy. The choice of a republican system governed by elected consuls may have reflected ideas and beliefs inherited from the Roman period. "Italian city-dwellers, by the close of the eleventh century, had had enough of classical learning and legal training to conceive of themselves as the Roman people in minatory, to call their chosen officers consuls, and to claim rights of self-government as their lawful heritage" (Hearder and Waley 1986, p. 43).

punishment for refusing to participate in its activities was exclusion from its overseas trade (CDG, vol. I, no. 285).

In evaluating the effectiveness of the commune in promoting Genoa's economy, one has to identify the institutional foundations that generated behavior among Genoa's political actors. Doing so, as I argued in chapter 7, benefits from identifying the institutional elements inherited from the past that may have exerted environmental, coordination, and inclusion effects on these institutions. In the case of Genoa, clans and their beliefs and norms were the institutional elements around which new institutions emerged.

Clans became important economic, social, and political entities in northern Italy following the decline in central authority in northern Italy in the late medieval period (Herlihy 1969, pp. 174-178). Two viscountal clans, the Manecianos and the Carmadinos, were particularly important in Genoa. These clans, descended from a tenth century feudal viscount of the area, had the economic and military resources needed to build a state in Genoa. In the early days of the commune, they had the resources required to launch large-scale piracy raids and obtain commercial privileges abroad.[9] The commune gained privileges on a substantial scale only when these clans cooperated and mobilized their resources toward that end.

The historical records suggest that members of these clans internalized the norms and shared the beliefs of the feudal era. During this time nobles aspired to become independent lords reigning over a particular locality; they considered military force a legitimate means of achieving this goal. Various Genoese nobles became independent lords outside Genoa, often through force provided by their clans (Greif 1998c, 2004a). This system of norms and beliefs was cultural in the sense that it reflected uncoordinated development.

To what extent did these institutional elements inherited from the past curtail commercially beneficial cooperation in Genoa? If the clans indeed mobilized their resources for

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[9] On the genealogy of these clans, see Olivieri (1861); Belgrano (1873, tables XIX-XXVI and XXIX ff.); Byrne (1920, pp. 200-201); Cardini (1978); and Day (1988, p. 74). The Maneciano clan comprised the Spinula, Castro, Embriachi, Bruscus, and Vicecome families. The Carmadino clan comprised the Piper, Ususmaris, Lusis, and Carmadino families. Genoa's third viscountal clan, the delle Isole (Belgrano, 1873, table XXXVIII) was not active politically. Other clans allied themselves with these clans and sometimes even assumed leadership. These clans were thus often at the center of political factions. For simplicity, I ignore these issues here but discuss them at length in Greif (2004a).

the sake of profit, each of these clans would have been unwilling to mobilize its resources unless it had been ensured of gaining from doing so. In the absence of third-party enforcement, an allocation of gains agreed upon ex ante had to be self-enforcing ex post. The ability to use force in interclan relationships, however, could have made it difficult to reach self-enforcing agreements. Was this the case? How was each clan able to commit not to confront the other if commercial expansion made Genoa a more profitable area to control? What were the institutional responses, if any, to this problem? Did institutional development affect commercial expansion?

8.2 A Model of Mutual Deterrence

A model of mutual deterrence is useful for addressing these questions. (The detailed model appears in the annex.) Assume that there are two clans with infinite life spans and that at the beginning of a period each clan decides whether or not to cooperate in piracy. These decisions are made simultaneously. Piracy raids cannot be launched against a polity from which Genoa had already gained privileges. (Privileges were given to prevent such raids; the credibility of Genoa's commitment not to raid was achieved in a manner detailed below.) This implies that gains from cooperation in piracy declined with the number of privileges. To capture that long-distance trade was the key to economic prosperity , the model assumes that gross income increases as the number of privileges rose.

Whether the clans cooperated in piracy or not, they shared (not necessarily equally) the income from cooperating in piracy and from Genoa's privileges. After obtaining this income, each clan decides *in turn* how much of it to divert to sunk investment in military strength (which would last until it is that clan's turn to investment again in the next period).[10] Past investment in military strength becomes obsolete only when the new investment is made (so the military strength of the second clan that invest in a particular period still prevails when the first clan to invest makes its decision.) Military strength is public information and can be used to defend

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[10] The investment is assumed to last one period, because it supported a clan patronage network. For simplicity, I ignore military investment for piracy.

one's clan or to attack another clan in order to gain control of the city. Immediately after investing in military strength, a clan can decide whether to attack the other.[11]

An attack is costly. If neither clan attacks, each clan obtains a payoff equal to its share of the income minus its expenditure on military strength, and this stage game is repeated.[12] If a clan attacks, each clan's probability of winning increases with its relative military strength. A winning clan becomes a "controlling" clan, which receives all future income from privileges, but both clans lose any gains from future joint piracy.

The commune was peaceful for many years following its establishment. There are thus historical reasons to initially consider subgame perfect equilibria in which interclan conflicts do not occur. There are also theoretical reasons to consider such equilibria, as we are interested in evaluating whether Genoa's clan structure hindered building a state that was effective in promoting political order.

Examination of the set of subgame perfect equilibria in which an interclan attack does not transpire indicates that mutual deterrence can maintain interclan peace. In mutual deterrence equilibria, each clan is deterred from attacking the other by the self-enforcing belief that an attack will not pay given the other clan's military strength, the cost of the attack, and the implied loss from forgone future joint piracy.[13]

Interestingly, peace based on mutual deterrence equilibria provides a disincentive to acquire privileges. To show why this is the case, I extend the model to allow the number of privileges to be determined endogenously. Specifically, because acquiring privileges required the clans to cooperate, I assume that the number of privileges is the largest that both clans agreed to acquire and then ask if this number of privileges is smaller than the efficient (joint income–maximizing) number.

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[11] Sequential moves are at the center of Powell's (1983) seminal work on mutual deterrence.

[12] The subsequent analysis is strengthened if either of the following historically reasonable assumptions is made: a clan reaps nonpecuniary benefits from gaining control of the city, and a defeated clan gets a positive continuation value.

[13] Many mutual deterrence equilibria can prevail, each of which entails a different allocation of gains from piracy and privileges.

Analyzing this game indicates that under a mutual deterrence equilibrium, peace comes at the price of economic prosperity. The number of privileges that each clan finds optimal to acquire if the mutual deterrence equilibria are characterized by a positive investment in military strength is less than the efficient number of privileges (proposition 8.1). Intuitively, when considering acquiring an additional privilege, a clan must take into account the implied additional expense (political cost) required to ensure deterrence. Everything else equal, the additional privilege increases each clan's benefit from attacking the other. There is more to gain by capturing the polity but less to lose from forgone future cooperation in piracy. Hence the investment in military strength required to deter the other clan from attacking before gaining this additional privilege would no longer be sufficient.[14] Therefore, the optimal number of privileges for each clan is not one that equates the marginal economic benefit with the marginal economic cost (which, for simplicity, I assume to be zero). Instead, a clan's optimal number of privileges—the number that maximizes its net income—equates the marginal economic cost with the sum of the marginal economic and political costs.

A mutual deterrence equilibrium with the efficient number of privileges maximizes each clan's *gross* payoff but does not maximize its *net* payoff (figure 8.1). A mutual deterrence equilibrium with fewer privileges is optimal for a clan. In this mutual deterrence equilibrium, the marginal economic gain from additional privilege equals the marginal political and economic

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[14] A clan has more to gain and more to lose if it attacks another clan after gaining additional privileges. In cases in which the clan was previously indifferent to attacking or not (as indicated by the other clan's need to deter attack by having a military force), everything else equal, the increase in gain will dominate.

costs. This result holds whenever the mutual deterrence equilibrium at the efficient level of privileges requires a positive military investment.[15]
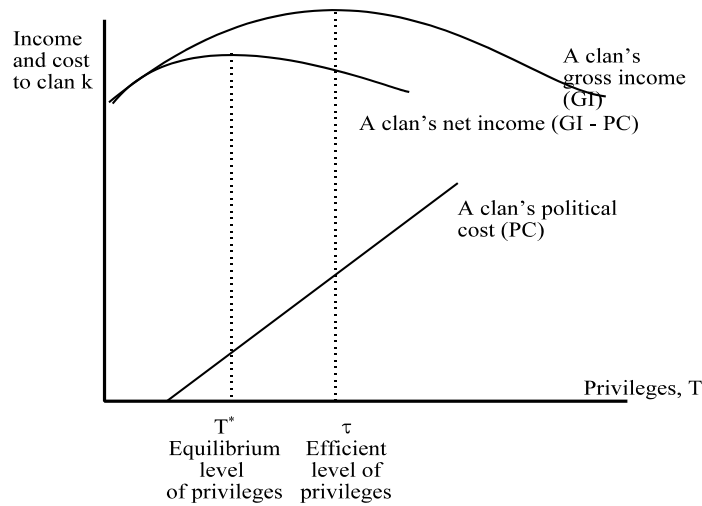

Figure 8.1: Equilibrium and efficient levels of privileges.

8.3 The Consular System: 1099–1154

If interclan mutual deterrence equilibrium indeed prevailed in Genoa, its institutional foundations reflected the coordination and inclusion effects of past institutional elements. Furthermore, the model suggests that the rise of an effective state was curtailed by clans' inability to commit to each other. Was this the case? Does the empirical evidence confirm the predictions of the model presented above? This section considers this evidence and establishes that the rise of an effective state in Genoa from 1099 to 1154 was hampered by the inability of the city's clans to commit to one another.

If a mutual deterrence equilibrium prevailed, the analysis predicts that Genoa's economy would be biased toward piracy and away from privileged commerce, despite the contractual nature of the Genoese commune and the profitability of long-distance trade. Indeed, a

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[15] Analytically, the results hold only at the efficient level of privileges. For ease of exposition, however, figure 8.1 portrays the result as holding everywhere.

contemporary traveler, Benjamin of Tudela, noted that the Genoese have "command of the sea and they build ships which they call galleys, and make predatory attacks upon Edom [the land of the Christians] and Ishmael [the land of the Muslims] and the land of Greece as far as Sicily, and they bring back to Genoa spoils from all these places" (p. 62).[16] Privilege-based commerce was, in the words of historian Gerald W. Day, "unusually slow to develop" (1988, p. 6). Caffaro, the contemporary author of Genoa's annals, suggests that it was slow to developed because of the clans' disincentives to mobilize their resources. According to him, "the city was asleep and was suffering from apathy and was like a ship wandering across the sea without a navigator" (*Annali* 1154, vol. I, p. 48).

Comparing Genoa's history with that of Pisa, Genoa's smaller neighbor to the south, provides more tangible evidence of the claim that the Genoese acquired fewer privileges than were possible and profitable, because of their need to sustain a self-enforcing political order.[17] Like Genoa, the Pisan commune was established at the end of the eleventh century, but by 1154 it had already acquired privileges throughout the Mediterranean, from Byzantium to Spain. Genoa at the time had privileges only in the Crusader states, Sardinia, Barcelona, perhaps Valencia, and some principalities in Provence. There is no indication that Genoa had any privileges in the important trading areas of Byzantium, Egypt, Sicily, or North Africa.[18]

This difference cannot be attributed to exogenous factors, such as opportunity, geography, or endowments. Pisa's location was not superior to Genoa's, and throughout the twelfth century Pisa's population was no more than 60 percent of Genoa's (Bairoch et al. 1988.) Nor can the difference between Genoa and Pisa be attributed to "first mover advantage," that is,

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[16] Otto the Bishop of Freising noted that the strength of the Genoese was "naval warfare" (1152-1158 [1953], p. 126). For evidence of piracy, see *Annali* vol. I, pp. 36, 38, 105-119. CDG vol. I, no. 75.

[17] For the history of Pisa, see Heywood (1921), Duffy (1903), and Rossetti and others (1979).

[18] Pisa had privileges in Corsica (since 1091); Sardinia (before 1118); the Crusader states (since the First Crusade); Byzantium (since 1111); Spain (in Catalonia since 1113 and in Almeria since 1133); North Africa (in Bona, Tripoli, Sfax, and Bugia since 1133); Egypt (including a bazaar in Cairo since 1153 and a bazaar in Alexandria, where it had acquired rights much earlier); and probably several principalities in Provence (since 1113) (Heywood 1921, pp. 46-82, 108-115). On Genoa's privileges, see CDG vol. I and *Annali* vol. I. In 1116 some Genoese consuls obtained private privileges in Sicily (CDG, vol. I, no. 27).

the fact that the Pisans began to acquire privileges earlier than the Genoese. The question is why Pisa moved first, not what transpired as a result.

While Genoa's commercial expansion was curtailed by interclan mutual deterrence, this was not the case in Pisa. Consistent with the argument that mutual deterrence provides disincentives to acquire privileges, Pisa's polity was dominated by a single clan, the Visconti, composed of just three families. Until 1153 this clan held 65 percent of Pisa's known leadership posts (consuls and vicecomes). Almost every year one or more of its members led the commune, and Pisa's consuls had the right to nominate their own successors (Rossetti et al. 1979; Cristiani 1962).[19] In Pisa the Visconti could have acquired privileges without worrying about how these additional privileges would have affected the intracommune balance of military power.

Internal peace prevailed in Genoa from 1099 to 1154. But as early as 1143, clans invested heavily in building fortifications to protect themselves from one another (CDG, vol. I, no. 128). They bought land and constructed walls and houses to form fortified enclaves with defensive towers.[20] Each clan established networks in which clients provided military and political assistance in return for economic and political patronage.[21] This seemingly wasteful behavior in a peaceful period was logical if interclan relationships were governed by a mutual deterrence equilibrium. Clans invested resources to maintain the interclan military balance. As Genoa's wealth increased, each clan had to invest more to maintain this balance.

The well-preserved information on Genoa's consulate holdings provides a measure of the extent to which clans mobilized resources to gain privileges. Consuls were elected by members of the Genoese commune, most of whom were not members or clients of the main clans. The number and military ability of these humbler Genoese made them a politically relevant force, as reflected, for example, in their right to approve taxation (CDG vol. I, no. 111). The economic interests of these commoners favored expanding privileged commerce. Yet in the early days of

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[19] The record of consulate holdings is incomplete. In any case, the Visconti provided one or more consuls or vicecomes each year before 1155 (Heywood 1921, pp. 8, 253-254; Waley 1988, pp. 35-36).

[20] See, for example, gs342 and gs505; Krueger (1957, pp. 270-271); and Hughes (1977, pp. 99-100; 1978, pp. 110-112). A contemporary traveler, Tudela (1159-1173), described the use of the tower in interclan conflict (1987, p. 62). See Greif (2004a) for the reasons why other clans also built towers.

[21] For example, *Annali* 1164, vol. II, p. 16; 1179, vol. II, p. 192; 1192, vol. II, p. 227.

the commune, these Genoese were too weak—organizationally, economically, militarily, and politically—to pursue this objective without the leadership and resources of Genoa's main clans. They did have a say in electing consuls and, given their interests, only clans willing to mobilize their resources to gain privileges could be expected to regularly participate in the consulate.

If this was the case, the conjecture that a mutual deterrence equilibrium governed interclan relationships suggests that initially Genoa's two main clans would jointly serve on the consulate. Theoretically, as long as the number of privileges is below what each clan finds optimal (T* in figure 8.1), both clans will find it advantageous to mobilize their resources to gain more privileges. Once a particular clan reaches the optimal number of privileges, it will cease cooperating in mobilizing its resources. Such a clan would therefore not participate in the consulate. Asymmetry in the optimal number of privileges for a clan, in turn, is more likely to prevail if gains from existing privileges are also asymmetrically distributed. To see why this is the case, consider, for simplicity, the case in which one clan expropriates all the rent from existing privileges but expropriates nothing from any new ones.[22] This clan's payoff will decline if new privileges are acquired, because it will have to increase its investment in military strength to maintain deterrence.[23]

Does the historical evidence confirm these predictions? Did the Genoese clans cooperate initially? Did the clan that gained more from existing privileges cease mobilizing its resources? The historical evidence indicates that this was indeed the case. Between 1102 and 1105, members of both the Maneciano and the Carmadino clans served on the consulate. Their joint

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[22] Formally, according to proposition 8.1, λ^k equals one with respect to existing privileges and zero with respect to additional privileges.

[23] Formally, using the notations developed in the annex, the increase in gross income implies a higher investment in military strength (that is, ICC^k implies that $\partial\psi^{-k}/\partial(I(T) + R(T)) > 0$) and thus clan -k's higher investment induces clan k to increase its number of supporters (that is, ICC^{-k} implies that $\partial\psi^k/\partial\psi^{-k} > 0$). Not cooperating in the acquisition of privileges is optimal for a clan that prefers the current equilibrium over an equilibrium with more privileges but prefers the equilibrium with more privileges over challenging.

mobilization of resources to acquire privileges is reflected in official documents.[24] About this time Genoa participated in the First Crusade, thereby gaining privileges in the East.[25]

After the initial acquisition of privileges, interclan cooperation ceased until 1154. The Manecianos dominated the consulate until 1122, while the Carmadinos dominated it from 1123 to 1149 (table 8.1).[26]

That the Manecianos practically abandoned the consulate after 1122 is consistent with the conjecture regarding the importance of mutual deterrence equilibrium if they also gained disproportionally from existing privileges. Indeed, after the First Crusade, members of the Maneciano clan were left to govern Genoa's ports, quarters, and towns in the East on the commune's behalf. Over time they gained de facto control over these territories. Throughout the twelfth century, they increased their independence, refusing to pay an annual lease to Genoa or to return the holdings to the commune for reinvestiture.[27] The Manecianos had little motivation to acquire additional privileges for Genoa. The Genoese responded by transferring the consulate to the Carmadinos.

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[24] See, for example, CDG, vol. I, nos. 24, 30. During this period Genoa sent piracy expeditions as well, but we do not know if the two clans jointly mobilized their resources to do so.

[25] On conquest by the Genoese, see Caffaro, *Libro della Liberazione delle Città d'Oriente*, which is part of the *Annali*, vol. ??, particularly pp. 155-160. The Maneciano held more consular posts during this period than any other clan; Ido de Carmadino, a member of the Carmadino clan, was consul in 1102-05, 1118, and 1119 (table 8.1). For Ido clan's affiliation, see Belgrano (1873) and Day (1988, p. 71). On privileges, see CDG, vol. I, no. 15, 16, 17. For a discussion of this period, see Heyd (1885, vol. 1, pp. 149-150); Byrne (1920, 1928); and Day (1984).

[26] Before 1122 the Manecianos held more consular posts than any other Genoese clan (18 percent of the total); after 1122 the Carmadinos provided more consuls than any other clan (13 percent of the total). This change from domination by the Manecianos to domination by the Carmadinos was associated with a broader change in the composition of the consulate, suggesting that when either of these main clans dominated the consulate, smaller clans in their patronage networks served on the consulate as well.

[27] *Annali* 1099, vol. I (also quoted in CDG, vol. I, no. 9), CDG vol. I, 47, 170, 246-248. For a discussion, see Heyd (1868, 1885); Rey (1895); Byrne (1920, pp. 202-205;1928); Cardini (1978); and Face (1952).

Table 8.1. Rank order of families or clans that together provided at least 50 percent of consuls		
Family or clan	*1099-22*	*1123-49*
Maneciano (clan)	1	
Rustico (family)	2	
Platealonga (family)	3	
Rufus (family)	4	
Roza (family)	5	
Pedicula (family)	6	
Carmadino (clan)		1
della Volta (clan)		2
Caschifellone (family)		3
Mallonus (family)		4
Gontardus (family)		5
Bellamutus (family)		6
Number of consuls	102	111

Note: The results are not sensitive to the choice of years (see Greif 2004a).
Source: Annali; Olivieri (1861).

If the transfer of the consulate to the Carmadinos reflected different incentives to acquire privileges due to the Manecianos' control of privileges in the East, then the Carmadinos would have been likely to attempt to gain privileges in the western Mediterranean. This was indeed the case, although trade with the East was more lucrative. This accounts for an otherwise puzzling shift in policy in Genoa, which participated in the First Crusade (circa 1099) but not in the Second Crusade (1147-49). Instead of sending its navy and army to the East, the Genoese sent them to the West to gain privileges in Spain. Genoa's policy depended on whether the

Carmadinos or the Manecianos controlled the consulate: the Carmadinos concentrated on the West because of the Manecianos' de facto control over Genoa's privileges in the East. Without the Manecianos' support, Genoa failed to acquire significant new privileges throughout this period, a result that is consistent with the argument that acquiring privileges required interclan cooperation.[28]

Genoa's self-enforcing polity under the consulate thus had three main characteristics. First, the beliefs associated with mutual deterrence governed the relationships between the two viscountal clans. Each was deterred from challenging the other militarily by the cost implied by the other's military strength and the lost benefits from future joint piracy. Second, the consulate itself constituted a means to coordinate clan behavior through their representative and mobilized the resources of the common Genoese to support Genoa's policy. Third, this consular system maintained peace and political order at the cost of commercial expansion. Because acquiring privileges decreased the gains from future joint piracy, it implied political costs—either the breakdown of political order or additional military expenses by each clan to maintain the balance between them. Too few privileges were therefore acquired during this period; the city-state of Genoa was no more than a "coordinating state" without power over the clans.

8.4 Exogenous Changes, Undermining, and Institutional Failure: 1154-94

Although trapped in an institutional equilibrium with a low level of privileges, Genoa's main clans nevertheless returned to cooperating in acquiring privileges after 1154. The change transformed Genoa's economy into one based on privileged commerce. Theoretically, this renewal of cooperation could happen even in the absence of an institutional change if the Genoese faced an unexpected parametric change, such as increases in external military threats, which reduce the value of becoming a controlling clan (by reducing the gains from winning an interclan military confrontation).[29] Such a reduction implies that a new mutual deterrence

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[28] *Annali* 1143, vol. 1, p. 41; CDG vol. I, nos. 122, 124, 125. Regarding the failed expedition to Spain, see Caffaro, *Storia della Presa di Almeria e di Tortosa*, and Krueger (1949).

[29] For simplicity, the basic mutual deterrence equilibrium analysis ignores this issue.

equilibrium with a higher number of privileges is now optimal for both clans. Intuitively, a threat shifts the clan's net income line in figure 8.1 upward (proposition 8.2).

Italians of the late medieval period recognized that an external threat could foster cooperation. An eleventh century Milanese chronicler remarked that when his fellow citizens "lack external adversaries they turn their hatred against each other" (cited in Waley 1988, p. 117; Riker 1964 makes a similar observation in the modern context). The point here—that an external threat enables cooperation in dimensions other than (joint) confrontation of the external threat—is different.

In 1154 Genoa was subjected to an unexpected external threat after Frederick I Barbarossa's accession to the throne ended the civil war in Germany. In that year, Genoa's de jure ruler crossed the Alps with a large army, explicitly declaring his intention to reimpose the Empire's control over the northern Italian cities.[30] A contemporary drawing in the *Annali* displaying the devastation imposed by Barbarossa on the city of Tortona in 1155 suggests how the Genoese perceived the Emperor's intentions. Quickly they began building walls around their city.[31]

If mutual deterrence hindered interclan cooperation in acquiring privileges, theory suggests that this new external threat would have led to the interclan mobilization of resources to gain privileges. Indeed, in 1154 members of the Carmadino and Maneciano clans served jointly on the consulate for the first time in 49 years; between 1154 and 1162 the two clans held nearly the same number of consulate posts (*Annali*, various years; Olivieri 1861). Furthermore, both clans were directly and jointly involved in acquiring privileges. Between 1154 and 1162 Genoa gained privileges in all the main trade centers around the Mediterranean. It reaffirmed its privileges in the Crusader states and acquired more in Spain, North Africa, Byzantium, Sicily,

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[30] See Munz (1969, pp. 119-120), Waley (1988, pp. 88-97). Otto of Freising (1152-58, [1952], pp. 126-128).

[31] *Annali* 1154, 1155, 1158, 1159, vol. I. Deterring an external threat was not necessarily costless, as assumed in the model, but including such costs would not have altered the model's main results.

and several cities on the French coast.[32] Genoa's long-distance trade expanded significantly, increasing about 60 percent in eight years.[33]

History confirms the relationships between an external threat, joint mobilization, and commercial expansion that are predicted by the conjecture regarding the centrality and implications of mutual deterrence in the consulate system. The greater external threat increased the number of privileges for which political order was self-enforcing and increased each clan's optimal number of privileges. The external threat was a substitute for the value of gains from future joint piracy and lower gains from capturing the city in maintaining mutual deterrence in Genoa. It thereby enabled Genoa's economy to structurally transform itself from one based on piracy to one based on privileged commerce.[34]

Despite its apparent success, the consular system was self-undermining. The system implied endogenous changes in various quasi-parameters that rendered the mutual deterrence equilibrium self-enforcing for a smaller set of parameters. Additional privileges reduced the parameter set in which mutual deterrence was an equilibrium. Furthermore, the consulate system did not render clans less politically or socially important. On the contrary, mutual deterrence fostered Genoa's clan structure by encouraging clan members to strengthen their military might and internal structure. The consular system was built on and reinforced clan structure. An individual's welfare depended on the strength of his clan, particularly because of the expectation that other clans also sought to benefit their own members.[35] "Far from loosening family bonds, urban association strengthened them... lineage ties became more clearly defined, more firmly patrilineal and more frequently invoked" (Hughes 1978, p. 107). Individuals may have been

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[32] See *Annali* vol. I, p. 1155-1161; CDG, vol. I, particularly nos. 266, 268, 269, 270, 271; Krueger (1949, pp. 127-128); Lisciandrelli (1960, pp. 11-12); Byrne (1920); Vitale (1955, pp. 36-38); De Negri (1986, pp. 275-281); and Day (1988, pp. 86-99).

[33] Based on Giovanni Scriba, the only surviving Genoese cartulary from this period.

[34] Piracy did continue, however (see CDG, vol. III, 104-107).

[35] The historical records rarely describe friction within clans, although it sometimes occurred. For example, in May 1144 Ugo Embriaco swore not to commit any hostile acts against Willielmus Embriaco and to discipline himself in order to restore good relations between them (CDG, vol. I, no. 133).

socialized as clan members first and citizens of Genoa second. In particular, the consular system motivated clans to instill the norm of protecting their clans by force and the appropriateness of using violence to achieve political and economic ends. A mutual deterrence equilibrium is by definition based on deterrence—an opponent's expected violent response increases the expected cost of using violence against him. The institution thus strengthened a culture of violence.

This undermining process came to the fore when the external threat suddenly and seemingly permanently receded. In 1164 civil war resumed in Germany, and the Veronese League was established in Lombardy to fight the Emperor. These events caught the Genoese by surprise. In 1162 Genoa agreed to provide Barbarossa with a fleet to conquer Sicily in a campaign he planned for 1164. The unexpected nature of the above developments is reflected in the fact that in 1164 the fleet was ready, although the Emperor failed to come with his army (*Annali* 1162, vol. I, p. 88-90; 1164, 1165, vol. II. CDG vol. I, no. 308, vol. II, nos. 3-5).

By 1164 Genoa's external threat could no longer constrain its clans by decreasing the benefit of gaining in an interclan conflict. At the same time, Genoa now had more privileges than it had in the past, implying that controlling the consulate was more profitable than it had been in 1155. Indeed, by 1164 the value of Genoa's export trade was more than six times what it had been in 1155.[36]

Theoretically, a weakened external threat and a larger gain from controlling the consulate implied a higher payoff to becoming a controlling clan. In other words, a change in an exogenous parameter led to a change in the number of privileges, a quasi-parameter. The change in the quasi-parameter meant that once the exogenous parameter returned to its original level, returning to the previous institution could no longer have been feasible. A higher level of privileges implies a smaller set of parameters for which interclan deterrence is an equilibrium (annex 8.2) for a given division of gains from privileges among the clans. This would not have been the case had the consular system altered other quasi-parameters—such as the identity affiliation of clan members or their patronage networks—to reinforce itself. In fact, the consular system had the opposite impact on these quasi-parameters.

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[36] No pre-1155 cartulary was preserved, nor is there one for the years immediately after 1164.

If a mutual deterrence equilibrium no longer exists (for a given allocation of income between the clans), the model predicts that clans would confront each other militarily. This conclusion does not change qualitatively if the model is extended so that the interclan division of income is determined endogenously. Such a model must include the possibility that if a particular mutual deterrence equilibrium no longer exists, one clan may find it more profitable to agree to a smaller share of the income, avoiding the cost of a military confrontation. The problem is that an allocation of income for which another mutual deterrence equilibrium exists is unlikely to be acceptable to both clans.[37] The new allocation has to be both acceptable to both clans ex ante and self-enforcing ex post, despite the link between income and military strength. If, for example, clan 1 finds it profitable to challenge at the existing income allocation, it will not accept a new allocation that gives it a lower income share. Clan 2, however, will not accept any new allocation that gives it a share that is so low that it prefers military confrontation. There may not be a new allocation that is acceptable ex ante and self-enforcing ex post, especially given the relationship between military strength and income. Any allocation that gives clan 1 a higher income share will add to its military strength relative to clan 2. Hence although clan 1 will have less to gain from challenging given the new allocation, it will also be more likely to have the upper hand in a military confrontation. In the context of Genoa, the clans could not restore a mutual deterrence equilibrium by abandoning privileges and returning to a piracy-based economy. A clan advocating such a strategy would have aligned the Genoese at large with its opposing clan, because the common Genoese benefitted from trade.

Theory predicts that Genoa's clans were more likely to challenge each other militarily in 1164, the year that a civil war broke out. The same families that had shared the consulate from 1154 to 1164 and cooperated in acquiring privileges fought one another in these civil wars.[38] Fighting occurred mainly in 1164–69 and 1189–94; between 1171 and 1189 the victorious Manecianos assumed control over the consulate.[39]

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[37] For a theoretical analysis in this spirit, see Fearon (1997).

[38] See, for example, *Annali* 1164, vol. II, p. 16, 28, 104.

[39] On fighting, see *Annali*, vol. I, II, various years. When the main clans fought, smaller ones (such as the Albericis and Roza) took charge. Genoa neither gained nor lost privileges between 1164 and

The annals reflect on the causes and extent of the civil war. "Civil discords and hateful conspiracies and divisions had arisen in the city on account of the mutual envy of the many men who greatly wished to hold office as consuls of the commune" (*Annali* 1190, vol. II, pp. 219-220). The extent of the fighting was such that "in our city the evil increased and the civic contentions flared up more as the flame of the fire... [and] rarely is it possible to see a citizen ... without any kind of armor, walking in the city" (*Annali,* 1160, vol. II, p. 63).

Genoa's civil wars reveal the limited ability of the consular system to maintain a privilege-based economy in the absence of an external threat. Instead of advancing the commune's economy, Genoa's main clans fought over the distribution of the spoils from past successes. Fostering Genoa's economic development and establishing political order required appropriate institutional development.

8.5 The Genoese *Podesteria*: 1194-1339

In 1194 an institutional development occurred that enabled the Genoese to end the civil war, further mobilize their resources, and attain a new level of economic prosperity. At the center of the new institution was a *podestà* (power), a non-Genoese who governed the city as its military leader, judge, and administrator, usually for one year.

Understanding this new self-enforcing political institution requires identifying several key factors: the agents and circumstances that led to the change, the options that were cognitively understood at that point, and the implications of institutional elements inherited from the past on possible new self-enforcing institutions. Indeed, the transition to the new institution reflects local learning that past institutions entailed and the coordination and inclusion effects of past institutional elements.

The transition to the *podesteria* occurred when Genoa faced a severe external threat that increased the cost of the rivalry between the Carmadinos and Manecianos for both. In 1194 Emperor Henry VI, the son of Frederick Barbarossa, demanded that Genoa provide naval assistance to help him attack Sicily. Failure to do so would have alienated the emperor,

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1189. Trade does not seem to have expanded (Giovanni Scriba; Obertus Scriba; Guglielmo Cassinese). Genoa's weakness is reflected in its near defeat by Pisa (see Greif 1998c and 2004a for details).

jeopardizing Genoese claims to the privileges the Emperor had promised them in Sicily. It would also have allowed Genoa's rival, Pisa, to grow stronger by gaining these privileges. To stand up to this external threat without incurring the high costs of refusing the emperor's request, the Genoese clans needed to jointly mobilize their resources.

The threat by the Emperor, most likely, made such mobilization possible. As it had in 1154, the external threat implied that joint mobilization was an equilibrium for a larger set of parameters than it had been. In 1154 the imperial threat shifted the Genoese into an equilibrium in which the Carmadinos and Manecianos jointly mobilized their resources. In 1194 the Carmadinos refused to mobilize their resources, withdrew from the commune, and threatened to establish a rival one (*Annali* 1194, vol. II). The collapse of the consular system in 1164 seems to have made them leery of relying on external threats to sustain political order. As a result, this time they conditioned their participation on an institutional change. Such change came about in 1194, when the Emperor's seneschal (agent) proposed that the consulate accept an imperial *podestà* to rule the city.[40]

The idea of ruling cities through *podestàs* also reflects institutional learning. During the first half of the twelfth century, Italian communes experimented with relying on a single administrator to manage their affairs. After Barbarossa's attempt to control the Italian cities failed, many communes continued to nominate civil officials, called *rectores*, *dominatores*, and *podestà*s, to act as administrators. These administrators, who were bound by the law, had police and judicial authorities.[41] In this respect, they were similar to the dictators of ancient Rome (Spruyt, 1994, p. 143). In the 1190s Emperor Henry VI used nonlocal imperial vicars, or *podestàs*, to administer Italian cities on his behalf and secure his control.[42]

In Genoa the consulate, which was dominated by the Manecianos, agreed to accept an imperial *podestà,* and the Maneciano and the Carmadino clans participated in the conquest of Sicily. Subsequent events, however, reflect the divergence in interests between the emperor, who

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[40] *See Annali* (1194, vol. II, pp. 231-2); Vitale (1955, vol. I, pp. 51-55); Abulafia (1977, pp. 204-212); and Day (1988, p. 149).

[41] See Hyde (1973, pp. 100-1); Heywood (1921, pp. 262); and Waley (1988, p. 42).

[42] See Day (1988, p. 147) and Heywood (1921, pp. 214 , 220).

aspired to control Genoa through his *podestà*, and the Genoese, who wanted to retain their independence. During the Sicilian campaign, the imperial *podestà* died. Without consulting the Emperor, the Genoese nominated another *podestà* (*Annali* 1194 vol. II, p. 239). The emperor refused to recognize this *podestà* and threatened to treat Genoa as a rebellious city (*Annali* 1194 vol. II, p. 240-1). Unintimidated, the Genoese successfully confronted the emperor; they continued to nominate their own *podestà* and they continue to use a *podestà* even when the emperor did not require them to do.

Under the *podesteria* system Genoa enjoyed a long period of relative political order, in which clans jointly mobilized their resources and the economy expanded rapidly. Political historians have long debated how the *podestà* was able to pacify and unite Genoa. Vito Vitale, Genoa's eminent historian, argues that the *podestà* was merely an administrator, hired to meet the need for professional administration and the desire to limit competition over consular posts (Vitale 1951, p. 9). According to him, internal tranquility under the *podesteria* was sustained by the gains from cooperation. Other scholars, such as Heers (1977, p. 206), consider the *podestà's* military power, which allowed him to impose peace on Genoa's rival clans, as the key to enabling cooperation.

Both of these positions have weaknesses. If the *podestà* was simply an administrator and political order was sustained by the gains from jointly mobilizing resources, why didn't these gains guarantee cooperation under the consulate? If the *podestà*'s superior military ability fostered cooperation, why didn't he become a dictator or assume political control?

8.5.1 Creating a Balance of Power

Hiring the *podestà* was an organizational change: it changed the relevant intertransactional linkages by introducing an additional strategic player. The change altered the rules of Genoa's political game and hence the set of self-enforcing beliefs in the central transaction among the Genoese clans.

Understanding the nature and the implications of this change requires a contextual refinement (chapter 7). Given the fundamental asymmetry, it is likely that the *podesteria* incorporated institutional elements inherited from the past, specifically, clans and their shared norms and beliefs. We can therefore develop a conjecture regarding the impact of the *podestà* by

considering a game whose rules and analysis recognize the impact of these institutional elements. We can then ask whether the introduction of the *podestà* can entail interclan cooperation and political order as an equilibrium outcome without subjecting Genoa to dictatorship. (For the formal analysis, see annex 8.3.)

Three conditions needed to be met to ensure interclan cooperation and political order as an equilibrium outcome without subjecting the city to a dictatorship. First, the *podestà* had to be militarily deterred from attempting to become a dictator and gaining political control. Second, the *podestà* had to be deterred from siding with one clan against another.[43] Third, the *podestà* had to deter each clan from challenging another in a larger set of situations than is otherwise possible. In other words, the *podestà* should reinforce interclan cooperation.

To prevent the *podestà* from becoming a dictator, he had to be too weak militarily to be able to fight Genoa's clans (and the Genoese more generally).[44] Making the *podestà* weaker than each clan also deterred him from siding with one clan against another. This type of collusion, in which the *podestà* provides military assistance to one clan in return for a pecuniary reward, is possible only if the clan can commit to reward the *podestà* after it assumes power. The stronger a clan is relative to the *podestà*, the less able it is to commit to do so, since the clan would never pay the *podestà* more than the cost of confronting him militarily. The weaker the *podestà*, the less the clan can commit to reward him for colluding against another clan. If the amount a clan can commit to pay the *podestà* is less than he would receive by not colluding, collusion is not an equilibrium outcome.

But how can a *podestà* who is weaker than each clan deter any single clan from attacking another? Limiting the *podestà*'s military ability relative to that of a clan implies that he can neither become a dictator nor collude with one clan against another. But such a limitation also reduces the *podestà*'s military ability to deter one clan from challenging the other.

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[43] Failed institutional refinement (section 7.2) after 1154 probably made the Genoese aware of this problem. Interclan cooperation after 1154 was facilitated by having the della Volta clan to balance the two viscountal clans. The della Volta clan married into both clans and was active in the consulate. Eventually, it became part of the Carmadino clan faction (see Greif 2004a).

[44] If these other Genoese were strong enough to deter the *podestà* by themselves, however, they would not have needed him to subdue the clans.

To see how each clan can nevertheless be deterred from challenging the other, we need to consider the incentives for a defending clan and the *podestà* to fight alongside one another against an attacking clan. More generally, we need to consider the conditions under which particular beliefs will be self-enforcing. These are the beliefs supporting the behavior that no clan attacks the other and the *podestà* does not collude with a clan that attacks another, fights against the other clan, and is assisted by the clan that was attacked.

The strategy combination associated with these beliefs is a subgame perfect equilibrium if the reward to the *podestà,* his military strength, and the other parameters are such that the following conditions hold. First, the *podestà* is sufficiently weak militarily and his wage sufficiently high that he is better off getting paid than colluding. Second, the *podestà* is sufficiently strong and clans are sufficiently equal in terms of military strength that he is better off fighting against a clan that attacked another than colluding, but only if the clan that was attacked also fights. Third, the *podestà*'s strength and the relative strength of the clans is such that each clan would fight alongside the *podestà* if attacked, and each clan would find it optimal not to challenge.

These conditions and the equilibrium strategy indicate how the *podesteria* system can provide the appropriate incentives—entail the required self-enforcing beliefs—to be effective in mitigating all of these problems. If the *podestà*'s military strength is reduced enough relative to his wage, the maximum reward that any clan can credibly commit to giving him following collusion will not be enough to induce him to collude. The *podestà*, expecting a clan that had been attacked by another to fight with him, prefers to confront the attacking clan rather than collude with it. The attacked clan is motivated to fight alongside the *podestà,* because if it does not the *podestà*'s strategy implies that he will not confront the other clan. At the same time, the combined forces of the the *podestà* and the clan fighting alongside it are such that it is optimal for a clan to fight with the *podestà*.

This analysis illustrates the delicate balance of power that must be maintained for the *podesteria* to promote political order. On the one hand, the *podestà* cannot be strong enough militarily to gain control himself or collude with a clan. On the other hand, he must be strong enough so that his threat to fight alongside a clan if necessary eliminates any clan's motivation to challenge another.

8.5.2   The *Podesteria* System in Action

Theoretically, introducing the *podestà* could have been a self-enforcing institutional change that weakened the link between political order and the mobilization of clan resources. Was this actually the case? To address this question, we have to examine the rules and regulations governing the *podesteria* to determine whether they match the theoretical conditions required for the *podesteria* to enhance cooperation and order.

To compensate the *podestà* for fighting if the need arose, the commune paid him generously (Vitale 1951, p. 25). Soldiers and judges whom the *podestà* brought with him supported him. His military force (possibly supported by Genoese who were not affiliated with the main clans) was neither negligible nor considerable (Vitale, 1951, p. 27). In the words of the annals, it was sufficient for the *podestà* to perform "the revenges against all those who were in anything rebellious in Genoese republic ... he made all the guilty succumb. His shade and his boldness made the escort and the walk of everyone sure" *(Annali* 1196, vol. II, p. 253).

At the same time, the Genoese *podestà* was kept sufficiently weak militarily relative to the Genoese as a whole not to be able to become a dictator. Indeed, no *podestà* ever attempted to gain control over the city. Arguably, the *podestà* was kept sufficiently weak militarily in order to prevent collusion with a clan. Theoretically, a militarily powerful clan can credibly commit to provide only a small reward. Yet a clan and a *podestà* might adopt other commitment devices, such as marriages and joint economic ventures, which do not depend on relative military strength.

To prevent this from happening, various rules sought to prevent the *podestà*s from getting involved in Genoese society and politics. The *podestà* was selected by a council made up of members chosen on a geographical basis to prevent any clan from gaining control. The outgoing *podestà* supervised the selection process. Neither the *podestà* himself nor his relatives (to the third degree) were allowed to socialize with the Genoese, buy property, marry, or manage any commercial transactions for themselves or others in Genoa. The *podestà*, as well as the soldiers who came with him, had to leave the city at the end of the term and agree not to return for several years. To avoid developing special relations with any clan, each of which dominated a particular part of the city, the *podestà* rotated his residence among different quarters until special housing was built for him.

The *podesteria* was constantly refined, as local institutional learning revealed its deficiencies. To increase flexibility in administrative and political decisions and to align the *podestà*'s actions and Genoa's interests, after 1196 eight *rettori* or *consiglieri* (one per district) functioned as part of the administration and control. These officials were chosen to isolate the *podestà* from the influence of Genoa's main clans. Very few rectors were identified with one of the major families involved in the interclan wars of the twelfth century.[45] Shortly after this change, it was institutionalized that the *podesteria's* regulations had to be approved by a larger forum (a council). Major policy decisions had to be approved by the *parlamentum* of Genoese with "full rights." In 1229 Genoa's legal rules were codified to further reduce discretion and limit the clans' ability to establish patronage networks through their hold over legal matters (Vitale 1951, pp. 32-40; 1955, vol. I, p. 56).

*Podestà*s were not given a free hand to mismanage the city. After the end of his term, a *podestà* had to remain in the city for 15 days, during which auditors assessed his conduct. Deviations from the set of prespecified rules were punished by fines to be paid before his departure (Vitale 1951, pp. 27-28). A *podestà*'s concerns about his **reputation probably gave him an additional incentive to prevent interclan confrontation, because many communes hired** *podestà***s and a good reputation could help a** *podestà* **secure another post.**[46] **Similarly, the Genoese concerns with being able to hire a high-quality** *podestà* **in the future rendered their promise to pay him credible.** *Podestà***s were recruited from a handful of Italian cities, and their contracts were read in front of each city's "parliament."**[47]

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[45] See Olivieri (1861) years 1196, 1199, 1202, 1203, 1205, and 1206; Vitale (1951, p. 11); and Day (1988, p. 150-151).

[46] The *podesterias* of various cities differed in some important respects. In Pisa the *podesteria*, established in 1190, was not aimed at creating a balance of power (Rossetti et al. 1979; Cristiani 1962; Heywood 1921). The first podestà (1190-99) was the Count of Gherardesca, who served on behalf of Emperor Henry VI. By 1199 the Visconti clan, which dominated Pisa before 1190, had reestablished its control and subsequently controlled the *podesteria*. Only after a war in 1237 between the Viscontis and the de Gherardescas were non-Pisan *podestà*s nominated.

[47] The community responsibility system, discussed in chapter 10, also strengthened the credibility of the promise.

In Genoa the end of the civil war and the increased ability to mobilize resources under the *podesteria* fostered political order and economic ascendence. The *podesteria* led to a period that was "indeed the Golden Age of Genoa" (Vitale 1955, p. 69). The *podesteria* lasted for about 150 years (to 1339), during which time it was challenged by temporary imbalances between clans, the political rise of the *popolo* (nonnobles), and the conflict between the Pope and the emperor. Still, the *podesteria* retained the same basic structure throughout its history, functioning as a nonpartisan balance of power and administrative and judicial authority.

In 1195 Genoa was peaceful for the first time in many years, and the Genoese reaffirmed their control over the smaller cities around them. In the next hundred years, Genoa freed itself from the rule of the Holy Roman Empire; defeated Pisa, its commercial rival in the western Mediterranean; and temporarily defeated Venice, its commercial rival in the eastern Mediterranean (Vitale 1955; Donaver 1890). It acquired extensive privileges in the Mediterranean and the Black Sea (Vitale, 1951, chapters 2-3).

During this period, Genoa enjoyed spectacular economic growth. In the years immediately following the introduction of the *podesteria* (1191-1214), **the value of long-distance** trade grew at an annual rate of at least 6 percent a year—50 percent greater than annual growth between 1160 and 1191. By 1314 the value of Genoa's trade was more than 46 times that in 1160.[48] A contemporary source estimated that Genoa was the richest city in northern Italy (Hyde 1973).

Genoa's population also exploded during this period. Between 1050 and 1200 the population doubled in size. Between 1200 and 1300 it increased by 230 percent (Bairoch et al. 1988, pp. 43, 49).[49] During the same periods, the population of Venice grew about 50 percent. By 1300 Genoa was second in size only to Venice, whose population was about 10 percent greater than Genoa's.

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[48] These calculations are based on all the available cartularies from this period: Giovanni Scriba, Obertus Scriba, Guglielmo Cassinese, Lanfranco Scriba and Giovanni di Guiberto. See also Sieveking (1898, p. 67); Day (1963, p. XVI). See Greif (1994c, 1998c, 2004a).

[49] No population estimates for either city are available for 1100.

8.6 The *Podesteria* as a Self-undermining Institution

The *podesteria* fostered interclan cooperation, political stability, and economic growth. It was a self-enforcing institution: the belief that any attempt by a clan to gain political dominance by using force was futile deterred clans from doing so, and the belief that a clan could gain from cooperation without the risk of losing its rewards through military confrontation motivated cooperation.

Yet like the consular system, the *podesteria* was also self-undermining and hence came under strain at the end of the thirteenth century. It restrained interclan warfare, but it did not eliminate interclan rivalry. Central to the success of the institution was the fact that clans had roughly similar military strength, so that a relatively weak *podestà* could be pivotal to one clan's victory over another. No clan could afford to become too weak relative to another, while each could have gained from being strong if another clan became temporarily weak. The *podestà* himself was motivated not to allow one clan to become weak either, as his compensation was conditional on no clan dominating Genoa at the end of his term. Hence as the city grew more prosperous, the punishment that would be imposed on a rebellious clan was bounded, while the gains from rebelling were increasing.

Under the *podesteria*, clans were still motivated to invest in acquiring the military capability to attack other clans, fortifying their residences, establishing patronage networks, and socializing their members to internalize the norm of revenge.[50] The Genoese continued to retain their clan identity rather than identifying themselves with the city as a whole. Indeed, the *podesteria* had no mechanism for reversing the legacy of the civil war, which fostered interclan animosity and cycles of feuds or vendettas.

These feuds, which began after the civil wars, curtailed interclan interactions that might have weakened the bonds among clan members or strengthened interclan social and economic

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[50] Mutual deterrence makes a culture of revenge rational ex ante, but the resulting feuds are costly ex post. A vendetta may be rational ex post, however, if a clan's failure to take revenge induces other clans to believe that it is easy "prey," leaving it worse off than if it had participated in a costly vendetta. Indeed, termination of a feud was a public matter (see, for example, *Annali* 1169, vol. II, p. 112).

ties.[51] They were so violent that clans approached the Pope for the right to build family churches, arguing that it was too dangerous for them to frequent public churches. Indeed, vendetta killings took place even in churches (Hughes 1978, p. 112). Business transactions, like prayers, were increasingly conducted in private. In the cartulary of Giovanni Scriba (1155-64), 88 percent of overseas contracts were written in public places, such as churches and markets. In contrast, in the cartulary of Obertus Scriba (1186), 90 percent of such contracts were written in private places, mainly merchants' residences.[52]

As chapter 6 notes, the incentive for each clan to develop a patronage network and the access of all city residents to Genoa's lucrative overseas trade also contributed to undermining the *podesteria*. It entailed more wealth transfer accumulation by nonclan members than otherwise would have been the case. Over time these families organized themselves to form their own armed political factions. Similarly, clans sought to increase their power by creating *alberghi*. *Alberghi* were clan-like social structures whose purpose was to strengthen ties among members of various families through formal contracts and the adoption of common surnames, usually that of the *albergo*'s most powerful clan. By the fifteenth century, the city's politics and economics were dominated by about thirty *alberghi,* each containing 5–15 lineages.

In the short run, these changes did not render Genoa's *podesteria* ineffective, but over time it became self-enforcing over a smaller range of situations. After 1311 the city attempted to restore political stability by having a strong military ruler, either an external one, such as the King of Germany, to whom the city submitted itself in 1311, or an internal one (a doge). After 1339, however, the *podesteria* was no longer self-enforcing. The city was torn by intense interclan strife, or one Genoese clan (with or without the support of Genoa's external foes) waged war against Genoa from abroad. In the next 200 years there were 39 revolts and civil wars (Epstein 1996, appendix.) Genoa declined economically, since it was unable to offer naval and

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[51] See, for example, Annali (1190, II, p. 220; 1193, II, p. 228; 1203, III, p. 28-9; 1187, II, p. 204-205; 1203). For a first-rate account of the experiences of other Italian cities in constraining their violent nobles, see Martines (1972).

[52] This distinction does not reflect a composition effect in the sense of capturing the activities of merchants who differ from each other along such attributes as wealth. Greif 2004a.

military support to its commercial outposts abroad or prevent the devastation of its own agricultural hinterland.

In 1381 Genoa was defeated by Venice. In a sense this defeat was preordained, although not sealed, during the twelfth century. It was then that particular self-enforcing yet self-undermining institutions established themselves. They had a lasting impact on the city's political, economic, and social history.

Ironically, the defeat led to organizational changes that brought about institutional development that isolated property from the peril of political military conflicts within Genoa. This organizational development reflects an unintended consequence of Genoa's economic progress and interclan competition. Economic prosperity and wealth transfer to nonclan members in return for support implies that various families, which did not belong to Genoa's main clans, were able to acquire substantial economic and military resources. Before the decisive battle against Venice in 1381, Genoa borrowed heavily from these families, who probably differed from the old feudal clans by being more interested in economic success than political control. Unable to pay its debt after the defeat, Genoa ceded control over various tax-bearing sources to its local creditors. These creditors organized themselves in a self-governed entity, the Bank of San Giorgio, which over time came to administer most of the towns and cities in the Genoese dominion.

Like the merchant guild examined in chapter 3, the Bank of San Giorgio was an organization that linked transactions among Genoa's many internal creditors. It enabled them to coordinate their responses and impose their decisions on one another. Over time the bank became so powerful that it was able to secure the property rights of its members and secure it in periods of political violence. Niccolo Machiavelli, writing in 1532, noted that whoever gained political control over Genoa had to respect the rights of the bank, "as it possesses arms, money, and influence" and abusing its rights entailed "the certainty of a dangerous rebellion" (p. 352).

Only in 1528, when Andrea Doria established an aristocratic republic similar to that of Venice, was Genoa able to achieve lasting political stability. At that late date, however, the

political and economic situation around the Mediterranean prevented Genoa from restoring its past glory. Ironically, this very inability may have made a Genoese republic feasible again.[53]

8.7 Concluding Comments

Genoa's institutional foundations reflected and embodied institutional elements inherited from the past. The clans and the beliefs and norms that shaped their objectives and motivated their behavior were part of the initial conditions in the process of state-building in Genoa. Maintaining mutual deterrence among clans while mobilizing their resources affected institutional development.

Genoa's institutional foundations evolved from these initial conditions. It is impossible to understand the city's political, economic, and social history without examining the means for and the implications of the need to render interclan political agreements self-enforcing. In the early days of the commune, the consulate provided a means of coordinating the behavior of the clans, but it had no power to impose its decisions on them. Mutual deterrence ensured peace among clans, but prosperity was curtailed because mutual deterrence—the institution inherited from the past—placed a wedge between the level of privileges that was economically efficient and the level that was politically desirable. For a period following 1154, an external threat weakened this constraint on the acquisition of privileges and fostered interclan mobilization of resources. The external threat implied that each clan had less to gain from challenging the other militarily, enabling each to better commit not to attack following commercial expansion. Genoa's economic structure was transformed to one based on privileged trade.

Economic prosperity and other implications of the consulate system, however, undermined the self-enforceability of Genoa's institutional foundations. Mutual deterrence was an equilibrium in a smaller set of parameters. It motivated clans to invest in coercive power and led their members to identify more with their clan than with their city as a whole. This implied that once the external threat unexpectedly subsided, peace was no longer an equilibrium outcome and Genoa descended into civil war.

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[53] See, for example, Donaver (1990, p. 86 ff.) and Epstein (1996, chapter 5).

It took 30 years for a new self-enforcing political institution—the *podesteria*—to begin to influence political and economic behavior in Genoa. The transition to the *podesteria* reflects the realization of institutional failure, an increased external threat, and a process of learning about possible alternatives. It reflects the influence of past institutional elements on the direction of institutional change and the building of institutions around elements inherited from the past. The *podesteria* incorporated Genoa's clan structures and their beliefs and norms.

Central to the *podesteria* was a self-enforcing political organization with independent coercive power, the *podestà*. For the first time the state had some power over the clans. The *podestà* constituted a means of balancing the military powers of the rival clans, thereby increasing the parameter set in which interclan mutual deterrence was self-enforcing. Under the *podesteria* each clan was deterred from attacking others in a larger set of parameters. The *podestà* itself was a self-enforcing organizational change, endogenously motivated to confront a challenging clan, to forgo colluding with any clan, and to refrain from using its coercive power to gain control over the city. The *podesteria* system thus represented a form of a limited government.

In the long run, however, the *podesteria* failed to sustain political order, because the clans and their beliefs were an integral part of the institution. Like the consulate system, the *podesteria* was self-undermining. Clans still had an incentive to gain military power and to shape their members' identities as clan members rather than as Genoese citizens. Military power remained the means by which various social groups advanced their causes. The *podestà* had no incentive to change Genoa's underlying clan structure. Eventually, he failed to keep the balance of power among Genoa's various rival groups and the system collapsed.

Genoa's experience supports the claim that a central challenge to state-building is motivating pre-existing social structures to mobilize their economic and military resources to create an effective state. Providing such motivation is challenging, because the process of state-building can undermine the institutions that maintain political order among these social structures and the social structures themselves. Specifically, in the case of Genoa, these social structures were innate and part of the beliefs and norms that individuals brought with them to the process of state-building were concern with maintaining these structures. It may not be

coincidental that contemporary states in which ethnic and tribal cleavages still predominate find it difficult to establish democratic and peaceful polities (Collins 2004).

Genoa's experience shows that an external threat can increase the parameter set in which cooperation among social structures is self-enforcing, thereby facilitating beneficial cooperation (Greif 1998c). The lack of an external threat in the postcolonial period may well have helped thwart the foundation of effective states in contemporary Africa (Greif 1998c; Bates 2001). Genoa illustrates, however, that the politically beneficial implications of such threats depend on two factors. First, each of the social structures must be sufficiently averse to the external power that it cannot be manipulated against another social structure. Second, the institutions prevailing during the period of threat must undermine, rather than reinforce, these social structures, so that political order will be maintained once the threat recedes. Where a polity's institutional foundations fail to undermine pre-existing social structures, they challenge the formation of a state.

Genoa's experience underscores the limitation of the notion that it is possible to build effective states by imitating the process of electing leaders and creating organizations, such as parliaments or congresses, that prevail in effective states. The impact of such political rules and organizations depends critically on the institutions of which these organizations are an integral part. Where these institutional elements emerged endogenously, they were an integral part of the institutional foundations of the polity and reflected the nature and interests of the social structures inherited from the past, their beliefs, and norms. Different social structures, beliefs, and norms prevailed where the political rules and organizations of modern effective states did not emerge endogenously. Where such rules and organizations are transplanted, they are less likely to lead to effective states. We know surprisingly little about what constitutes favorable initial conditions for effective state-building, however, and what political rules and organizations are best matched with various institutional elements inherited from the past. Comparative studies of political development using a perspective similar to that conducted here with respect to Genoa may be useful, but they have not yet been undertaken (see Greif 2004b, however).

Studying the institutional foundations of a state rather than its political rules and organizations helps us understand the economic implications of political order or its absence. A premise in both the predator-ruler and the neo-Hobbesian perspectives is that violence

undermines economic growth and peace promotes it. The analysis of mutual deterrence at the time of the consulate, however, reveals that peace is not necessarily conducive to fostering prosperity. Mutual deterrence fostered peace, but it discouraged the clans from taking economically productive actions, which would have eliminated the self-enforcing peace.

The Bank of San Giorgio suggests that political violence is not necessarily detrimental to the economy. The bank was part of an institution that isolated the economy from the polity. It illustrates a point that is complementary to the one made in chapter 3, which examined how the politically powerful can credibly commit to protecting property rights in the absence of the rule of law. The bank's success underscores the importance of institutions that constrain the powerful from abusing rights based on countervailing coercive and economic powers. Historically, such institutions may have been central to the development of effective political representation and states, since rulers had to consult with those with the power to constrain them before taking various actions (Greif 2004b).

The consensual establishment of a state with power over its subjects entails a shift from one self-enforcing institution to another. In order for the existing social structures central to the prevailing institution to help the state gain this power, those structures must believe that the ensuing power will not be used ex post to reduce their welfare. Even if the resulting state is effective and promotes order and prosperity, particular social structures may not be better off.

More generally, the extent to which a state is effective in advancing economic prosperity and altering its institutional foundations depends on its institutional foundations and the motivation they entail. These foundations should be such that those who have the resources to advance economic prosperity and those who can change institutions using their power or through consensual agreements will be better off ex post from doing so, although they may end up with relatively fewer resources and less power. The initial institutional foundations of Genoa, reflecting as they did institutional elements inherited from the past, lacked the ability to mitigate this problem (Greif 1994c, 1998c.) It may well be that the difficulty of creating effective states today reflects the same inabilities (Acemoglu and Robinson 2000.) Political actors object to welfare-enhancing institutional changes, because they personally stand to lose from it.

The European experiment in creating effective states that occurred in the late medieval period, and of which Genoa was a part, by and large failed. Like Genoa, most of the Italian city-

republics did not succeed in retaining their independence, and they ceased to promote prosperity. Internally, they failed to gain an effective monopoly over coercive power. Warfare among old social structures, such as noble clans, and new structures, such as various social classes, led to political disorder. External threats from the Italian countryside and beyond led to the eventual political and economic demise of the city-states.

Although the Italian city-states failed in their quest to become democratic, welfare-oriented states, their attempt represents a turning point in European institutional history. After the late medieval period, kin-based organizations were no longer at the center of European institutional complexes. In Italy the city-states themselves contributed to this process, as they sought, many with greater success than Genoa, to limit the strong clans they had inherited from the past (Tabacco 1989). Indeed, the Italian communes were only one manifestation of the large extent to which the urban population in Europe was organized into non-kin-based social structures. They took such diverse forms as guilds, fraternities, and self-governed cities.

In Europe as a whole, the decline of the kin-based organization of society had deep historical roots that reflect even larger political and ideological struggles. The medieval Church took actions that undermined kin-based organizations. From as early as the fourth century, the Church was engaged in weakening the kin-based organization of society by prohibiting marriages among kin (sometimes up to the seventh degree) (Goody 1983). Kin-based clans were strengthened in Italy in the tenth century due to the decline in central authority, but the Italian communes, like the other non-kin-based organizations in Europe at the time, reflect the large extent to which Europe had already advanced toward a society in which non-kin-based organizations were central. The later processes of state-building in Europe were arguably facilitated by not having to confront these kin-based organizations. Indeed, the modern European state itself is a non-kin-based corporation.

This was not the case in the Muslim world at the time. Although Islam created a strong sense of common identity, it did not undermine kin-based social structures. Indeed, the institutional foundations of the state in the Muslim world reinforced, rather than undermined, innate, kin-based social structures, such as tribes and ethnic groups. From as early as the period of the first Caliph, Abu Bakr (632–634), Muslim rulers often used the strategy of "divide along existing social structures, compensate for support, and rule," which took advantage of the

existing social differentiation within the emerging Muslim Empire to create a militarily strong coalition. It rewarded individuals unequally based on their distinct innate social affiliation with tribes and clans that existed in the early days of the Muslim Empire.

In the short run this strategy was successful. Indeed, it was first formulated when Abu Bakr faced revolts following Mohammed's death in 632. Arguably, the strategy of rewarding various Arab tribes according to their contribution to the Muslim community facilitated subduing the revolt and creating, through conquest, a Muslim Empire.

In the long run though, this strategy undermined the state by reinforcing social divisions, which expressed themselves in military conflicts among members of various innate groups. This is why innate social structures still dominate many countries in the Middle East, such as Iraq and Syria, while the tribal divisions and clan associations that prevailed in Europe in the medieval period disappeared long ago (Lewis 1988; Hodgson 1977; Greif 2002).

Annex 8.1 A Formal Model of Genoa's Political Institution

Consider two clans, C^i and C^j with infinite lifespans and a discount factor of $\delta \in (0, 1)$. Suppose for the moment that the number of privileges is $T \in [0, \mathbf{T}]$ and that they generate total, per period income of $I(T)$. The stage game of this complete information game has two substages. In the first, both clans simultaneously decide whether to cooperate in piracy. Cooperation by both yields the gain of $R(T)$ and total income of $I(T) + R(T)$.[54] At the end of this substage, each clan k gets the share of $\lambda^k > 0$ of total income. In the next substage, each clan (sequentially) has to decide on a sunk investment in military strength, ψ^k. This investment replaces that which was made in the previous period which become obsolete when the new investment is made. This investment is subject to the clan's budget constraint, $\psi^k \leq \lambda^k [I(T) + R(T)]$. Investment in military strength is observable and is henceforth equated, for simplicity, with recruiting supporters.[55] After investing in military strength, and before the other clan's past military investment amortized, a clan can decide whether to "challenge" the other clan or not.

If neither clan challenges, the period ends, clan $k \in \{i, j\}$ gets a payoff of $\lambda^k[I(T) + R(T)] - \psi^k$, and the stage game is repeated. If either clan challenges, an interclan war transpires. Each clan bears the cost of war, c, and stands to win with probability $s^{k,w}(\psi^k, \psi^{-k})$. The probability of winning is nondecreasing in the clan's own investment and nonincreasing in the opponent's

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[54] The analysis is robust—indeed strengthened—if we extend a clan's utility functions to include benefits from social prestige and political control.

[55] For recent works on military deterrence, see Powell (1993), Bates et al. (2002), Grossman and Kim (1995), and Skaperdas (1992.

investment.[56] The winning clan becomes a "controlling" clan, gaining all the subsequent per period income from privileges, I(T).[57] The losing clan receives a continuation value of zero.

Following an interclan war, war against an external threat may transpire. To capture the impact of this external threat on interclan equilibrium relationships in a simple manner, I assume that before interclan military conflict, the clans' joint military strength and their expectations of cooperation against the external threat are such that the impact of the external threat can be ignored. An external threat affects the net expected gains from being a controlling clan, which depend on its military investment, the likelihood of war, and the outcomes of such a war.[58]

Formally, assume that in every period after an interclan war (if one occurs), the controlling clan can invest in military strength after receiving that period's payoff. Following this investment, war against the threat may occur. The probability of such a war depends on the magnitude of the external threat, $\theta \in [0, \bar{x}]$ and the military strength of the controlling clan. Accordingly, we can define $\omega(\psi^k, \theta)$ as the probability of war when ψ^k is invested in military ability and $s(\psi^k, \theta)$ as the ex ante probability that either a war did not occur or that it occurred and the clan won. The probability $\omega(\psi^k, \theta)$ decreases in ψ^k and increases in θ, whereas $s(\psi^k, \theta)$

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[56] All functions are assumed to be continuous and differential. For a general discussion and examples of contest success functions, see Skaperdas (1996). The possibility of a tie within a given period can easily be incorporated into the model without changing its insights. Specifically, denote clan k's per period probability of winning as $S^{k,w}(\psi^k, \psi^{-k})$, which is the per period probability that clan k will win, allowing for ties. Define $s^{k,w}(\psi^k, \psi^{-k}) = S^{k,w}/(1 - \delta(1 - S^{k,w})(1 - S^{-k,w}))$. This function captures the probability that clan k will ever win and the implied reduction in the value of winning due to delay. An example for $S^{k,w}(\psi^k, \psi^{-k})$, which implies that $s^{k,w}(\psi^k, \psi^{-k})$ increases in the first argument and decreases in the second, is $S^{k,w}(\psi^k, \psi^{-k}) = f(\psi^k)/(f(\psi^k) + f(\psi^{-k})) - \epsilon$, where ϵ is in the interval [0,1], and $f(\psi^t) = \alpha(\psi^t)^m$, where $\alpha > 0$, m > 0, t = k, -k.

[57] In equilibrium, clans do not cooperate in piracy following a challenge.

[58] Indeed, a joint Carmadino-Maneciano front was a strong deterrent. As reported in the annals, in 1155 the emperor destroyed the Italian city of Tortona, "so that the [Italian] cities ... [will] pay a large homage to [him]. But the Genoese consuls... did not want to give or to promise him even the value of one mite and meanwhile fortified all the castles .... As soon as [the Emperor] learned that the Genoese had prepared to war with such fierce expedience," he did not attack the city (*Annali* 1155, vol. I, p. 54-55.) This suggests that the emperor could not have employed a divide and conquer strategy in Genoa, as the clans were united in opposing his rule.

increases in ψ^k and decreases in θ. At the limit, as $\theta \to 0$, $s(). \to 1$ and $\omega(). \to 0$. War against the threat costs c. If war does not occur or if the controlling clan wins, the game proceeds as before. Defeat implies a zero continuation payoff.

Consider a controlling clan k's time-discounted average expected payoff (henceforth, average payoff), $V^{k,c}(T, \theta)$,[59] which is the value function of

(OP)
$$\underset{\psi^k}{Max} \ (1 - \delta) \sum_{t=0}^{\infty} \delta^t [s(\psi^k, \theta)]^t \ [I(T) - \psi^k - c\omega(\psi^k, \theta)]$$ [60]

subject to the clan's participation constraint, $(1 - \delta)\Sigma\delta^t s().^t[I(T) - \psi^k - c\omega().] \geq 0$, and the clan's budget constraint, $I(T) - \psi^k - c\omega(). \geq 0$.

Since OP involves maximizing a continuous function over a compact set, a solution exists. I assume that the solution is an interior solution. Establishing that $V^{k,c}(T, \theta)$ is increasing in T and decreasing in θ is straightforward and intuitive. A controlling clan's payoff increases in its gross income, namely, its number of privileges, T, and declines in the magnitude of the external threat, θ. Clearly, a clan prefers to control a city with more profitable privileges and face less risk and investment for maintaining this control. Assume that a controlling clan finds it profitable to confront an external threat, that is, $\delta V^{k,c}(T, \theta; \psi^k) > c$. (Henceforth the endogenous variable ψ^k in $V^{k,c}(\bullet)$ is not explicitly denoted.)

Mutual Deterrence Equilibrium with a Fixed Number of Privileges

A clan is deterred from challenging its opponent if the other clan's military investment is such that the net expected gain from challenging is less than that from not challenging. In a mutual deterrence equilibrium, neither clan can gain from reducing its military investment or challenging the other clan.

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[59] For simplicity of presentation, I omit parameters not relevant to this stage of the analysis.

[60] Clans can differ in their military strength and in their investment in it. Hence the function s(). is not necessarily the same for both clans. For ease of presentation, I ignore this issue.

To consider the necessary and sufficient conditions under which a mutual deterrence equilibrium can exist, suppose that no challenge has ever occurred, neither clan is expected to challenge, and clan $k \in \{i, j\}$ invests ψ^k in each period. In this case, clan k's average payoff, $V^k(\lambda^k, T; \psi^k)$, equals its net per period income, namely, $\lambda^k[I(T) + R(T)] - \psi^k$. If clan k expects to obtain this payoff each period, it would be deterred from challenging if this payoff is higher than the expected payoff from initiating interclan war.

Formally, clan k will not challenge if and only if the following inequality holds:

$$\delta V^{k,d}(\lambda^k, T; \psi^k) \geq \delta s^{k,w}(\psi^k, \psi^{-k})V^{k,c}(T, \theta; \psi^k) - c(1 - \delta)$$

where $\delta V^{k,d}(\lambda^k, T; \psi^k)$ is the present value of the clan's average payoff under mutual deterrence in the next period and $\delta s^{k,w}(\psi^k, \psi^{-k})V^{k,c}(T, \theta; \psi^k) - c(1 - \delta)$ is its net present value if it becomes a controlling clan in the next period, discounted by the probability that it would win the interclan war ($s^{k,w}(\psi^k, \psi^{-k})$) minus the (time-discounted average) cost of the war.

We are interested in the situation in which this inequality holds for both clans and neither can gain by reducing its investment in military strength. For this to prevail, condition 8.1 must be satisfied:

Condition 8.1: There exists $(\psi^{i,d}, \psi^{j,d})$ such that for $k \in \{i, j\}$,

A.   The investments are feasible: $\psi^{k,d} \leq \lambda^k[I(T) + R(T)]$

   and

B.   they maximize payoffs: $\psi^{k,d} \in \arg \max V^{k,d}(\lambda^k, T; \psi^k)$

subject to

C.   achieving deterrence: $\forall \psi^{-k} \leq \lambda^{-k}[I(T) + R(T)], \psi^{-k} \geq \psi^{-k,d}$,

   $\delta V^{-k,d}(\lambda^{-k}, T; \psi^{-k,d}) \geq \delta s^{-k,w}(\psi^{-k}, \psi^{k,d})V^{-k,c}(T, \theta) - (c + (\psi^{-k} - \psi^{-k,d}))(1 - \delta)$ [ICC^{-k}]

If condition 8.1 is satisfied, there is a feasible investment for each clan (A) that is the lowest investment (B) that will deter the other clan from challenging for any possible investment the other clan can make (C). If a (subgame perfect) mutual deterrence equilibrium (λ^k, T) exists, condition 8.1 must hold. If it holds, this directly implies that such an equilibrium exists.[61] Specifically, if condition 8.1 is satisfied, the following strategy combination is a mutual deterrence equilibrium (λ^k, T): If a challenge has never occurred, clan $k \in \{i, j\}$ cooperates in piracy and invests $\psi^{k,d}$ in military strength. The clan does not challenge if $\psi^{-k} \geq \psi^{-k,d}$ and challenges otherwise. Neither clan cooperates in piracy following a challenge. If clan k has ever won a challenge, it invests $\psi^{k,c}$ in preparation to confront the external threat.[62]

Efficiency Attributes of Mutual Deterrence Equilibrium When the Number of Privileges Is Endogenous

Assume that income from privileges, I(T), increases and income from piracy, R(T), decreases in the number of privileges, T. (Specifically, $I'(T) \geq 0$ and $R'(T) \leq 0$.) Assume that the function I(T) + R(T) is strictly concave and has a unique maximum, which is the (economically) efficient number of privileges $\tau \in (0, T)$, $I'(\tau) + R'(\tau) = 0$. Hence the (economically) efficient mutual deterrence equilibrium is τ. **Clan k's** optimal mutual deterrence equilibrium maximizes its average payoffs, namely, $V^{k,d}(\lambda^k, T; \psi^k)$.

To evaluate if peace was achieved at the cost of commercial expansion, we need to determine whether the *efficient* mutual deterrence equilibrium is also the *optimal* mutual deterrence equilibrium for each individual clan. In other words, is cooperating to acquire the economically efficient number of privileges (that which maximizes total surplus) the best each

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[61] Since the forms of the utility and winning functions as well as the order of other parameters are unknown, I do not provide a general existence theorem.

[62] Neither clan cooperates in piracy with the other following a challenge, because it expects that the other would not do so either. This aspect of the mutual deterrence equilibrium strategy is not essential to the main results. A more complicated analysis, based on a belief-dependent utility function, suggested by Geanakopolos, Pearce, and Stachetti (1989), indicates that fear of revenge that endogenously emerges would have given the clans an additional motivation to avoid joint piracy if joint piracy provided one clan with a better opportunity to assault the other (a realistic assumption). Indeed, feuds characterized interclan relationships in Genoa after a military confrontation between them.

clan can do?[63] If the answer is no, we can conclude that, theoretically, the need to sustain political order in Genoa hindered economic efficiency. We can then use the model to identify the source of this inefficiency.

The interesting case is the one in which the efficient number of privileges entails a positive investment in military strength. Formally, a necessary condition for mutual deterrence equilibrium (λ^k, T) to be characterized by a positive investment in military ability is the following: there exists a feasible investment for one clan that makes it profitable for that clan to challenge if the other does not invest, that is, for $k = i$ or j

$$\exists \, \psi^k \leq \lambda^k[I(T) + R(T)] \text{ such that } \delta s^{k,w}(\psi^k,0)V^{k,c}(T, \theta) - (c + \psi^k)(1 - \delta) > \delta V^{k,d}(\lambda^k, T, 0).$$

This condition is more likely to hold if the value of θ is lower (since $V^{k,c}$ increases in θ), c is lower, or δ is higher.

Proposition 8.1 establishes that when the efficient mutual deterrence equilibrium is characterized by a positive investment in military ability, it maximizes a clan's gross average payoff but not its net average payoff.[64]

Proposition 8.1

a.   Assume that mutual deterrence equilibrium(λ^k, τ) exists, the clans' equilibrium investment in military strength, $\psi^{k,*}(\tau)$ **is** strictly positive (without loss of generality), $\partial^2 s()./\partial\psi^{k2} < 0$, and $\partial^2 \omega()./\partial\psi^{k2} > 0$ for $k = i, j$ (namely, $k = i$ and $k = j$). Then each clan's net average payoff is not maximized at τ.

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[63] The question and analysis assumes that acquiring more privileges entails a transition from one mutual deterrence equilibrium to another. It ignores possible hindrances to efficiency from the difficulties of such a transition.

[64] The result also holds qualitatively when $\psi^{k,*}(\lambda^k, \tau)$ is strictly positive to only one clan and there is no piracy. When piracy does not take place, the marginal political cost is positive for any mutual deterrence equilibrium(T) with a positive investment in military strength if and only $(1 - \delta)/(1 - \delta s().) > \lambda^k$. In other words, for any δ and λ^k, if $s()$. (that is, the probability of survival as a controlling clan is sufficiently close to one), the result holds. The marginal political cost is positive, since a high $s()$. implies that the gains from taking control increase by more than the expected loss from a failed challenge.

b.   Assume that mutual deterrence equilibrium(λ^k, T) exists for every T and the implied investment in military strength, $\psi^{k,d}$(T) is strictly positive for k = i, j (without loss of generality). Then if a clan's optimal number of privileges is not zero, its net average payoff is maximized in a mutual deterrence equilibrium(λ^k, T^*) such that $T^* < \tau$ and $\lambda^k \, \partial I(T^*)/\partial T = \partial \psi^{-k,d}(T^*)/\partial T - \lambda^k \partial R(T^*)/\partial T$.

Proof: At a mutual deterrence equilibrium(λ^k, T), clan k's optimal investment is such that the incentive constraint in condition 8.1, ICC^{-k}, is binding at the largest feasible investment for clan -k, that is, $\lambda^{-k}[I(T) + R(T)]$. This locally binding constraint implicitly defines ψ^{-k} as a function of T, that is, $\psi^{-k,d}$(T). The most profitable mutual deterrence equilibrium(T) for clan k is the one that maximizes its per period income in a mutual deterrence equilibrium, that is, $H(T) = \lambda^k[I(T)) + R(T)] - \psi^{k,d}$(T). The first-order condition for maximization is

$$\lambda^k[\frac{\partial I(T)}{\partial T} + \frac{\partial R(T)}{\partial T}] - \frac{\partial \psi^{k,d}(T)}{\partial T} \geq 0.$$ Evaluated at $T = \tau$, this first-order condition holds if and

only if $\dfrac{\partial \psi^{k,d}(\tau)}{\partial T} \leq 0.$ The equilibrium investment in military strength, $\psi^{k,*}(\tau)$, increases in T if

$\partial V^{-k,c}/\partial T > \partial V^{-k,d}/\partial T$. By the envelope theorem,

$$\frac{\partial V^{-k,c}}{\partial T} = \frac{(1 - \delta)}{(1 - \delta s(.))} \frac{\partial I(T)}{\partial T}.$$ Similarly, $\dfrac{\partial V^{-k,d}}{\partial T} = \lambda^{-k}[\frac{\partial I(T)}{\partial T} + \frac{\partial R(T)}{\partial T}].$ Hence $\partial V^{-k,c}/\partial T > \partial V^{-}$

$^{k,d}/\partial T$ if and only if $\dfrac{(1 - \delta)}{(1 - \delta s(.))} \frac{\partial I(T)}{\partial T} > \lambda^{-k}[\frac{\partial I(T)}{\partial T} + \frac{\partial R(T)}{\partial T}].$ Evaluated at $T = \tau$, the right-hand

side of the inequality equals zero, and the left-hand side is strictly positive. Hence the equilibrium investment in military strength increases at $T = \tau$, that is, $\partial \psi^{k,d}(\tau)/\partial T > 0$, implying that the clans' expected utility is not maximized with the efficient number of privileges.

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As for the second claim, clan k's expected utility is maximized in a mutual deterrence

equilibrium in which $\quad \lambda^k \dfrac{\partial I(T)}{\partial T} \;=\; [\dfrac{\partial \psi^{k,d}(T)}{\partial T} \;-\; \lambda^k \dfrac{\partial R(T)}{\partial T}],$ which is the required condition. Q.E.D.

       This proposition implies that an inefficient mutual deterrence equilibrium is more likely to exist if the external threat is weaker. Specifically, the expected value of being a controlling clan increases as the external threat weakens, implying a larger parameter set for which the efficient mutual deterrence equilibrium is characterized by a positive investment in military strength, equivalent to having a positive number of supporters (recall that investing in military strength is equated with recruiting supporters).

       Formally, at the limit, when $\theta \to 0$ (and hence $s(). \to 1$ and $\omega(). \to 0$ for $\psi^k = 0$), $c(1 - \delta) \to 0$, and $R(T) \to 0$ the equilibrium number of supporters must be positive if for $k = i$ or j, $\exists \, \psi^k \le \lambda^k[I(T) + R(T)]$ such that $s^{k,w}(\psi^k,0) > \lambda^k$, that is, there is a feasible number of supporters that makes clan k's probability of winning, $s^{k,w}()$., larger than its share of the gains, λ^k, when the other clan has no supporters.

Proposition 8.2: Suppose that for $\forall \, T \in [0, \tau]$, a mutual deterrence equilibrium(λ^k, T) with a positive equilibrium investment in military strength exists. For both clans, the number of optimal privileges, $T^*(\theta)$, is nondecreasing in θ.

Proof: Any reduction in $V^{k,c}()$. relaxes the mutual deterrence constraints and makes more privileges optimal for both clans. Since θ directly affects only $V^{k,c}()$., to prove the proposition, it is sufficient to show that a controlling clan's expected utility decreases in θ. A controlling clan's expected utility is the value function of problem OP above defined earlier. To see that it is decreasing in θ, define $g(). = I(T) - \psi - c\omega(). \;(> 0)$ and recall that $\partial s()./\partial \theta < 0$ and $\partial \omega()./\partial \theta > 0$. These relations and the envelope theorem imply that

$$\frac{\partial V^{k,c}}{\partial \theta} \;=\; \frac{(1 - \delta)\delta}{(1 - \delta S(\cdot))^2} \frac{\partial s(\cdot)}{\partial \theta} g(\cdot) \;-\; \frac{(1 - \delta)}{(1 - \delta s(\cdot))} \frac{\partial \omega}{\partial \theta} c \;<\; 0. \quad \text{Q.E.D.}$$

Annex 8.2 Existence of a Mutual Deterrence Equilibrium

What are the conditions under which a mutual deterrence equilibrium does not exist? Condition 8.1 implies that such an equilibrium (λ^k, T) does not exist if one clan finds it profitable to challenge when the other clan invests all its resources in enhancing its military strength. That is, if for k = i or j, $\exists \psi^k \leq \lambda^k[I(T) + R(T)]$ such that for $\psi^{-k} = \lambda^{-k}[I(T) + R(T)]$, $\delta V^{k,d}(\lambda^k, T, \psi^{k,d}) <$ $\delta s^{k,w}(\psi^k, \psi^{-k})V^{k,c}(T, \theta) - (c + (\psi^k - \psi^{k,d}))(1 - \delta)$.

The left-hand side of this inequality equals $\delta\{\lambda^k[I(T) + R(T)] - \psi^{k,d}\}$ and thus decreases with R(T), while the right-hand side increases with θ, since $\partial V^{k,c}/\partial\theta < 0$ (as established in the proof to proposition 8.2). Hence as R(T) and θ decrease, this condition is more likely to be satisfied.

At the limit, as R(T) → 0, θ → 0 (implying that s(). → 1 and ω(). → 0) and δ → 1, a mutual deterrence equilibrium(λ^k, T) does not exist if and only if for k = i or j, $\lambda^k < s^{k,w}()$. for some feasible ψ^k and all feasible ψ^{-k}. That is, a mutual deterrence equilibrium (λ^k, T) for the allocation λ^k does not exist if one clan has enough supporters so that its probability of winning a challenge is higher than its share in the income.

Annex 8.3 The Collusion and *Podesteria* Games
The Collusion Game

To what extent can a clan commit ex ante to reward ex post a podestà who provides it with military assistance? Denote by $v_i(m_j, m_k; m_i)$ the probability that player i (a clan or the *podestà*) will win a war against j and k, given respective military strengths of m_j, m_k, and m_i. The probability of i winning is declining in m_j and m_k and increasing in m_i.. (For ease of presentation, I omit the parameter m_i in the equations below.) If a player participates in a military confrontation, he has to bear a cost, c. V_i is the net present value to player i of controlling Genoa. Assume that local clans gain more than a *podestà* does from controlling the city, that is, $V_i > V_p$ if player i is a clan.[65]

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[65] This assumption, as well as the one that the cost of war is the same for all players, is not essential to the result but simplifies the presentation. For simplicity, I ignore the clans' ability to invest resources in military strength, since this ability does not qualitatively alter the results.

Consider what happens after a clan (say clan 1) and a *podestà* collude against the other clan and gain control over the city (figure 8.3). The controlling clan has to decide what reward, $R_p > 0$, to give the *podestà*. Once this reward is announced, the *podestà* can either accept it or reject it and fight the clan for control of the city. If he accepts, the payoffs are $V_1 - R_p$ to the clan and R_p to the *podestà*. If he rejects it and fights, the expected payoff to each is the probability of winning times the value of gaining control minus the cost of war, namely, $(1-v_p(m_1))V_1 - c$ and $v_p(m_1)V_p - c$.
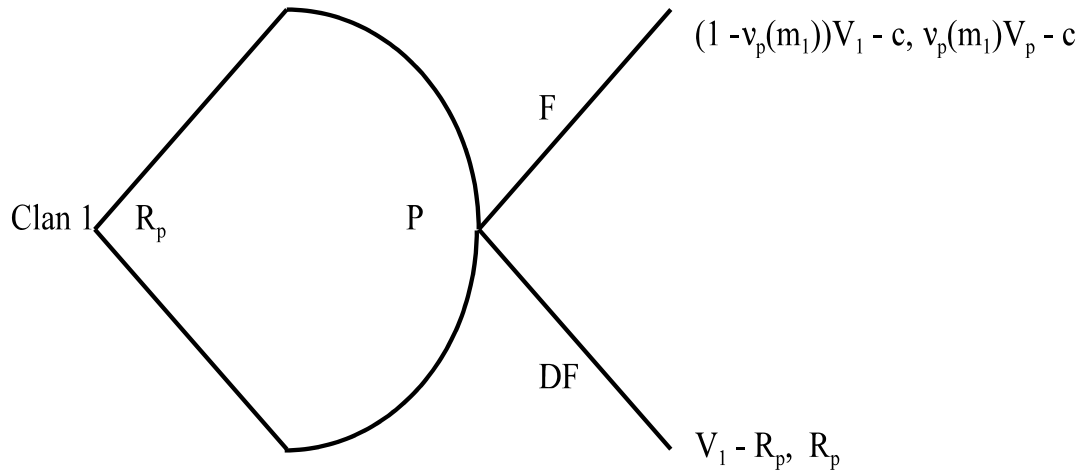

Figure 8.3: The Collusion Game

The clan will not find it profitable to offer an R_p higher than the one required to make the *podestà* indifferent between fighting or not, that is, $V_1 - R_p \geq (1-v_p(m_1))V_1 - c$. Hence it will offer $R_p \leq v_p(m_1)V_1 + c$. If the *podestà* receives a payment as great as the net expected value of fighting against a clan, namely, $R_p \geq v_p(m_1)V_p - c$, he will find it optimal not to fight. Thus in any subgame perfect equilibrium, the clan will not offer more than the amount required to make the *podestà* indifferent between fighting or not, namely, $R_p = v_p(m_1)V_p - c$. This implies that the only subgame perfect equilibrium is the one in which the clan offers $R_p = v_p(m_1)V_p - c$, while the *podestà*'s strategy is to fight if paid less than that amount and not to fight if paid at least that amount. The payoffs associated with this equilibrium are $V_1 - V_p^c$ to the clan and V_p^c to the *podestà*, where $V_p^c = \text{Max}\{0, v_p(m_1)V_p - c\}$.

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The analysis implies that after collusion occurs, the *podestà*'s reward depends on his military ability.[66] Specifically, in any equilibrium, the *podestà* will not receive more than the net present value of militarily confronting the clan. Thus ex ante—before collusion occurs—a clan cannot credibly commit to ex post reward the *podestà* more than this amount. When $v_p(m_1)V_p - c \leq 0$, for example, the clan cannot make any credible promise to reward the *podestà*. The weaker the *podestà*, the weaker the ability of the clan to make its ex ante promise of a reward credible.[67]

The **Podesteria** *Game*

Limiting the *podestà*'s military ability (relative to that of a clan) implies that his military might, in and of itself, becomes less effective in deterring one clan from challenging the other. To see how a clan still can be deterred from challenging, consider two other problems: motivating the *podestà* to help a clan that stands to lose in an interclan confrontation and motivating a clan to fight alongside the *podestà*.

Let I_i be the per period income for clan i if no interclan military confrontation takes place, W the *podestà*'s wage, and δ the time discount factor.[68] The *podesteria* game reveals how the interclan game can be altered by introducing a *podestà,* despite the need to limit his military strength (figure 8.4).

This repeated game begins, without loss of generality, with clan 1 having to decide whether or not to challenge clan 2. If clan 1 challenges, clan 2 must choose between fighting and not fighting. In either case the *podestà* can respond by preventing clan 1 from taking control (an action denoted by p), by not preventing clan 1 (dp), or by colluding with clan 1 (co). If the *podestà* colludes with clan 1, I assume, for ease of exposition, that clan 2 cannot gain control

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[66] A similar commitment problem prevails in the relationship between clans and their supporters. In that case, their ongoing relations could help mitigate such a problem, something that is not feasible with an outsider.

[67] Introducing asymmetric information can strengthen this result. Suppose that there is asymmetric information between the *podestà* and the clan regarding the clan's military strength. In this case, a generous offer to the *podestà* will be made by a militarily strong clan, which will not have to compensate the *podestà* ex post. Hence the *podestà* is further deterred from colluding.

[68]It is implicitly assumed that the *podestà's* reservation utility after assuming office is zero

over the city and that the *podestà* and clan 1 are playing the collusion game (figure 8.3). Since the collusion game has a unique subgame perfect equilibrium, figure 8.4 presents only the payoffs associated with this equilibrium.
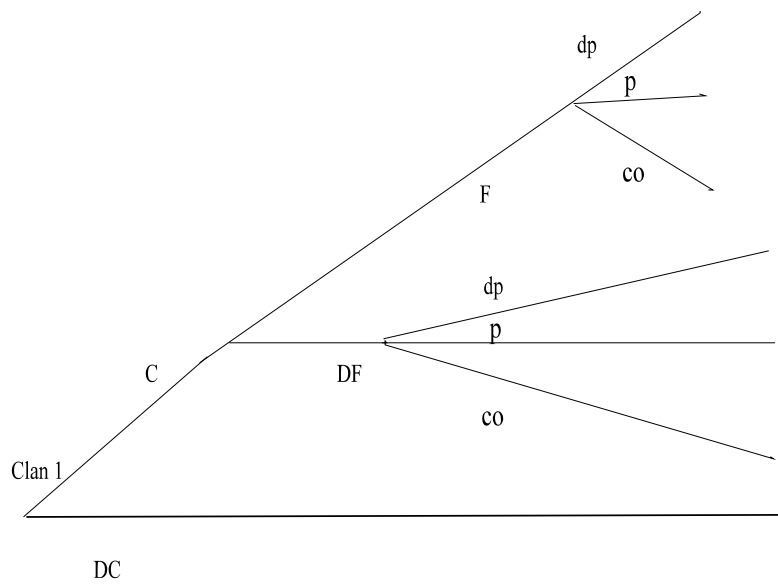
$$v_1(m_2)V_1 - c, (1 - v_1(m_2))V_2 - c, 0$$
$$v_1(m_p,m_2)V_1 - c + (1 - v_1(m_p,m_2))I_1,$$
$$(1 - v_1(m_p,m_2))I_2 - c, (1 - v_1(m_p,m_2))W - c$$
$$V_1 - V_p^c, 0, V_p^c$$

$$V_1, 0, 0$$
$$v_1(m_p)V_1 - c, 0, v_p(m_1)V_p - c$$

$$V_1 - V_p^c, 0, V_p^c$$
$$I_1, I_2, W$$

Figure 8.4: The *podesteria* game.

The payoffs to this game are as follows:

- If clan 1 does not challenge, the payoffs are (I_1, I_2, W) to clan 1, clan 2, and the *podestà* respectively, and the same game is played in the next period. If clan 1 challenges and clan 2 does not fight, clan 1 becomes the controlling clan. The associated payoffs are as follows: If the *podestà* does not prevent the fight, the payoffs are $(V_1, 0, 0)$. If the *podestà* colludes, clan 1 rewards him with V_p^c (namely, the *podestà*`s payoff in the equilibrium of the collusion game). The payoffs are $(V_1 - V_p^c, 0, V_p^c)$. If the *podestà* attempts to prevent clan 1 from taking over, his payoff equals the net expected value of an attempt to gain control. The payoffs are $(v_1(m_p)V_1 - c, 0, v_p(m_1)V_p - c)$.

- If clan 1 challenges and clan 2 fights, the associated payoffs are as follows: If the *podestà* does not prevent the fight, each clans' payoff equals the net expected value of being a controlling clan, while the *podestà* gets zero, that is, $(v_1(m_2)V_1 - c, (1 - v_1(m_2))V_2 - c, 0)$.[69] If the *podestà* colludes, as before, clan 1 assumes control. The payoffs are $(V_1 - V_p^c, 0, V_p^c)$.

  - If the *podestà* prevents the fight, clan 1 will either gain control and get V_1, or fail to gain control and get only its share in that period's income, I_1. If clan 1 fails to

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[69] The analysis holds if a *podestà* who did not prevent a interclan confrontation could challenge the clan that won it.

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gain control, clan 2 gets its share of that period's income, I_2, while the *podestà* gets his wage, W. The payoffs are thus $(v_1(m_p, m_2)V_1 - c + (1 - v_1(m_p, m_2))I_1, (1 - v_1(m_p, m_2))I_2 - c, (1 - v_1(m_p, m_2))W - c)$.

Consider the following strategy combination: clan 1 does not challenge, clan 2 fights if it is challenged, and the *podestà* prevents the fight if and only if 1 challenges and 2 fights. If clan 1 challenges but clan 2 does not fight, the *podestà* colludes if $V_p^c > 0$, and does not otherwise. This strategy combination is a subgame perfect equilibrium if the following conditions hold:

a. $(1 - v_1(m_p, m_2))W - c \geq V_p^c$. The *podestà* prevents and does not collude if clan 2 fights.

b. $(1 - v_1(m_p, m_2))I_2/(1 - \delta) \geq c$. Clan 2 fights if challenged.

c. $c + \dfrac{\delta I_1}{1 - \delta} \geq v_1(m_p, m_2)(V_1 - I_1)$. Clan 1 does not challenge.

Intuitively, condition (a) implies that the *podestà* is better off preventing if clan 2 fights and that he colludes otherwise. Condition (b) guarantees that clan 2 fights. Because the *podestà* does not prevent unless 2 fights, and since condition (b) implies that 2 prefers to fight rather than not fight if the *podestà* prevents, fighting if challenged represents clan 2's best response. Condition (c) then implies that clan 1, expecting clan 2 and the *podestà* to fight together, finds it optimal not to challenge.

These conditions and the equilibrium strategy indicate how the *podesteria* system can provide the appropriate incentives to overcome the problems that could render it ineffective. Condition (a) and clan 2's strategy prevent collusion between clan 1 and the *podestà* by sufficiently reducing the *podestà*'s military strength relative to his wage, so that the most clan 1 can credibly commit to reward the *podestà* following collusion is not enough to induce him to collude. The *podestà*, expecting clan 2 to fight with him, prefers to prevent clan 1 from challenging rather than colluding. Clan 2 is motivated to fight alongside the *podestà* because if he does not (the *podestà*`s strategy implies), the *podestà* will not confront clan 1. At the same time, condition (b) implies that the combined forces of clan 2 and the *podestà*, relative to clan 2's share in the gain (I_2), are such that it is optimal for clan 2 to fight with the *podestà*.

A delicate balance of power must thus be maintained for the *podesteria* to promote political order. On the one hand the *podestà* cannot be strong enough militarily to gain control himself or collude with clan 1. (Both sides of condition (a) decline in m_p, but the right-hand side increases in W.) On the other hand he must be strong enough so that his threat to fight alongside clan 2 if necessary eliminates clan 1's incentive to challenge. (The left-hand side of condition (b) increases in m_p.) This balance provides the *podestà* with an important incentive that is not explicitly captured in the model. The more equal the clans are in military strength, the more likely the equilibrium is to hold, and the *podestà* is more likely to gain W without being involved in a war. The *podestà* is thus motivated to prevent fighting, but not at the cost of severely weakening either clan. The *podestà* can therefore credibly commit to maintain the relative strength of each clan.