2. Institutions – a theoretical approach

2.1 Introduction

Institutions constitute the social, political, legal and economic system of a state. According to North (1990), “Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. [...] they structure incentives in human exchange, whether political, social or economic” (p. 1). Hence, institutions are the rules that regulate social interaction. Therefore, they establish the framework within which social life takes place. Institutions can take different forms, ranging from an individual’s attitudes and beliefs to the legal system of a state. Regulations might, for example, be imposed on the distribution of power, the legal foundation (which must judge misconduct), and land tenure or ownership rights. Furthermore, economic regulations, which clarify expected costs and returns, can be established. However, these constraints – called institutions – must be implemented by humans to regulate their interrelationships. With institutions, people are able to assess others’ behaviors since an institution by definition is universal, and thereby all members of the observed population adhere to the rule. The risk that somebody violates the rule is reduced, because the violator is punished and must pay a cost for their misconduct. Therefore, institutions make human behavior predictable. That is to say, human interrelations follow a given pattern, which allows preceding calculations. This is true for both formal rules such as laws and informal codes of conduct. It follows that, because of institutions, humans are endowed with information on others’ behaviors and, therefore, transaction costs can be reduced. The institution – whether a formal rule or morals and norms – provides behavior guidelines, which help an individual choose their own actions and predict others’ behaviors. However, we should not mix this up with a situation of complete information, which does not exist. Therefore, transaction costs still exist and humans act in a state of uncertainty. Institutions reduce transaction costs and uncertainty by providing rules of conduct. Whether institutions are efficient cannot be easily stated and depends on the particular case and the applied theory. In fact, certain parts of the population can suffer from high transaction costs and uncertainty despite the implementation of institutions. Hence, institutions do not imply that all members of the observed population live a materially secure and satisfying life. However, to know about one’s own and others’ constraints opens up a clearly defined scope for action, even if the institutional environment is not efficient. Individuals can calculate their gains and losses resulting from specific behaviors. Hence, with distinct rules it is possible to determine whether an investment is worthwhile or not. Thus, the decisive property of institutions is that they set constraints on human behavior and so determine human action;
therefore, they reduce uncertainty and transaction costs. Hence, they create incentives for particular actions, since gains and losses become predictable.

Institutional analysis, however, is a complex field with several feedback mechanisms; it has ‘no beginning’ per se. Institutional development can be described as a circuit that continues indefinitely and for which a starting point cannot be detected. The crucial element, which determines and sustains societal organization, is human behavior. Hence, institutions are directly connected with human behavior, and this brings game theory as an analytical tool into play. To find the least common denominator, we can record that institutions are all about maximizing an individual’s utility by optimizing their own behavior conditional on others’ behaviors in time. Human behavior, however, depends on incentives and motivation. That is to say, institutions provide an incentive to act in a certain way – they motivate people to do something. In a world without institutions a human’s reaction to a particular incentive is unpredictable. No patterns exist to help forecast human behavior. Furthermore, misconduct cannot be sanctioned since the difference between ‘good’ and ‘bad’ behavior is not defined. This world is characterized by uncertainty and, therefore, high transaction costs (Coase, 1937; Coase, 1960; Greif, 2006; North, 1990). Therefore, people strive for a situation in which others’ reactions are predictable and thereby uncertainty and transaction costs can be reduced. To achieve their target, humans are prepared to impose constraints on themselves whereby codes of conduct emerge that afford reliable expectations and reduce uncertainty. Thus, the constraints are endogenous. At the same time, individuals are born into a world where restrictions already exist and which are, therefore, exogenous to them. That is to say, the constraints shape peoples’ codes of conduct, whereas the latter determine the constraints. The restrictions, however, are called institutions. They are created by human beings – consciously or unconsciously – to impose binding rules on social interactions. Since almost all members of a society subordinate themselves to the self-imposed rules individuals achieve the maximal level of freedom under which the particular societal life is possible. Or, according to Hodgson (2006): “Regulation is not always the antithesis of freedom; it can be its ally” (p. 2).

However, the preceding explanation of institutional emergence should not be misunderstood. We do not emanate from a starting point where no institutions exist. Even an anarchical state, like every other, is distinguished by institutions. However, a certain institutional environment might not lead to an effi-
cient outcome and individuals might implement and alter institutions to optimize their living standards. To improve our understanding, we should consult Hodgson’s (2006) definition that describes institutions as “durable systems of established and embedded social rules that structure social interactions … institutions are social rule-systems” (p. 13). Hence, social interactions require institutions and institutions require social interactions. Without institutions, social interactions cannot be realized, since an individual does not know what the other’s behavior is meant to express. However, an institution cannot exist without interacting individuals, because otherwise there is no need for an institution. This is the beginning of the structure–agency debate and of a discussion that questions what came first, the individual or the institution. However, this study will not enter that particular debate. Instead, it is assumed that both approaches – structure and agency – must be applied and combined in a reasonable manner to examine institutions. Therefore, the present approach should be regarded as a mixture of agency and structure. Individuals make their decisions according to more or less rational reasoning. The micro view of the agency approach, however, suggests that they build institutions to regulate their social interactions. Anyway, individuals are a creation of their environments. Thus, prevalent norms and the social value system do influence their behavior and the decisions they make. Hence, on a macro level, individuals are born into an existing institutional environment that provides incentives and, therefore, regulates their behaviors. Individuals maximize their utility according to rational consideration. However, what they understand by rationality and utility maximization depends on the prevalent social value system and thereby the institutional environment. That is to say: “Human reasoning capacities are thus linked to their evolving social and biological contexts. Rationality is not detached from the world; it is situated in and operates through specific cues, triggers and constraints. These structures and circumstances are part of our biological and social heritage. Among them are institutions that frame our cognitions, enable some behavioural options and constrain us from others” (Hodgson, 2007, p. 8).

Individuals are utility maximizers and rational actors. However, rationality and logic are not exogenous entities; they emerge and exist in a certain social environment that is determined by individuals. The rules that determine the social value system are influenced by the individuals. But the individuals act according to the rules. That is to say, both structure and agency require each other (Lawson, 1987). Therefore, neither agency nor structure alone can solve the issues of institutional theory: “Institutions depend for their existence on individu-

Ch. 2, pp. 29–53). However, this idea further leads to the question of whether some institutions are predetermined in human nature and, hence, are settled in our genes. Anyway, this topic leads far into the realms of biology as analyzed by neuro-economists. Although interesting and important, it is not further ensued in this study.
als, their interactions, and particular shared patterns of thought. Nevertheless, any single individual is born into a pre-existing institutional world which confronts him or her with its rules and norms” (Hodgson, 2006, p. 7).

Therefore, the present work does not deal with the very beginning of institutions, but with institutional development over time. By the nature of its object of investigation institutional analysis cannot detect whether the individual or the institution was the starting point. We cannot draw a separating line between the micro- and macro-level. Institutions shape individual behavior, which in turn generates institutions that again determine behavior, and so forth. Nevertheless, for the purpose of analysis it might be useful to emanate from a pure rules-of-the-game approach.\(^9\) Hence, certain questions might necessitate one approach while others are better solved with another. To depict the endogenous nature of institutions, the assumption of exogenously given institutions that determine an individual’s behavior must be abandoned. Instead, an equilibrium approach that describes the endogenous, self-enforcing character of an institution can be applied (Aoki, 2001, Ch. 7, pp. 185–206).

A plausible scheme of institutions is given by Williamson (2000), who arranges institutions into four levels. The first is the social embeddedness level, which corresponds to North’s (1990) informal institutions. It includes “norms, customs, mores, traditions, etc.” and also “religion plays a large role at this level” (Williamson, 2000, p. 596). The first-level institutions are characterized by their robustness and durability – institutional change at this level happens very slowly, that is to say, in a dimension of centuries or even millennia.

The second level is called ‘institutional environment’. This describes what we specify as formal institutions – that is, formal rules such as property rights, judiciaries, laws, or constitutions. The formal rules change faster than the informal institutions, between around 10 to hundred years according to Williamson (2000). The first two levels of Williamson’s approach correspond to what North (1990) describes as formal and informal institutions. Williamson, however, further differentiates institutional analysis by introducing two additional levels.

Level three is called ‘governance’ and includes issues of private order, contract enforcement, and getting “the governance structures right” (Williamson, 2000, p. 599). Change on this level needs one to 10 years to happen. Level four,  

\(^9\) Interpreted in this way, the rules-of-the-game approach describes an exogenous understanding of institutions. That is to say, the institution – the rule – is exogenously attached to an individual, who adheres to the rules. North (1990), who determined the term ‘rules-of-the-game’, did not understand institutions as being purely exogenous to agents (North, 2005). This should be revealed to avoid misunderstanding. When we talk of the rules-of-the-game approach, we advert to the micro level where we observe one single individual who in fact takes institutions as exogenously given. Anyway, on the macro-level, institutions are endogenous and are shaped by society. That is to say, the rules-of-the-game approach must not mean that the particular author takes institutions as generally exogenously given. Institutions are still endogenous, but are exogenous to a single individual.
however, regards the economy from a macro-level and deals with resource allocation and macroeconomic optimality analysis.

The current study deals with levels one and two. These explanations demonstrate that a clear definition of institutions is difficult to state. What is defined as an institution and what is excluded depends on the kind of analysis. Institutions are entities that cannot be precisely described with certain terms. Institutions are a concept that must be understood and internalized; it makes no sense to desperately try to define them with a certain range of words. Therefore, whether organizations are defined as institutions or not and whether culture is an institution or not depends on the object of study and the idea being followed. Any definition of an institution cannot be described as wrong; every approach must be followed and discussed to find out whether it makes sense and whether further research should be conducted.

Therefore, informal institutions might be described as culture, the social value system, credible beliefs, habits, worldview, and so on. As a minimum they describe the broad, underlying basis of a society. They shape a society’s mental model or its belief system, on which formal institutions might emerge. That is to say, this study will not commit to a certain restrictive definition of institutions. It rather seems to make sense to contribute to the understanding of the concept of institutions in general – which will hopefully be achieved by the end of the study – than to get lost in definition fetishism.

North’s (1990) approach seems to include the most comprehensive and accurate definition of institutions. Based on his approach, further more or less restrictive definitions can be specified to analyze certain institutional issues. Some economists use the term ‘rules-of-the-game approach’ to describe institutions as purely exogenous (Aoki, 2001; Greif, 2006). However, North’s approach is not tempted to understand institutions as pure exogenously given entities. Nevertheless, the exogeneity assumption might be true from an individual, micro point of view. Greif (2006), for example, specifies the assumption that institutions “are exogenous to each individual whose behaviour they influence” (Greif, 2006, p. 30) as a determining characteristic of institutions. In any case, at least from a macro point of view, institutions are endogenous. This is demonstrated, for example, by Aoki’s (2001) equilibrium view of institutions. Both approaches are ‘right’ depending on the point of view – micro or macro – and, as will be seen, complement each other.
2.2 Formal and informal institutions

The current study follows North’s (1990) approach and differentiates between formal and informal institutions. This is the case since it should be emphasized that institutions do not only correspond to formal entities – that is, to certain laws and regulations that are officially written down. Some empirical analyses, although very important for examining institutions and their effects on economic development, convey the impression that institutions correspond solely to a form of government, a legal system, property rights, or business regulations, but do not correspond to the sociocultural value system. Of course, the fact that empiricists concentrate on formal measures of institutions is an issue of data availability, since a country’s social value system is difficult to measure. However, the availability of survey data has led to some interesting results in recent years. In any case, the objective of the current study is to include informal institutions or the embeddedness level in its analysis (Williamson, 2000). It is important to define precisely our understanding of the terms ‘formal’ and ‘informal’ institutions, since different definitions and approaches exist and are often mixed up (Hodgson, 2006).

In general, rules that constitute the political, legal, economic, and social environment and are formally written down in a rulebook, be it for example a legal text or a constitution, are called formal institutions. Formal institutions imply an official formal enforcement mechanism in case the rules are violated. However, life is not constrained solely by formal institutions. Morals, norms, values, conventions, traditions, and codes of conduct also influence human behavior. These cultural and societal factors are called informal institutions. They are not officially written down and a violation might not lead to state-run, but rather societal punishment. Usually, informal institutions underlie formal institutions because they determine a society’s basic attitudes and beliefs and, hence, its value system (Aoki, 2001; Boettke, Coyne & Leeson, 2008; Greif, 2006; North, 2005). North (1990) reverts to a plausible example of rules in sports to describe the difference between formal and informal institutions. Thus, formal institutions can be compared to rules that are written down in a rulebook, whereas informal institutions are “unwritten codes of conduct that underlie and supplement formal rules, such as not deliberately injuring a key player on the opposing team” (p. 4).

In the present study, informal institutions are defined as values, beliefs, morals, convictions, norms, habits, and codes of conduct and the term is used as

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10 See, for example, Acemoglu, Johnson & Robinson (2001); La Porta et al. (1999); La Porta et al. (2004); Rodrik (2000); Rodrik, Subramanian & Trebbi (2004); Persson & Tabellini (2008).

11 See, for example, Fernández & Fogli (2007); Guiso, Sapienza & Zingales (2006); Knack & Keefer (1997); Knowles & Weatherston (2006); Tabellini (2005); Tabellini (2008a); Tabellini (2008b); Williamson (2009).
a substitute for culture. However, institutions can range from the general to the specific. Thus, culture can be defined as an institution that corresponds to the broadest categorization; further, values, beliefs, morals, norms, convictions, and so on can be categorized as culture or informal institutions. Hence, particular values or norms correspond to specific categories.

Culture is used as a substitute for informal institutions since at least in the current definition it depicts the rules that regulate human interactions. Culture restricts human behavior since individuals belonging to a certain culture share the same values and beliefs and, therefore, share norms, codes of conduct, habits, and traditions. Hence, they will behave according to certain defaults, and misconduct will be punished. Furthermore, culture offers incentives. Culture provides a metaphysical incentive in the sense that people want to act in a particular way because they are persuaded that they are ‘right’. Hence, they act according to religious or other metaphysical beliefs, such as altruism or abstinence. They do so because they are persuaded by a particular belief system or because they fear societal or divine punishment. Furthermore, culture offers the incentive of becoming a member of a cultural group by practicing particular traditions and codes of behavior.

If, however, new beliefs and convictions become accepted by the individual, at least parts of a society’s belief system and its worldview can be consciously altered by its members. Take, for example, attitudes regarding gender equality, political equality, vigilantism, the death penalty, or the rule of law. These institutions have been altered in some societies because the attitudes concerning the individual and social coexistence changed. These changes can be traced back to conscious decisions that were taken because of rational and logical reasoning. However, institutions can also emerge or be altered unconsciously. Hence, rules to regulate social interaction are established unconsciously, and after their implementation individuals adhere to the rules without consciously questioning them.

Individuals might feel constrained by informal institutions rather than by formal institutions, because informal institutions are connected to their personal convictions. That is to say, formal and informal institutions are not clearly separable. According to Hodgson: “… the idea that there is a dividing line between institutions that are entirely “formal” on one hand and entirely “informal” institutions on the other is false, because “formal” institutions […] always depend on nonlegal rules and inexplicit norms in order to operate. If laws or declarations are neither customary nor embodied in individual dispositions, then – “formal” or not – they have insignificant effects” (2006, p. 18).

Hence, a society’s value system or its culture determines its worldview and its general understanding of the state and of society. Thus, a conservative or non-modern value system might unconsciously support a hierarchical societal structure, an authoritarian government, and a restricted judiciary. On the con-
trary, a liberal and modern social value system might be supportive of a horizontal societal structure, political participation, civil liberties, and an independent judiciary. However, since the institutional system is influenced by many exogenous and endogenous factors, exceptions to the hypotheses might be found.

The differentiation between formal and informal institutions seems reasonable since it clarifies that not only formal rules are institutions. Nevertheless, one should not forget that a clear separation between formal and informal institutions is not possible since both are connected in several ways and both merge into each other. Anyway, depending on the object of study, the distinction might be useful.

Once established formal institutions also impact informal institutions. A democratic state that practices the rule of law and in which civil liberties and political rights are implemented might induce self-reliant and self-dependent individuals who are able to question their political and societal environment. They might be able to critically reflect on themselves and on the surrounding structures. An autocratic or patrimonial state that oppresses its citizens and does not imply civil liberties such as freedom of the speech does not necessarily bring up critical and self-reliant individuals. Education also plays a major role. Individuals with access to a modern educational system will probably develop different personalities compared with individuals with no or less access to education.

Of course, formal institutions, such as in the form of government, property rights, the legal system, business regulations, and so on, influence a country’s development and thereby its growth performance. Opinions are mixed about informal institutions. The current study’s hypothesis is that informal institutions influence economic development because cultures differ between societies. Hence, values, beliefs, worldviews, morals, codes of conduct, and so on differ between cultural groups. Therefore, preferences, incentives, and utility functions differ. These differences lead to varying strategies on the individual level, but also regarding collective behavior. Hence, the impacts on economic development vary. If, for example, a society has a positive attitude concerning materialism, it will probably accumulate more capital and invest more than a society in which materialism is considered negative.

If societies differ concerning their cultural characteristics, aggregated behavior will vary and affect economic outcomes differently. The following sections will examine institutional properties, institutional emergence and change, and the transmission channels between formal and informal institutions and economic growth.
2.3 Growth-supporting institutions

Since we are interested in the impact of institutions on economic growth and economic development, we should define the meanings of growth-supporting and growth-inhibiting institutions before we examine the issue of institutional efficiency and change. An institution that has a positive effect on the growth rate is called growth supporting, whereas an institution that has no effect, or that is detrimental to economic growth, is called growth inhibiting. A general classification in growth-inhibiting and growth-supporting institutions is impossible because the economic impact of an institution depends on several influencing factors such as other institutions, history, geography, ecology, the level of economic development, and so forth. Depending on the prevalent environment, an institution that supports growth in one country might have a different impact on the growth rate in another country. However, assuming equal initial conditions, certain institutional features are generally described as growth supporting. These institutions are considered to be property rights, an independent judiciary, the rule of law, and political participation, although the detected effect of democracy is mixed.\textsuperscript{12} Property rights are growth supporting in two ways. First, they expand the possible use of an asset. That is, besides its direct utilization as a living space, office, production facility, showroom, farmland, and so forth, the asset can be used as collateral and thereby can create new capital (De Soto, 2000). Second, clearly defined ownership rights guarantee individual utility maximization since the owner can use the asset in a way that best fits her or his interests. Therefore, secure property rights are accompanied by higher growth rates (Acemoglu & Johnson, 2005; Williamson & Kerekes, 2009). However, property rights are useless if they cannot be enforced by an independent judiciary; hence, as long as the state or private interest groups are able to appropriate private property or influence the allocation of assets. La Porta et al. (2004) examine the effect of judicial independence and constitutional review and discover that an independent judiciary matters most in the attainment of economic freedom. Political participation guarantees that it is not possible for a minority, which is not legitimatized, to determine the institutional form. That is, political participation prevents interest groups from exerting de facto political power solely based on their resources (Acemoglu, Johnson & Robinson, 2005; Rodrik, 2000; Rodrik, 2007). On the informal level, a societal structure of generalized morality (Plateau, 2000; Tabellini, 2005; Tabellini, 2008a; Tabellini, 2008b), high levels of trust (Akerlof & Kranton, 2000; Knack & Keefer, 1997), convictions concerning destiny and predetermination, and the level of respect for other people (Knowles & Weatherston, 2006; Tabellini, 2005) are proven to support economic growth.

\textsuperscript{12} See, for example, Barro (1999); Persson & Tabellini (2006); Persson & Tabellini (2008); Persson & Tabellini (2009).
As already indicated, the economic impact of institutions depends on other institutions, historical accidents, further factors, and reverse causality. The informal institutional environment, for example, might not match the relevant formal institutions – that is, a culture of property rights, rule of law, and political participation might not exist. In this case, the assumed growth-supporting institutions might not support growth. However, if countries could change their institutional environments in a way that fits the above-named growth-supporting institutions then efficient production would be possible and would result in optimizing the growth rate. Of course, this is an unrealistic and less helpful assumption. It reveals that if we emanate from a growth model similar to, for example, the neoclassical model, then the mentioned institutions will support growth. However, this is precisely the problem. Real conditions do not correspond to the model world. But models can be used in a way that makes sense. Hence, we can detect which institutions – emanating from our perfect model world – would support growth. Then, we can continue and examine how far the prevalent situation differs from the model and draw conclusions regarding institutions and growth. That is to say, we can compare the model world and the real world; but the objective should not be to change and perfect the real world according to the model world, but to detect differences.

However, in institutional economics the ‘strongest’ (meaning the economically most efficient) institution might not prevail and survive. The corresponding hypothesis cannot be brought into line with the persistence of many economically, politically, and socially inefficient informal and formal institutions. Furthermore, the theory of multiple equilibria has taught us that inefficient states can emerge and persist, although they are detrimental to economic growth and development. This is not astonishing since utility maximization does not necessarily correspond to material utility maximization. An individual’s utility can also be influenced by certain beliefs and convictions. Furthermore, stability and security can be rated higher than economic profit, depending on risk adversity, societal dullness, values, attitudes, and beliefs. Hence, the persistence of institutions might lead to a state of general inefficiency – that is, even if informal and formal institutions are inefficient from an economic point of view they might persist because of the complexity and difficulty of institutional change. Thus, even if we consult informal institutions and immaterial incentives, the persistence of inefficient institutions cannot be easily explained. But since institutions are inertial but changeable, marginal alteration is always possible. Nevertheless, as we will see in the following sections, possibilities to accelerate the process of change are limited because of the complexity of the institutional system.
2.4 Transaction costs

Transaction costs are the costs that arise from transactions such as information costs, policing costs, and enforcement costs. To accomplish a transaction, information concerning the relevant commodity, its value, the seller, the contractual arrangement, and relevant laws must be gathered. Aside from the commodity’s price, costs for contract enforcement, information about the goods, and information about the business partner are incurred. Additionally, a risk premium must be considered.

According to North (1990), the theory of institutions is a combination of a theory of human behavior and a theory of transaction costs. Since institutions have binding rules, they are created in a way to reduce transaction costs (Coase, 1937; Coase, 1960). Hence, via institutions humans try to reduce, as far as possible, expenditure on information, monitoring, and enforcement. A clear system of rules that punishes offences decreases enforcement costs. Hence, acts of sale are well regulated and correspond to specified patterns. The consolidation of procedures, through business regulation and laws (for example, contract law, patent rights, and the protection of intellectual property) constrains human action and fosters predictability. Therefore, even if we are not endowed with personal information about our potential seller, we take less risk in doing business with him since we know he must adhere to the rules otherwise he will be punished. This means the introduction of relevant institutions has decreased risk and thereby transaction costs. Institutions have superseded the need for information and monitoring and have facilitated enforcement, since binding rules exist that can be used by individuals to predict others’ behaviors. The possibility to predict human actions increases security. We can rely on people acting under these rules since a violation is connected with costs. Since the constraints are binding, the environment in which humans act is stable. Thus, institutions decrease transaction costs and increase security and stability. Hence, under these conditions, individuals maximize their utility.

Institutions not only increase material utility but also increase immaterial utility by providing a stable mental and metaphysical environment that permits the prediction of others’ reactions and thereby decreases transaction costs. How individuals rate material and immaterial utility, (what they assess as being more important) depends on individual attitudes and beliefs.

However, institutions are not necessarily economically efficient and a particular institutional environment might not maximize the utility of an individual or a society. Consider what happens if somebody achieves maximal personal utility by general destabilization. In this case, the individual might try to rearrange institutions that best fit their interests, for example, if it is an unstable environment. This could be true for certain minorities that consciously destabilize a particular region to enforce their own interests, for example Iraq or Afghani-
stan in the past couple of years. However, from a societal point of view, this approach is not desirable since it usually leads to the oppression of large sections of the population and economic disadvantages. In any case, the utility of the minority, which possesses de facto political power, is maximized.

Utility is maximized under certain assumptions. The assumptions correspond to the prevalent institutional environment and depend on individual preferences. That is, institutions allow individuals to maximize their utility presupposing the institutional environment. For example, in a dictatorship that oppresses its citizens individuals can maximize their utility by adhering to the rules and constraints set by institutions. However, if an individual’s utility can be increased by revolting against the authority and the established institutional system, it will act accordingly. Nevertheless, such an approach is accompanied by high costs, which might, in part, explain the persistence of authoritarian regimes.

![Figure 2.1: emergence and alteration of institutions. Source: own calculation.](image)

Figure 2.1 demonstrates the emergence and alteration of institutions. The state of prevalent institutions is affected by uncertainty and high transaction costs. This might be for different reasons, for example historical accidents, increasing dissatisfaction regarding the current situation (cognitive disequilibrium), and so on. In this situation, humans impose further constraints on themselves, or alter existing constraints, to regulate their relationships – that is, they implement or alter institutions. Institutions make human behavior predictable; hence, institutions reduce transaction costs and increase security and stability. Within this environment, people will maximize their individual utility, which includes immaterial utility. Utility, in general, is an irrational concept since it depends on individual attitudes, convictions, and beliefs – that is, the social value system and the prevalent culture.

### 2.5 Institutional change and transplantation

Ascribing underdevelopment to institutional quality poses challenges for the theory of economic growth in several ways. First, a general growth model, which determines the reasons for growth and provides overall solutions that can be applied to every economy, cannot be found. Second, this makes it difficult to give instructions for improvements in growth performance, since the success of reform activities depends on the prevalent conditions. If Pareto-optimal growth
is the target, it is possible that existing institutions could hinder its implementation. Hence, to realize Pareto-optimal growth institutions must be altered in a way that supports growth. Thus, the problem could be solved by adopting institutions from economically successful countries and implementing them in economically backward countries. However, as the previous section has already suggested, institutional development and change are subject to several influencing factors and institutional properties, which can make the adoption of such a policy difficult. In addition, institutions differ in relation to the nature of change and, in particular, to the speed of change. This section, therefore, deals with the issue of institutional change and transportability.

To expand this idea, we will refer to the approaches of Boettke, Coyne and Leeson (2008) and Roland (2005). These two studies incorporate the basic facts of the subsequent argument and will now be summarized.

Roland (2005) establishes the concept of slow- and fast-moving institutions. Institutions can change slowly and continuously, or rapidly and irregularly. Culture depicts a typical slow-moving institution. Thus, culture is rooted in religion or other beliefs that have hardly changed over time. Since it is an institution that constitutes the identity of the society, only marginal change is possible. Hence, we are talking about a slowly but continuously changing institution.

By contrast, for example, political institutions can be changed rapidly and irregularly. A military coup or a rebellion can alter the power structure of a state overnight or at least within a few weeks or months. Legal institutions can be seen as in-between, since the revision of statutes does not occur very quickly, but does not take centuries either.

However, a relationship between fast- and slow-moving institutions exists, since institutions are complementary and build systemic consistency (Roland, 2005). In examining institutions we deal with a system of institutions that influence and complement each other. Therefore, slow-moving institutions such as culture can be understood as the slow, but continuously altering, underlying foundation that influences the fast-moving institutions and vice versa. Fast-moving institutions can change during no observable modification to a slow-moving institution. Yet, after a long period of marginal change in slow-moving institutions, the aggregated shift might suddenly lead to a rapid and irregular adjustment in fast-moving institutions. Hence, inconsistencies between slow- and fast-moving institutions lead to changes (Roland, 2005). The fact that institutions interact and build complementary systems has far-reaching policy implications. Disturbing the complex institutional apparatus might result in equally complex inconsistencies and might have unpredictable consequences. Hence, replacing an apparently growth-inhibiting institution by a seemingly growth-supporting institution can be risky.

Another approach that sheds light on the issue of institutional change and transportability comes from Boettke, Coyne and Leeson (2008). The authors as-
sign a crucial role to ‘institutional stickiness’, that is, “the ability or inability of new institutional arrangements to take hold where they are transplanted” (p. 332). Within the model, institutions are categorized as ‘indigenously introduced endogenous institutions’ (IEN), ‘indigenously introduced exogenous institutions’ (IEX), and ‘foreign-introduced exogenous institutions’ (FEX). Here, foreign-introduced means institutions designed by outsiders such as foreigners, whereas indigenously introduced denotes institutions established by insiders or locals. Exogenous is meant to describe institutions implemented by a subordinate entity, which could be the local government or a foreign organization or force. Endogenous, on the contrary, depicts institutions that are not formally designed but developed spontaneously from within the community of indigenous individuals.

Boettke, Coyne and Leeson (2008) use the philosophical term métis to describe the societal and cultural basis that underlies all human and societal life. Since métis depicts the origin of the natives’ mentalities, beliefs, and practices, it is durable and nearly unchangeable. Hence, the stronger an institution is connected to métis, the stickier it will be. Since IEN institutions are rooted in métis, they constitute the stickiest of all institutions. Thus, the further an institution is situated from métis, the less sticky it will be.

IEX institutions are not endogenous but formally created by a superior entity. However, this entity must be indigenous, which implies it must concern a local institution, for example, the local government. Since an indigenous authority is familiar with local customs, attitudes, and practices, IEX institutions will, in general, be consistent with IEN institutions and métis. Hence, IEX institutions are less sticky than IEN institutions, but more inertial than institutions introduced by an outsider. Consequently, FEX institutions are the least sticky since they are created and implemented by foreigners and are sparsely, or not at all, correlated with métis.

Figure 2.2 demonstrates the closeness of the particular institutions to métis and to each other and, therefore, their degree of stickiness. The institutions within the outermost circle are the easiest to modify, whereas a change becomes catchier the further inwards we go.
However, according to Boettke, Coyne and Leeson (2008), the stickiness of an institution depends on its stickiness in the former period, hence:

\[ Z_t^I = Z_t^I(Z_{t-1}^I) \]  \hspace{1cm} (2.1)

\[ Z_{t-1}^I = Z_{t-1}^I(Z_{t-2}^I) \]  \hspace{1cm} (2.2)

\[ Z_{t-n}^I = Z_{t-n}^I(Z_{t-(n+1)}^I) \]  \hspace{1cm} (2.3)

where \( Z \) denotes the level of stickiness and \( I \) the particular institution. Accordingly, the stickiness of an institution today at least depends on the stickiness at its date of emergence \( N \) periods ago. That is:

\[ Z_{t-N}^I = Z_{t-N}^I(\text{IEN}, \text{IEX}, \text{FEX}) \]  \hspace{1cm} (2.4)

where:

\[ Z^{\text{IEN}} > Z^{\text{IEX}} > Z^{\text{FEX}}. \]  \hspace{1cm} (2.5)
Hence, the stickiness of an institution today depends on its past stickiness, which depends on its level of connection with *métis*.

This model shows that institutional transplantation can be disputed. Adopting institutions from an economically successful country and implementing them in an underdeveloped economy is consistent with adding or changing FEX institutions. These institutions do not match the societal basis and do not complement IEN and IEX institutions. The more the endogenous and exogenous institutions differ, the less sticky FEX institutions will be. However, one should not conclude that IEN and IEX institutions must be economically efficient and support growth. If it is not possible to implement particular institutions because they do not fit *métis*, the prevalent institutions are not necessarily ‘better’. On the contrary, the *métis* and the IEN and IEX institutions can be growth inhibiting. However, transplanting institutions that are supposed to be growth supporting might not necessarily improve the situation; instead, it could worsen it.

The model of institutional stickiness can easily be connected to Roland’s (2005) theory of fast- and slow-moving institutions. IEN institutions are slow moving since they are rooted in hardly changing beliefs and practices. IEX institutions can be considered fast or slow moving depending on which particular institution is involved – which is also true for FEX institutions. However, both concepts of institutional change emphasize the rootedness of informal institutions in a societal and cultural foundation on which a society’s identity depends. Thus, less connection between the foundation and the institution makes modification or transplantation easier. However, less connection also implies that the institution will eventually not fit the complex institutional system in a particular country; this could mean it might not be accepted, might be seen as useless, or might even be abolished. Thus, an institution that leads to economic growth in one country might be unsuccessful in another country. Consequently, encouraging economic growth in a country in which growth-inhibiting informal and formal institutions are prevalent is a complex and difficult task, especially for outsiders not connected to the country’s *métis*.

Dolfsma and Verburg (2008) also develop an approach to institutional change. Like Roland (2005), they emphasize tensions as the trigger for institutional change. Accordingly, sociocultural values (which we determine as informal institutions) shape the institutional setting. However, the authors differentiate between three examples of institutional change. First, value tensions are seen as crucial, since new sets of sociocultural values might conflict with old values. Thus, a new constellation between values and institutions might emerge. The second possibility for institutional change is tensions between institutions. Third, tensions between values and institutions can trigger institutional change, since sociocultural values alter over time and can no longer match the institutional setting. At this point, institutions have to adjust.
However, the three outlined theories of institutional change all originate in the context of a connection between a sociocultural foundation and a formal superstructure. The sociocultural values, or the general value system, determine the formal institutional structure. The closer the informal and formal structures are, the more inert they become. However, tensions between or within the structures cause institutional change.

Furthermore, institutional change depends on the ability to cooperate. If the majority of the population wants to change the institutional environment but is not able to cooperate or form an organized representation of interests, it is easy for a small group of oppressors to restrict those particular individuals. Individuals might not be willing to subject themselves to the high costs of institutional change. However, in this case this means that the current institutions, introduced, for example, by a dictator, do their jobs.

As previously mentioned, interactions between institutions are crucial. The absence of institutional change not only depends on costs and the fear of oppression, but also on the interplay of a myriad institutions. Hence, an inefficient political and legal system might be preserved because of its connectedness with history and culture.

Because individuals are unsure how others will react to a new situation, people are uncertain whether an institutional change will improve or worsen their living conditions. To avoid a deterioration in their living standards, they will try (consciously or not) to preserve the status quo. In the case of informal institutions, the preservation of the status quo might be a matter of the subconscious.

However, since informal institutions determine self-identification, they build the foundation of a society and of an institutional system. Further, formal institutions are based on the fundamental structure of values and beliefs. Institutions that determine an individual’s identity are the stickiest, since people do not easily give up their convictions, belief systems, or origins – that is their identity. Informal institutions construct a system of mental guidance and affiliation and, therefore individuals identify with a certain culture. They define a society’s identity, shape its worldview, and establish a feeling of affiliation. Hence, informal institutions are hard to change; external and internal changes are slow moving.

The complexity of the institutional system has consequences for the issue of institutional transfer. If the institutional arrangement is crucial for economic development, it seems logical that less well developed countries will adopt the institutions of rich countries – which we define as growth-supporting institutions. It is argued that underdeveloped countries should replace their growth-inhibiting institutions by growth-supporting institutions, since this would solve their issue of underdevelopment. However, it is not easy to conduct a transfer of institutions. The reasons for this have already been examined. Informal institutions
equal culture; cultures differ between regions since cultural components such as values, norms, beliefs, conventions, worldviews, and attitudes can all differ. In general, since these informal institutions build the fundament of institutional structure, institutions will differ between societies. Therefore, fundamental institutions, as well as institutional superstructures, can vary greatly and (to make it even more complicated) a country’s development path can also be hit by historical accidents.

Institutions that are exogenously transplanted into an economy correspond to FEX institutions. If an external organization, such as the World Bank or the International Monetary Fund, forces a country to liberalize its financial system or forces privatization, these are examples of FEX institutions. However, these FEX institutions are transplanted into a complex institutional system consisting of institutions that are, more or less, connected to the informal foundation and complement each other. Substituting one institution for another, or adding a new one, can disturb the complex structure and lead to severe consequences. Thus, the new institutions (or the institutional changes) might not be accepted because they do not match the system. Since FEX institutions are not connected to IEN and IEX institutions – that is, to relevant informal and formal institutions – they might be dismissed by the institutional structure and then quickly retracted. They might also be bypassed and subsequently malfunction. In the worst case scenario, they might disturb institutional equilibrium and impact on other institutions, in turn, making them unsound. If this occurs, the FEX institutions would have an inhibiting effect on economic growth. Hence, a transplanted institution is not usually rooted in the informal institutional structure. It does not match the institutional system, and the consequences of its adoption are incalculable since a calculation would require a complete knowledge of the total institutional structure, which is impossible.

However, institutional transplantation can work. If the FEX institution matches the underlying system, the expected positive effects on the growth rate can be realized. As a consequence, the chance of success is higher if the transplanted institution better fits the informal structure. Take, for example, the exogenous institutional innovations in Japan and West Germany after World War II, which showed that institutional transplantation can have positive impacts. However, if the transplanted FEX institution does not match the informal institutional structure, the outcome of the transplantation is not predictable and the risk of a worsening economic situation is high. Hence, if countries’ formal institutional structures differ, the transplantation of institutions should be reconsidered.

However, historical accidents can also alter the institutional system in the short- or long-term. Historical accidents are events that randomly change the

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13 It has also been suggested that historical accidents are responsible for the emergence of institutions, in so far as they are the catalysts for the implementation of certain institutions.
institutional environment, for example wars, civil wars, natural disasters, political upheavals, migrations, or economic crises. Since rapid institutional changes correspond to FEX or IEX institutions, the theory of institutional stickiness predicts that alterations are not durable. However, in relation to how much damage is done – that is, to what extent the original institutional system has been demolished – and in relation to power allocation, historical accidents can lead to lasting institutional changes. If a historical accident causes an indigenous or exogenous minority group to have sufficient resources (and thereby power) to create institutions that best fit their interests and enforce the compliance of those institutions, then these, potentially inappropriate institutions, might persist. Since institutions influence each other, the prevalent environment might eventually adjust or the new institutions might never be totally accepted. In this case, they might one day be abolished, even if it is a long period of time between implementation and abolishment.

Hence, history can be a catalyst of institutional implementation and is responsible for the shape institutions assume. This shape can differ from that which humans had originally created. The outcome depends on how long the situation persists, the prevalent institutional system, further historical accidents, and other unpredictable factors. Again this demonstrates the complexity and unpredictability of institutional systems and institutional changes.

History, in the sense of experience, is also crucial. In the case of informal institutions, historical events can influence value systems, societal attitudes, morals, and beliefs. At the same time, history influences each individual and their personal experiences, values, beliefs, morals, and so on. Since people’s experiences can be traced back to general historical events, many will experience the same event; for example, individuals who experience the cruelties and the destruction of war. Every individual makes their own experiences; however, on an aggregate level, their experiences are similar and, therefore, society is also shaped.

2.6 Institutions and technology

“Technology relates to a broader set of beliefs about the operation of the physical world and about the nature of interactions between humans and their physical environment. […] it is the interaction between institutional change and technology that drives economic growth” (Roland, 2005, p. 13).

Hence, historical accidents might not only change the institutional environment, they might also be the starting point of the emergence of a new institution. This is the case when a historical accident alters the environment in a way that makes the implementation of new constraints necessary.
Technology is the body of knowledge available to society that creates economic value. Technological progress is the alteration of the relationship between inputs and output and, therefore, can be defined as a change in knowledge. Hence, if the same amount of output can be produced with fewer inputs, or if more output can be produced with an equal amount of inputs, we talk about technological progress. Technological progress is a change in the knowledge about products, about the production process, and about the organization of production. This knowledge differs between societies. However, this could be the case because one society could, potentially, be further behind other societies on its development path. In this situation, time is the decisive factor, because the society that is behind will further evolve over time and will equal the level of technological knowledge of the more developed countries. In any case, this implies that all societies exhibit equal initial conditions, which is not a realistic assumption. Therefore, differences in technology can be traced back to different initial conditions, such as geography or institutions (Rodrik, 2003; Rodrik, Subramanian & Trebbi, 2004). We are interested in the technological differences that can be traced back to institutions. We argue that some societies possess a body of knowledge that creates economic value, whereas other societies do not have such technologies or at least not to the same extent. According to the current hypothesis, the available technological knowledge depends on the prevalent informal and formal institutions. Reverse causality also exists – that is, institutions influence technology and technology influences institutions.

According to Lipsey, Carlaw and Bekar (2005), technological progress is the main driver for long-term growth. The ability to use tools, to invent, and to innovate are the crucial properties that led to the unique evolution of the human race. Thus, rearranging knowledge about existing technologies and developing completely new ideas, make production more efficient and lead to technological progress.

Economic development did not spread evenly around the globe and nor did technology. At certain times in history, some societies were, technologically, very sophisticated, whereas others were totally backward. However, the rank order of the technological leaders has changed several times, and progressive societies have suffered setbacks while underdeveloped societies took over the technological and scientific leadership. The most remarkable progress took place in Britain and spread to Western Europe at the beginning of the 19th century.

However, if technological progress is crucial, then societies with knowledge that creates economic value have an advantage, since they are able to rearrange technologies and generate new ideas. That is, innovating societies are better off compared with non-innovating societies when the goal is per capita income maximization.

Whether a society can be described as innovating or non-innovating depends on several factors. Lipsey, Carlaw and Bekar (2005) specify five classes of rea-
sons for why a society can be non-innovating. Here, we will discuss how much of a role institutions play.

• The ability to innovate depends on the prevalent opportunities and challenges the society faces. Hence, some societies are well adapted to their environment and for them there is no need to innovate; the prevalent technological standards might also be low compared with those in other societies.

• It is possible that people do not realize the opportunities for technological progress and further development. This is because they interpret their environment in a way that makes technological progress unnecessary. Lipsey, Carlaw and Bekar (2005) state that “someone whose worldview is mechanical, as was common with Europeans in early modern times, will tend to look for mechanical solutions. Someone whose worldview is mystical will tend to look for magical solutions” (p. 70).

• Societies might be non-innovating because they do not receive the full return of their efforts, for example, because of insecure property rights.

• Innovating efforts can be restricted by the government in power or by powerful interest groups. Also, certain innovations can be forbidden for religious reasons.

• Humans’ energy to innovate can be influenced by diseases or other circumstances that leave no space and strength for innovating activity.

Institutional matters relate to points one to four. Individuals need incentives to innovate. The innovation must improve their current situation. Hence, the expected returns must be high enough to take the costs of innovating. If individuals do not receive the full return from innovating, the remaining return might be under the critical level that does not make innovating worthwhile. In relation to the role of property rights, people will not use their assets in an economically efficient way if they cannot be sure whether their ownership will endure and whether they will receive the profits from using the assets. Property rights can be restrained by an inadequate legal system, by political power, or by powerful interest groups. Hence, property rights, which are an institution in themselves, depend on further political and legal institutions. Thus, a society can be described as non-innovating because it has insecure property rights and an inadequate legal system.

As already mentioned, even if property rights exist powerful interest groups might be in a position to ignore them. Furthermore, since particular interest groups might possess de facto political power or might be able to influence de jure political power, they can change the formal institutional environment in a way that best fits their interests and thereby they can abolish property rights (Acemoglu, Johnson & Robinson, 2005).

Furthermore, formal and informal institutions, which preclude individuals from freely accumulating knowledge, constrain technology and technological
progress. In such cases, beliefs, values, and convictions can restrict knowledge accumulation; or there might be formal restrictions, such as particular laws or political restraints. An authoritarian regime, which oppresses freedom of opinion and controls publicly expressed ideas as well as teachings in schools and universities, does not support the free accumulation of knowledge and thereby does not support technological progress.

Civil rights, especially freedom of speech, rule of law, and material and intellectual property rights, seem crucial for knowledge accumulation and technology. However, the absence of property rights, civil rights, and an independent judiciary can lead a society to be non-innovating since it hinders the individuals from receiving their full returns from innovating.

Lipsey, Carlaw and Bekar (2005) mention several situations in which informal institutions preclude people from innovating. Here, individuals might not realize the opportunities that are offered to them by innovation. In history, most economically viable innovations are grounded in scientific and mechanical research. To innovate, humans have to examine the physical world and accept the laws of nature. Therefore, if people support a more mystical worldview, which often has its roots in religious beliefs, they might not identify the ideas that are necessary for economically relevant innovations. A person who believes that, every second, God creates a feature of the world anew and who believes that everything (at least in the physical world) can be totally changed in a moment is not persuaded by the laws of nature. Hence, this individual cannot develop a naturalistic and mechanical worldview. Therefore, their basic beliefs shape knowledge and thereby technology.

Furthermore, informal institutions might place constraints on human behavior and bar individuals from innovating. Religious doctrines or other metaphysical convictions can restrain scientific research and technological progress. Even if people receive the full returns for innovating, they might be persuaded that their proposed method of innovating was wrong and might not innovate at all. People might also put so much time and energy into religious and other metaphysical activities, that there are not enough resources left for the innovation itself.14

Here, it is argued that the institutional environment influences a society’s ability and desire to innovate. Hence, technological progress depends on the particular institutional structure. Since the institutional system per se is complex, the connections and transmission channels between institutions and technology are also complicated and difficult to see through. Owing to institutional complementarities, institutions that hinder technological progress might not always

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14 Barro and McCleary (2003), for example, find that the number of church attendances is negatively correlated with the growth rate, whereas religious beliefs, in general, have a positive impact on growth.
be growth inhibiting. The concentration of power, for example, might hinder innovative activity since individuals do not receive the full returns from innovating. However, a powerful interest group (such as a government) might also be able to channel resources into the relevant sectors, for example research and development, and thereby support innovation and technical progress in a way that exceeds private innovating behavior.

The relationship between institutions and technology is not causal. That is to say, a change in technology might influence living standards and, therefore, might lead to a change in priorities and preferences. As a result, the feelings of material and immaterial stability might be modified and at least some informal institutions might change. Hence, a change in the value system, and even in worldviews and beliefs because of technological progress, is possible. Nevertheless, technology and technological progress emerge from the interplay of institutions, historical accidents, and further technological progress.

Hence, the hypothesis at hand is that informal institutions, which are not supportive of a naturalistic, scientific, or mechanical worldview, do not encourage economically viable innovating activity and thereby do not encourage technological progress. That is, knowledge depends on general beliefs and attitudes concerning worldviews and ideology. As regards formal institutions, secure property rights will create the maximal incentives for innovation by guaranteeing the owner of an asset the full returns from innovating. An independent judiciary and civil rights will also support innovation and technology, since they guarantee freedom of action, at least within the boundaries of the rule of law. Hence, every individual can use their assets in a way that maximizes utility. When property rights, civil rights, and an independent judiciary exist, the question of whether individual utility maximization supports innovation and technological progress depends on the informal institutional setting, because here innovating activity is solely restricted by worldviews and beliefs.

Therefore, the particular development that took place in Western Europe can be led by the kind of technological knowledge and the special institutional environment that have been prevalent. That is to say, the Industrial Revolution could only occur in Europe, since the required conditions were available. Furthermore, it started in England since this was the leading country concerning Newtonian mechanics. The point in time of the Industrial Revolution was affected by the interdependencies between sciences, technology, and institutions. Hence, it could have happened sooner or later depending on external influences. But it could not have happened anywhere else (Lipsey, Carlaw & Bekar, 2005).

The process of industrialization since 1820 is related to the development of modern sciences, Newtonian mechanics, and the mechanical worldview that pervaded all of Western European society. The diffusion of the mechanical worldview can be traced back to the emergence of modern sciences whose basis was the acceptance of naturalism. The decisive point is that the ideas of natural-
ism, the belief in the laws of nature, modern sciences, and a mechanical worldview were able to penetrate all of society and build the basis of the society’s identity. Hence, Western European technology is related to the prevalent beliefs, worldviews, and convictions concerning the physical world and its components. The informal and formal institutional environment permitted and supported the development of the Industrial Revolution. Historical accidents and the emergence of relevant formal institutions such as independent universities, the structure of the educational system, the role the church played in education, the emergence of corporate bodies, and the legal system supported a unique development path, which was accompanied and correlated by a body of technological knowledge that led to high economic growth. The fact that naturalism could at least not be abolished by the Catholic church depicts one of the stochastic historical accidents; another one is depicted by the fact that in Europe political pluralism was prevalent, which also supported its development (Grant, 1996; Huff, 2003; Jacob, 1997; Lipsey, Carlaw & Bekar, 2005).

However, technology and institutions are highly correlated. A society’s stock of knowledge, its beliefs and worldviews, and its attitudes concerning the fundamentals of the physical world differ between cultures. Hence, technological developments vary. Therefore, a specific cultural background constrains the development of knowledge and thereby of technology. In addition, it determines formal institutions, which further influence the development of knowledge and technology.

2.7 Equilibrium view of institutions

2.7.1 General remarks

This part of the dissertation project demonstrates a more formal approach to institutions. That is to say, game-theoretic analysis is used to describe the formations of self-enforcing strategies and, therefore, institutional persistence. It has already been stated that, depending on the object of study, different approaches of institutional analysis are reasonable. The rules-of-the-game or design view, which depict institutions as exogenously given to human agents, neglect the endogenous character of institutions. Anyway it makes sense to consult this view for the examination of several issues. With the assumption of exogenously given constraints, we can examine the impact of these constraints on behavior and, for example, on economic development. That is to say, we can assume the legal system, or in the case of informal institutions the level of trust, is exogenously given and study its impact on a situation in which there is no feedback mecha-
nism. Regarding a single individual or a certain period of time, this proceeding can be considered to describe the real world truthfully.

The equilibrium view, however, tries to explain the self-enforcing character of institutions. This approach is useful for an understanding of institutional persistence and institutional diversity. It incorporates feedback mechanisms and describes institutional self-preservation in an equilibrium state. The equilibrium view demonstrates the circular flow between humans’ actions and institutions; that is, institutions determine human behavior, but they are also determined by human actions. Institutional persistence and the self-enforcing character of institutions are institutional properties that cause problems for less developed economies. If institutions could easily be changed, we could just establish the institutions of economically successful countries in underdeveloped economies and the problem of underdevelopment would be solved, apart from geographical factors. Therefore, it is the robustness of an established institution that causes the problems.

In the subsequent model the reason for institutional robustness is an equilibrium state. The only possibility for an alteration of an equilibrium state is an exogenous shock. Without the appearance of an exogenous shock, the equilibrium state will exist indefinitely. Therefore, a pretend ‘inefficient’ equilibrium, in which only low living standards and low growth rates are implemented, is hard to abolish. However, an equilibrium state suggests that optimal strategies are implemented and thereby the state cannot be inefficient. That is to say, societies might be situated in an equilibrium state in which only low living standards are realized. Nevertheless, contingent on the prevalent conditions, the state might present an equilibrium. In economics, however, we are looking for Pareto-optimal results. Hence, a state in which no individual can be better off without putting another individual in a worse position. In any case, an institutional equilibrium might not be Pareto-optimal. But, according to the equilibrium view, the strategies are optimally chosen regarding the prevalent conditions. Hence, the individuals choose their strategies in a way that maximizes their utility. Therefore, strategies are optimal, but not necessarily Pareto-optimal (Greif, 2006, pp. 407–420). When multiple equilibria are possible, multiple optimal states exist. Thus, different equilibrium strategies are possible. Then, however, equilibrium behavior or rather equilibrium codes of conduct differ. Different strategies originate in different institutions. Hence, varying value or belief systems are

However, historical path dependence and historical accidents play a decisive role in institutional development (Aoki, 2001; David, 1994; Greif, 1993; Greif, 1994; Greif, 2006; North, 1990; North, 2005). According to Aoki (2001), institutional development cannot be solely described by analytical tools and game theory. Historical events must be consulted to understand a society’s institutional environment. That is why Aoki describes his approach as comparative institutional analysis – that is an analytical, comparative, and historical analysis (Aoki, 2001, p. 3).
equal to different institutions, which determine different optimal strategies (the strategy determined by the institution corresponds to the optimal strategy that is derived through utility maximization). Since institutions become visible through behavior, different institutions become visible through different forms of societal organization. Hence, according to the equilibrium view of institutions, an equilibrium corresponds, for example, to a certain form of societal organization. Therefore, forms of societal organization vary and correspondingly result in different economic performances. Comparing societies regarding their economic performances or even their institutions and concluding that the society with less economic growth or a low living standard is ‘worse’ is wrong. An institutional standard that must be fulfilled to be considered a ‘good’ institution does not exist. Every society optimizes its strategies and, therefore, realizes its individual optimal institutions and strategies. Institutions that lead to (Pareto-)optimality in one country are not (Pareto-)optimal in another country. Hence, a normative comparison of institutions and growth performances is – according to the equilibrium view – not possible.

Greif’s (1994) model, which is depicted in the next section, demonstrates that two varying societies that reside in their particular equilibrium realize different economic outcomes. Nevertheless, both implement optimal strategies. Hence, the state will endure indefinitely – or until an exogenous shock occurs – although one society might realize significantly lower growth rates and living standards than the other one. The present study differentiates between generalized and limited morality. Chapter three describes the two concepts in more detail. Here, we define limited morality as a traditional and conservative form of societal organization where hierarchical and paternalistic structures are prevalent. Societies realizing limited morality are marked by the importance of group affiliation, for example the family, the tribe, the clan, the religious group, and so on. Furthermore, individualism is less pronounced since the collective is emphasized. Generalized morality describes a modern, individualistic society where civil liberties are realized. Group membership is not the decisive factor; instead individuals cooperate independent of affiliation.

2.7.2 Shared-beliefs cum equilibrium-summary-representation approach

This part of the present study demonstrates Aoki’s (2001) shared-beliefs cum equilibrium-summary-representation approach of institutions. According to Aoki’s definition: “An institution is a self-sustaining system of shared beliefs about how the game is played” (Aoki, 2001, p. 185). This definition includes

16 In his paper (1994) and his book (2006), Greif refers to individualist vs. collectivist societies instead of generalized vs. limited morality.
three important statements. First, we are entering the sphere of game theory, which is unavoidable if we want to study strategic behavior, that is situations in which an outcome depends on an agent’s own actions and on other agents’ actions. Second, an institution is defined as self-sustaining. That is to say, when the institution is established (that is when it is implemented in peoples’ minds and behaviors), it resides in an equilibrium state and, therefore, is self-preserving. Third, the institution is a system of shared beliefs. Hence, institutions are built from expectations regarding one’s own and others’ behaviors. That is to say, certain beliefs about behavioral patterns are established and every agent believes that the other agents behave according to these beliefs. Therefore, the agent himself will also act according to the beliefs. The result is a Nash equilibrium, as will be seen and thereby there exists no incentive for an unilateral deviation.

According to Aoki (2001, Ch. 7, pp. 185–206), five properties characterize institutions. First, institutions are endogenous. That is to say, the beliefs about how the game is played are not exogenous, but emerge from an equilibrium state of the society. Second, the beliefs enable agents to predict others’ behaviors and thereby optimally choose their own actions. Therefore, the institution contains all the information necessary for the agent to choose his own behavior. This is called the summary representation of an institution. Third, institutions are characterized by their robustness or durability; that is institutions are inertial and change slowly. Therefore, we can assume institutions are constant at least for a certain period of time. Change comes along through a shock or other exogenous influences. However, change can also occur because a critical mass of agents considers the rules – no matter whether formal or informal – as unsatisfying and tries to change them. Such a situation corresponds to a general cognitive disequilibrium (Aoki, 2001, p. 240). Nevertheless, change implies the abandonment of an equilibrium path. Hence, the shared-beliefs cum equilibrium-summary-representation approach examines institutional existence, and persistence, in equilibrium. Fourth, institutions are universal to all agents. Since institutions regulate human interactions, they have to be universal. An institution becomes an institution because agents adhere to it. They do so because an equilibrium institution establishes a Nash equilibrium and thereby the agents have no incentive to unilaterally deviate. Finally, since institutions are not given by a natural order but develop spontaneously, multiple institutional systems can emerge within technologically similar environments. That is to say, multiple equilibria are possible.

Our definition of institutions now becomes more analytical. However, this does not change anything regarding the general content. Institutions are necessary to regulate strategic interactions between agents. That is to say, an agent maximizes his utility by optimally choosing his action. An agent’s utility, however, depends not only on his own action but also on others’ actions. Hence, to
maximize his utility the agent must anticipate other agents’ actions and choose his own behavior accordingly. That is to say, a utility function must incorporate an agent’s actions as well as expectations regarding other agents’ actions. Decisions that depend on one’s own and on others’ actions are called ‘strategic’.

The technologically feasible actions determine a society’s environment. The environment influences an agent’s action, but a single agent’s action choice has no impact on the environment. Thus, the environment consists of exogenous rules (institutions, geography) that influence an individual’s action choices.

Before the model is presented some general remarks are necessary. As mentioned, institutions reduce uncertainty regarding others’ behaviors and, therefore, decrease transaction costs. Hence, an institution includes information regarding others’ actions and lets an agent choose his optimal action given the expectations concerning the others’ behaviors. A certain moral, for example, makes individuals behave in a particular way; hence, an agent knows how to behave (how others expect him to behave) and he knows how the others will act. Thus, codes of conduct based on a certain moral or worldview emerge. The same holds for formal institutions, for example a certain law, although the motivation might differ.\footnote{The adherence to an informal institution might originate in a metaphysical belief, whereas the adherence to a formal institution might be rooted in the fear of official punishment. However, since formal and informal institutions cannot be clearly separated, usually both motivations are mingled.} However, this is a typical problem solved by game-theoretic analysis: to predict behavior in a strategic situation – that is, in a situation in which the outcome does not solely depend on one’s own action but also on other individuals’ behaviors. According to Greif, game-theoretic analysis deals with the issue that: “For player A to choose behavior, he has to know what B will do, but for B to choose behavior, he has to know what A will do” (Greif, 2006, p. 408). This, however, is exactly the problem of social interaction and the reason why humans impose institutions. Institutions let player A know how B expects him to behave as well as how B will behave, and vice versa. Then it is optimal for A to behave like B expects him to do. Hence, with an institution being established, a Nash equilibrium is implemented since no player has an incentive to unilaterally deviate; and we can observe the self-enforcing character of institutions: “if each individual expects others to follow the behaviour expected of them, he finds it optimal to follow the behaviour expected of him” (Greif, 2006, p. 408).

Classical game theory, however, has its drawbacks. As with every theory, at least some of the assumptions are unrealistic. In any case, as already argued the reasonableness of a theory depends on the object of study. That is to say, the unrealistic assumptions of complete information, rationality, and homogeneous agents, for example, might be acceptable when the objective is to demonstrate the self-enforcing character of institutions. Here, however, we want to demon-
strate that institutions are self-enforcing and explain institutional persistence. To do so, we will show that the five characteristics of institutions defined above hold in the model. Other questions, of course, are better solved using other models, and thereby other assumptions, for example bounded rationality in evolutionary game-theoretic approaches.

2.7.2.1 Model I

Below Aoki’s shared-beliefs cum equilibrium-summary-representation model is demonstrated (Aoki, 2001, Ch. 7, pp. 185–206). However, the model described here partly deviates from Aoki’s model and the interpretation might differ at some points. Therefore, the core model is adopted but modifications are made.

To analyze institutions, we now deal with the most elementary actors, the single agents themselves. Institutions as mental models or belief systems are irrelevant as long as they are not implemented by human behavior. Hence, human behavior makes institutions visible.

The model demonstrates the self-enforcing character of institutions. That is to say, an institution depicts the equilibrium state of a strategy. The pure existence of an institution implies a Nash equilibrium, since the agents have no incentive to unilaterally deviate. This, however, implies that the institution is self-sustaining and will persist until an exogenous shock or a cognitive disequilibrium leads to a deviation from the equilibrium path.

The domain of the game includes a finite number of agents – that is, the set of agents $R = \{1,2,\ldots,r\}$ as well as the sets of physically feasible actions $\Lambda = \lambda, \Lambda_i = \{\lambda_i, \lambda_i, \ldots, \lambda_i\} \ (i \in R)$. The action profile $\lambda(t)$ consists of the actions chosen by all agents in period $t$. The action profile actually implemented is called the internal state of the domain. The technological and institutional environment of the domain – the exogenous rules – is depicted by the consequence function. For the moment, we assume the environment to be stationary. Time is infinite and agents choose their actions in every period.

Notation:

- $R = \{1,2,\ldots,r\}$: set of agents
- $\Lambda_i = \{\lambda_i\}$: set of technologically feasible actions of agent $i$ / agent $i$’s action profile ($i \in R$)
\[ \Lambda = \{x, \Lambda_i = \{\lambda_i\} = \{\lambda_i, \ldots, \lambda_i, \ldots\} \]  
set of all technologically feasible action profiles

\[ \lambda_{-i} \]  
agent i's expectations regarding others’ actions

\[ \Omega = \{\omega\} \]  
set of physically possible consequences / institutional environment

\[ \phi(\Lambda) = \Omega \]  
consequence function

\[ s_i(\Omega) = \Lambda_i \]  
private action choice rule

\[ s_{-i} \]  
all agents’ action choice rules omitting agent i's action choice rule

\[ \pi_{-i} \]  
agent i's Nash equilibrium expectations regarding other agents’ action choices

\[ \sigma_{-i} \]  
agent i's expectations regarding others agents’ action choice rules

\[ u_i \]  
agent i's utility function

\[ \delta \]  
discount factor

At first, the relationship between an agent’s action and the environment is depicted. \( \Omega \) presents the already existing institutional environment – that is, the institutions exogenous to the single agent. \( \Lambda_i \) is the set of a single agent’s possible actions. \( \Lambda \), by contrast, represents the general set of possible actions – thereby all agents’ possible actions. Agent i’s action \( \Lambda_i \) depends on the existing institutional environment, which is exogenous to the single agent. This is demonstrated by:

\[ s_i(\Omega) = \Lambda_i. \]  \hspace{1cm} (2.6)

\( s_i \) presents an agent’s private action choice rule or his strategy. Hence, the environment – the prevalent formal and informal institutions – determines an agent’s behavior. How the environment influences an agent’s action is described by \( s_i \). Instead, the environment \( \Omega \) is determined by the set of all technologically feasible action profiles \( \Lambda \):
\[ \phi(\Lambda) = \Omega. \] (2.7)

A function \( \phi \) assigns to every element of \( \Lambda \) an element of \( \Omega \). \( \phi \) is the consequence function, that is, the functional form that describes how \( \Lambda \) and \( \Omega \) are assigned to each other. Thus, the environment \( \Omega \) is determined by the technologically possible actions of all agents, \( \Lambda \). Anyway, an individual agent who maximizes his utility by optimally choosing his technologically feasible actions \( \Lambda_i \) takes \( \Omega \) as exogenously given. Agents observe the environment \( \Omega \) in period \( t \). Thus, the decision regarding an agent’s action in period \( t+1 \) is based on the environment in period \( t \). Hence, we have:

\[ \lambda_i(t + 1) = s_i(\omega(t)) \] (2.8)

\( s_i \) assigns to every \( \omega(t) \) an action \( \lambda_i(t + 1) \). That is to say, an individual’s action depends on the institutional environment in the preceding period. The environment itself is constituted by the set of all technologically feasible actions of all agents, \( \Lambda \).

Therefore, we have:

\[ s_i(\omega(t)) = s(\phi(\lambda(t))) , \] (2.9)

\[ \lambda_i(t + 1) = s_i(\omega(t)) = s(\phi(\lambda(t))) , \] and (2.10)

\[ \lambda(t + 1) = s(\phi(\lambda(t))) = F(\lambda(t)) \text{ for all } t. \] (2.11)

\( F(\lambda(t)) \) is the transition function, which describes the transition of the internal state of the domain from one period to the next.

The steady state equilibrium of the internal state is determined by:

\[ \lambda(t) = \lambda(t + 1) = \lambda(t + 2) = \ldots = \lambda^* \quad \text{with} \quad \lambda^* = F(\lambda^*). \] (2.12)
The next step, however, is to explain the action choice rule \( s_i \) in more detail and to demonstrate how the equilibrium state is achieved.

Let us introduce \( u_i \) as agent \( i \)'s utility or payoff function and \( \delta \) as the agent’s discount factor. First, we assume \( \delta = 0 \), thereby the agent’s optimization problem is limited to the current period. Let \( \Lambda_i \) describe the action profile without agent \( i \)'s action – that is, the actions chosen by all agents in period \( t \) omitting agent \( i \)'s action.

Now we add agent \( i \)'s expectations regarding the other agents’ behaviors. Another agent’s behavior might cause agent \( i \) to reconsider his strategy. Therefore, agent \( i \)'s utility function includes his own actions as well as his expectations regarding other agents’ actions. However, \( \lambda_i \in \Lambda_{-i} \) depicts agent \( i \)'s expectations concerning the other agents’ action choices \( (i \in R) \). We assume that the expectations regarding others’ actions correspond to the actions that are actually chosen, and that an agent’s action choice is always the best response. Hence, there exists a Nash equilibrium: agents act as they expect each other to act and their behavioral response is optimal; there is no incentive for a unilateral deviation.

Thus, there exists a Nash action profile \( \Lambda^{Nash} \in \Lambda \) such that:

\[
\pi_{-i} = \lambda_i^{Nash}, \quad \text{and} \quad \lambda_i^{Nash} \in \arg\max_{\lambda_i \in \Lambda_i} u_i(\phi(\lambda_i, \pi_{-i})) \quad \text{for all } i. \tag{2.13}
\]

\( \pi_{-i} \) depicts agent \( i \)'s Nash equilibrium expectations regarding other agents’ action choices. Agent \( i \)'s utility depends on his own action \( \lambda_i \) and on his (Nash equilibrium) expectations regarding other agents’ action choice rules, \( \pi_i \). Hence, agent \( i \) chooses \( \lambda_i \in \Lambda \) so that \( u_i \) is maximized. Then, under the assumption that expected actions and actual actions coincide, and that \( \lambda_i \) is best response, the resulting \( \lambda_i^{Nash} \) is a static Nash equilibrium. The agents act in the way agent \( i \) expects them to act, and agent \( i \) himself knows how the other agents expect him to behave and since he has no incentive to deviate, he delivers. With the transition function transferring the internal state from one period to the next we have:

\[
\lambda(t) = \lambda(t + 1) = \lambda(t + 2) = \ldots = \lambda^{Nash}.
\]

Now the conditions for the subgame are imposed. A subgame includes the history up to a specific point in time, the internal state. In the current model, \( \lambda(t) \) depicts the internal state including the history up to period \( t \). All following events are based on \( \lambda(t) \).

Therefore, let us assume that an agent's decision regarding his action choice rule \( s_i(.) \) is made once and for all in period \( t \), depending on the internal state
\( \lambda(t) \). Hence, \( s_i \) in the period \( \tau \geq t \) is contingent on the internal state \( \lambda(t) \). That is to say: \( s_i(\tau: \hat{\lambda}(t)) \).

At some point in time, the equilibrium state \( \lambda^{Nash} \) has to emerge; hence, the particular action has to appear for the first time. From then on, it is a Nash equilibrium. Thus, the observed game starts at a certain point in time, at which \( \lambda^{Nash} \) is determined. We are not directly interested in the history up to that point in time, but the history is indirectly included through \( \lambda(t) \). The period in which the internal state \( \lambda^{Nash} \) is generated for the first time is defined as period \( t \). Furthermore, suppose \( \delta > 0 \). Now the agent must incorporate his own and other agents’ future action choices. For simplicity, let us further assume \( \Omega = \Lambda \) and accordingly \( \omega(t) = \hat{\lambda}(t) \); that is the institutional environment is one-on-one determined by the set of all technologically feasible action profiles in the particular period.

The game evolving since period \( t \), and thereby the game contingent on the internal state \( \lambda(t) \), is called a subgame. That is to say, for \( \tau \geq t \) an agent’s set of technologically feasible action choices, \( \Lambda_i \), is determined by the set of all technologically feasible action choices, \( \Lambda \). The functional form which maps \( \Lambda_i \) and \( \Lambda \), \( s_i(.) \) is constant for every period \( \tau \geq t \).

Suppose \( \sigma_i(.) \) denotes agent i’s expectations regarding other agents’ action choice rules, \( s_{-i}(.) \). Assume that the expectations regarding other agents’ action choice rules correspond to the real action choice rules and that, therefore, agent i’s action choice rules are the best response. Hence, agent i’s expectations regarding other agents’ action choice rules are equal to the agents’ action choice rules omitting agent i’s action choice rule:

\[
\sigma_i(\tau: \hat{\lambda}(t)) = s_{-i}(\tau: \hat{\lambda}(t)). \tag{2.15}
\]

\( s_{-i} \) are the agents’ strategies omitting agent i’s strategy. The terms in brackets indicate that \( s_{-i} \), and therefore \( \sigma_i \), is a function of \( \hat{\lambda}(t) \), the set of all technologically feasible action profiles. However, we observe \( s_{-i} \), and thereby \( \sigma_i \), as a function of \( \tau \) contingent on the internal state \( \lambda(t) \).

Agent i’s utility, however, depends on his own action choice rule \( s_i(\tau: \hat{\lambda}(t)) \) and on his expectations regarding other agents’ action choice rules, \( \sigma_i(\tau: \hat{\lambda}(t)) \). Now agent i maximizes his utility \( u_i \) by optimally choosing his action choice rule \( s_i \):

\[
s_i^{opt}(\cdot) \in \arg \max \sum_{\tau \geq t} \delta^{\tau-t} u_i(s_i(\tau: \hat{\lambda}(t)), \sigma_{-i}(\tau: \hat{\lambda}(t))) \tag{2.16}
\]

for all \( \hat{\lambda}(t) \in \Omega, \tau \geq 0 \), and i.
$s^*_i$ is agent i’s optimal action choice rule or strategy. It is a subgame perfect equilibrium. Agent i’s utility depends on his own action choice rule and on his expectations regarding the other agents’ actions. Both variables, $s_i$ and $\sigma_{-i}$ are a function of the environment – that is, to say, of the set of all technological feasible actions $\lambda(t)$. The expectations, however, are consistent with the agents’ actual actions. Hence, every agent acts in the way the other agents expect him to act. Agent i chooses his action choice rule so that his utility is maximized. This is what Greif (2006) means when he writes: “Behaviour is self-enforcing if, when players expect it to be followed, it is indeed followed because each player finds it optimal to so expecting the others to follow it” (p. 410).

So far, we have established strategies, or action choice rules, for the agents’ actions that are self-enforcing in equilibrium. That is, the function that converts the exogenous environment or the set of all feasible technological actions into an individual’s action is constant in equilibrium and does not depend on time. Hence, the transition function of the internal state is constant as is the internal state itself. Without an exogenous shock, the state will continue indefinitely. Hence, we demonstrated how human behavior in a society can become persistent. However, the strategies or action choice rules, $s$, are not institutions yet. A strategy misses an institution’s summary representation function. An institution is a bundle of information that includes the information relevant for the agent to decide on his strategy or action choice rule, $s_i$.

For now we know that the action choice rule or the strategy $s_i$ is the function that maps the set of all technologically feasible actions, $\lambda(t)$. $s_i$ can be understood as the strategy behind the behavior; that is to say, $s_i$ is the reason for (or the consideration behind) a certain behavior. However, $s_i$ is included in the utility function. An agent’s utility is maximized by optimally choosing $s_i$, the agent’s strategy or action choice rule. Now, assume that we have already maximized utility and got an equilibrium strategy profile:

$$ s^* = (s_1^*, ..., s_i^*, ..., s_n^*) \in S = x_iS_i. \quad (2.17) $$

$S_i$ is the set of strategies or action choice rules of agent $i (i \in R)$. Now suppose that there exists a function $I'_i(\cdot)$ associated with the equilibrium that incorporates all information necessary to achieve $s^*$. Hence, $I'_i(\cdot)$ summarizes the relevant information for the equilibrium strategy; other information is not necessary. As soon as $I'_i(\cdot)$ is the functional form of a strategy, $s_i$ is the equilibrium strategy or action choice rule: $I'_i(s) = I'_i(s^*)$ for $s \in x_iS_i$. 
Therefore:

\[ s_i^*(\phi(s)) = s_i^*(\phi(s^*)) \]  \hspace{1cm} (2.18)

That is, to say, if agent \( i \)'s strategy is in equilibrium, then the set of all strategies (all agents' strategies) are in equilibrium. Since \( I_i^*(s^*) \) includes all relevant information, it is defined as agent \( i \)'s summary representation.

An institution, however, is defined to be robust within a certain environment. That is, to say, institutions do not adjust to small modifications in the exogenous rules; instead, most of them are inertial and only extreme external shocks cause institutional change. Here, we do not deal with institutional change but with the institutional self-enforcement that causes institutional persistence. Therefore, we assume the exogenous environment to change within a certain range. A change beyond the range would cause institutional adjustment.

\( \Psi = \{\psi\} \) depicts the exogenous environmental parameters. \( \hat{\Psi} \) is the subset of the environmental parameters within which the environment can vary without causing institutional change. Hence, within the subset \( \hat{\Psi} \), \( s^*(\psi) \) exists. That is, to say, the set of all action choice rules now depends on the environmental parameters. As long as the environment varies within a certain range, \( \hat{\Psi} = \{\psi\} \), \( s^* \) remains the equilibrium strategy, since an environmental variation within the range causes no strategic changes. Hence, the agent might not directly maximize his utility contingent on his own action choice rule, \( s_i(\tau: \lambda(t)) \), and on the expectation regarding other agents’ actions, \( \sigma_i(\tau: \hat{\lambda}(t)) \). Instead, \( I_i^*(s^*) \) incorporates all information necessary for \( s^* \). Therefore, \( I_i^* \) is implied by:

\[ I_i^*(s^*(\psi)) \quad \text{for any } \psi \in \hat{\Psi}. \]  \hspace{1cm} (2.19)

The last term indicates that, as long as the environment varies within the range \( \psi \in \hat{\Psi} \), \( I_i^* \) is the summary representation of the internal state that agent \( i \) observes, and on which his strategy and actions are based.

Now assume that the environmental parameters are given by the subset \( \hat{\Psi} = \{\psi\} \), but that different sets of equilibrium action choice rules, \( \{s^{**}(\psi)\} \{s^{***}(\psi)\} \ldots \), exist contingent on \( \hat{\Psi} \). Hence, there also exist different equilibrium summary representations, \( I^*, I^{**}, \ldots \), emanating from the subset of environmental parameters \( \hat{\Psi} \). That is to say, despite the same underlying exogenous parameters, multiple equilibrium paths are possible.

Therewith the summary representation \( I^* \) can now be defined as an institution. Aoki’s (2001) five characteristics of institutions, depicted with his shared-beliefs cum equilibrium-summary-representation view of institutions, are ob-
served in the model: \( I^* \), the institution, is endogenous; it is a summary representation of the decisive information; it is robust; it is universally relevant to all individuals (shared cognition); and multiple institutional equilibrium paths are conceivable, based on equal technological and ecological environments.

The institution, however, includes all relevant information the agent needs to optimally choose his strategy. With the institution in place, the agent does not consciously choose a strategy; the only possible strategy adapted from the institution is the optimal strategy. The strategy, however, is decisive for the agent’s action. Hence, an individual’s behavior is based on the prevalent institution.

That is to say, without the institution in place, the agent has to consciously maximize his utility as depicted in this section to achieve his equilibrium strategy. With an institution in place, the derivation is not necessary. The institution includes all relevant information and lets the individual know – without further consideration – how others will behave and how they expect the individual to behave. This is a Nash equilibrium since an incentive for an unilateral deviation does not exist. The state will continue until it is disturbed by an exogenous shock.

This applies as long as the environment varies within a certain range. An environmental change exceeding the particular range is similar to an exogenous shock and thereby causes institutional adjustment. Hence, the equilibrium state is disturbed and a new equilibrium must emerge. As long as the equilibrium does not exist, an institution cannot be observed. In this case, the specific universal rule regulating social interaction does not exist within the examined domain. An institution becomes obvious when it is already implemented in human behavior. Hence, it becomes obvious when an equilibrium is realized. Therefore, an institution is unobservable until an equilibrium state is present. Hence, the institution is associated with the equilibrium. However, other institutions, depicted by the exogenous environment \( \Omega \), do exist. Applying the equilibrium view of institutions \( I^* \) refers to the one institution under consideration, but of course other institutions are prevalent.

The model is unsatisfying in the sense that it does not describe the emergence of an institution. The institution is suddenly there. However, institutional emergence can have several origins. It depends on the definition of an institution and its borderlines. Institutions can obviously emerge from other institutions or historical accidents. In any case, often institutional emergence cannot be traced back to a certain starting point. Invisible random events might, influenced by other exogenous events or shocks, generate a new institution without anybody recognizing it. Institutional emergence can be a conscious process, that is consciously initiated by individuals to regulate their interactions. However, institutions can also emerge unconsciously (and probably most institutions do); nevertheless, their intentions are to regulate social interaction.
So far, we cannot explain the emergence of an institution. At least when it comes to the origin of informal institutions, other disciplines such as neurology, genomics, evolutionary theory or in general biology and anthropology must be consulted. However, if we want to explain certain codes of conduct within a society, we can resort on a particular social value system or worldview. These are often based on a certain religion, although this might not be the case. Behavioral patterns originate in a society’s tradition and culture but the roots of the culture are difficult to assess.

Therefore, the model and the equilibrium view of institutions in general have their drawbacks. However, the theory should be used to demonstrate the persistence of institutions and the issue of equilibrium strategies and inertial behavior; no more and no less.

The case study in chapter five demonstrates the emergence of a new worldview in the Arab region during the early Middle Ages because of societal, historical, religious, and accidental reasons. Starting with subtle changes, institutional modifications were put into motion that, together with external random events, altered the existing institutional environment and created a new starting point for technological development, modern sciences, and economic growth.

According to the equilibrium view, it could be argued that external shocks and a cognitive disequilibrium originating in a new worldview disrupted the institutional equilibrium and ended up, after hundreds of years, in a new stable equilibrium that seems to be less growth supportive, at least from a Western economist’s point of view. Now, institutional persistence makes it difficult to change institutions in a growth-favoring way.

However, the institutional equilibrium that might become disrupted does not have to relate to the general institutional system of a state or a society. Institutional systems emerge within institutional systems. This is what makes the topic so complex. An institutional equilibrium might exist on a low level; hence, a certain institution might regulate the interactions of a certain group of individuals in a particular case. That is to say, talking about institutions does not necessarily mean talking about the ‘big’ institutions, such as the constitution, the jurisdiction, property rights, or the general social value system. A certain institution can be relevant for only a few individuals. Therefore, it is important to define the observed population. Institutions might exist within a circle of friends, the family, colleagues, a firm, a nation, and so on. Other institutions might be relevant not only for a country but for a whole cultural area, which might cross national borderlines. That is to say, the term ‘institutional persistence’ does not intend to suggest that all institutions within a state are in equilibrium and cannot be changed. Instead, an institutional system consists of a myriad institutions, formal and informal, relevant to a certain group or to all individuals in the system. All institutions interact with each other, are influenced by exogenous factors, and, of course, change. One institution in the system might be disrupted
and modified. This can be without result for the other institutions, it can have consequences for a few institutions, it can have a sudden impact on the whole institutional system, or it can have a slow but strong influence on the other institutions. In the model, for example, we demonstrated institutional persistence for a certain domain, and thereby for the observed set of agents and their physically possible actions. The model can be applied to a large state-level institution or an informal institution affecting only a few individuals, but it cannot be applied to the whole institutional system.

For example in the Arab case, we cannot say that the institutional system per se experienced an exogenous shock and, therefore, deviated from the equilibrium path. Some institutions changed, others did not, and some were modified subtly, others consciously. However, some of the changes had long-lasting effects on societal and economic development. An institutional system is a dynamic entity with some constraints never changing and others being modified constantly. Thus, the equilibrium view of institutions should not be misunderstood. The model deals with only one institution for a given population. It emanates from partly unrealistic assumptions. Therefore, it cannot be applied one-on-one on the institutional environment of a state. The objective is merely to demonstrate the issue of equilibrium strategies in the case of institutional analysis. Hence, when individual and collectivist behavior is in equilibrium, codes of conduct cannot be changed. Thus, we cannot just change institutions because they are economically inefficient. Even if they result in low economic growth rates, the individuals’ strategies are optimal regarding the prevalent conditions.

2.8 The form of societal organization

Institutions, however, are the reason for a certain form of societal organization. Societal organization describes the collective behavior of the members of a society. Hence, with societal organization we can examine the impacts of different institutions on collective behavior. When different institutions lead to different individual and, since institutions are universal, to different collective behavior, different forms of societal organization are the consequences. Thus, choosing societies that vary in their form of organization means we can demonstrate the impact of different institutions on, for example, the equilibrium wage.

However, how does the issue of institutional persistence adhere to societal organization? Well, if optimal strategies are realized, then the value system and, therefore, norms and codes of conduct will not change until an exogenous shock causes a deviation from the equilibrium path. In any case, this means the form of societal organization is persistent. Hence, limited or generalized morality will survive, no matter which outcomes they produce. Outcomes, however, can vary widely depending on societal organization.
The next model demonstrates the impacts of different forms of societal organization. Again it is important to note that the objective of the analysis is not to identify the ‘better’ form of societal organization. Both societies cannot be normatively compared. In both societies, optimal strategies are implemented contingent on the corresponding prerequisites. Individuals maximize their utility by choosing the optimal strategy contingent on the others’ behaviors and at least indirectly contingent on the institutional environment. Hence, it is demonstrated that different forms of societal organization cause different results. No statement is made regarding which result and which organizational form is ‘better’, since every form and every result is optimal per se.

2.8.1 Model II

This section partly depicts the model by Greif (1994). Greif, however, examines the development paths of a collectivist and of an individualist society, where the former corresponds to the concept of limited morality and the latter is similar to a society practicing generalized morality.

The original paper from 1994 combines the game-theoretic analysis with a historical case study of Genose and Maghribi merchants of the 11th and 12th centuries. Here, however, only the theoretical part will be presented.

The model depicts the agency relationships between entrepreneurs and agents. The one-side prisoner’s dilemma game demonstrates that different forms of societal organization lead to different patterns of agency relations that are separately in equilibrium. Agents can decide whether to cheat and earn a one-period gain from cheating, or whether to play honest and earn the regular wage. Entrepreneurs, by contrast, can hire an agent or decide to work on their own and not hire an agent. Whether to hire an agent or not depends on the possibilities of avoiding cheating. Thus, the entrepreneur, who pays the agent’s wage if he hires the agent, can provide an incentive to play honest by correspondingly choosing the wage. The wage must be higher than the gain through cheating. Then again the entrepreneur must decide whether it is worthwhile paying the wage. Thus, the incentive structure works via a wage, which must be high enough to provide an incentive for the agent not to cheat. The wage must also be low enough to provide an incentive for the entrepreneur to hire an agent, since he can also do the work himself.

The equilibrium wage that ensures that an agent is hired, and that the agent plays honest, is calculated using the players’ corresponding utility functions. When the wage is fixed, however, the differences between societies practicing

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18 See also Greif (1993).
limited rather generalized morality become obvious. It is demonstrated that, depending on the form of societal organization, the equilibrium wage and societal structures differ.

Notation:

- $E$: entrepreneurs
- $A$: agents
- $E < A$: agents are more numerous than entrepreneurs
- $\alpha > 0$: agent’s one-period payoff from cheating
- $\delta$: agent’s time discount factor
- $\eta \geq 0$: agent’s reservation utility
- $\kappa > 0$: entrepreneur’s payoff if he does not hire an agent / payoff from noncooperation
- $\gamma$: entrepreneur’s gross gain when he hires an agent / gross gain from cooperation
- $W \geq 0$: wage
- $\xi$: termination probability

Players live indefinitely. An entrepreneur hires one agent and an agent can work for only one entrepreneur per period. Entrepreneurs and agents meet randomly; however, the entrepreneur can exclude certain groups of agents from the possible pool according to the information available to the entrepreneur. When the agent is employed he can decide whether it is worthwhile playing honest or to cheat. The reservation utility $\eta$ is the utility the agent receives from being unemployed. Furthermore, the agent runs the risk that, even when he plays honest, the agency relationship is terminated. This could be the case because the entrepreneur becomes ill or retires. $\xi$ depicts the probability that the entrepreneur terminates the relationship even though the agent plays honest. All players are aware of the history of the game.
Agent playing honest:

When the entrepreneur hires an agent and the agent plays honest, the entrepreneur receives $\gamma - W$; that is the gross gain from cooperation minus the wage. The agent receives the wage $W$.

$\gamma$ entrepreneur’s gross gain from cooperation
$\gamma - W$ entrepreneur’s net payoff from cooperation
$W$ agent’s payoff from cooperation

Cooperation is assumed to be efficient, that is $\gamma \geq \kappa + \eta$. The left-hand side of the inequality depicts the gross gain from cooperation, thereby the entrepreneur’s and the agent’s payoffs. $\gamma$ includes the entrepreneur’s net gain plus the agent’s wage. The right-hand side describes the gain from noncooperation, thereby the entrepreneur’s payoff $\kappa$ plus the agent’s reservation utility $\eta$.

Agent playing cheat:

0 entrepreneur’s payoff
$\alpha > \eta$ agent’s payoff

If the agent cheats the entrepreneur receives zero payoff. Hence, the entrepreneur prefers noncooperation over being cheated or having to pay $W = \alpha$ since noncooperation provides him with $\kappa > 0$.

Derivation of the equilibrium wage:

Up next the players’ utility functions are described, which are then used to derive the equilibrium wage.

$h_h$ probability that an unemployed agent who was honest in the last period he was employed will be hired in the current period
$h_c$ probability that an unemployed agent who cheated in the last period he was employed will be hired in the current period
$V_h$ present value of the lifetime expected utility of an employed agent who, whenever hired, is honest

$V_{h}''$ present value of the lifetime expected utility of an unemployed honest agent

$V_{c}''$ present value of the lifetime expected utility of an unemployed cheater (who will be honest in the future if hired)

One period of cheating must be less attractive than the utility an agent receives from playing honest in every period. Hence:

$$V_h \geq \alpha + V_c'' \quad (2.20)$$

must hold for the agent to play honest.

Utility functions:

$$V_h = W^* + \delta(1 - \xi)V_h + \xi V_h'' \quad (2.21)$$

$$V_{i}'' = \partial_i V_h + \delta(1 - h_i)(\eta + V_i'') \quad i = h, c \quad (2.22)$$

To gain the equilibrium wage $W^*$ we have to dissolve equations (2.21) and (2.22) for $V_h$ and $V_c''$, which we then have to insert in the above inequality (2.20). The full derivation is demonstrated in appendix A.

Dissolve (2.21) for $V_h''$:

$$V_h'' = V_h \frac{\sum W^*}{\xi} \quad \text{with: } \sum = 1 - \delta(1 - \xi) \quad (2.23)$$

From (2.22); setting $i=h$:

$$V_h'' = \partial_h V_h + \delta(1 - h_h)(\eta + V_h'') \quad (2.24)$$
Dissolve (2.22) with \( i = h \) for \( V_h^u \):

\[
V_h^u = \delta H_h V_h + \delta P_h \eta
\]

with \( H_i = \frac{h_i}{1 - \delta(1 - h_i)} \)

\[
P_i = \frac{1 - h_i}{1 - \delta(1 - h_i)} \quad i = h, c
\]

Similarly; setting \( i = c \) in (2.22):

\[
V_c^u = \delta H_c V_h + \delta P_c \eta
\]

Equalizing (2.23) and (2.25):

\[
V_h = \frac{\delta P_h \eta \xi + W^*}{\sum -\delta H_h \xi}
\]

Remember:

\[
\Rightarrow V_h \geq \alpha + V_c^u
\]

Insert (2.26) in (2.20):

\[
V_h \geq \frac{\alpha + \delta P_c \eta}{1 - \delta H_c}
\]

Insert (2.27) in (2.28):

\[
\frac{\delta P_h \eta \xi + W^*}{\sum -\delta H_h \xi} \geq \frac{\alpha + \delta P_c \eta}{1 - \delta H_c}
\]
Dissolve (2.29) for $W^*$:

$$W^* = w_0 \left( \frac{\alpha (\sum - \delta H^c \xi)}{1 - \delta H^c} + \xi \right) + \delta h_c \left( \frac{P_t (\sum - \delta H^c \xi)}{1 - \delta H^c} - P_t \xi \right)$$

(2.30)

$$W^* = w(\delta, h, h_c, \xi, \eta, \alpha) \geq \eta.$$  

(2.31)

$w$ decreases in the agent’s time discount rate $\delta$ and in the probability of hiring an honest agent $h$. $w$ increases in $h_c$, the probability of hiring a cheater; in $\xi$, the termination probability; in $\eta$, the reservation utility; and in $\alpha$, the payoff from one period of cheating.

Hence, the optimal wage is $W^* = w(\delta, h, h_c, \xi, \eta, \alpha) \geq \eta$ with $\delta \in (0,1)$ and $h_c < 1$.

Until now no difference has been made between limited and generalized morality. The optimal wage depends on the agent’s discount factor, on the probability of hiring an honest agent or a cheater, on the termination probability, the reservation utility, and the agent’s payoff from one period of cheating. Altogether the wage has to be greater than the reservation utility since it must provide an incentive to an unemployed agent.

The two observed forms of societal organization differ regarding the probabilities of hiring an honest agent $h$ or a cheater $h_c$. A society that practices limited morality is characterized by informal networks of social interaction. Within these networks or groups, information is transposed at no charge. That is to say, an entrepreneur is told which of the agents have cheated in the past. Hence, the entrepreneur has information on which of the agents have cheated and, therefore, is able to employ only from the group of previously honest agents. With limited morality, $h = 1$ and $h_c = 0$. An entrepreneur will not employ an agent who cheated in the past since he knows the agents’ histories. He will hire an agent from the pool of honest agents.

In a society practicing generalized morality, no such informal information networks exist. Hence, an entrepreneur does not know whether the considered agent is a cheater or not. Therefore, $h = h_c > 0$. The probability of hiring a cheater is equal to the probability of hiring an honest agent. The entrepreneur does not know the agents’ histories. Entrepreneur and agent are randomly matched and agents are chosen from among the pool of all agents. Hence, the
entrepreneur must pay a wage high enough to prevent agents who previously cheated from cheating in the current period.

In the case of limited morality, the entrepreneur knows that the hired agent will play honest. Hence, an incentive to keep the agent honest is not necessary. The wage must merely be higher than the agent’s reservation utility, since only then it is worthwhile for the agent to get a job.

Hence, under limited morality the optimum wage is lower than under generalized morality. Societies practicing generalized morality possess no informal information network to provide the entrepreneurs with the agents’ histories. Thus, the probability of employing a cheater equals the probability of employing an honest agent. Therefore, agents must be provided with an incentive to play honest.

As long as \( \gamma - W^* \geq \kappa \) holds, both strategies constitute a subgame perfect equilibrium. That is to say, the net gain from cooperation has to be greater than or equal to the equilibrium wage. If this condition holds, it is worthwhile for both the entrepreneur and the agent to cooperate. Hence, both have no incentive to unilaterally deviate. The wage is low enough to make cooperation efficient for the entrepreneur and the wage is high enough to provide an incentive for the agent to play honest. Under limited morality, an incentive to play honest is not necessary. Thus, the wage has merely to be higher than the agent’s reservation utility. In this case, work is more efficient to the agent than unemployment. The probability of employing a cheater is zero. Under generalized morality, history is irrelevant. The wage provides an incentive for the agents not to cheat, but cooperation is still worthwhile for the entrepreneurs. Since agents play honest under the equilibrium wage, cheating never occurs in equilibrium, neither under limited nor under generalized morality. Both the entrepreneur and the agent know how the other player will act, thereby expectations correspond to real actions; the players behave as they are expected to since this strategy is the best response. Thus, entrepreneur E knows how agent A will behave and agent A knows how entrepreneur E will behave. Behavior that violates the expectations will not occur since entrepreneur and agent would put themselves in a worse position.

This first result demonstrates that different equilibrium states can exist. Each state implicates another outcome \( W^* \). However, both states are optimal even though wages differ. Hence, strategies can be in equilibrium even though economic outcomes differ. However, even the society with the lower equilibrium wage realizes its optimal wage. The generalized strategy is to hire from the pool of all agents, whereas the limited strategy is to hire only from the pool of honest agents.\(^{19}\)

\(^{19}\) Strategies off-the-path-of-play are not depicted here, however, corresponding evidence can be found in Greif, 1994, p. 920 and p. 945.
2.8.1.1 Horizontal and vertical societal structures

The informal information network plays a major role in the model since it exists only in the case of limited morality. A further important assumption refers to the collective punishment strategies. Limited morality needs informal collective punishment strategies, since otherwise the information network would be futile. A third-party enforcer does not exist; however, official formal rules would be necessary for such an enforcement mechanism to exist. Since the rules regulating social interactions consist of norms, traditions, habits, and so on they are informal and no legitimate third-party enforcement exists. Thus, regulation and enforcement have to be provided informally.

Regulation is guaranteed by informal institutions, whereas the enforcement of the institutions is ensured by unofficial collective punishment strategies. Hence, society itself and not a third party such as the state punishes the violators. Of course, informal enforcement results in subjective punishment strategies. These are governed by subjective sentiments and might seem rude and unjustified to observers that are used to the rule of law and an independent judiciary. Nevertheless, these informal enforcement mechanisms are optimal strategies for the particular society.

In the case of our model, informal enforcement has nothing to do with crude punishment but with the fact that society punishes cheaters because entrepreneurs do not employ agents who cheated in the past. Hence, unemployment is the punishment strategy applied for dishonest agents.

Now it is assumed that entrepreneurs can work as agents for other entrepreneurs. In the original model by Greif (1994), entrepreneurs are restricted to merchants, since the historical case study deals with two groups of merchants. Regarding the historical example of Maghribi and Genose traders, it was in fact the case that merchants installed agency relations with other merchants. This made sense since merchants were situated at different locations and thereby a merchant in one place could act as an agent for a merchant situated in another location. Or, a merchant who was travelling between places could act as an agent for locally bound merchants. Merchants who were members of a society practicing limited morality (the Maghribi) actually preferred to hire other merchants from the particular society as agents. For reasons considered below, merchants were more trustworthy than pure agents.

However, in the present model we now add the possibility that entrepreneurs can be hired as agents by other entrepreneurs. In addition, pure agents exist (who can only work as agents and not as entrepreneurs). Hence, an entrepreneur can choose between employing an agent or employing an entrepreneur who provides agency services. An entrepreneur who provides agency services can either cheat or play honest.
If the entrepreneur is *honest* while providing agency services we obtain:

\[
V_h^A \quad \text{entrepreneur’s expected utility from being an agent}
\]

\[
\frac{\gamma-W^*}{1-\delta} \quad \text{entrepreneur’s expected utility from being an entrepreneur}
\]

\[
V_h^A + \frac{\gamma-W^*}{1-\delta} \quad \text{entrepreneur’s lifetime expected utility if he is always honest}
\]

If the entrepreneur *cheats* while providing agency services we obtain:

\[
\alpha \quad \text{gain from cheating while providing agency services in the current period}
\]

\[
V_c^A \quad \text{entrepreneur’s expected utility from being an agent}
\]

\[
\gamma-W^* \quad \text{payoff from being an entrepreneur in the current period}
\]

\[
V_c^E \quad \text{entrepreneur’s expected utility from being an entrepreneur}
\]

\[
\alpha + \gamma - W^* + V_c^E + V_c^A \quad \text{present value of the lifetime expected utility of an entrepreneur who cheated while providing agency services}
\]

An entrepreneur should not gain from one period of cheating while providing agency services, That is:

\[
V_h^A + \frac{\gamma-W^*}{1-\delta} \geq \alpha + \gamma - W^* + V_c^E + V_c^A. \quad (2.32)
\]
If this inequality holds, the entrepreneur will play honest while providing agency services.

For a pure agent to play honest

\[ V_h^A \geq \alpha + V_c^A \]  

(2.33)

must hold.

The difference between generalized and limited morality becomes visible via the punishment strategy. By assumption, under limited morality an entrepreneur who cheated while providing agency services gets punished by withholding information from him. Thus, the entrepreneur does not learn which of the agents cheated in the past. Hence, he has to pay a higher wage, since he has to choose his agent from the pool of all agents, which includes honest agents and cheaters. Therefore, the entrepreneur has to provide an incentive for the agent to play honest. If the entrepreneur himself plays honest while providing agency services, he will not get punished and thereby gets to know the agents’ histories and can choose from the pool of honest agents. Then, he does not have to provide an incentive to play honest and can pay a wage that is higher or equal to the agent’s reservation utility.

The argumentation, however, might seem far-fetched. But Greif (1994) demonstrates that exactly the punishment strategy described above was applied by the Maghribi traders in the 11th century.

Under limited morality, an entrepreneur who cheated while providing agency services has to pay a higher wage to his agent, since he does not know his history. Therefore, the lifetime expected utility of the entrepreneur decreases. That is to say, \( V_c^E \) on the right-hand side of equation (2.32) decreases and thereby it becomes less attractive for an entrepreneur to cheat while providing agency services, since cheating decreases his future utility because of higher labor costs. Thus, cheating while providing agency services influences the entrepreneur’s utility of being an entrepreneur.

\[ \frac{(\gamma - W^*)}{(1-\delta)} \succ \gamma - W^* + V_c^E \]  

(2.34)
Equation (2.34) includes the gains from being an entrepreneur. The left-hand side depicts an entrepreneur’s gains from entrepreneurship when he plays honest while providing agency services; the right-hand side represents the gains from entrepreneurship when the entrepreneur cheats while providing agency services. Again, $V^E_c$ decreases and thereby it becomes more attractive to play honest.

However, because under limited morality cheating as an agent impacts on an entrepreneur’s utility from entrepreneurship, the entrepreneur has more to lose from cheating than under generalized morality. Therefore, the probability that the entrepreneur cheats while providing agency services is lower under limited morality. Hence, under limited morality entrepreneurs prefer to employ other entrepreneurs as agents, since for them cheating is less attractive because it has a negative influence on their utility from entrepreneurship.

A society practicing generalized morality misses the informal information network and the collective punishment strategy – that is to say, history is irrelevant. Therefore, an entrepreneur who cheats while providing agency services does not get punished and might not pay a higher wage. However, as has been proved before, the equilibrium wage under generalized morality is higher since the probability of employing a cheater equals the probability of employing an honest agent.

In any case, under generalized morality, we observe:

$$\frac{(\gamma - W^*)}{(1 - \delta)} = \gamma - W^* + V^E_c. \quad (2.35)$$

That is to say, the lifetime expected utility from entrepreneurship of an entrepreneur who plays honest when providing agency services equals the lifetime expected utility from entrepreneurship of an entrepreneur who cheats when providing agency services. Hence, under generalized morality entrepreneurs do not prefer to hire other entrepreneurs for agency services. Since an entrepreneur who provides agency services realizes an income from entrepreneurship, his reservation utility might be higher than that of a pure agent. Therefore, under generalized morality, entrepreneurs might prefer to employ pure agents instead of entrepreneurs providing agency services, since the latter might demand a higher wage for playing honest because of their higher reservation utility.

It can be concluded that under limited morality, entrepreneurs prefer to hire other entrepreneurs providing agency services instead of pure agents. The collective punishment strategy deprives an entrepreneur who cheated as an agent of the information regarding the honesty of other agents and entrepreneurs. Hence,
the cheating entrepreneur has to pay a higher wage since he does not know whether the hired agent is honest or not. Therefore, entrepreneurs providing agency services have more to lose when working as an agent. Thus, they need a lower incentive to play honest and thereby a lower wage.

Under generalized morality, entrepreneurs prefer to hire pure agents. Since a collective punishment strategy does not exist, and since the agents’ histories are irrelevant, the entrepreneurs anyway pay a higher equilibrium wage. However, because of the high reservation utility of entrepreneurs providing agency services, entrepreneurs prefer to employ pure agents.

Thus, limited morality advances a horizontal social structure, whereas generalized morality results in a vertical social structure. This is what we would expect according to our previous definition of generalized and limited morality. Hence, limited morality is characterized by group affiliation. Within these groups, informal networks and punishment strategies exist. Wages are lower compared with individualistic societies. Limited morality results in a horizontal social structure. Hence, income differences are less notable. Social mobility is constrained since there is not much space for up- or downward movement. This matches the significance of the collective. Less social mobility hampers incentives to invest. Hence, incentives and preferences differ compared with a vertical social structure. This might result in less productivity, economic growth, and consequently lower living standards.

Generalized morality describes an individualistic society. Group affiliation is not important. Transactions are conducted independent of certain memberships and are regulated via formal rules. These are enforced by a third-party enforcement mechanism. Since informal networks do not exist, wages are higher and a vertical social structure is realized. Hence, social mobility is possible and income differences are bigger compared with limited morality. Therefore, incentives and preferences differ. Incentives to invest are higher and productivity and living standards might be higher compared with a collectivist society.

Greif (1994) indeed proves that the Maghribi traders of the 11th century realized a horizontal structure. A clear dividing line between a class of merchants and a class of agents could not be drawn. On the contrary, the society of the Genoese merchants of the 12th century was structured vertically. Merchants rarely functioned as agents and instead a relatively rich class of merchants and a relatively poor class of agents emerged (Greif, 1994, p. 928).

The current chapter shows that different institutions – and thereby the rules that regulate human interactions – lead to different behavioral patterns and that these cannot be easily changed once implemented. This can be demonstrated with the equilibrium view of institutions and a model that presents the issue of institutional persistence via equilibrium strategies. These strategies can only be
changed by an exogenous shock; otherwise they persist indefinitely. However, multiple equilibria are assumed to be possible and different equilibrium strategies can occur. Since institutions determine an individual’s behavior, they also determine the societal patterns of behavior since they are universal to all members of the observed population. Hence, different institutions imply different individual and collective behaviors. Although behavior differs, it might correspond to an optimal strategy regarding the particular population. Varying behavior can result in different economic outcomes, as Greif’s (1994) model shows. However, although one society might realize lower economic growth rates and living standards compared with another one, it might still realize equilibrium strategies. Hence, the outcome might be optimal regarding the particular society and the prevailing basic conditions. Hence, a bad economic performance does not imply that the societal structure per se is inefficient and has to be changed. If change is still to be promoted this might be a difficult task. Since institutions are the main drivers for behavior, institutions must then be modified. However, according to the equilibrium view, institutions are associated with an equilibrium and thereby the implemented strategies are equilibrium strategies. Therefore, a modification of collective and individual behavior is only possible by a preceding institutional modification, which can only occur via an exogenous shock.

Hence, two points should be stressed: first, if a society’s institutions do not promote high economic growth this does not mean that the society itself is in disequilibrium and, therefore, inefficient. Second, institutional change is not easily conducted.

Until now the institutional analysis in this thesis has been conducted theoretically. The next chapter, however, depicts an empirical analysis of institutions. It will be demonstrated how formal and informal institutions can be measured. Furthermore, issues of the empirical examination of institutions are presented. Then, a regression analysis is run that examines whether informal and formal institutions influence per capita income. Hence, it will be examined whether the theoretical consideration can be empirically verified.