Chapter 3

A Framework for Analyzing Institutions

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The opening chapter in this book introduced the role of institutions in natural resource management and the coordinated exchange of goods and services, different types of institutions and institutional change, and particular problems of agricultural development in poor areas in Africa. It was argued that understanding and influencing institutional change are fundamental to understanding and influencing the processes of social, economic, and technical change in agricultural development.

Chapter 2 set out the main theoretical elements of the economics of institutions, dealing with questions about the definition and nature of institutions, the functions that different types of institutions play in economic activity, influences on their effectiveness in performing these functions for different stakeholders, and the processes of institutional change.

The remainder of this book develops and applies this theory to address the challenges set out in Chapter 1, examining practical issues regarding the roles and effectiveness of markets, state action, and collective action in promoting agricultural developmental in different circumstances. Before embarking on this effort, however, we need to develop a conceptual framework for applying the theories described in Chapter 2 to analyze the evolution, functions, and economic and social outcomes of specific institutions, such as those governing the management of common property resources, those bringing players together in market exchange, or

Ruth Meinzen-Dick, Esther Mwangi, and Eleni Gabre-Madhin made substantial contributions to this chapter, notably in the development of the framework in Figure 3.2 and in reading and commenting on drafts.

those assisting in the enforcement of credit contracts. Analysts may wish to know the answers to such questions as:

- How effectively do these institutions perform their functions?
- Are there trade-offs between the performance of these functions and, for example, other aspects of market efficiency?
- Do these arrangements have the potential to generate corruption or rent seeking?
- Are there winners and losers from the particular configuration of institutional arrangements that are observed and, if so, who are these winners and losers?
- Can the design of a particular institution—or a set of institutional arrangements—be modified to improve its effectiveness, efficiency, equity, or sustainability?

The purpose of this chapter is to develop a conceptual framework for conducting this type of analysis. The framework introduced here will provide a unifying structure for the analysis of different institutions illustrated in the case study chapters in Parts 2 and 3 of the book.

3.1 Framework—Origins and Layout

In this section, a framework for institutional analysis is set out. The framework is intended to identify the main elements that need to be considered when undertaking institutional analysis. The framework is intentionally abstract, to allow its application to a wide variety of situations and enable it to accommodate different theories about the roles of and influences on institutions. The framework draws on the general agreement between these theories regarding the core structural elements in all social and economic relations.

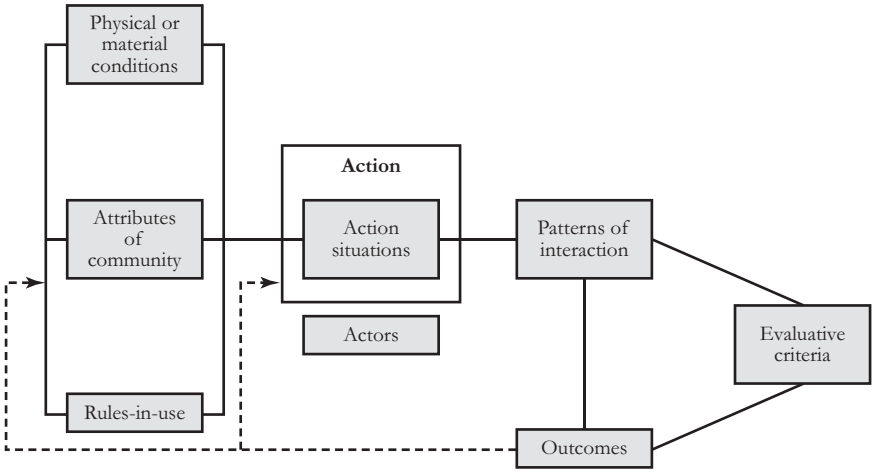
The framework presented here has its roots in two branches of New Institutional Economics (NIE). First, there has been a flourishing literature that initially emphasized understanding collective action in natural resource management but has been broadened to integrate the application of different theoretical approaches to the study of a wide range of institutions in different spheres of economic activity, namely, the Institutional Analysis and Development (IAD) approach. The framework is developed by unpacking and extending the basic building blocks: exogenous variables are broken down into physical/material conditions, community attributes, and rules in use; actors and action situations are set in an action arena; and the feedback of outcomes to the exogenous variables and action arena is mediated through patterns

of interactions and evaluative criteria. The IAD approach (Ostrom, Gardner, and Walker 1994) is a widely known framework. The basic structure of the IAD framework involves (1) an exogenous set of variables that influence (2) situations of actors (or players in the game) and (3) the behavior of actors in those situations, leading to outcomes, which then feed back to modify both the exogenous variables and the actors and their situations.

An IAD framework diagram is set out in Figure 3.1. The blocks can be unpacked further into clusters of variables in the action situation and with different theoretical assumptions about actors' behavior. The IAD framework can be used to help develop predictions about actor behavior and outcomes from changes in the exogenous variables, assuming that the variables specifying the situation and the motivational and cognitive structure of actors do not change. Further analysis can investigate factors affecting the structure of the action arena in terms of interrelationships among institutions, actors, and their activities and resources.

The second branch of NIE from which the framework has developed is transaction-cost economics (TCE). The primary focus of TCE is the analysis of institutions for the exchange of goods and services (Davis and North 1971; Williamson 1985, 1991; North 1990; Jaffee and Morton 1995). Frameworks in this branch emphasize (1) the influences of the environment; (2) characteristics of goods or services being exchanged; and (3) characteristics of potential parties to a transaction, as they determine the outcomes of bargaining over the form and terms of particular

Figure 3.1 The IAD framework



Source: Adapted from Ostrom, Gardner, and Walker (1994) and Ostrom (2005a).

institutional arrangements. The environment is further separated into the physical/infrastructural environment, institutional environment (following Davis and North 1971), and social/economic environment.

The framework presented here draws on these two branches, recognizing their common structure (an environment or exogenous variables influencing actor behavior in and through institutions) but also playing on their respective strengths (the emphasis in the IAD framework on the action arena and on feedbacks from the outcomes to the environment; the emphasis on actor, institutional, and activity attributes in the TCE frameworks). Figure 3.2 provides an overview of (1) the main elements in the theoretical and practical analysis of institutions and (2) broad relationships among these elements. The paragraphs below provide a brief overview of the diagram; the rest of the chapter discusses in detail each element of Figure 3.2.

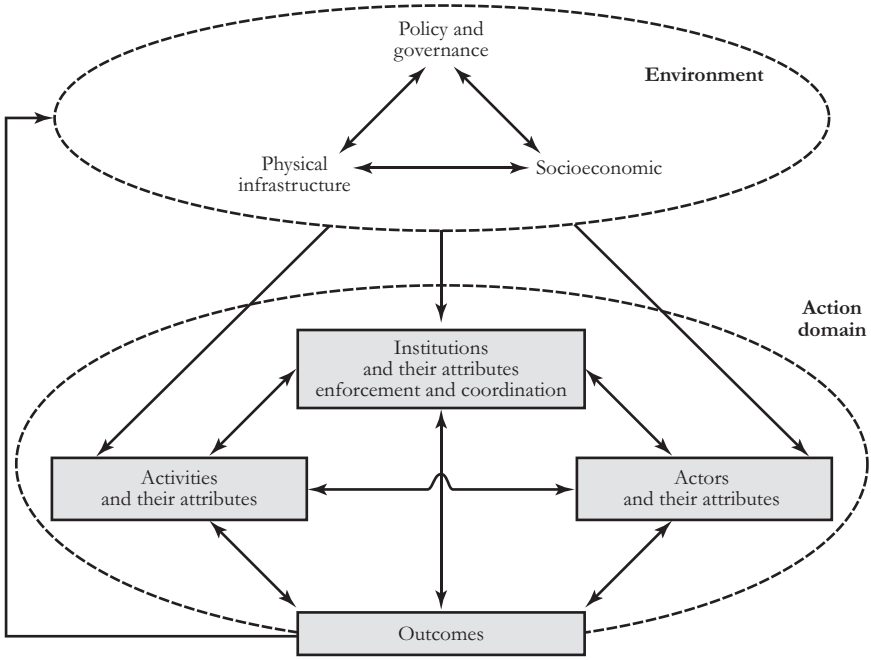
The heart of the framework is the identification of the action domain, which defines the spheres of activity and interest of the analysis (such as economic exchange of goods and services, the management of natural resources, or insurance and safety nets). The action domain is discussed in more detail in Section 3.2. It comprises the institutions to be analyzed, the activities that the institutions engage in (see the left and right sides of Figure 3.2), and the actors in those institutions and activities.[1] An important part of institutional analysis is the identification of the institutions, activities, and actors that are important in a particular action domain. This identification must be accompanied by examination of the attributes of these elements.

The structure and behavior of the action domain is not, however, determined solely by the elements in it. The action domain is set in and affected by a wider environment (see the top of Figure 3.2), which is considered in three parts—the physical and infrastructural, the socioeconomic, and the policy and governance environments (see Section 3.3). Institutions, activities, and actors are affected by (and in turn affect) their wider environment.

The interactions among institutions, actors, and activities involve actions that lead to outcomes. The outcomes of these actions may reinforce or change the environment, institutions, activities, and actors. Impacts may be direct or indirect, the latter occurring, for example, when the outcome of particular actions is a change in the scarcity or value of a particular resource, which leads to changes in the environment, in the aspirations and wealth of actors, and in the attributes of actors. These changes lead to institutional change.

The remainder of this chapter describes in more detail the elements of this framework and the interactions among them. These are discussed in a particular sequence, but institutional analysis need not follow a neat linear approach—it is likely to be iterative and cumulative, as consideration of one element leads to identification of another, or to the realization of the importance of another set of institutional,

Figure 3.2 A conceptual framework for institutional analysis



activity, or actor attributes. The framework should be used more as a checklist of the major elements and interactions that should be considered in institutional analysis. The application of this framework must be adapted to suit the specific situation, type of analysis, and the analyst, and different elements and relationships will be found to be important in different situations. This flexibility is illustrated in the case studies in later chapters for the two types of action domain that are the major focus of this book: exchange of goods and services and natural resource management.[2]

3.2 Action Domain

The framework begins with the definition of action domains, which draws on the IAD concept of action arenas as social spaces in which actors (individuals and organizations) interact in social and economic exchange (Ostrom, Gardner, and Walker 1994; Ostrom 2005b). It can also be related to Aoki's (2001) discussion of the six basic types of domain in which institutions operate: commons, economic exchange, organization, social exchange, polity, and generic organizational fields. In this book

the primary concern is with applying institutional economics to two types of domain that are important to agricultural development in Africa: the economic exchange of goods and services (the focus of Part 2 of this book), and natural resource management (considered in Part 3).[3] Application of the framework to specific situations requires the definition of specific action domains.

As discussed earlier, there are four major parts of the action domain—institutions, activities, actors, and outcomes. Institutional analysis requires

- identification of which institutions, activities, actors, and outcomes are important and significantly affect the behavior of the action domain; and

- consideration of the attributes of institutions, activities, and actors that significantly affect interactions among them and wider behavior in the action domain.

The action domain lies in an environment (discussed in Section 3.3), and a critical part of institutional analysis is the identification of the boundaries between the action domain and its environment—which elements are in the action domain, and which are outside it, in its environment? Action-domain boundaries are determined by the purposes of the analysis and the specific research or policy question to be addressed in the institutional analysis: Does the analysis seek to investigate the way that existing institutions influence actors' behavior and hence their responses to and the outcomes of exogenous changes (with institutions largely fixed as exogenous variables)? Or does it seek to go further and investigate the impact of exogenous factors on changes in institutions? A critical issue in determining which elements should be included in the action domain is the level of institutions at which change is to be investigated. This issue is discussed in Section 3.2.1.

Just as some institutions, actors, and activities will be included in the action domain (Box 3.1), there will be others that affect the action domain but are largely exogenous to it: these should be considered as part of the environment. They should be defined as part of the environment if

- they operate at a much larger scale than the action domain and are therefore hardly affected by changes in it (for example, national markets or large river flows may be hardly affected by changes in small community markets or small catchment areas, respectively);

- they respond slowly to feedback effects and can thus be ignored in short- to medium-term analyses (for example, it will take a long time before improved school enrollments of children affect literacy and educational attainments of the

working population or before a reduction in livestock numbers ameliorates the severe effects of gully erosion); and

- they are unaffected by changes in the action domain and there are no feedback effects (for example, wages in tasks reserved for men may be largely unaffected by changes in the burden of women's activities).

The boundaries of environment should therefore be sensitive to aggregation effects, the time scale of analysis, and structural changes in the environment or action domain. Thus in the examples above:

- National markets may well be affected by changes in small community markets if all (or many) of these markets change in the same way, just as large river flows may be significantly affected by changes in small catchment areas if all (or many) catchment areas change in the same way.

- Actors' education levels should be treated as endogenous and included in the action domain as attributes, if long-term analysis is being conducted.

- Removal of restrictions on women's participation in activities previously reserved for men may mean that wages in these tasks are now more sensitive to changes in the burden of women's activities.

Box 3.1 Action domains

An *action domain* concerned with the exchange of particular goods and services includes those actors involved in the exchange of these goods and services in locations or social groups that are the subject of the analysis. It also includes activities that directly interact with these exchanges and actors, and the institutions that govern these interactions. Similarly an action domain concerned with the management of natural resources includes those actors with property rights over these resources as well as other stakeholders in locations or social groups that are the subject of the analysis. It also includes activities and actors directly interacting with the application of those rights (in use, control, and usufruct, as explained in Chapter 2). These interactions may involve social, economic, or natural (biological, chemical, or physical) relations.

Decisions about what lies in the action domain and what lies in the environment are also likely to change in the process of analysis, as interactions that were not initially recognized are seen to be important.

Institutions, actors, and activities outside the action domain (Box 3.2) but affecting it still need to be analyzed, as discussed in Section 3.3. Note that action domains are not distinct entities that can be analyzed in isolation: interactions among domains are a major feature of social and economic systems, and their analytical separation is made to simplify analysis of a highly complex and interrelated system. As a result, selection of one domain of study means that other domains become part of the first domain's environment.

3.2.1 Institutions and Their Attributes

A major task in the analysis of institutions in an action domain is the identification of the institutions that are important in the domain. This effort begins with an initial

Box 3.2 Examples of the boundaries of action domains used for institutional analysis

The boundaries of action domains are constructs—artificial limits on analysis set by the analyst to suit the particular interests of analysis and the system under study.

Exchange of goods and services. In the analysis of the exchange of goods and services, the action domain may be defined by social or economic variables. Thus emphasis on sociopolitical issues might lead, for example, to the action domain being limited to a village, an administrative district, or an area occupied by an ethnic group. Emphasis on economic variables might result in defining the boundary of the action domain as being an area that serves and is served by a particular market or set of markets. Geographical features may determine administrative districts and markets: agro-ecology (affecting areas where particular crops are produced) or topography and communications infrastructure (for example, roads serving certain areas, or rivers acting as boundaries or transport and communications routes).

Natural resource management. In an area with settled farmers and transhumant pastoralists, the action domain may be bounded by the local village (so that events concerning migrant pastoral groups elsewhere are treated as external influences), or it may be bounded by a larger area that encompasses the territory covered by the pastoralists. The latter may even span national borders.

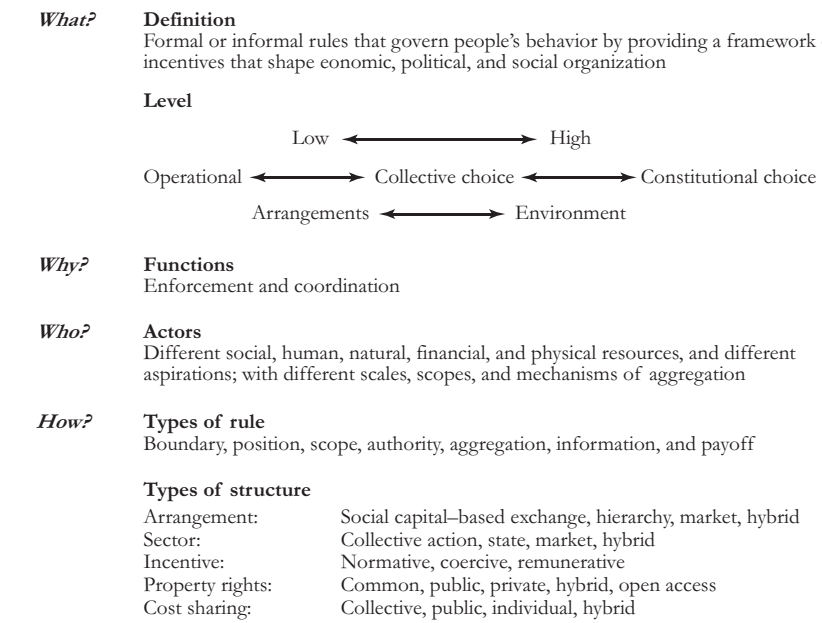
identification of the boundaries of the domain and continues iteratively as actors and activities are identified and the attributes of these elements and their interactions are considered.

Identifying institutions and their attributes is no easy task. Ostrom (2005a) notes that institutions are invisible, there are multiple definitions of institutions, there are multiple interactions among them, and they operate at multiple levels and are inter-nested. Institutions also perform a variety of social and economic functions, and they connect and affect different sets of actors. Identifying institutions that are significant influences in the action domain, and the attributes that make them significant, can be considered by addressing questions about what institutions are, who they connect and affect, why they exist (the social, economic or other functions they perform or have performed in the past for particular stakeholders), and how they work (Figure 3.3). Analysis should move between these questions (and between similar sets of questions about actors and activities) in an iterative fashion. These questions are now considered in turn, although the question about who they connect and affect is left to the discussion of the actors and their attributes in Section 3.2.3.

What institutions are. In Chapter 2, institutions were defined as formal or informal rules that govern people's behavior by providing a framework of incentives that shape economic, political, and social organization. Williamson's (1999) identification of four levels of institutions was also discussed in Chapter 2 (see Table 2.1). Kiser and Ostrom (1982) identify three levels of rules or institutions: *operational rules* affecting people's everyday decisions, higher level *collective-choice rules* influencing the structure and use of operational rules by different actors, and *constitutional choice rules* influencing the structure and use of collective-choice rules by different actors. This categorization has similarities with the distinction by Davis and North (1971) between lower level institutional arrangements and their higher level institutional environment. Higher level rules generally have wider scope and are more resistant to change than lower level rules. For these reasons higher level rules often lie outside the action domain and are considered as elements of the socioeconomic or policy governance environment.

This discussion of institutional levels links with—but is distinct from—earlier consideration of the boundaries of the action domain, and of the distinction between institutions (and actors and activities) that lie in the action domain and those that are considered part of the environment. This distinction was concerned with the scale of institutions. Institutional scales and levels are often related (for example, operational rules tend to operate at smaller scales than collective-choice and constitutional-choice rules), but there are nevertheless operational rules that operate at very large scales and constitutional-choice rules that operate at small scales. As discussed earlier, one approach to addressing the question of action-domain boundaries is to consider the

Figure 3.3 Institutions and their attributes



Source: From Ostrom (2005a).

purpose and scope of the analysis with respect to the relationship between institutions and actors. Pertinent questions include whether the analysis deals with any of the following:

- The access of particular actors to existing local institutions that are considered to be fixed and thus exogenous (for example, considering how poor people's ability to obtain a license to access a resource could be improved by improved literacy, or how their ability to participate in a market might be enhanced by some change in the productivity of their assets or access to assets).

- The terms of access of particular actors to existing local institutions, where these terms might be negotiable (for example, local operational rules considering how poor people's access to a resource could be improved by reducing license fees or literacy requirements, or their participation in a market improved by better prices or reduced transaction costs).

- The form of local institutions (for example, local constitutional choice rules involving the replacement of licensed access from local authorities by resource-user

associations or private ownership and markets, or the abolition of local market regulations).

- The terms and forms of wider, higher-level, or more embedded institutions (wider operational or constitutional-choice rules, such as international and national laws and policies, or local cultural norms defining local institutions).

These different levels and scales of analysis require the boundaries of the action domain to be drawn in different places. In the first case local institutions governing resource access are considered fixed and thus analyzed as part of the environment (although local institutions governing access to literacy or productive assets would probably be considered as part of the action domain). If all institutions are considered fixed, then analysis can be considered in terms of level 4 in Williamson's schema in Table 2.1. The subsequent cases above represent a moving up levels of institutions in Williamson's and Ostrom's schemas, with higher level institutions becoming endogenous and thus part of the action domain.

Why institutions exist and their social and economic functions. Institutions exhibit path dependency, as discussed in Chapter 2, and their functions and the benefits they offer to different stakeholders evolve over time. Nevertheless definitions of institutions are often helpfully expressed in terms of their general functions.

Institutions perform two fundamental (and related) functions in social and economic interactions between actors—enforcement and coordination:

- Enforcement (an activity conducted to ensure compliance) concerns the informal and formal rules that define interaction; the monitoring and sanctioning mechanisms through which rules and contracts for interaction between actors are enforced; and the roles of trust, community norms, morality, and social capital in enforcement. Further issues in enforcement concern the motivation, or incentive compatibility, of enforcement and the impact of limitations of enforcement mechanisms on markets and other forms of exchange.

- Coordination (a process encouraging parties to take common or complementary actions necessary to achieve individual goals) may be viewed primarily as an information and transaction-cost/risk problem. Here analysis is concerned with information access and the sources and extent of transaction costs and risks related to search, negotiation, monitoring, and enforcing property rights and exchange; the ways that transaction costs determine contractual forms; and the economic organization of actors in collective, private, or state-dominated arrangements. In many agricultural development situations transaction costs and risks are high,

and analysts need to consider how they can be reduced and the likely impacts on market organization and performance of different ways of reducing them.

Institutions can also be considered in terms of a more detailed classification of closely linked rule functions or types. Within the IAD framework seven types of rule are commonly identified (Ostrom 2005a):

- *Boundary rules* (or entry and exit rules) affect the number of actors with roles and influence in a situation, the attributes and resources needed for these roles, actors' ability to enter and exit these roles, and the terms of entry and exit.

- *Position rules* (which are closely related to boundary rules) establish the particular (and relative) roles and influence of actors in the situation.

- *Authority rules* (associated with the abovementioned rules) assign sets of actions that actors in given positions should, may, or should not take (the set of decisions open to them).

- *Scope rules* determine the range of outcomes that can be affected by these actions.

- *Aggregation rules* affect the degree of control that actors are able to exercise in initiating actions.

- *Information rules* affect the information that actors acquire and use.

- *Payoff rules* determine the costs and benefits associated with particular actions, outcomes, and actors.

These types of rule interact closely and can be analyzed in terms of the way that they reflect (1) power relations and (2) individual and collective mechanisms for dealing with problems of imperfect information, bounded rationality, and asymmetric information. In any situation there are also generally several different rules of each type.

How institutions work. There is some overlap between the functions of institutions and the way that institutions provide incentives, sanctions, and information to promote particular types of behavior. There are other dimensions that can be considered in terms of different structural elements: contractual forms, institutional sectors, incentive systems, property rights, and cost sharing.[4] In each of these dimensions particular types with specific characteristics are identified, but it must be recognized that although consideration of these types is useful in setting out basic insti-

tutional variations, many (perhaps most) institutions do not conform to these pure types and are best understood as hybrids. Furthermore, the different types overlap in different ways across the various structural elements discussed below. The purpose of this discussion, therefore, is not to define particular combinations of structural elements in different action domains but to set out in broad terms the ways in which different functions may be performed by different institutions.

Three basic types of *contractual form* are recognized in the transaction-cost literature: market, hierarchy, and gift exchange.[5] Williamson (1991) in particular analyzes the influence of asset specificity, frequency of exchange, and uncertainty in influencing actors' choice of spot-market, hierarchy, or hybrid (bilateral contractual) contracts to reduce transaction costs and risks in industrial economies.[6] In some other literatures gift exchange is described more in terms of investment in and utilization of social capital; thus here it is referred to as social reciprocity where investment in social capital (through gifts and participation in social activities) leads to direct and indirect claims on others (such as for labor, food, money, and political or social support).

The importance of social reciprocity is widely recognized in traditional rural communities: economic development is often considered to involve declining reliance on social reciprocity and increasing reliance on markets, because markets, when they work well, provide more efficient information and incentives for efficient resource allocation and exchange. However, the important roles of both hierarchies and social reciprocity in supporting market exchange are often overlooked. Hierarchies are particularly important in developed market economies, where a substantial proportion of transactions are not conducted in competitive markets but within firms and in long-term relationships between firms (see, for example, Williamson 1991; Coase 1992; Hall and Soskice 2001). This situation is particularly relevant to modern supermarket procurement systems (Reardon and Timmer 2005). Globally the proportion of transactions occurring within firms is growing, and two-thirds of world trade is either within transnational corporations or associated with them (see Yusuf 2001). Similarly, the importance of social reciprocity in market economies is often underestimated: this effort includes firms' investments in reputation with consumers and in personal relations with key personnel in other firms they work with (for example, through corporate hospitality and other social interactions in business relationships). It also includes gift exchange by teams in hierarchies to promote working together and effective sharing of responsibilities, tasks, resources, and rewards. Social reciprocity may be particularly important in the development of supply chains and market, hierarchy, and hybrid relations in rural areas (Johnson, Suarez, and Lundy 2002). Such exchange underpins collective action in which individuals and groups manage resources to meet shared goals. Collective action can, therefore, be considered as a particular contractual form closely related to and reliant on social capital–based exchange.

Just as there are three types of contractual forms (and a range of hybrids), there are also three typical *institutional sectors* of actors[7] and action in enforcement and coordination in a domain—the private, state, and collective-action sectors (Uphoff 1993a). These are loosely related with the contractual forms discussed above. As already noted, market forms of exchange are most commonly found in the private sector, hierarchy may be the predominant contractual form in the state sector, and social reciprocity may be closely related to collective action. However, private-sector firms that interact through the market are themselves hierarchies (unless they are very small), and social reciprocity and collective action may be important for both their internal and external relations. Many private-sector market operations also depend on and are nested in hierarchical contracts by which states regulate markets and limit opportunistic behavior. Similarly although the state sector may involve predominantly hierarchical command-and-control contracts both within state agencies and between the state and other agents, market contracts may also be important (as the state contracts out services, for example, and is also a significant player in financial and other markets). These relationships also use social reciprocity and collective action (as discussed above), and indeed the power and capacity of the state depends on its social capital. Similarly, players in the collective-action sector enter into markets and may, like firms, use hierarchical contracts in their own structures and engage in hierarchical relations with other players in the collective-action sector.

The third structural element of institutions relates to the *incentive systems* that support and are used by the contractual forms and institutional sectors discussed above. What is it that encourages actors to behave in accordance with institutions? Uphoff (1993a) loosely aligns the different sectors with different incentive systems. He characterizes these incentive systems as remunerative (actors gain from interactions with one another), coercive (actors are forced to interact in particular ways by threats), and normative (actors are induced to behave in certain ways by personal or collective norms of behavior). Market interactions in the private sector are considered to involve primarily remunerative incentives; the collective-action sector to involve both normative and remunerative (with emphasis on the former); and the state sector to involve all three forms of incentives. These can also be mapped against social capital–based exchange, hierarchy, and market contracts.

The fourth structural element relates to the way that the *property-rights system* works. Property rights are defined and discussed more fully in Chapters 13 and 14. They can involve collective, public, and private rights (and of course hybrids among them). Although the mechanisms of establishment and enforcement of rights are loosely correlated with the collective-action, public, and private sectors, private property rights are normally embedded in wider state and collective rights, and actors in different sectors may hold a range of types of property rights.

The question of the embeddedness of property rights is closely related to the final structural element in this discussion of how institutions work: the *cost-sharing system.* This system refers to the way that enforcement and coordination costs are shared in society. Again, private, public, and collective costs are considered. In the last case the costs of establishing, operating, maintaining, and adapting institutions are borne by specific social or economic groups. This case largely pertains to isolated and traditional rural communities. Market activity in such communities would probably rely significantly on group and individual social capital. Where wider institutions (beyond the community) are weakly developed, individuals wishing to engage in private-sector markets would have to bear much of the coordination and enforcement costs. These high private costs would likely lead to market failure for many goods and services and the development of hybrid rather than spot-market contracts where these could be established. Some of these contracts would involve collective action among producers and traders, with a transfer of costs from individuals to producer and trader associations, which are able to achieve economies of scale in transaction costs. Further development of the economy would involve improved provision of communications infrastructure, information, trading standards, and the rule of law by the state, with a transfer of collective and private costs to the public sector. The improved institutional environment that this transfer provides allows the expansion of market exchanges across wider geographic areas without large increases in the private costs of exchange. The private costs of operating large hierarchies also fall, allowing hierarchies to grow and larger hierarchies to become more common—although market arrangements would still have lower private transaction costs than would hierarchical arrangements (but often with the disadvantage of higher transaction risks).

Application of these principles in natural resource management, however, is more problematic. Isolated and traditional communities often have property rights over natural resources that are defined and enforced by the group, with a combination of individual and collective use and management rights. With increasing contact with outsiders—whether the state or other individuals, firms, or groups—the locally defined rights that are vested, at some level (whether use or allocation level) in the local community may not be recognized by the outsiders. If those outsiders also wish to use the resource, the existing customary rights may not stand up to the increased competition. The result has often been policies to either nationalize the resource or to privatize it so that it can be transferred to outsiders. The latter has been associated, in theory, with higher efficiency, because resources can be transferred to more productive users and used as collateral to obtain credit. However, allowing unfettered sales of natural resources often ignores overlapping claims on the resource, as well as power and wealth differentials between local and external interests. The result can be negative third-party effects and the overall loss of value of output as secondary uses

are cut off. These issues are returned to in Section 3.2.2, where the importance of resource attributes in determining appropriate cost-sharing systems and contractual forms is discussed.

The efficient distribution of enforcement and coordination costs varies with the extent and distribution of economic activity, the attributes of the activities, and the attributes of the actors. This important theme lies at the heart of this book (see, for example, the discussion concerning Figures 1.1 and 1.2 in Chapter 1). It is taken up again, in different ways, later in this chapter and subsequent ones.

Our discussion of institutions and their attributes has provides some order to a complex set of arrangements that cannot be described in any neat and linear structure. The discussion above has also regularly used the term "actors" without defining it—actors are discussed in more detail in Section 3.2.3. Before leaving this discussion of institutions and their attributes, however, note that the term "actor" has been used to describe a decisionmaking entity. In this sense, although individuals are important actors in an action domain, they often work with and are part of aggregate groups that are also actors—households, different social groups, economic and user associations, firms and state agencies—though their behavior is influenced by the interactions among their constituent actors. It is this interaction of institutions and actors at multiple levels, sometimes inter-nested, that leads to many of the difficulties analysts face in understanding institutions and their attributes.

3.2.2 Activities and Attributes

This section examines the nature of activities in the action domain. Production and exchange *processes* that actors engage in and the *resources* and *products* (goods and services) that are managed, used, produced, and exchanged are included under the term "activities." Understanding the attributes of these processes, resources, and products is important when (1) these attributes affect the benefits, costs, and risks to actors (and hence their ability to invest and engage in them), and (2) these benefits, costs, and risks can be modified by different contractual forms and terms, property-rights systems, and incentive systems. Actors are expected to craft contractual arrangements that maximize the risk-adjusted net benefits that adhere to limits determined by the wider policy and governance environment, past experience and path dependency, and power relations.

Jaffee and Morton (1995) treat the distinctive techno-economic characteristics of the individual commodities as major determinants of institutional arrangements developed and adopted by transacting parties. Dorward (2001) draws on Jaffee and Morton (1995) to break these "techno-economic characteristics" into commodity and transaction characteristics. Transaction characteristics include volume and frequency, uncertainty and bounded rationality, asset specificity, and scope for oppor-

tunism. These traits relate to one another and depend significantly on commodity characteristics—price and volume (production) uncertainty, perishability, processing and storage requirements, quality, seasonality, economies of scale, the supply chain and the commodity's place in it, and government interventions. Further commodity (or resource) characteristics identified by Ostrom (1990, 1992) as being of great relevance to natural resource management include the ease of resource use by multiple users (subtractability or rivalness); the ease of exclusion of potential users (excludability); the importance of interactions and interdependence in use, management, and benefits across natural resources (externalities); the degree to which benefits can be divided among users (divisibility); the degree to which benefits can be transferred between users (transferability); the size and dispersion of benefits (boundedness); the temporal distribution of the resource and predictability across time and space; the mobility of resources (for example, of fish or wildlife); and the extent to which different items or bundles of resources can be distinguished from one another or identified.

Activities (products, processes, and resources) also differ in the value that actors place on them. In many societies, for example, land has social and spiritual significance that is more important than its productive or monetary value. Similar observations may be made about the keeping of animals, growing of some crops, and particular aspects of labor use by different social groups.

The nature and importance of many of the activity characteristics listed above are examined in more detail in the case study chapters in Parts 2 and 3 of the book. Here they are considered in terms of five broad and related dimensions that determine the institutional arrangements maximizing risk-adjusted net benefits to actors. Four of these dimensions have their primary influence on the institutional arrangements governing relations among actors who are stakeholders in the same activities (for example, among farmers, fishers, workers, or traders). These dimensions are the relative costs and returns of excluding others from the benefits of using a resource, product, or service; the economies of scale in a process or in transactions associated with a process; the importance and nature of externalities; and the importance and characteristics of renewable natural resources in the activity. The fifth dimension—the relative transaction risks and returns of a process—has its primary influence on the institutional arrangements governing relations among actors using the same supply chain (for example, among fishers, fish processors, and fish traders or among farm-input suppliers, farmers, and agricultural produce buyers). Each of these dimensions is explained in turn below.

Relative costs and returns of exclusion. Resources, goods, and services differ in the ease with which their owners or producers can exclude others from benefiting from their use. Excludability depends upon the extent to which resources, their products, or their use are bounded, divisible, dispersed, identifiable, mobile, and rival

(or subtractable).[8] Excludability relates to the cost of preventing others from using the resource, whereas subtractability refers to situations in which use of the resource by one individual reduces the amount available to others. Resources that have high excludability can be managed efficiently as private property; those with low excludability but also low subtractability are public goods that the state can provide. Those with low excludability and high subtractability are common pool resources, which are the most susceptible to degradation through the "tragedy of the commons" if management institutions are weak or lacking.[9]

When excludability is high, the costs of exclusion are low and can largely be ignored by investors: production costs and sales revenues are the main items to be considered in investment decisions. When excludability is low, however, the costs of enforcing exclusion also need to be taken into account in investment decisions. If these costs are sufficiently high relative to potential returns, they may make otherwise profitable investments unprofitable. The result will be market failure (that is, profits from engaging in the activity are insufficient to justify transaction risks and costs, even though underlying prices and input–output relations suggest transactions should be profitable), unless:

1. The state intervenes to enforce property rights or subsidize production.

2. Potential investors are able to take some collective nonmarket action to enforce property rights at lower cost than would be possible were they to act individually.

3. A small number of individual investors are able to invest on a sufficiently large scale to make it worthwhile to take on the costs of nonmarket action to enforce property or use rights.

This analysis therefore suggests that in a spectrum of activities with increasing costs of enforcing exclusion relative to returns, those with lower exclusion cost/return ratios are amenable to smaller scale market exchange (with all the efficiencies of well-functioning markets), whereas higher exclusion costs lead to increased activity coordination and integration through collective action or larger firms (hierarchies). Very high exclusion costs, however, lead to market failure or, if the state considers it worthwhile, to state action (another form of hierarchy) to overcome market failure.

Economies of scale in a process or in transactions associated with a process. The relative costs and benefits of excluding other parties from using resources, goods or services have been shown to be an important attribute determining both the benefits of activity coordination (whether achieved through hierarchies or collective action) and, in more extreme situations, the occurrence of market failure (and possibly state

intervention to overcome market failure). However, this relation is largely a special case of a more general pattern: higher economies of scale in activities lead to a shift from independent market exchanges to activity coordination and integration (with larger scales of production, management, or transaction) and to market failure (or state intervention). Economies of scale may arise because of exclusion costs as discussed above, transaction costs,[10] or high fixed costs of management or machinery. Natural resources that are highly variable over time and space have economies of scale, as seen in many rangeland areas. The production of multiple products from the same resource may also create economies of scale (or of scope), as seen in community forests that provide a range of products used with different frequency (as opposed to private monocropped woodlots that might provide only timber or firewood).

Importance and nature of externalities. *Externalities* are nonexcludable costs or benefits arising from the existence or use of a resource. They are therefore closely associated with issues of excludability. Although economies of scale in general (and more specifically the relative costs and benefits of excluding other parties from using resources, goods, or services) are important determinants of the scale and form of institutional arrangements for the management of activities, these arrangements are also affected by the extent and nature of externalities associated with them. Their management, however, goes beyond the consideration of relative costs and returns of exclusion: coordination is needed among actors owning or managing activities with externalities and others affected by these externalities, and market mechanisms on their own will not provide such coordination. When the number of actors involved is relatively small, they may be managed by collective action (perhaps involving some collective-action/market hybrid arrangements). As the number of actors increases and coordination becomes more complex, collective action becomes more difficult, and more hierarchical arrangements are needed for coordination. Again these may involve some hybrid arrangement, mixing collective action and hierarchy, but in complex multi-stakeholder situations the state likely needs to be involved to provide some element of hierarchical coordination.

Natural resources. Natural resources are a dimension that influences the institutional arrangements governing relations among actors who are stakeholders in the same activities for two reasons. First, externalities associated with multiple-use rights are particularly important and complex for many, particularly renewable, natural resources. This factor leads to the general importance of collective and state action in natural resource management.

Second, the general pattern of private-market contracts giving way to hierarchical or collective contractual forms of activity coordination (or to market failure or state intervention as exclusion costs rise relative to returns) can take on a particular form in natural resources management activities, as these resources generally exist

without any investment (where levels of utilization are low). The returns to enforcement of exclusive-use rights depends on the value of losses incurred if these rights are not enforced. These losses (and the returns to enforcement of exclusive-use rights) are generally low for nonrival (or nonsubtractable) goods or services, or for rival (subtractable) goods or services when exploitation is low compared to natural stocks or rates of use.[11] Under such conditions open access prevails (the equivalent to market failure for capital items and services not provided by the natural environment) unless the state regulates access and use. If there are increased losses from nonenforcement, however, there may be increased gains from establishing and enforcing property rights. Increasing losses from nonenforcement encourage common property arrangements or large-scale hierarchical management units and then, with high returns to exclusive-rights enforcement, private management of small-scale units.

Relative transaction risks and returns. The four dimensions of activity attributes discussed above are important because they affect contractual arrangements and property rights for particular resources, goods, or services in terms of the relations among different (potential) users, owners, producers, and managers of these elements. The ways in which activity attributes affect contractual arrangements between resource owners, process managers, and buyers and sellers along a supply chain are now considered.

As noted earlier, Williamson has identified uncertainty, asset specificity, and frequency of exchange as key influences of actors' preferences for market, hybrid, and hierarchical contractual forms (see Williamson 1985, 1991). Uncertainty and asset specificity are important for the way that they affect the risks of loss from transaction failure compared with the potential gains from successful transactions. This can be considered in terms of an investment's transaction risk/return ratio. This ratio is high in conditions of uncertainty and for large investments in more specific assets (assets whose returns are specific to and dependent on a particular set of transactions).

Uncertainty is linked to imperfect information, bounded rationality, and opportunism. Bounded rationality (an inability to make use of all information available) and opportunism (which can lead to unpredictable and potentially damaging behavior by transaction partners) both contribute to uncertainty and risk of transaction failure. Actors also face a third source of uncertainty and risk of failure: some aspects of the environment are highly variable and unpredictable (climate, yields, disease and pest attacks, and prices, for example). This type of uncertainty is sometimes known as *substantive* uncertainty, whereas uncertainty due to bounded rationality is known as *procedural* uncertainty. These three types of uncertainty interact, as substantive and procedural uncertainties often make it more difficult to control opportunism (for example, crop buyers can give farmers poor prices for their produce under the pretext that central market prices are very low, when this may not be the case).

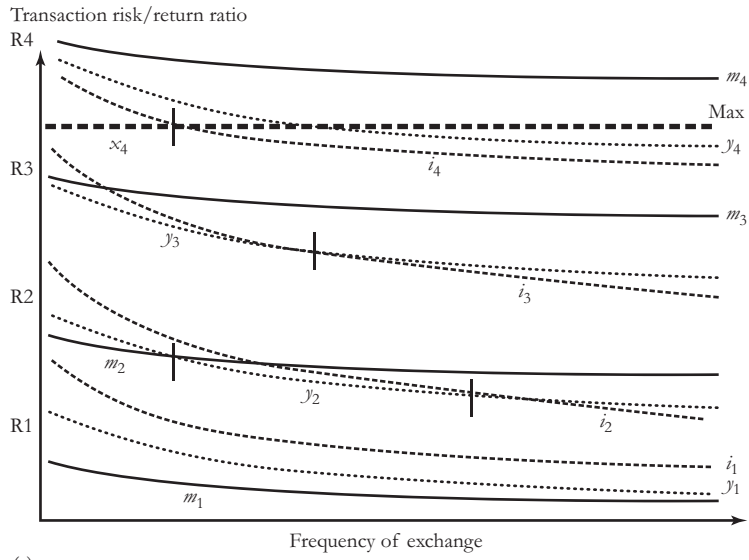
However, uncertainty alone does not lead to risk of financial loss in a transaction. Such losses are only incurred if an adverse event leads to transaction failure and an actor has invested in specific assets (those that cannot easily or cheaply be redirected to other uses if the transaction fails). General examples of specific assets in agriculture include tree crops, specialized technical knowledge, and fixed specialized processing facilities. Dorward and Kydd (2004) note that asset specificity is primarily the result of thin markets for an asset. As a result, in the weak markets that are common in poor rural areas in Africa, many assets have high specificity, although such assets would not generally be considered as specific assets in economies with thicker functioning markets that would allow redeployment. This circumstance has important implications for agricultural supply-chain development, as discussed in Chapter 5.

Uncertainty and asset specificity are together important codeterminants of transaction risks, because uncertainty increases the probability of transaction failure, and large investments in specific assets increase the scale of potential losses from transaction failure. Potentially high returns from transactions, however, reduce the transaction risk/return ratio. This ratio is important for actors' institutional preferences as, with higher risks, actors look for ways to reduce transaction risks. In particular they are likely to look for contractual forms that reduce risks by establishing longer term (hybrid or hierarchy) arrangements that bind buyers and sellers in a transaction, with improved communication (to reduce substantive and procedural uncertainty) and monitoring and incentive systems to control opportunism. The establishment and maintenance of such arrangements involve transaction costs. If it is not possible to establish such arrangements at reasonable costs, then potential investors may decide not to invest. The result is market failure, unless the state steps in to enforce or subsidize transactions (that is, by reducing transaction risks and/or costs or increasing returns).

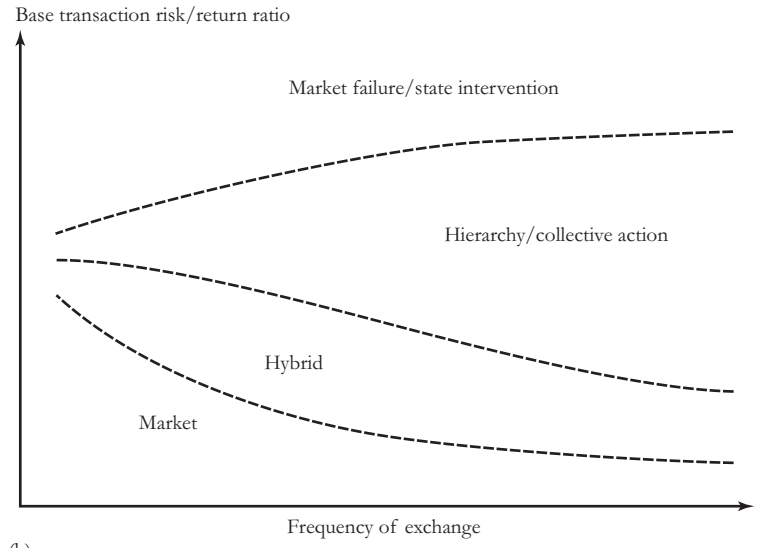
The third activity attribute identified by Williamson as influencing contractual forms is frequency of exchange: when buyers and sellers of a good or service have an interest in repeated transactions, the establishment of hybrid or hierarchical relationships is likely to yield higher returns than is the case for individual transactions. These higher returns arise because (1) the fixed costs of the relationship are spread over more transactions (with lower cost per transaction), (2) the prospect of continuing gains from future transactions creates incentives for parties to fulfil their obligations in each transaction and not behave opportunistically, and (3) greater exchange frequency is also often associated with reduced procedural uncertainty as repetition increases familiarity with transaction procedures. Frequency of exchange can therefore moderate the transaction risk/return ratio—more frequent exchanges can, with hybrid or hierarchical relations, reduce risks and raise returns.

Figure 3.4 shows the stylized relationships among frequency of transaction, the transaction risk/return ratio, and contractual forms. Figure 3.4a shows how the

Figure 3.4 Frequency of exchange, transaction risk/return ratio, and contractual forms



(a)



(b)

transaction risk/return ratio for different contractual forms changes with frequency of exchange under different risk/return scenarios. These scenarios are labeled R1 to R4 in order of increasing risk, and for each scenario three sets of lines show how the risk/return ratio changes for the three main types of contractual form (with a solid line for market transactions, a dotted line for hybrid transactions, and a dashed line for hierarchy transactions). Contracting parties should choose the contractual form that gives the lowest risk/return ratio for a particular frequency of exchange under each scenario. These are indicated by *m, y,* or *i* (to represent market, hybrid, and hierarchy, respectively) for each scenario. In scenario R1 market arrangements give the lowest risk/return ratio; in scenario R2 the same applies at low frequency of exchange, but with increasing frequency first hybrid and then hierarchy forms have the lowest ratio. In scenario R3 hybrid arrangements have a lower ratio than do market arrangements even at low frequency of exchange, but with higher frequency, hierarchy forms have a lower ratio. Finally in the highest risk/return scenario (R4) there are no contractual forms that can yield an acceptable risk/return ratio (below the dashed line marked "Max") at low frequency of exchange, leading to market failure (indicated by x_4 on the figure). With high frequency of exchange, however, hierarchy arrangements can reduce the risk/return ratio sufficiently to make them viable.[12]

Figure 3.4b generalizes the analysis of Figure 3.4a to show how preferred types of contractual arrangement vary with different combinations of frequency of exchange (on the horizontal axis) and base transaction risk/return ratio[13] (on the vertical axis). The figure shows (1) how increases in transaction risk (indicated by the base transaction risk/return ratio) make market relations less attractive relative to hybrid relations, so that further increases in the risk/return ratio lead to hierarchy and then to market failure (as discussed earlier) and (2) how the advantages of hybrid and then hierarchical relations relative to market relations grow with higher frequency of exchange, which may also reduce the likelihood of market failure as the risk/return ratio increases.

The stylized relationships in Figure 3.4 will, however, be modified by a number of factors: the institutional environment (including institutional attributes, as discussed in Section 3.2.1), actor characteristics (discussed in Section 3.2.3), the physical/infrastructural and political/governance environment (discussed in Section 3.3), and other activity attributes.[14] The importance of other activity attributes is illustrated by the existence of common property resource and open access regimes for high-exclusion cost/return natural resources, as discussed earlier. Supply chains also involve a variety of activities that may have different techno-economic characteristics (suggesting different contractual forms) but that need to be bound together in the same contractual arrangements. Similarly one resource may be used in different supply chains with different activity characteristics. When multiple use rights exist, they introduce another

level of complexity to institutional development and analysis. Finally path dependency —the historical context that shapes institutions, actors, and their attributes—is a major influence on institutional arrangements and may lead to deviations from what might appear to be optimal or least-cost institutional arrangements. Complex and overlapping mixes of institutional arrangements are therefore common.

3.2.3 Actors and Their Attributes

As with institutions and activities, the analysis of actors and attributes involves an iterative process of identification in the context of institutions, activities, and their respective attributes. The analysis starts with a discussion of different types of actors, followed by a consideration of the types of attributes that may be important to them.

Types of actors. From the earlier discussion of institutions it should be apparent that actors in an action domain can be in the private, public, or collective-action sectors. There are also actors who do not fall neatly into any of these sectors and are best considered as hybrids. Uphoff (1993a) provides a useful analysis of the continuum of different types of local organizations (Table 3.1).[15]

Table 3.2 provides another perspective on a similar set of issues. It highlights the multiple involvement of members as owners and suppliers of capital, as clients and (for some) as employees in multiple membership organizations. These roles can lead to conflicting interests that do not arise in the same way in nongovernmental organizations (NGOs) or private companies. The nature of these conflicts vary with the rules under which farmer organizations operate—their norms of behavior, their articles or by-laws, their relationships with other organizations, and national laws relating to different forms of association. (A distinction needs to be recognized between de jure and de facto laws and regulations, the former existing in name whether or not they are implemented, the latter being those that are actually applied.) Tables 3.1 and 3.2 identify the multiple roles of different individuals in the various types of organization.

Table 3.1 Continuum of types of local organization by sector

	Public sector		Collective action sector		Private sector	
Type of organization	Local administration	Local government	Membership	Cooperative	Service	Private business
Orientation of local organization	Bureaucratic	Political	Self-help (common interests)	Self-help (resource pooling)	Charitable (nonprofit enterprise)	Profit making (business enterprise)
Role of individuals in organization	Citizens or subjects	Voters and constituents	Members	Members (or owners), clients, and employees	Clients (or beneficiaries) and employees	Owners clients, and employees

Adapted from Uphoff (1986, Figure 1.2; 1993b, Figure 3).

Table 3.2 Principal roles of individuals in farmer organizations, private companies, and NGOs

Role in organization	Farmer organization	NGO	Private company
Suppliers of capital	Members, donors, banks, and trading partners	Donors	Equity: shareholders Loans: banks and trading partners
Clients	Members and nonmembers	Beneficiaries	Customers
Employees	Members and nonmembers	Not owners	Not generally owners

Source: Adapted from Stockbridge et al. (2003).

Note: NGO, nongovernmental organization.

Uphoff (1993a) also makes an important distinction between organizations or actors that operate at different levels and involve different degrees of aggregation among individuals (Table 3.3). It is important that institutional analysis explicitly consider these different levels when defining the boundaries of the action domain and the allocation of institutions and organizations or actors between the action domain and the environment. However, institutional changes (such as deconcentration, devolution, and decentralization—discussed in Chapters 14 and 17) may shift the boundaries of the action domain as well as change the institutions and actors with responsibilities for particular activities.

Uphoff's (1993a) identification of sectors and levels or scope of activities is helpful in classifying organizational actors, but at the lowest level he does not categorize individual people into his three sectors—most individuals have multiple roles and relationships among the different sectors. It is therefore often more helpful to categorize individuals by social or economic characteristics that relate to their roles in the action domain (their interests and aspirations, resources, and social grouping).

Attributes of actors. At the outset of analysis it is important to remember the general characteristics of economic actors that affect their economic behavior: imperfect information, bounded rationality, self-interest, and opportunism. The extent to which these characteristics are present varies among actors and is affected by the attributes of their activities as well as by their own attributes discussed below.

In Section 3.2.2 it was noted that when actors are exposed to high risks of loss from transaction failure due to significant investments in specific assets and uncertainty in prices or transaction partners, they often wish to engage in bilateral (hybrid) contracts or even in vertically integrated hierarchical contracts rather than spot-market transactions to reduce risks. In this case, therefore, asset attributes appear to be major influences on contractual forms. This conclusion, however, depends upon actors' aversion to risk—more risk-averse actors will have a greater preference for risk-reducing contractual forms, and therefore actor attributes that reduce or increase risk aversion may influence preferences for different contractual forms. Furthermore, because actors who are party to the same activities may have different risk preferences and may use different resources and processes (for example, farmers and crop buyers

Table 3.3 Institutional sectors, levels of action, and decisionmaking

	Sector		
Level	**Public**	**Collective action**	**Private**
International	United Nations agency; multilateral and bilateral donor agencies	Society for International Development	Multinational corporation; PVO
National	Central government ministry; parastatal corporation	National cooperative federation; national women's association	National corporation; national PVO; PVO coordinating body
Regional	Regional administrative body; regional development authority	Regional cooperative federation; watershed consultative assembly	Regional company; regional PVO; PVO council
District	District council; district administrative office	District supply cooperative; soil conservation educational forum	District firm; charitable organization
Subdistrict	Subdistrict council; subdistrict administrative office	Subdistrict marketing cooperative; area sports club	Rural enterprise; private hospital; bank branch office
Local	Division council; health clinic; secondary school; extension office	Wholesale cooperative society; forest protection association	Market town business; service club (for example, Rotary)
Community	Village council; post office; primary school; extension worker	Primary cooperative society; village dike patrol; parent-teachers association	Village shop; mosque committee for village welfare
Group	Caste panchayat; ward or neighborhood assembly	Tubewell Users Association; mothers' club; savings group	Microenterprise
Individual	Citizen, voter, taxpayer, partaker of services	Member	Customer, client, beneficiary, employee

Source: Uphoff (1993).

Note: PVO, external private voluntary organization.

may be partners in crop-purchase transactions but may have different specific assets and risk exposure), these actors' contractual arrangement preferences may differ. In this case the terms and forms of transaction will be subject to bargaining. The result of this bargaining depends on the relative power of the different parties (Dorward 2001), where power may be a function of such attributes as access to information; social status and relations; alternative livelihood options; links to urban centers; political and other connections; willingness to bargain; education and literacy; self-confidence; previous experience; access to capital, land, and labor; gender, age, caste, and ethnicity; and willingness to engage in protracted bargaining processes.

Particular resources that confer actors with power to bargain are termed "action resources" (Di Gregorio et al. 2005). Examples of action resources that may be

amenable to rapid change are information (for example, through access to mobile phones), and cognitive schema in which people view themselves and the limits of their ability to act.

Actor attributes may also be affected by membership in social groups, whose members can act together to improve their bargaining position. Such groups may provide social support or material resources to represent their members' interests. These groups, when effective, can be considered as actors in their own right.

3.3 Environment

Three categories of factors define the environment in which action domains are embedded: physical and technical factors, socioeconomic factors, and policy and governance factors. The interactive impacts of these three categories of environmental factors condition how institutions and attributes of actors and activities combine to shape outcomes (see Figure 3.2). Identifying and analyzing these interrelationships is therefore crucial. The main elements to be considered in the environment and their attributes are briefly discussed below, followed by some illustrations of how the environment can interact with other elements in institutional analysis. The boundaries between the environment and the action domain have been discussed in Sections 3.2 and 3.2.1.

3.3.1 Physical and Technical Environment

In agriculture, geography and climate are central features of the physical environment. Biophysical conditions—such as levels and variability (seasonality) of rainfall and temperature, soil quality, and access to surface and ground water—are crucial determinants of production potential and risk (for example, from drought; flooding; and human, animal, and crop pests and diseases). The more favorable these conditions, the higher the potential of agricultural sectors, and vice versa. Biophysical conditions vary widely across Africa, suggesting corresponding diversity in production potential. Also important is the level of infrastructural development in the form of roads, transport services, telecommunications, marketplaces, and irrigation systems. The relationship between population density and the level and quality of infrastructure is crucial. As argued in Chapter 1, in many African countries population growth has far outstripped infrastructure development.

The degree of technological advancement relative to the frontier represented by the newest and most promising technologies defines the technical limits of production and exchange. The diversified subsistence-oriented production systems that dominate agriculture in most of Africa are based on technical and organizational routines poorly suited to the requirements of agro-industrialization built on com-

mercialized agriculture. The interactions of these physical and technical conditions with those in the socioeconomic and policy spheres delineate actual opportunities.

3.3.2 Socioeconomic Environment

Socioeconomic conditions refer to the demographic, sociocultural, and economic underpinnings of societies. Population levels and distributions define land/labor ratios, with important consequences for land management, the choice of production technology, and supply of goods and services; they also influence patterns of demand and thus scope for trade in matching supply and demand. Birth, mortality, and morbidity rates influence a range of investment choices, most notably in education, thereby influencing long-term prospects for growth and poverty reduction.

Distributions of human, financial, and social assets (or capital) have major implications for levels and distributions of income, wealth, and power. Highly unequal distributions of these variables in many African countries thus reflect deeper disparities in asset holdings.

Cultural heterogeneity and interactions across ethnic groups impact importantly on several key determinants of social welfare, including the size and behavior of markets, the scope and nature of collective action, the performance of public organizations, and the form of political discourse. Cultural norms shape values as well as behavioral patterns. Cultural habits tend to be deeply held and highly resilient to change, suggesting major challenges in effecting long-lasting change in many societies.

The socioeconomic environment thus represents the milieu in which physical and technical realities express themselves. It is the underlying context for broader policy and governance regimes.

3.3.3 Policy and Governance Environment

Policy and governance conditions comprise the set of fundamental political, social, and legal ground rules that establish the basis for production, exchange, and distribution. Rules governing political elections and representation determine long-term political stability. Judicial systems—especially the availability of courts to resolve disputes—define property rights, rights to contract, and the scope for contract enforcement. The nature and stability (predictability) of macroeconomic, sectoral, and trade regimes influence investment climates, most notably through interest and inflation rates. Legislation and related administrative processes establish channels of authority for the use of public, communal, and private resources, especially land. Contracts related to concessions, disciplinary actions, and personnel rules affect recruitment, retention, promotion, and discipline of human resources in public and private agencies. In many cases these formal systems coexist with customary institutions that may not

only inform them but also sometimes provide an alternative, competing forum for the allocation and distribution of productive resources as well as for conflict resolution.

Together these policy and governance factors condition how physical, technical, and socioeconomic factors are articulated in given settings, thereby establishing links through which prevailing conditions influence the future and determining the direction and pace of change in societies. Clearly, some of these policy and governance conditions might also be defined as institutions within some action domains. The key recognition is that environments and action domains are nested. Decisions about whether conditions belong in or outside action domains depend on the scale of analysis and the set of issues under consideration. These issues are discussed in Chapter 20.

3.3.4 Action Domain–Environment Interactions

Some of the impacts of the environment on elements in the action domain need little discussion. It is, for example, apparent that climatic, price, or macroeconomic uncertainty tends to increase uncertainty among activities related to these elements, which has consequences for contractual forms, as discussed in Section 3.2.2. This influence is important, given the many sources of uncertainty and risk in smallholder agriculture in Africa.

Other interactions among the environment, institutions, and agricultural development in Africa may be less obvious. Some of the forms that these can take can be illustrated with reference to three further characteristics of poor rural economies in Africa: thin markets, weak institutions, and a low level of economic activity among dispersed populations.

It was noted earlier that asset specificity as defined by Williamson (1985) is the result of thin markets, as it represents an investment in an asset that cannot easily or cheaply be transferred to another use. Limited opportunities for transferring the asset to another use arise because there is limited demand for use of the asset outside the transaction that justified the investment. Many assets that would be easily transferred to other uses in a more developed economy can therefore take on the characteristics of specific assets in poor rural economies with low levels of economic activity and thin markets. Examples might include fertilizers and other agricultural inputs and investments in general storage facilities (for input or produce traders). The consequent increased importance of asset specificity in agricultural supply chains means that small players in atomistic markets are less likely to find it worthwhile to engage in activities in these supply chains. Apart from traditional export crop supply chains, however, these rural economies tend to lack large firms that are able to engage in supply-chain coordination, and hybrid contractual arrangements are often slow to develop, limited in extent, and fragile.

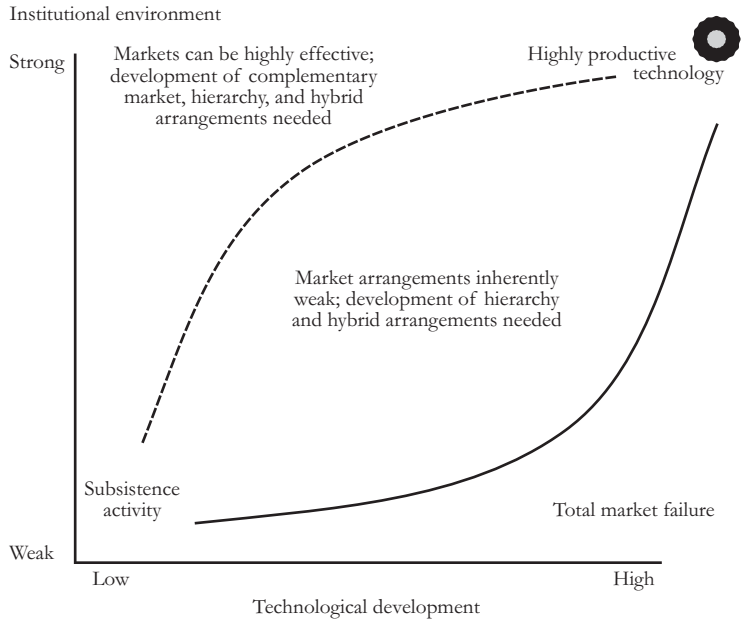
The tendency for thin markets to increase the importance of asset specificity in poor rural economies, and hence demand a greater role for hybrid and hierarchy (as opposed to market) contractual forms, can be reinforced by a weak institutional environment. Dorward et al. (2005) note that highly productive technologies require intensive and effective mechanisms for complex coordination and exchange, to allow investment in and operation of different specialized activities with increasing input purchases and output sales. Increased exchange places demands on the institutional environment, with the highest demands for market exchange and lower demands for hybrid and hierarchy exchange (because hybrid and hierarchical contractual forms internalize more transaction-enforcement mechanisms and costs compared to market exchanges), although as noted in Section 3.2.1 the costs of running hierarchies are also reduced with stronger institutional environments.

Dorward et al. (2005) explore this dynamic with a diagram that maps technological development on the horizontal axis and the strength or effectiveness of the institutional environment on the vertical axis (Figure 3.5). Economic development involves movement from the lower left to the upper right of the diagram, with complementary progress in institutional and technological development. This stylized representation yields several useful insights about the interactions between technological and institutional change in economic development. A poorly developed institutional environment cannot support highly advanced technologies, and therefore market failure occurs in the lower right of the diagram. In the upper left corner, however, a highly developed institutional environment allows effective competitive markets to support relatively simple technologies. Along the diagonal from the lower left to the upper right there is a zone of ambiguity: here the institutional environment may not be sufficiently developed to support increasingly intensive markets that are required for the coordination and exchange needed by more productive technologies. Hybrid and hierarchical arrangements, however, may be more effective for supporting these technologies in such conditions.

This analysis suggests that there is no a priori reason for expecting economic development to involve the promotion of competitive market arrangements—more emphasis may be needed on promoting hybrid and hierarchical arrangements that serve development interests. Dorward et al. (2005) argue that this pattern of development is indeed what has been generally been observed in successful economic development in the twentieth century.

Our final illustration of the interaction between the environment and the development of institutional arrangements concerns the effects of dispersed populations and low levels of economic development on poor rural people's access to services. As noted in Chapter 1, many poor rural areas in Africa have dispersed populations with poor communications and low levels of economic activity. Together these conditions

Figure 3.5 Technology, institutional environment, and contractual arrangements in economic development

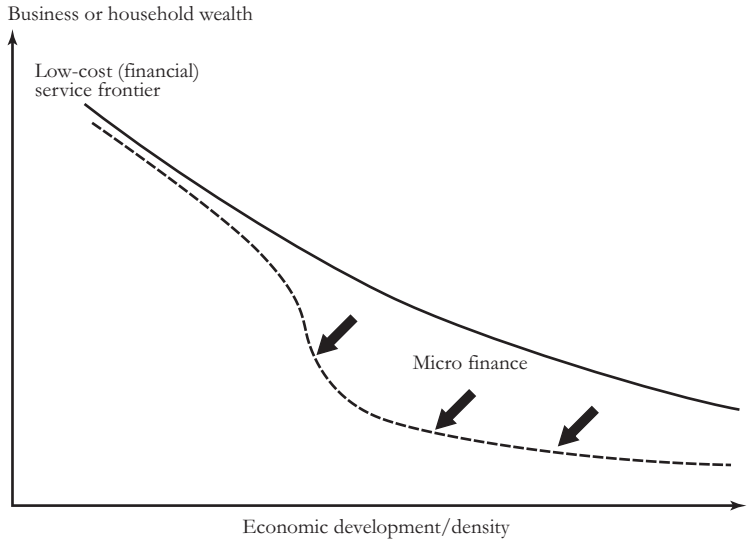


Source: Adapted from Dorward et al. (2005).

lead to a low density of economic activity and high transaction costs (and risks) for providers of services, as it takes time and other resources to search, screen, and monitor transaction partners. Dorward, Poulton, and Kydd (2001) apply this analysis in a review of rural and agricultural financial services and extend Von Pischke's (1993) concept of a financial frontier to map out a low-cost financial service frontier (Figure 3.6). This map shows how market access to financial services is more difficult for small, poor businesses or households (with smaller, more costly transactions than for large businesses) and for lower levels of economic development and density. As a result, the low-cost financial service frontier slopes down from left to right in Figure 3.6: businesses or households located to the right and above this frontier can access such services; those to the left and below the frontier cannot, and their only access to financial services (if any) is to high-cost services that are generally too expensive for financing productive investments and are only used in emergencies.

Figure 3.6 also shows how microfinance systems can be seen as an institutional innovation that shifts the low-cost financial service frontier downward, establishing new institutional arrangements that reduce transaction costs and risks for both

Figure 3.6 The low-cost financial service frontier and institutional innovation



Source: Adapted from Dorward, Poulton, and Kydd (2001).

financial service providers and poor people accessing these services. However, microfinance systems do not normally reach the very poor, nor do they extend into poorer rural areas. They are also not well suited to seasonal rainfed crop production.

The analysis of Figure 3.6 can be generalized to other types of service delivery and economic activity by recognizing (1) the concept of low-cost service delivery frontiers and (2) the need for new institutional arrangements to push these frontiers down.

3.4 Action Outcomes

We conclude this discussion of the analytical framework by considering action outcomes. These may be actions by actors in the action domain or changes in states in the action domain (for example, changes in the attributes of activities or actors, such as increases or reductions in resource stocks, supply, demand, or prices). These outcomes may impact directly on other elements in the action domain, and they may have feedback effects into the socioeconomic, policy-governance, or physical-infrastructural environment (for example, by affecting prices in wider markets).

Outcomes can also be considered in terms of general outcome measures for the action domain (its efficiency, equity, and sustainability), and the welfare of particu-

lar interest groups (such as the poor, landless, or women), and specific attributes of products of the action domain (such as adherence to quality standards).

3.5 Conclusions

This chapter provides a conceptual framework for institutional analysis, linking the elements of the action domain (institutions, actors, and activities) with the physical-infrastructural, socioeconomic, and policy-governance environments. The framework provides a checklist of some of the types of elements and attributes that may be important in institutional analysis, and it also considers ways in which these elements interact. It is clear that institutions, actors, and activities influence one another: activities and their attributes interact with different actors' attributes to shape institutions governing access to resources or opportunities. However, these institutions themselves also shape other attributes of actors and activities.

Agricultural development is embedded in these relationships, but different natural resources, agricultural production processes, and agricultural products have different inherent techno-economic attributes. These attributes tend to promote certain types of contractual arrangement in enforcement and coordination of use and exchange. The effects of existing path-dependent institutions and actors, however, may moderate these tendencies. The result is considerable variability in the way that institutions develop in otherwise similar systems of resource management and production. The way that this variability is manifested in various institutions and processes of institutional change, and the implications for rural people and for agricultural development analysis, are the subjects of the chapters and case studies that follow.

Notes

1. The term "activities" is used here to encompass various production and exchange activities and the resources and products (goods and services) that are involved.

2. The research methods for fieldwork and analysis required for conducting institutional analysis are not discussed here. This topic is important, but it is beyond the scope of this book.

3. There are of course other domains that are important in agricultural development in Africa (insurance and safety nets, for example), but the discussion is restricted to illustrating the application of institutional economics to these two domains.

4. In keeping with the overall framework for analyzing institutions, this section integrates concepts and terminology that are often used differently by those working in transaction-cost economics and collective action/natural resource management and analysis. In integrating these branches into one framework, new terminology is sometimes developed.

5. These are defined in Chapter 1. Note also that the use of the term "contractual" does not imply the use of formal written contracts and can be applied to informal (and sometimes implicit) agreements.

6. The influence of these activity attributes on contractual forms is discussed in more detail in Section 3.2.2 and Chapter 5.

7. The characteristics of actors in these sectors are discussed more fully in Section 3.2.

8. These concepts are explained in more detail in Chapter 2.

9. Although many common pool resources are managed under common property regimes, it is essential to distinguish the two. Common pool resources refer to the characteristics of the resource, which may be managed under public, private, or common property regimes, or they may be open access (Oakerson 1992).

10. An important reason for the establishment of smallholder farmer organizations, for example, is the opportunity to achieve economies of scale in buying inputs, obtaining financial services, or selling produce.

11. Products or services that are not derived from natural resources have zero rates of natural production and hence have potentially high returns to enforcement of exclusive-use rights.

12. The stylized relationships shown in Figure 3.4a have characteristics described by the equation

$$(R/Y)_{as} = R_{bs}\,(1 - z_a)/(Y_{bs} - v_a - [c_a/f]),$$

where $(R/Y)_{as}$ is the risk/return ratio for scenario *s* and contractual arrangement *a;* R_{bs} and Y_{bs} are, respectively, the base risk and base return (under basic market arrangements with minimal transaction costs and single transactions) for *s;* z_a is the proportion of base risk that is removed by adopting *a;* v_a is the additional variable transaction cost per transaction under *a;* c_a is the additional fixed transaction cost under *a;* and *f* is the number of transactions covered by *a.*

In addition, R_{bs} is increasing from R1 to R4 with constant Y_{bs}; z_a, $(c_a + v_a)$, and $c_a/(c_a + v_a)$ are all increasing from market to hybrid to hierarchy arrangements. (Note that $(c_a + v_a)$ is the total transaction costs for all transactions under contractual arrangement *a,* and $c_a/(c_a + v_a)$ represents fixed transaction costs as a proportion of total transaction costs.)

13. The base transaction risk/return ratio on the vertical axis of Figure 3.4b is defined as the ratio that would prevail for a single market transaction under basic market arrangements with minimal transaction costs.

14. These factors affect the values of R_{bs}, Y_{bs}, z_a, v_a, and c_a in note 12.

15. More detailed discussion and the definition of cooperatives are provided in Chapter 5.

Further Reading

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