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Institutional Systems and Economic Growth

LESZEK BALCEROWICZ

It is believed that before 1800, living standards differed little across countries and time (Parente and Prescott 2002). Modern economic growth started around 1800 in Great Britain and its ethnic offshoots and then spread to other Western European countries, setting off an unprecedented acceleration in the improvement of living standards in the West. As the Western economies surged ahead, there was also a substantial convergence of their income levels, especially between 1950 and 1973. The post–World War II period also saw an impressive catching-up of some other economies: Japan and later other Asian Tigers as well as Chile in Latin America. Many countries, however, continued to lag, most notably in Africa, Latin America, and the former Soviet bloc.

To explain these and other differences in long-term growth is one of the most fundamental tasks of empirically oriented economics. Although the literature on this topic is extensive, much remains to be done. There is a broad consensus that growth models focusing on proximate causes of growth—such as productivity and accumulation of capital—cannot provide a convincing explanation for the different rates of long-term growth as these "causes" themselves require explanation. Thus a growing literature focuses on the deeper factors that differentiate the speed of development across countries and time periods and especially on institutional de-

Leszek Balcerowicz is professor of economics at the Warsaw School of Economics, former deputy prime minister and finance minister of Poland, and former chairman of the National bank of Poland. *He is grateful to Andrzej Rzońca for his comments on the first draft of this paper and to Natalia Nazarewicz for her assistance in editing this text.*

terminants of long-run growth. This chapter draws extensively on this literature and attempts to make the following contributions.

First, I distinguish between innovation-based growth, which is potentially universal and lasting, and other growth mechanisms that are situation-specific and transitional.

Second, I sketch a simple model of individual choice and link the impact of institutional systems to this model, distinguishing *information* and *incentive* barriers to innovation-based growth. I also present an extensive discussion of institutional systems that block innovation-based growth and thus convergence, and I show that such systems are broader than closed economies (Sachs and Warner 1995) or systems where producers enjoy monopoly rights (Parente and Prescott 1999, 2002). I attempt to go beyond the existing literature by showing a broader range of such systems and explaining how they block innovation-based growth.

Next I take a brief look at the history of successful growth accelerations. I distinguish between a very small group of countries that maintained a relatively unchanged *liberal* system and achieved accelerated growth and a much larger category that used reform packages to transform a growth-retarding system.

I then analyze such reform packages, distinguishing between economic and political economy considerations and describing the interactions between the two. The discussion focuses on the economics of reform packages—their direction, scope, and time structure—and offers a critical look at so-called nonconventional reform solutions (e.g., village and town enterprises in China). I link the differences in the scope of successful reforms via two variables in the initial conditions: institutional growth barriers and special growth mechanisms. By definition, the former constrain lasting growth to very low levels while the latter explain why growth may transitionally accelerate before more comprehensive reforms are completed or in the presence of only modest reforms.

Last, I discuss the importance of breakdowns of growth, which may reduce long-term average growth, and link them to features of countries' institutional systems. Against this background I distinguish between two overlapping sets of domestic institutions, those that propel and those that stabilize. In the closing section I offer a summary of my findings and suggestions for further research.

Innovation-Based Growth

The mere extension of unchanged production processes and products is not capable of producing lasting growth. Simple observation and economic theory tell us that under such conditions the declining marginal productivity of capital will bring economic growth to a halt. This conclusion is supported by economic history: Before 1800, technology was basi-

cally stagnant and growth very slow. The modern economic growth that started around 1800 has been based on changing technology.

It is thus systemic innovations that increase productivity and bring about welfare-enhancing new products,[1] making economic growth lasting—as long as such innovations continue and shocks do not interrupt growth. I define innovations in a Schumpeterian vein, as applications in the business practice of new ideas: innovative proposals. Some of these "proposals" are inventions—new products from independent inventors or R&D departments in firms and other organizations; other innovative proposals concern business practices. Innovations may affect not only narrowly defined production processes but also transportation, communication, and organization (e.g., "just in time" logistical systems).

Many innovations require or are "embodied" in new capital goods. Therefore, strong barriers to physical investments block innovation-based growth. However, the lack of such barriers and resulting high investment ratio do not guarantee fast growth, as innovations may be constrained by other barriers (as discussed below).

Innovation-based growth includes structural changes such as the reallocation of resources to new production processes and products that otherwise would not spread in the economy. But not all structural changes are related to innovations; some reflect the fact that different categories of consumer goods have different income elasticities of demand. Such differences explain the declining share of agriculture in a growing economy (Engels Law).

Innovative business practices may have domestic or foreign origins; in the latter case we speak of foreign (or international) technology transfer. Because it is difficult for technological leaders in a given field to borrow technology from abroad, progress depends on moving the world technology frontier through inventive activity. Countries that rely on technology transfer instead of their own innovation may nonetheless require domestic R&D capacity to enable the successful adoption and integration of foreign technologies (Griffith , Redding, and Van Reenen 2005).

As successive innovations raise productivity and enhance welfare, countries that are technological leaders in their productive sectors are also leaders in per capita income. Correspondingly, economies that are less technologically advanced display lower standards of living. They can, however, catch up with more advanced economies by adopting their technologies. This is the innovation-based growth mechanism for such economies.[2]

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1. I sometimes call such innovations "genuine" to differentiate them from "easy" innovations, which are pursued under some institutional systems but do not increase productivity or increase consumer welfare.

2. As Weede (2006) points out, benefits accrue not only to the institutions in the advanced economies that produce technological knowledge but also to less advanced economies, thanks to technology transfer.

Why is technology transfer (including related structural changes) the convergence mechanism that makes it possible for less developed economies to grow faster than the advanced ones? There are at least two reasons. First, it is more difficult and costly for advanced economies to bear the risks and R&D expenses necessary to shift forward the technology frontier (Barro and Martin 1997).[3] Second, it is then cheaper and faster for the less advanced economies to adopt technology already invented and applied in the advanced country than to invent or reinvent it (Gomulka 1990). The first regularity explains why the less developed country's technological growth may be faster than in advanced countries, the second explains why technology transfer accelerates the growth of nonadvanced economies.

However, the fact of being poor is not a guarantee that a poor country will grow, nor that it will grow faster than a rich one. Poverty neither generates growth nor condemns a country to future poverty (the poverty trap). The *reasons* for developmental lag have to be identified, removed, and replaced by conditions that enable effective technology transfer and other growth mechanisms. These conditions are often referred to as "social capability" (e.g., Abramovitz 1986), which in turn is usually reduced to the domestic capacity to learn and adopt foreign technologies.[4]

Innovation-based growth is the only growth mechanism capable of producing lasting growth, but there are other growth mechanisms. One is the Ricardian comparative advantage—improvement in allocative efficiency, based on the expansion of trade and effective even if technologies and products do not change. The Ricardian comparative advantage may explain the improvement in the living standards of the European trading nations during the expansion of trade in the 15th to 17th centuries.

Some situation-specific mechanisms (i.e., those inherent to a country's conditions) can also produce transitional economic growth. For example, the communist system operated with enormous waste (slack) and produced some very repressed sectors (e.g., agriculture in China, services under Soviet socialism), and some countries operate at low levels of (official) employment. Removing these weaknesses may accelerate growth for a while and—as they are usually much more widespread in the underdeveloped countries than the advanced ones—also constitute a convergence force. I return to situation-specific growth mechanisms in a later section.

In the next sections I focus on innovation-based growth as it is the main force for lasting development and convergence.

3. Some theories of endogenous growth (e.g., of P. Romer) may be interpreted as questioning the second assumption and thus convergence based on technology transfer. However, as Sachs and Warner (1995) point out, this is not validated by experience.

4. Keller (2004), for example, focuses only on this factor and disregards the question of incentives.

Determinants of Individual Choice

As a proponent of methodological individualism, I recognize that aggregate outcomes (e.g., economic growth) ultimately depend on individual decisions. These decisions may be conceived as resulting from the interaction of two variables: (1) individual disposition and (2) a choice situation (for more on this, see Balcerowicz 1995, 4–15).

Personal disposition is a lasting or relatively lasting feature that affects human decision making (Madsen 1968). It is both motivational and cognitive. The former determines what utility an individual assigns to various objects and courses of action, the latter represents the individual's informational capacities, including the capacity to learn.

A choice situation is any situation that includes more than one option (see Greif 2006), including a situation in which an individual does not perceive a choice or thinks that there is "no choice" because one option is incomparably better than the others.

An individual's disposition determines which variables are personal motivators. A variable is a motivator if the person reacts to a change in its intensity as either a reward or a punishment. Thus differences in value linked to the options perceived in a choice situation constitute positive or negative incentives.

For the purpose of this discussion I suggest that four main categories of motivators define an individual's utility function:

$$U = U(EM, ES, IM, E) \tag{7.1}$$

where *EM* stands for external motivators of a pecuniary nature (e.g., income or wealth) and *ES* represents external motivators of a social nature; these result from emotional needs and the tendency to maintain or increase self esteem (Madsen 1968) and include reputation, social position, prestige, and power. *ES* is, among other things, the basis for the power of social norms, those enforced by the informal reactions of other members of a given group and not by a specialized enforcement apparatus (see Elster 1989). Some variables are both *EM* and *ES*; for example, income or wealth is for many individuals not only a source of consumption but also an indicator of social position. *IM* is intrinsic motivation, for example, personal achievement (McClelland 1961) or pleasure derived from an intellectually stimulating activity; such activity is psychologically rewarding because of the need for sensory and intellectual stimulation (Hebb 1958). Finally, *E* denotes unpleasant effort, related to boring or excessively stressful actions.[5] This motivator helps to explain the innovative defi-

5. Therefore, actions differ in the extent to which they are self-rewarding (at least to some people) or involve an unpleasant effort. Self-rewarding actions require less external motivation than actions related to *E*.

ciency of a monopoly relative to enterprises facing competition (more on this below).

An individual's cognitive and motivational dispositions "translate" each choice situation into a mental representation of a "feasible set." The feasible set has two dimensions:

- a set of actions that the individual perceives as feasible; and
- the perceived distribution of motivations across these actions and, as a result, their relative utility or preferential ordering.[6]

We now turn to barriers to innovations. Individuals do not introduce innovations

- if the innovative proposals are absent in their feasible set (see Elster 1989); I call this an *information barrier* to innovation.
- if such proposals are present in their feasible set but, given the choice situation and the individual's motivational disposition, they are not attractive because of their low expected utility relative to alternative options (e.g., routine activity, robbery, rent seeking); I call this the *incentive barrier* to innovation.

Moving from the individual to society, the information barrier is the absence of innovative proposals in the feasible sets of all the appropriate decision makers in a given society. The incentive barrier exists when the innovative proposals are present in the feasible sets of at least some of these decision makers but are not selected because their expected utility is too low relative to that of other options. Some innovative proposals may "hit" the information barrier while others are stopped at the incentive barrier.

In subsequent sections I discuss first the factors responsible for the information barrier and their interaction with the factors responsible for the incentive barrier. Then I analyze the latter factors at greater length. But before proceeding to those discussions I will link the variables that determine individuals' decisions—their dispositions and choice situations—to institutions.

Linking Individual Choice to Institutional Systems

Discussions of economic growth and of other aggregate economic outcomes increasingly recognize that capital accumulation, productivity growth, and technology transfer are only proximate determinants that de-

6. This ordering does not need to be complete; in practice, one action (or type of action) is preferred, given the motivational dispositions, over the other options, which are often not preferentially ranked.

pend on deeper factors such as institutions.[7] I define institutions as all nonmaterial and relatively enduring factors that are both external to the individual and capable of influencing an individual's behavior (Balcerowicz 1995; for a similar definition, see Greif 2006). Institutions shape individuals' actions and especially their interactions (transactions) in the sense that sufficiently large differences or changes in institutions produce differences in these actions and interactions. Institutions are usually either *formal* (i.e., related to the existence of the state) or *informal* (e.g., the caste system in India). Informal institutions—social norms and informal networks—constitute what is usually called the "culture" of different societies.

In discussing a society's economic growth and other aggregate outcomes, it is useful to look at all the institutions that may affect the behavior of the members of this society.[8] How do differences or changes in a society's institutional systems affect individuals' decisions? Here we come to the link between institutional systems as a complex variable and the determinants of individuals' choice. I have identified three types of impact of this variable on individuals' decisions (Balcerowicz 1989):

- Institutional systems differ in the types of positions they offer, and these positions are defined in terms of the typical choice situations faced by the individual in the position (the *situational impact*).
- Institutional systems differ in the ease (or difficulty) with which an individual can access decision-making positions (the *selectional impact*).
- Institutional systems that have operated for a longer time may produce some specific dispositions (e.g., beliefs, attitudes, and skills) in the members of society that participate in these systems (the *formative impact*).

Situational Impact

Let us first consider the situational impact of the institutional system, the types of positions (or roles) available in the system, and the typical choice situations faced by those who occupy them. Examples of such positions or roles are private entrepreneur, private monopolist, manager of a state-owned company, deputy in a democratic parliament, member of a ruling

7. Other determinants include, first of all, physical environment. But differences in institutions can bring about larger differences in economic performance (see, e.g., North and South Korea) than differences in physical environment. Besides, institutions can be more easily changed than geographical factors.

8. Institutional systems of various countries may have some similar aspects or components (e.g., similar laws). This is especially true for countries of the European Union. Besides international law, membership in international organizations may be regarded as a common part of various countries' institutional systems.

group in a dictatorship, worker in a state-owned enterprise, worker in a private firm, and caste member in India. In addition, people may have different positions in different spheres of life; for example, an individual may be a member of a voluntary association and an employee of a public agency.

Differences in countries' legal framework, property rights, competition, and political regime are likely to show up as differences in individual positions. In this way there is a link between these institutional or institutionally determined variables and individuals' actions. One crucial difference among institutional systems is the extent to which they offer productive positions, those that allow and encourage those who occupy them to pursue productive actions (e.g., saving, investing, inventing, and innovating).

Special sets of positions linked by a common origin and common rules are usually called organizations. Of particular interest in every institutional system are the top decision-making positions, which are usually part of the political system. The key question is, What are the constraints (if any) on the top political rulers? This is crucial both for the type and security of individual property rights and for the likelihood of policies (i.e., rulers' actions) that produce economic shocks (discussed below). In this sense the basic features of a political regime and of the fundamental economic institutions are two sides of the same coin. More generally, various individual liberties are determined by limits on political powers rather than by lists of rights.[9] If one wants to know how extensive and lasting these liberties can be, one should look at constraints on these powers, including checks and balances.

The more the decision-making power is concentrated at the top, the less room for acting—and especially interacting—is available for individuals other than the top ruler(s).[10] Free interaction includes the spontaneous development of new institutional arrangements such as new types of contracts and new forms of organizations. Institutional systems with highly concentrated decision-making power are thus deprived of the possibilities of bottom-up institutional innovations—that is, they are characterized by institutional rigidity. In contrast, systems where such power is limited, so that individuals have a large scope for interacting, can spontaneously evolve. This difference in the scope of free interaction is of tremendous importance for institutional dynamics and for innovation-based growth (as discussed below).

9. This is why James Madison, main author of the US Constitution and a proponent of these liberties, was not enthusiastic about the Bill of Rights but pushed for constraints on political powers.

10. This scope depends not only on institutional factors but also on geographical distance and technology. For example, the people in Siberia in Tsarist Russia had more de facto freedom than those who lived in Moscow. However, technological advances in transportation and communication have reduced the importance of distance for the efficacy of political control.

In considering the situational impact of institutional systems, one usually varies the institutionally determined positions while holding the individuals' dispositions constant—that is, one assumes certain dispositional invariants in human nature. These invariants include a general utility function and certain informational capabilities.[11] This is a typical approach in theoretical social sciences, especially economics, and enables the isolation of the impact of institutional and, more broadly, situational variables on individuals' actions.

But although individuals share certain invariants, they also differ along many dimensions—talent, ambition, intelligence, character, propensity to take risks, and so forth. One can assume that every large society displays a wide distribution of individuals along these psychological dimensions.[12] And as individuals differ, it matters what positions they occupy, especially those with decision-making power.

Selectional Impact

This intersection of individual invariants and institutional positions brings me to the selectional impact of institutional systems. These systems differ not only in their positions but also in the mechanisms that govern the access of different individuals to higher decision-making positions. In other words, institutional systems differ in the extent of upward social mobility they allow, and this bears on economic growth and other aggregate outcomes. Characterizing the higher positions as political and economic explains upward political and economic mobility. Of course, institutional systems differ in the extent to which these two categories overlap or are separated. This is one of their most important variable dimensions. For example, under the communist regime, political and economic decision-making power were concentrated in the same higher positions, whereas under democratic capitalism they are separate.

The importance of the variability of individuals and thus of selection mechanisms depends on what types of positions are provided by the system. Consider the issue of the mode of succession in top political positions: It may be through election, cooption, an incumbent's nomination of his/her successor, or a coup d'état. These mechanisms differ in the variability of the psychological characteristics of the office holders they allow, with elections probably enabling more variability than other modes.[13] And the

11. I discussed these invariants at greater length in Balcerowicz (1995). Psychology may provide new information about these dispositional invariants that, if implemented in economics, may give rise to new insights. One example is behavioral finance.

12. I have in mind "natural" societies (e.g., nations) created by birth and not by self-selection (examples of the latter include monasteries and Israeli kibbutzes).

13. This is just a hypothesis, as I have not found any empirical analysis of that issue.

differences in the personality features of those who hold decision-making positions matter because of the very nature of these positions. (Various modes of political succession also differ in the degree of instability they produce, and this can affect the economy, too.) Notice, however, that the impact is stronger the larger the concentration of power in the top political positions. In other words, the weaker the constraints on the top political positions, the greater the scope of differences in the personality features of the successive rulers and thus the scope for different policies. For this reason, analysis of the performance of dictatorships must include the psychology of dictators. Their psychological characteristics are also relevant to institutional rigidity or change: Individuals who ascend to positions of concentrated political power have the possibility to reduce this power by changing a basic characteristic of the inherited system.[14] Whether they do that or preserve the system depends on their personality.[15]

Let us now turn to the issue of individuals' access to economic decision-making positions. Rigid institutional or institutionally determined barriers (e.g., the caste system, slavery, and serfdom) can block the mobility of large groups of individuals regardless of the personal features of the group members. Less drastic barriers to mobility include unequal access to education, finances, and state protection for individuals with similar characteristics. One may assume, other things being equal, that the performance of societies plagued by serious mobility barriers must be worse than those that are closer to the meritocratic ideal of equal opportunity. The second situation is obviously to be preferred on the grounds of equity.

However, if we focus on efficiency alone, we can't help but notice that the importance of upward social mobility depends, again, on the first dimension of the institutional system, that is, what kinds of position it includes. If there are productive positions, especially for private entrepreneurs acting under competition, then the easier the access of talented and hard-working individuals to these positions, and the better for economic growth. Free enterprise and social mobility produce better results than free enterprise without social mobility. Under a system that combines a broad set of productive positions and social mobility, individuals can choose positions that best suit their psychological profiles, and as a result positive self-selection forces operate.[16] This strengthens the spontaneous evolution of the system.

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14. Examples include Gorbachev and Yeltsin in the former Soviet Union.

15. But dictators may to some extent be prisoners of their own power apparatus, which will defend the dictatorship as the source of privileges to its members. This was the situation for some tsars in 19th century Russia.

16. Under a system with concentrated political power negative self-selection may operate: Individuals with morally reprehensible characteristics are likely to be attracted to the power apparatus.

However, certain types of institutional systems exclude the most productive positions (more on this below). Under such systems social mobility matters much less for efficiency because talented, hard-working individuals cannot move to such positions for the simple reason that the latter do not exist. The society's entrepreneurial potential is then wasted. In a similar situation, productive positions nominally exist, but rigid institutional barriers prevent anyone from accessing them. The long-term economic performance of institutional systems without productive positions is likely to be worse than that of systems that include such positions but limit access to them.[17] Even the best individuals in unproductive positions cannot outperform less talented persons in productive positions.[18]

Formative Impact

Finally, two very different institutional systems operating for a long time in two similar societies may produce varying special dispositions (e.g., skills, attitudes, and beliefs). I call this a *formative impact* of institutional systems. The term does not, however, indicate how important and lasting this impact can be. Comparative psychological research, for example, on East and West Germans and on North and South Koreans, would help to elucidate this issue. The psychosocial legacy of a regime may be especially important when an attempt is made to replace it by a different one, the most prominent example being the transition from socialism to capitalism in Central and Eastern Europe.[19]

The bulk of economic research on institutions focuses on their situational impact. This appears to be the most important channel, and it is easier to model and to investigate empirically than the other two channels.[20] But many interesting questions related to the other two kinds of impact of institutions on aggregate outcomes await research. For example, the economic ascent of the West is usually attributed to the emergence of productive positions—those of private entrepreneurs acting under competi-

17. For example, successful entry into entrepreneurship may depend on political connections. Keefer and Knack (1997) suggest that persons who become entrepreneurs thanks to such connections may have lower entrepreneurial potential than those who become entrepreneurs under free entry.

18. Different institutional positions may be compared with the different capital equipment used by individuals.

19. I believe (Balcerowicz 1995) that if socialism left a psychosocial legacy, then even more emphasis should be on its radical institutional transformation: the theory of cognitive dissonance. Festinger (1957) tells us that people are more likely to adapt internally to external changes if they are radical and therefore perceived as irreversible than if they are small and thus regarded as easy to reverse.

20. Sociology and anthropology deal more with specific cultures and therefore include research on the formative channel.

tion. One wonders about the role of the reduction of institutional barriers (e.g., the abolition of serfdom) to entry into these positions. Or there are now some useful indicators for measuring economic freedom; they deal mostly with the administrative barriers that an average entrepreneur has to overcome in entering the business.

One particularly important question remains: What is the distribution of barriers across individuals with different socioeconomic characteristics but similar psychological profiles? A potentially useful example, the psychosocial legacy of socialism in the former Soviet bloc, is the subject of much speculation but little empirical research.[21] Such research is possible and would be very interesting, for example, on the impact of intergenerational dynamics on initial socialist attitudes or on differences in the attitudes of workers at state-owned and privatized enterprises.

In the following section, however, I focus on the situational channel, as it appears to be more important for our topic, differences in economic growth. Whenever possible, given the state of research, I will also invoke the selection channel.

The Information Barrier to Innovation-Based Growth

The principal reason for innovations not being implemented in a society is the absence of innovative proposals in the feasible sets of decision makers. It is also true that such proposals may be known to them but rejected in favor of other activities (the incentive barrier). I briefly discuss the factors behind the information barrier and how they interact with those that produce it.

A broad look across time and space reveals three situations in which innovations are affected by the information barrier. Innovative proposals

- are not produced and are therefore absent in all societies;
- are not produced in a given society but exist in other societies; and
- are produced in a given society but they are not known to the appropriate decision-making individuals in this society.

The first situation characterizes the distant past when humans were organized in small hunter-gatherer groups with basically stagnant technology. How some of these groups evolved and then introduced the major innovation of agriculture is beyond the scope of this discussion.

In situations 2 and 3, the absence of innovative proposals is due to broadly conceived communication barriers (including limited capacity to

21. There is much talk of "homo sovieticus" but at the same time an amazing amount of adaptation has taken place since radical reforms were introduced.

understand the innovative ideas). These barriers may be external (i.e., vis-à-vis other societies) or domestic (e.g., between scholars and rulers or universities and firms).

Until relatively recently, external isolation was mostly due to geography. In the modern world, however, it is institutionally determined and takes the form of politically imposed bans on contact with foreigners. Such bans are characteristic of systems with a heavy concentration of political power in society (e.g., Imperial China, China under Mao, or other communist countries).

Systems that impose external isolation on societies often display features that produce incentive barriers to innovation, too. Therefore, even if isolation were reduced, the incentive factors would still block innovation. For example, China before the isolation period produced a stream of pioneering innovations, but they were not implemented because of their relative low utility in the eyes of decision makers, who regarded innovators with suspicion (Baumol 2002). The command economies were plagued by incentive problems (as discussed below); for example, the relative opening of Poland in the 1970s resulted in poor choices and inefficient implementation of Western technologies. Thus information barriers tend to go hand in hand with incentive barriers.

One of the reasons for this joint occurrence is that every kind of behavior depends on incentives—the production of innovative proposals, communication of these proposals to the appropriate decision makers, and the search for innovative ideas. If institutional arrangements block the introduction of innovative projects, few people will bother to produce them, communicate them, and search for them. Thus an information barrier may result from incentive factors.

However, there is also a reverse link, from external isolation to incentives: Isolation not only blocks the inflow of foreign technologies but also reduces competition, and this matters for the utility of innovation relative to routine activity. Isolation also limits the scope of the market, thus reducing the possible rate of return from innovations in two additional ways. First, it worsens the profitability of implementing new, large-scale technologies. Second, it raises the unit costs of activities that distinguish innovations from routine activity. These costs consist of expenditures for acquiring the new technology (costs of original research or of imitation) and the start-up costs of learning by doing in the early phase of production that uses the new technology. Both of these costs are largely fixed, which means the unit costs decline with the scope of the market. Obviously, the negative effects of external isolation on incentives to adopt innovations are much more serious in small than in large economies.

In the following section I focus on the institutional variables that shape the relative utility of innovations and related activities (investment). Because incentive factors, as I stressed above, are the most powerful deter-

minant of innovation-based growth, I start with institutional arrangements that block or seriously limit such growth.

The Incentive Barrier: Institutional Systems that Block Innovation-Based Growth

This section deals with institutional arrangements that so reduce the relative utility of innovation and of related activities in the estimation of a society's decision makers that genuinely innovative proposals are rejected in favor of alternative options. I assume here the general individuals' utility function and ask, What institutional arrangements could structure the distribution of motivators across genuine innovations and alternative courses of action such that the former rank lower in the decision makers' preferential ordering than the latter? In other words, I focus on what I have called the situational impact of institutional variables on individuals' actions.

The impact of institutional systems (and of situations in which they operate) that produce an incentive barrier to innovation is concentrated on different arguments of individuals' utility function. The most important (and most researched) case deals with systems that structure pecuniary motivators (*EM*) in such a way that they discriminate against innovation or against activities that require it. It is (usually implicitly) assumed that social norms related to *ES* do not play any role as a barrier to innovation and that opportunities related to conquest or to the exploitation of subjected territories do not exist. I will adopt the same assumptions and focus on this category as it represents most countries where innovation-based growth is blocked in the modern world. However, I will consider the impact of innovation-blocking systems not only on *EM* but also on the required, unpleasant effort, *E*. Otherwise it is difficult to explain why such systems block innovation. At the end of this section I briefly discuss institutional systems that existed in the past and might have blocked innovation because of social norms and/or because noneconomic actions provided more attractive opportunities to gain wealth to the key decision makers than productive activities (other than agriculture).

Systems that block innovation-based growth because of their impact on *EM* (and *E*) may be divided into

- those that block investment in physical capital and thus indirectly block innovation, which frequently requires such investment; and
- those that create specific barriers to innovation.

Systems of the first group limit the investment ratio to a very low level. However, their negative effect on growth and convergence is mostly due to the fact that this category applies not only to routine investment but also to the accumulation of physical capital, which would embody technical

change.[22] In addition, some of these systems discriminate against innovative investment; therefore there is a certain overlap between the first and second group of innovation-blocking/institutional frameworks.[23] Systems that belong to the second category may display a high investment ratio and thus block innovation-based growth, not through investment barriers but through mechanisms that reduce the utility of innovations relative to that of routine activity or "easy," nonproductive innovations.

Let us start with the first group. Low investment may be caused by low or highly uncertain returns to individual investors or by a low domestic savings ratio when access to foreign savings is limited.

The returns to individuals' investment depend on a crucial institutional variable: property rights. The literature on this important issue is huge and growing; I will make here only some clarifications necessary to this discussion of innovation-based growth.

It is important to distinguish between the structure of property rights and the level of security (protection) enjoyed by those who hold them. The content determines whether private economic activity is allowed or banned, and if allowed, then under what conditions regarding entry, the functioning of private entrepreneurs, and the division of the total effects of their activity into those that accrue to them and those that are appropriated by other agents. This definition indicates that property rights are shaped internally by regulation, contract law, and taxation.[24] The security of property may be defined by the extent of uncertainty with respect to the entrepreneur's private returns from investment.[25]

Generally speaking, barriers to investment result either from the improper structure of property rights that are effectively enforced or from the insecurity of property rights that have a proper structure.[26] The first

22. If technology were stagnant, then the negative impact of limiting investment on economic growth would be much reduced. However, most productive new technologies require investment (Abramovitz 1993).

23. This means that the proportion of innovative investment under such systems is lower than in innovation-friendly frameworks. But even if it were the same, the amount of such investment allowed under the systems with low investment ratios would be lower than under those with a higher ratio but the same composition of investments.

24. Property rights with reduced decision-making power (the control rights of their holders because of regulation are often called "attenuated."

25. This uncertainty may be expressed by parameters (e.g., standard deviation) of the statistical distribution of possible returns or by subjective measures based on investors' perceptions.

26. This formulation expresses the general idea that the effect of the content of property rights and of the level of their protection on economic efficiency are not additive. If the content is improper (i.e., the property rights guarantee a private or public monopoly), it is doubtful their increased protection increases overall efficiency, as it implies that competitors who dare to enter the monopoly fiefdom would be more harshly prosecuted. In contrast, in the case of property rights providing for a free enterprise, the higher the protection of individual entrepreneurs the better for economic efficiency.

case is common in traditional, small, kin-based communities with collective property rights that tend to equalize individual returns regardless of individual effort. Kin-based redistribution, based on informal property rights and given individuals' motivational invariants, discourages individual accumulation. Only the assumption of strongly altruistic or collectivist motivation could change this conclusion, but judging by the results, such an assumption is not realistic.[27]

A more modern example of the first category is represented by systems that allow nominally private property rights but subject returns from private investment to confiscatory taxation. This practice may be due to ideological reasons (as in the case of a private sector in the centrally planned economy) or to fiscal needs resulting from an overextended budgetary sector. The latter situation exists in some less developed countries because of an oversized public bureaucracy and/or excessive (and often badly targeted) social spending. State-enforced redistribution may have similar effects to that of kin-based redistribution in traditional communities. The economics of such situations is not complicated: Predatory taxation must reduce private investment.[28] More interesting is the political economy question of why such socially dysfunctional systems come into being and persist. Generally speaking, they usually owe their origin to politico-ideological breakthroughs and, once created, reproduce their own clientele that supports their continued existence and resists reforms.

In discussing predatory taxation I had in mind official taxes. However, the private returns to investment are reduced by all forced payments imposed on an entrepreneur, both regular and corruption taxes. There are many countries where the former are low and the latter high, resulting in large forced payments and low investment.[29] This was also the case in Imperial China, where confiscatory corruption payments especially affected innovation.

From the analytical point of view, persistent and widespread corruption is not just an aberrant behavior of public officials but something with institutional roots. Entrepreneurs pay both official and corruption taxes because officials use a credible threat of exercising state power to enforce payments: In the case of official taxes, that power is ultimately the penal

27. The communal nature of property rights is not the only reason for the low level of economic development of traditional, kin-based communities. Some of them have more individualistic property rights, but the scope of private transactions is limited by enforcement that does not extend beyond members of the group (see, e.g., Greif 2006).

28. Excessive budgetary spending often reduces investment and growth through an additional channel: chronic fiscal deficits, which absorb private savings, produce macroeconomic instability and related uncertainty that affects private investment, and lead to crises (for more information, see Rzońca 2007).

29. This explains why the correlation between only the official tax burden and investment and growth is weak. A different picture emerges if one links the total taxes a firm must pay and these variables. On the links between corruption and private investment see Frye (2001).

code; in the case of corruption taxes, it is the instrument of pressure. In this sense, corruption payments (as distinct from purely private predation) owe their existence to the state or, to be more precise, to its regulations, which seriously damage private returns from economic activity. And these regulations must be eliminated so that the very basis of corruption—the credible threat of using state power—is eliminated.[30]

Systemic corruption may be categorized either as an improper de facto structure of property rights due to excessive regulations or as poor protection of official property rights, described by their legal definitions. In either case its impact is clear: Larger corruption, ceteris paribus, reduces private investment compared with smaller corruption.

Impacts of Improper Structure of Property Rights

The impact of the insecurity of private property rights on private investment becomes clear when the rights are properly structured but investors are subject to predation, not from public officials but from nonofficial agents. This is the case in weak or failed states that do not perform well, or at all, the constitutive function of a state: the protection of individuals and of their property, including the enforcement of contracts.[31] The huge uncertainty these situations generate, if effective private protection does not exist, must limit investment to a very low level. Their impact is thus similar to an egalitarian redistribution in kin-based communities and to confiscatory taxation in some efficient but predatory states.

It is clear that some institutional systems may combine features of the models I have sketched. For example, officials' predation may go hand in hand with weak defense of property rights against nonofficial predation. High regular taxes, if spent on bloated bureaucracy or on oversized social transfers, can be combined with a low level of law and order. Therefore, these "mixed" systems are also bound to produce low expected returns from private investment.

Systems that reduce the rate of investment may be especially detrimental to investments in new and superior technology. For such investment is likely to be more visible—because of its larger scale or its novelty—than

30. Two additional comments are in order. First, not all regulations that produce compliance costs can and should be eliminated. For example, sanitary and safety regulations are usually justified and need not produce corruption. Second, corruption is not related only to official regulations but may also be present in public procurement or in the legislative process. The main remedies for these kinds of corruption are transparency and a strong and impartial judicial apparatus.

31. I leave aside here a fundamental question about the extent to which private protection (either contractual or self-help) can substitute for state protection. This issue deals—in its philosophical dimension—with the rationale for the very existence of the state. For an in-depth discussion, see Nozick (1974) and Greif (2006).

noninnovative investments and therefore provoke more predation, either from the officials or from private agents, in systems where private property rights are badly protected (Gonzales 2005).[32]

Finally, I note that investment in some countries may be limited by low domestic savings rather than low returns of investment. Such countries display high returns to investment but a low investment ratio; a prominent example is Brazil (Hausman, Rodrik, and Velasco 2005). Domestic savings may act as a constraint on investment because of imperfect international mobility of savings, denoted as home bias. In addition, countries with a history of macroeconomic crises[33] may have particular difficulty in attracting foreign savings. The question arises as to what factors are likely to limit domestic savings in the presence of high returns to private investment. The most likely candidate is an overextended welfare state, which reduces precautionary private savings. Fiscal stance may thus limit investment in several ways: by producing high taxation that reduces the return to investment, by bringing about chronic budget deficits, and by lowering domestic savings.

Impacts of Improper Protection of Property Rights

I now turn to the second group of institutional systems that block innovation-based growth: those that constitute a barrier to innovation without necessarily affecting the rate of investment. What these systems have in common are serious deficiencies in the content of property rights, not in their security.

One such system is analyzed by Stephen Parente and Edward Prescott (1999, 2002), who single out widespread and persistent working practices that perpetuate the use of inefficient technologies by preventing the shifting of labor, both within and across firms, to new technologies. They illustrate this model by pointing to the example of India under British rule: The country was incapable of introducing the superior British technologies in the textile industry even though it was open to British capital (and British technology had been successfully adopted in Japan). Parente and Prescott stressed that for working practices to be an effective barrier to innovation,[34] they have to be protected by the state.

32. This is why high official taxes without predation may be less detrimental to innovation-based growth than low taxes and insecure property rights.

33. These crises may be linked to the weakness of stabilizing institutions, which I discuss below.

34. In terms of individual choice, this barrier may be interpreted as factors that either eliminate superior technology from entrepreneurs' feasible sets or burden its introduction with such effort that its utility is less than the continued use of inefficient technology.

This category must include the institutional blockade of domestic and foreign competition by giving the monopoly position to crippled domestic firms (crippling institutions include not only restrictive working practices but also state ownership). Otherwise, domestic or foreign entry would undermine the profitability of the enterprise subjected to restrictive, anti-innovative working practices and thus crowd them out. This point may be generalized: Any institutional arrangement that blocks the efficiency potential of domestic firms requires—as a functional necessity—their protection from competition[35] (or permanent subsidies to them).

The situation discussed by Parente and Prescott includes restrictive working practices and, as their necessary complement, the monopoly rights granted by the state to the domestic firms crippled by these practices. The authors stress in their conclusion (1999, 1231) that "Until now, support for the view that monopoly rights can lead to large inefficiencies and impede economic progress has been empirical in nature. Theory provided no economic mechanism by which monopoly could have large effects. In this paper, we provide a mechanism for monopoly rights to have large effects upon aggregate output." However, Parente and Prescott deal with a special case when monopoly rights affect economic efficiency through restrictive working practices as their necessary complement. What about monopoly rights of the terms without the restrictive working practices? What are the incentive mechanisms by which the monopolistic position of domestic firms affects innovation? I agree with Parente and Prescott that the theoretical literature on this important topic is surprisingly scarce, and the bulk of it deals with the static deficiencies of monopolies.

Impacts of Monopolies: The Private Monopoly System

I distinguish here two types of institutional systems with monopolistic suppliers in the product markers and point out the mechanisms by which these systems discriminate against innovation.

I call the first model the *private monopoly system*. Under this system producers have private property rights but do not face competition. Competition is another concept that, despite extensive literature, needs some clarification. What I have in mind here is competition as an incentive-reallocation mechanism. The two functions are organically linked: Competition can act as an incentive mechanism with respect to suppliers only if they can attract the resources to realize their plans. Such a competition requires three concurrent conditions (Balcerowicz 1995):

35. But the reverse is not true, as protectionism is due not only to functional necessities but also to ideological considerations (economic nationalism, the misuse of infant industry argument) or to rent seeking.

- Demand must be able to shift among alternative products.
- Suppliers must include those who are capable of and willing to undertake actions that result in outcomes that attract demand and thus produce a competitive threat to other suppliers.
- Shifts in demand must have serious incentive consequences for the suppliers affected by them.

If even one of these three conditions is not met, competition as an incentive-reallocation mechanism cannot operate. And in a number of institutional systems—all varieties of the private monopoly model—at least one of these conditions is not fulfilled.

Buyers do not have a choice among products if there is only one product because of blocked entry and a small economy, as is the case with an externally isolated economy or with royal monopolies granted in past centuries to selected individuals. However, there may be many supplies but still no choice—and no competition—if all are subject to restrictive price and quality regulations and thus prevented from producing new outcomes that might pose a competitive threat to other products. This was true of medieval guilds and nowadays is approximated by heavily regulated service industries in some countries (e.g., until recently in Japan; see Lewis 2004). Finally, competition as an incentive-reallocation mechanism is excluded if initially successful firms cannot expand because of the rigid nature of the input markets or if the decision makers in those firms cannot reap the benefits of their market success because of steeply progressive taxation or wage regulation. Competition will also be excluded if failure in the market does not have serious consequences for the firm and its decision makers—that is, if they do not face bankruptcy or some other soft budget constraint.

Different mechanisms are behind different cases. Efficiently enforced restrictive price and quality regulations have incentive effects equivalent to the restrictive working practices analyzed by Parente and Prescott (1999, 2002). They burden innovative proposals with such a threat of penalties in terms of *EM* and additional *E* that the expected utility of their implementation falls below that of simply continuing the routine activity.[36]

But I focus here on an analytically more interesting case: that of long-term monopolies that are free to innovate (i.e., they are not subject to innovation-restricting regulations).[37] A review of a whole system

36. The declining effectiveness of the enforcement of these regulations could change the incentive calculus, as happened with medieval guilds. This shows, again, that the efficiency effects of changes in levels of enforcement depends on what is enforced.

37. However, the state's granting of monopoly power often goes hand in hand with constraining regulations (e.g., price or rate of return) justified by the attempt to curb this monopoly power. Thus there is a double link between restrictive regulations and monopoly: on the one hand such regulations require that the affected firms be protected from competition, and on the other hand established monopolies are often regulated.

dominated by such monopolies shows that it excludes one important innovation-incentive channel: The chances to discover new technologies are directly related to the number of people or departments engaged in the search for and testing of new possibilities (Gomulka 1990). And radical innovations are often introduced by new entrants. On these two accounts the private monopoly system has to be inferior in genuine innovation than a system with free entry and competition.

But what about the monopolies themselves? Why shouldn't they innovate? After all, some analysts follow Joseph Schumpeter (1962 [1942]) in suggesting that a certain degree of monopoly power (but not a lasting monopoly) is conducive to innovation. Here we come, I think, to the theoretically least explored link between monopoly and innovation. Empirically we know that private enterprises under competition are much more innovative than those that enjoy lasting monopoly. But why?

One theoretical possibility is to postulate that monopolies have an aspiration level of *EM* that can be easily achieved without innovation and without the related effort and technical risks. This explanation in the spirit of Herbert Simon (1979) may be applicable to some real-life situations.

However, one can suggest other mechanisms that produce an incentive barrier to innovation without invoking the satisfying model of choice. A lasting monopoly is institutionally based and the political powers that grant this privilege are likely to impose some requirements on the monopolists. In other words, to explain its behavior one must remember that a lasting monopoly is a political fact that can have certain political consequences. One likely consequence is the responsibility of a monopolist for an uninterrupted supply of goods: It has a monopolistic privilege to supply, for by granting a monopoly, the ruler took the responsibility of ensuring a supply for the domestic population. Now, innovations—as distinct from continued technological status quo—may end in technical failure, especially the more radical they are. Therefore, the responsibility for supply system may burden the potential pecuniary rewards of more radical innovations with such a risk that their expected utility in terms of *EM* would fall below status quo to "easier" and thus probably less productive innovations.

Finally, even if the political responsibility for supply is not a factor, still another mechanism may expose innovations under the monopoly system to an incentive barrier. Remember that innovations require an extra effort compared to continued routine activity, and this effort is likely to grow with the degree of technical novelty and social usefulness of the innovative proposals.

The expected utility of alternative actions depends not only on *EM* but also on other motivators, including *E*. Focusing on only these two variables yields the following utility function:

$$U = U(EM) - U(E) \tag{7.2}$$

Let us now denote the *relative* utility of innovation as $U_i - U_c$, where U_i stands for the utility of innovating and U_c for that of continuing the routine activity. By virtue of (6.1):

$$\begin{aligned} U_i - U_c &= [\, U_i\,(EM) - U_i\,(E)\,] - [\, U_c\,(EM) - U_c\,(E)\,] \\ &= [\, U_i\,(EM) - U_c\,(EM)\,] - [\, U_i\,(E) - U_c\,(E)\,] \end{aligned} \tag{7.3}$$

The component $U_i\,(E) - U_c\,(E)$ denotes the extra effort required by innovation compared to that of status quo. I assume that it is the same for the same innovative proposals under both monopoly and competition. Therefore, monopoly does not discriminate against innovation through this component of utility. The difference lies entirely in $U_i\,(EM) - U_c\,(EM)$. Under competition, the more time passes from the moment of the introduction of an innovation, the riskier it is to delay the introduction of the next one. Therefore, $U_i\,(EM) - U_c\,(EM)$ is growing and thus at some point is likely to compensate for the entire effort required by innovation. Under monopoly, the continued status quo is not risky in terms of *EM*, and hence $U_i\,(EM) - U_c\,(EM)$ is much less likely to be so large as to compensate for the extra effort. This is especially true for genuine innovations, for which this variable is bound to be especially large.

All in all, given the various possible channels, private monopoly systems suffer from the incentive barrier with respect to genuine innovation and therefore hamper innovation-based growth.

Impacts of Monopolies: The Command Economy

Let us now turn to the *command economy*, which differs from the private monopoly system in two basic respects: (1) monopolistic enterprises are state-owned, not private; and (2) command mechanism (central planning) replaces market coordination. What could be the impact of these two differences on the relative innovativeness of the command economy? A glimpse at the history of economic thought provides a puzzling observation: While no prominent economist has regarded the private monopoly system as conducive to innovation and economic growth, quite a few highly regarded thinkers did not doubt the innovative potential of a centrally planned economy. As they did not praise long-term monopolies (either state-owned or private) as vehicles for innovation, their optimism about the innovative performance of a command economy must have stemmed from the belief that market competition is not necessary for innovation-based growth because it can be effectively replaced by central planning. And indeed, this was the view expressed by Schumpeter (1962 [1942]), who maintained that under socialism innovations could be spread just by instructions issued by the authorities to the managers of state companies.

Early critics of socialism (e.g., Brutzkus, von Mises, and Hayek) did not have such illusions and warned that the centrally planned economy would be plagued by bureaucratization and insufficient risk taking. And experience has indeed shown that, instead of being an effective substitute for market competition, the command mechanism is a source of additional problems that are likely to make the centrally planned economy even more hostile to innovation than the private monopoly system (Balcerowicz 1995). There are two reasons for this outcome: First, the additional effort that such innovations require of managers is likely to be larger under the planned regime because they produce chronic shortages; second, central planning induces managers to seek "easy" plans, thus avoiding efficiency-increasing innovations. And given information asymmetry to the disadvantage of central planners, they are not in a position to overcome the incentive barrier felt by the subordinate managers and to launch rational central investment. Indeed, central investment drives may lead to extreme misallocation of resources and to macroeconomic crises. Contrary to naïve beliefs, central planners are neither omniscient nor benevolent. Besides, once completed, newly built factories operate under the regime that discriminates against genuine innovation at the enterprise level.

Incentive Barriers

I have focused so far on institutional systems that block innovation-based growth either because they limit investment (including that required by innovation) or because they produce such an incentive structure that the utility of genuine innovation, defined in terms of *EM* and *E*, is lower than that of continued routine activity. These systems seem to cover the bulk of growth-retarding institutional frameworks not only in the contemporary world but also in many similar situations in the past.

However, to complete the picture I mention two additional reasons for the existence of incentive barriers with respect to innovation:

- Alternative options to such innovations may include not only routine economic activity but also conquest, lucrative public service, or exploitation of subjected territories.
- Social norms may discriminate against economic activity in general (except for being a land holder) or against innovation in particular.

These two reasons may be present separately or jointly, strengthening each other.

Baumol (2002) suggests with reference to historical literature that the elites in Imperial Rome were not interested in economic activity (except for land holding) because more lucrative options (in terms of *EM*) were open to them: conquest and administration of conquered territories. In

addition, he claims that social norms discriminated against nonagricultural economic activity. As a result, innovations were not pursued by members of the ruling elites. This leaves open the question of why other people did not engage in innovative entrepreneurial activity in order to get wealthy and, as in Britain since the 19th century, to become members of the growing elite. To prevent this and, thus, innovation-based growth, some barriers to social mobility or to innovations must have been present in Rome.

In Imperial China, innovations were subject to the incentive barrier because a more lucrative option existed for ambitious individuals: that of becoming an imperial official—a mandarin—by passing an examination. A mandarin could prey on successful innovators, thus contributing to their inferior relative utility (Baumol 2002).

In some systems, social norms penalized innovation by emphasizing the value of order and status quo and even regarding changes brought about by innovative competition as immoral. The idea of progress was alien to many cultures. How such social norms originated and how they changed (if they did) is a fascinating question that I cannot explore here.

A Look at History: Growth Accelerations and Slowdowns

The enduring lack of difference or change in living standards across countries and time can likely be explained by institutional factors: All societies until about 1800 had some variety of innovation-blocking system or a succession of such systems (the latter may be called unproductive transitions). The common features of these systems were (1) improper structure of property rights (i.e., those that excessively taxed individual rewards, heavily restrained freedom of private action, and/or created producers' monopolies) or (2) acute insecurity of properly structured property rights. There may have been an additional role for the availability of lucrative noneconomic options and social norms that penalized economic activity in general or innovation in particular. The command economy, which belongs to the first category, constituted the modern version of the innovation-blocking system, although in its essence it was not very different from much older systems that abolished private ownership and/or competition.

As long as societies lived under innovation-blocking systems, modern (i.e., persistent and fast) growth could not start. Such growth began in the late 18th century when Britain, its ethnic offshoots, and then other European nations broke out of the circle of such systems. Why such systems prevailed until that time and why Britain and, more generally, the West managed to escape their "gravitational force" are among the most important and debated questions of history, political science, and institutional economics (e.g., North 1990, Rosenberg and Birdzell 1986, Kuznetz 1971, Jones 1981), but it is beyond the scope of this chapter.

With the start of modern economic growth, the new era of divergence and convergence (i.e., the cross-country differences in the rate of long-term economic growth) has begun. Also, economies have displayed different growth trajectories during the last 200 years (Maddison 1991), differing in the length and time distribution of periods of stagnation, growth slowdown, and growth acceleration.

Obviously, growth accelerations in less advanced countries tend to overlap with their convergence periods vis-à-vis the world leader in per capita income, while periods of stagnation and serious growth slowdown in such economies overlap with divergence episodes or at least with periods when convergence does not take place. However, the world leader in per capita income accelerates its growth per capita, as the United States did in the 1990s; other countries would then diverge even if their rate of growth did not decline (e.g., larger Western European economies relative to the United States in the 1990s). Analysis of the distribution of countries' growth rates over the past few decades reveals that long-run growth may accelerate at various initial levels of income per capita (e.g., in the poor South Korea, Taiwan, and other future Asian Tigers in the 1960s, and in much richer Ireland in the early 1990s). The same goes for growth slowdowns—they occurred in most African countries since the 1970s, in the communist economies including China after their initial growth phase, in advanced countries such as Britain in the 1960s and 1970s, and in Germany in the 1970s and 1980s. The long-term growth trajectories of these economies display enormous variation: For example, China until the late 1970s suffered during the previous centuries from very slow growth and divergence, only to become a Tiger since early 1980. Smaller Asian Tigers also had long periods of relative decline until they surged beginning in the early 1960s. Central European economies were diverging after World War II, only to start catching up in the 1990s. Britain, once the world's economic leader in the standard of living, was overtaken first by the United States and then diverged relative to most other Western European economies after World War II before accelerating since the 1980s. Sweden displayed an impressive convergence for almost 100 years starting in the second half of the 19th century, slowed down and diverged in the 1970s and 1980s, and then has been accelerating since the early 1990s (Balcerowicz and Fisher 2006).

The theory of economic growth should be able to explain cross-country and cross-time episodes of stagnation (slowdown, or divergence) and of growth acceleration (convergence). However, it is clear that the formal growth models, with their emphasis on proximate growth determinants (productivity, employment, acceleration), are incapable of coping with this job,[38] for these factors themselves are in serious need of further ex-

38. For example, Temple (1999, 141) in his overview of the growth models says "few of the variables considered here would offer much insight into the experience of China or the former command economies, for example."

planation. And changes in institutional surfaces, as is increasingly recognized in the economic literature, must be linked either to these proximate causes of growth or directly to the rate of growth.

In the preceding sections of this chapter I focused on institutional systems that block innovation-based (i.e., modern) growth. Their universal existence until the 19th century would explain, as I noted earlier, why growth during that period was slow and differed little across time and space. However, their explanatory role does not disappear with the onset of modern economic growth: They are the main explanation of all recent periods of stagnation (growth slowdowns, or divergence) whenever it occurred during this epoch.[39] And they produced such effects wherever introduced. So they have the power to block longer-term growth.

Growth slowdowns can result not only from innovation-blocking systems but also from a transition to any variant of such a system, even if not introduced in its full-fledged form. What I have in mind here is the serious deterioration of the incentive qualities of the property rights through increased forced payments or anticompetitive regulations as well as seriously reduced protection of such rights. The existence and negative growth effects of transitions to a predatory, overregulatory, or failed state have been shown by ample empirical research (e.g., Lewis 2004, Scarpetta et al. 2002). Such negative transitions obviously occur only in countries that previously enjoyed institutional systems with better structure or protection of property rights, especially with respect to the structure of property rights; this was the case for many Western European economies in the 1970s and 1980s.

I now focus on the institutional determinants of episodes of accelerated growth (convergence). They fall into two categories:

- episodes that largely overlap with the whole trajectories of certain countries; and
- episodes that happen during and after a successful transition from an innovation-blocking system, whether in its full-fledged or a muted form.

The first category comprises countries that from the beginning have maintained a relatively unchanged institutional system with a strong and proper structure of private property rights, a large extent of market competition as the incentive-reallocation mechanism, and a reasonable protection of these rights. The constitutional features of this system provide a large scope and strong incentives not only for technological innovation

39. This is not to say that they are the only actual and possible reasons for such negative growth episodes. Protracted wars have similar effects. Powerful economic shocks may also derail the economy. However, many shocks have domestic, institutional roots (as discussed below).

but also for spontaneous, bottom-up institutional change (new types of organizations and contracts) that supplement or enable such innovations.[40] This system—let us call it liberal—is capable of spontaneous evolution thanks to its invariant fundamentals: a large scope of economic liberties and, as a result, a large scope of relatively free and thus flexible markets within the framework of the rule of law. Very few countries can be considered as belonging to this category; in fact, I can name only two: Hong Kong and—with some hesitation—the United States. However, this should not be interpreted as an argument against the liberal system—one should not confuse value with frequency. Rather, why have economic liberties historically been so difficult to achieve? And once achieved, why have they proved so fragile and vulnerable? These questions point to one of the most important issues of institutional dynamics and comparative history.

The growth record of countries that have managed to adhere to the liberal system suggests that it should serve as a guidepost for reforms aimed at producing rapid, innovation-based growth. Indeed, is there a qualitatively different model that, given expedience (and theoretical institutional economics), could play this role equally effectively? Centrally planned economies have failed miserably everywhere, and the illusions they produced have been shattered beyond repair. Corporationism à la Germany, praised by many a while ago, has shown its inherent limitations,[41] and Germany has been liberalizing its economy in recent years. France, another example of a constrained market economy, is trying to do it, too. Japan, which some 20 years ago was expected by some economists to overtake the Unites States in the not-too-distant future, was shown to be a dual economy whose export sector is subject to intense market competition and thus highly competitive, while the service sector displayed low productivity due to anticompetitive regulations (Lewis 2004). Sweden achieved an impressive convergence under a liberal system, then diverged when its welfare state and regulations expanded, only to deregulate and reform its social sector. Various "nonconventional" solutions (e.g., foreign trade regulations in South Korea or two-tier price systems in China), which I discuss below, can be shown to be more complicated functional equivalents of a liberal regime or its very important substitutes or clearly deficient in their economic impact.

40. One of the fundamental questions of institutional economics and political theory is what are the limits to such institutional evolution—i.e., which institutional changes, widely regarded as beneficial (e.g., limiting child labor) could not have been achieved through market competition or civil society and thus required collective action via the political system? For an early and fundamental treatment of the costs of these types of action see Buchanan and Tullock (1962).

41. Edmund S. Phelps, "The Genius of Capitalism," *Wall Street Journal*, October 10, 2006.

The second group of growth (convergence) episodes, by far larger than the first, applies to countries that successfully move away from some version of innovation-blocking institutional system. In the following section I focus on this category and consider the direction, scope, and time structure of such successful reform packages, how they depend on initial conditions, and why growth may accelerate before such reforms are completed.

Successful Reform Packages: Direction, Scope, and Time Structure

What are the characteristics of reform packages that are capable of producing potentially lasting growth acceleration (convergence)? One can group them into three categories: direction, scope, and time structure.[42] For reform packages in this category to be successful, they must (1) have proper direction, scope, and time structure and (2) be sustained. The first three are a function of the economics of reforms, which concerns the links between changing and changed institutional systems, individual behavior, and the resulting outcomes, including long-run growth as a primary objective. The last is a function of the political economy of reforms, which concerns the relationships between sociopolitical factors (e.g., protests, pressures, interest groups) and sustainability (i.e., the anchoring, attenuation, or rejection of reforms).

One can analytically isolate the first category by determining whether reform packages, given initial conditions, can lastingly improve economic performance if sustained. This is a legitimate approach—there is little point in introducing reforms that cannot work; the question of their sustainability is irrelevant. However, reforms that can work, if sustained, differ in their chances of being sustained. These chances may depend on their very scope and time structure. For example, changes that in their initial phase reduce the power of organized groups to resist market reforms would increase their chances of survival and would thus improve the performance of the economy, the sustainability of a changed institutional system, and the prospects of further reforms. Successful reforms that aim for the lasting improvement of economic performance must, therefore, often have a political component—that is, they must change the balance of forces affecting the country's institutional framework. Hence, there is an overlap between economics and political economy of reforms. This overlap exists also because, the better the economic outcomes of reforms, thanks to their proper scope and time structure, the better (on the whole) their chances for survival and extension.

42. I prefer the expression "time structure" to "sequencing," as the time distribution of reforms does not need to be sequential.

However, the sustainability of reforms is not simply a function of how they are structured—political economy of reforms cannot be wholly reduced to their economics; economic outcomes that influence the sustainability of reforms depend not only on their scope and structure but also on the economic conditions in which they are introduced. As a result, two reform packages can have different outcomes and chances of survival under different sets of economic conditions (reforms in China that started in that late 1970s and those in Russia in the early 1990s are good cases in point). Besides, sociopolitical developments have their own dynamics, independent of economic outcomes, and this dynamic differs across countries and across time. Thus, depending on a country's history and geopolitical situation, there are different possibilities to link reforms to other developments, positively or negatively valued by the people. For example, market reforms could have been positively linked in the Central and Eastern European countries to future entry into the European Union, while in Russia not only could such a linkage not exist but also market reforms were probably negatively linked to the perceived loss of the Soviet empire.

Political developments influencing reforms also depend on personalities, on both the reform and antireform side, and they are not likely to be identical across countries and time. Finally, different natural endowments produce different pressures for reform; politicians in resource-rich countries face weaker incentives to improve their countries' institutional framework than policymakers in resource-poor economies.

My focus in this section is on the economics of reforms—what direction, content, and time structure of reform packages are likely to produce potentially lasting growth acceleration (convergence) if sustained. However, I also mention some political economy problems, as they overlap with the economics of reform.

Direction of Reforms

Let us start with the *direction* of reforms, assuming situations in which some variant of growth-retarding institutional system exists at the beginning. Successful reforms must then take a direction toward a liberal system. Depending on the specifics of the inherited institutional framework, reform will mean either changing property rights (i.e., by removing the ban on private entrepreneurship, privatization, deregulation, reduced taxation, and fiscal reforms) or increasing the protection of these rights, if they are properly structured. As an empirical observation, I can't find a single example of successful reforms with a different direction. And I believe that institutional economics can explain why: They would further weaken the incentives to invent, to innovate, to save, or to work.

However, some authors[43] praise what they call "nonconventional" solutions as alternatives to liberal or classical prescriptions. They stress, for example, that trade openness is possible not only through lower tariffs but also through duty drawbacks, export subsidies, special economic zones, export processing zones, and so on. They praise Chinese townships and village enterprises as efficient substitutes for open firms' privatization (Rodrik 2006). They stress the benefits of the dual-track system in the Chinese transition toward the market economy as an example of successful "gradualism." They claim that different institutional arrangements can produce similar results. These claims raise two questions:

- How different are such arrangements from "classical" solutions?
- Can really different institutional arrangements produce similar results?

If very different institutional arrangements could, under the same conditions, produce the same individual behavior, and thus the same outcomes, then institutions would not matter. However, experience contradicts such institutional nihilism.[44] What these authors seem to have in mind, without clearly articulating it, is that some differences in institutions do not matter, as some institutions that differ in *nominal* (or legal) terms are *functionally equivalent*, that is, they have similar structure of incentives and thus produce similar behavior and outcomes under the same conditions.[45] Such a logical possibility cannot be denied. However, the true challenge is empirical—can the authors show that this is really the case? They usually just take it for granted, as is the case with Rodrik's various modes of trade opening. It is obvious that such different modes exist. But are they really functionally equivalent? They differ in at least one respect: The "nonconventional" modes of trade opening are more complicated than the simple across-the-board trade liberalization and thus more costly in terms of transaction costs and more prone to corruption. However, if they were truly functionally equivalent to the classical liberalization, why do the proponents of nonconventional solutions criticize classical liberalization?

One can have serious doubts whether the discussed "nonconventional" solutions are really functionally equivalent to outright liberal reforms. For example, township and village enterprises, praised by Rodrik (2006, 479) for their ability to "elicit inordinate amounts of private investment," pro-

43. Rodrik (2006) is a prominent representative of this category.

44. Some of these authors seem to believe in the superiority of "Third Way" solutions, so they are not institutional nihilists but ideological socialists. I leave them aside.

45. I note in passing that an important task for institutional economics is to analyze the relationship between the nominal and functional differences in institutional arrangements, including the fact that nominally different institutions produce similar behavior and outcomes under similar conditions.

duced a lot of corruption and abuse of peasant rights (Woo 2006). And the delayed privatization of state-owned enterprises in China created huge incentives and possibilities for asset stripping and outright embezzlement by managers. A dual-track price system, praised as a gradualist transition mode toward market pricing that would avoid social tensions, in fact generated such widespread corruption—and social tensions—that it had to be scrapped and replaced by "big bang" price liberalization in 1990–91 (Woo 2006).

It appears that those who praise nonconventional solutions for their (allegedly) good outcomes not only disregard some of their true effects but also attribute to them results that are in fact due to the special conditions under which they operate. For example, fast economic growth in China in the 1980s was largely due to its initial economic structure—a large share of easily privatizable agriculture; the initial structure in Russia in the early 1990s was very different and precluded such growth (Balcerowicz 1995, Woo 2006, Åslund 2007).

Therefore, in comparing the effects of various reform packages, one should control for differences in other factors. This elementary requirement, often violated in the discussion of reforms, goes beyond the debates on reforms after the collapse of communism. For example, the Danish "flexicurity" system is often presented as an alternative to the Anglo-Saxon flexible labor market; both, it is claimed, produce low unemployment and high employment rates. However, the differences in the growth of labor supply are overlooked here: It is stagnant in Denmark and growing in the United States. Therefore, Danish-type systems were most likely much more costly and less effective in terms of employment than the present flexible labor market arrangements in the United States.

Scope of Reforms

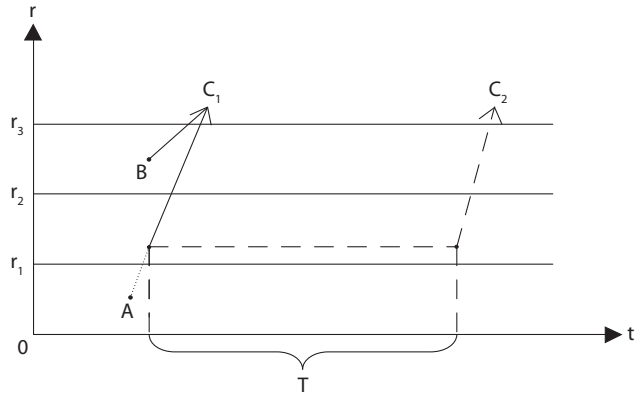
I now turn to the *scope* of growth-accelerating reforms. By scope I mean the number and extent of specific reforms during a given period.

The size of the reform package capable of producing accelerated growth clearly depends on the initial conditions, including the type of inherited institutional system. In exploring the links between the initial conditions, the scope of the reform package, and growth, I introduce two concepts: growth barriers and special growth mechanisms. The first variable indicates the necessary scope of a reform package that can produce potentially lasting growth acceleration. The second variable explains why growth may accelerate before the reform package is completed.

The idea of growth barriers is very old;[46] I use it with respect to the institutional system. Let us assume a list of institutional variables $I_1, I_2, \ldots I_n$,

46. For a recent application, see Hausman, Rodrik, and Velasco (2005).

Figure 7.1 Growth paths under restrictive barriers



which correspond to various dimensions of countries' institutional systems. Each variable is a set of alternative states. For example, a variable for the structure of property rights would consist of communal, state, and private property rights regimes. Another variable, the protection of property rights, denotes various levels of this protection. Each institutional system is a combination of interconnected states of different institutional variables that can coexist—that is, they constitute a system even if, taken together, they perform badly.[47] For example, a command mechanism cannot coexist with free entry; it requires a rigid multilevel organizational structure of the economy (Balcerowicz 1995).

Simple observation and empirical research indicate that institutional variables do not positively influence long-run growth: At least some of them limit growth to very low levels, regardless of the shape of other institutional variables. I call these institutional growth barriers.[48] A growth barrier, by definition, causes slow or no growth and, as described above, can be part of an institutional system.

The levels of slow growth resulting from the barriers B_1, $B_2 \ldots B_n$ may differ or be the same. The first scenario is depicted in figure 7.1. In this diagram, r denotes the average long-run growth achievable under successively more restrictive barriers B_1, B_2, B_3. Points A and B symbolize different initial positions and correspondingly different scopes of reform necessary to achieve r exceeding r_3. Starting from point A, one can achieve

47. Capacity to coexist (i.e., to last as a system) should be distinguished from performance; a badly performing combination of institutional variables can form a system (i.e., it can last).

48. Not all growth barriers are institutional in nature. For example, a chronic fiscal deficit is not directly an institutional barrier but depends on institutional factors, i.e., the lack of proper constraints on policymakers. In contrast, a bad location is a noninstitutional barrier to growth that does not depend on institutions.

growth faster ($A \rightarrow C_1$) or slower ($A \rightarrow C_2$). With the slower path, one incurs the costs of slow growth during period T. Therefore, the assumption of the existence of multiple growth barriers in an initial institutional system argues for a large package of reforms during a short time rather than for a gradualist approach. This abstracts, of course, from political economy considerations and logistical questions. The "antigradualist" conclusion does not change if we assume the existence of multiple growth barriers, each of which limits long-run growth to the same low level.

Successful reform packages may be defined as those that remove all growth barriers in the inherited institutional system; unsuccessful ones leave some of these barriers intact and so growth remains low despite some reforms.[49] The latter situation often leads to confusion in which the reforms—and not their incomplete nature—are blamed for the lack of success. Empirically oriented institutional economics should identify first the institutional variables that are barriers to growth and then the guidelines for successful reforms.

The task of describing successful reform packages includes more than identifying and removing institutional barriers to growth. Another important question is how much lasting increase in r can one achieve by larger and larger improvements in the institutional variables that make up a country's institutional system once all of these variables take the "proper" form (i.e., they are not growth barriers). In other words, which reforms are most productive in terms of r, given the initial conditions? A related issue is whether subsequent improvements to the institutional system display declining marginal productivity in terms of r. If this is the case, as appears likely, then reforms should focus on those aspects that constitute the weakest spots, as the marginal improvement in r would be the largest.

One should remember, however, that there are strong complementarities among reforms. Take, for example, competition as an incentive-reallocation mechanism, which is indispensable for innovation-based growth. It can operate only if three conditions are met at the same time: Demand must be able to move freely among the alternative bids, supplies must include those that create a competitive threat by attracting demand, and success or failure in the market must have serious incentive effects for the suppliers. If the initial situation is that of a command economy, then the lasting introduction of strong competition requires a massive liberalization (dismantling the central planning, entry, price, and foreign trade liberalization) and massive institution building (e.g., bankruptcy procedures, SOE privatization). Under such situations one should analyze the productivity of packages of strictly related (complementary) reforms and not just of single components.

49. Successful reform packages also remove all crucial vulnerabilities (i.e., sources of macroeconomic crises); unsuccessful reforms leave at least some of them intact (more on this below).

Of special interest are reform packages that bring an economy from very slow to very fast long-run growth. One speaks then of growth miracles. It is clear that the initial conditions in such cases must include at least one growth barrier, but what factors explain a jump in r from a very low to very high level? This is one of the most important questions of development theory and needs more research. What I can do here is to suggest that radical growth acceleration in a developing country requires a reform package that, given the initial conditions, very sharply and lastingly increases the pace of productive technology transfer from abroad. Depending on these conditions and the related growth barriers, the package would include radical external opening, extensive domestic deregulation, fiscal reforms that visibly raise the saving and, in effect, investment rates, and a radical increase in protection of private property rights.

And what initial conditions, given the proper reform package, are most likely to give rise to growth miracles? There are different views on this issue in economic literature. Some authors point to the poorest countries because, they claim, they have the largest stock of foreign technology to adopt, and they can start with the technology that produces the largest increase in r (Barro and Sala-i-Martin 1997). Other researchers suggest that it is the middle-income countries that are most likely, with proper reforms, to become growth miracles as, with more human capital, they are better equipped to adopt foreign technology (Gomulka 1990). The Irish example since early 1990 suggests that even richer countries may become economic tigers. To get richer a country has to grow reasonably fast for an extended period and be free of growth barriers. Then one of the growth determinants has to worsen to such an extent that it becomes a barrier and slows growth to a very low level, despite other proper determinants. Under such conditions, a limited reform that transforms the critical factor from a barrier to a growth-conducive form releases the full force of all the growth forces, and thus a relatively rich country may become, for a while, a growth miracle.[50] This illustrates again the main point that the scope of successful reforms depends on the initial conditions or, to be more precise, on their weaknesses. There is no point in curing a disease a patient does not suffer from.

If the initial conditions include many barriers to growth, a reform package capable of producing a lasting acceleration of growth must be huge indeed. However, there have been many cases where growth accelerated before the reform package was fully implemented, under evolving but still very imperfect institutional systems,[51] when presumably there remained

50. It appears that the blocking factor in Ireland until the late 1980s was desolate public finance; other factors had the proper shape—private and well-protected property rights, open economy, reasonable education.

51. This has led some authors (e.g., Eckhaus 2004) to question the importance of institutions for growth. Their point is that because growth can accelerate under imperfect institutions, institutions do not matter.

some growth barriers. How can one explain this apparent contradiction? My explanation is that to achieve a lasting acceleration of growth from a position of many barriers to growth, a large and properly structured package of reforms is required. However, transitional growth accelerations are possible thanks to smaller doses of reforms or before comprehensive reforms are completed if the initial conditions include what I call special growth mechanisms.

I have discussed innovation-based growth as the only lasting and potentially universal growth mechanism. In contrast, special growth mechanisms are situation-specific and nonlasting, even though some of them may operate for many years. Following are examples of these mechanisms.

The first two are due to the existence of "surplus" human capital, either general (e.g., widespread literacy, knowledge of mathematics, modern sciences) or specific (e.g., individual knowledge of technological blueprints). War in the West lowered the standard of living and at the same time created an imbalance between the human capital, both general and specific, and the stock of physical capital. The "surplus" human capital could have produced accelerated economic growth when the machinery of the war economy was abolished and market economy was thus restored.[52] Once this accelerated reconstruction was completed, the special growth mechanism ceased to operate.

The Communist education system was better than its economic systems; a relatively large stock of general human capital was created but not fully used for innovation-based growth, given the constraints of the command economy. With the removal of these barriers, the dormant part of human capital could serve as a vehicle for accelerated technology transfer. This potential extra-acceleration ends when previously inactive people are fully employed.[53]

The third special growth mechanism relies on the existence of widespread "simple waste," as exists in command economies both in their organizations and in the relations between them. The first type of waste appears as a very low level of X-efficiency (Leibenstein 1957)—for example, low utilization of fixed assets, workers' shirking, neglect of maintenance, and the like. The second type of waste concerns massive and chronic disruptions of interenterprise links that both produce delays and violate requirements of technical complementarity, thus lowering the quality of goods. This unavoidably results from the command mechanism (Balcerowicz 1989), although some Western economists have blamed the market

52. The liberalization of international trade, which reversed the economic isolation of the 1930s, was an additional growth factor.

53. However, freedom of migration may induce the most talented and energetic people to migrate, especially if there are poor prospects for economic improvement because of insufficient reforms. The longer-run growth of domestic human capital depends on the quality of the education sector, which could also depend in part on the extent of migration.

mechanism (Nelson 1981). The first type of waste probably exists in all organizations not subject to market competition and thus in all systems where such competition is banned, for the strength of incentives within organizations depends on the strength of incentives for the organizations themselves, and there are no good substitutes for market competition.

Communism was characterized by ideological hostility to sectors regarded by Marxism as "unproductive," including services and especially trade. As a result, the service sector was hugely repressed. Removal of this repression was bound to release pent-up demand, thus resulting in exceptionally high returns and growth in the affected sectors until their share achieved more "normal" levels. Such a source of acceleration would not exist in countries that were uniformly "backward."

Another sort of repression consisted in imposing on a given sector an incentive system that broke any link between individual effort and reward. This was the case with Marxist communes in Chinese agriculture, which employed most of the working population and did not rely on a large state machinery (i.e., they were easily "privatizable"). Once communes were disbanded and replaced by the "responsibility system," there was a powerful surge in productivity in agriculture and many farmers were released to seek employment in other sectors (Crafts 1998). This special growth mechanism could not operate with such strength in the former Soviet block because agriculture there accounted for a much lower share of employment and relied much more on large-scale machinery.[54]

A different mechanism of serious agricultural repression operated in many postcolonial African countries. It relied on the state's purchasing monopoly, which imposed unfavorable prices on nominally private farmers. The extracted surplus financed wasteful public involvement (Bauer 1998, Schultz 1980). Lifting this repression also released a special growth mechanism.

This mechanism overlaps to some extent with another: All technologically delayed economies have a high share of sectors with low productivity and a low share of sectors with high productivity. Thus they have a large scope for growth-enhancing structural shifts. This is strictly related to technology transfer, as the growth of more productive sectors is largely based on this factor. Such structural shifts of resources should therefore be regarded as a component of technology transfer and not as a situation-specific special growth mechanism. However, there are some initial situations that "contain" such mechanisms. One of them is related to the existence of a large bureaucracy with very low, possibly negative, productivity: Shifting its members to more productive sectors would raise the aggregate productivity.

54. Also, Chinese agriculture under Mao was heavily taxed, whereas Soviet agriculture was subsidized (Rozelle and Swinnen 2004).

Some economies display a low employment ratio—a large share of the working-age population has zero productivity.[55] Increasing this ratio—moving some people from zero to positive productivity—constitutes another special growth mechanism and another structured shift that raises aggregate productivity. A low employment ratio is caused by different sets of factors than other sources of proefficiency structural shifts and thus requires different treatment: reducing the incentives for not working by reforming social transfer systems.

Countries that have amassed more special growth mechanisms can achieve an accelerated growth for a while but, obviously, pay a heavy price for it, as these mechanisms are the reverse side of the conditions (heavily repressed sectors, massive waste, a large share of unproductive labor) responsible for their delayed growth. Because these mechanisms are inherently related to slow development, they are a force for transitional convergence, even though it is not clear whether a simple, linear relationship exists between income per capita and the strength of the mechanisms.[56]

Special growth mechanisms differ in the type of reforms that are likely to set them in motion. Some may be released through limited reforms that do not strengthen the fundamental growth mechanism, which is based on systematic innovations. Such reforms might entail shifting part of the bureaucracy to more productive occupations or the decollectivization of agriculture, while leaving the bulk of the economy without market competition. Such limited reforms could transitionally raise the rate of growth, but it would then fall to its previous low level (figure 7.2). Therefore, they should be considered failed reforms.

Other special growth mechanisms may be set in motion only by the start of more comprehensive reforms that begin to strengthen innovation-based growth. This would explain why growth can accelerate before these comprehensive reforms are completed. For example, to reduce massive waste within and among enterprises, market competition is required, which, in turn, calls for wider-ranging reforms.

In figure 7.3, r accelerates during $t_0 - t_1$ due to a special growth mechanism set in motion by comprehensive reforms that strengthen innovation-based growth. From t_1 onward, only the latter mechanisms remain and r stops growing.

55. Some formally nonemployed people may work in the informal economy while drawing on various social benefits. Thus low employment ratio may overlap with large informal sector.

56. It may well be that these mechanisms are more strongly related to some peculiarities of growth-retarding systems and not so much to their income per capita. For example, centrally planned economies might have accumulated more "surplus" human capital than an emerging market economy without comprehensive central planning but at a similar level of income per capita.

Figure 7.2 Growth resulting from limited reforms

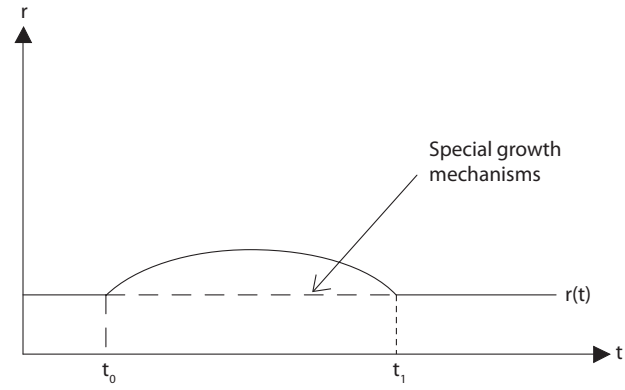
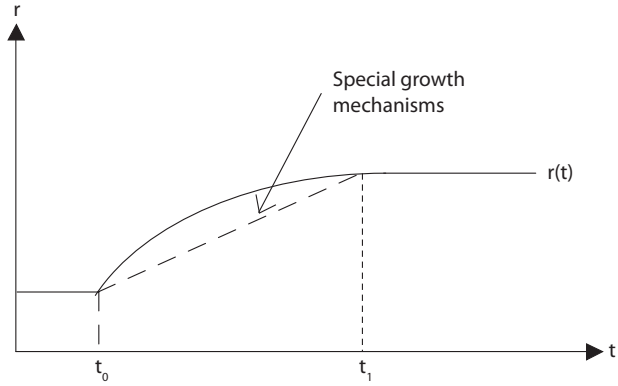


Figure 7.3 Growth resulting from comprehensive reforms



Time Structure of Reforms

Finally, let us turn to the time structure of successful reform packages, that is, the distribution over time of their constituent parts. Two decision variables are crucial here:

- the timing of the start of individual reforms (simultaneous or sequential), and
- the speed of their implementation (the amount of time between their start and the emergence of their effects).

The key point in analyzing and shaping the time structure of reform packages is that individual reforms differ in their maximum possible speed: preparing new legislation, including in support of liberalization,

and stabilizing the economy take less time than building new organizations or restructuring existing ones. Another important point is that, for any given initial conditions, required reforms differ in two crucial respects: in the importance of their direct impact on performance of the economy and in the importance of their results for the success of other reforms. Obviously, reforms that matter very much in at least one of these two respects should be started early and implemented fairly quickly.

For example, it has been suggested that product market reforms (deregulation of entry) should be combined with or precede labor market reforms, as they reduce producers' rents and thus resistance to the deregulation of the labor market (Berger and Danninger 2005). Comprehensive and radical liberalization of conditions for the establishment and functioning of private enterprises in a former socialist economy is crucially important for releasing growth mechanisms, removing widespread shortages, and reducing the scope for future rent seeking. Indeed, half-hearted deregulation threatens to perpetuate an immature market economy, plagued by widespread rent seeking and political connections, and thus displaying limited competition as early winners try to obstruct further reforms in order to preserve their privileges (Åslund 2007, Hellman 1998).

Stressing the importance of radical and comprehensive liberalization of an inherited socialist economy does not necessarily imply that it is optimal to delay other reforms. If the initial conditions include massive macroeconomic imbalances (as was the case in most former centrally planned economies), macroeconomic stabilization should start together with liberalization and be decisively pursued, both because it is dangerous to neglect such imbalances and because there are important links between liberalization and stabilization (Balcerowicz 1995).

But what about organizational restructuring—setting up the independent central bank and financial supervision, privatizing the state-dominated economy, reorganizing the justice system? These reforms are fundamentally important for the longer-term performance of the economy and take more time than liberalization, other legislative changes, and macroeconomic stabilization. These characteristics argue for an early start and rapid implementation of these reforms. In this way I arrive at the general conclusion that for the crumbling and heavily imbalanced command economy, massive parallel reforms, started at about the same time and implemented as quickly as possible, constitute the optimal time structure. Such a strategy releases both special growth mechanisms and innovation-based growth, thus ensuring the largest increase in economic growth relative to other strategies. It is also the strategy that, thanks to the dynamics of its outcomes, reduces the scope of rent seeking, thus facilitating further reforms.[57]

57. There are other arguments in favor of comprehensive and radical reforms of a formerly command economy. The collapse of such a regime creates a brief period of "extraordinary politics" when it is easier than usual to get radical reform accepted. The theory of cognitive dissonance implies that such reforms are likely to be recognized as irreversible (Balcerowicz 1995).

Summary of Successful Versus Unsuccessful Reforms

Let us sum up what distinguishes reform packages that are successful in producing a lasting growth acceleration from the unsuccessful ones. Remember we are speaking about initial situations, which include institutional systems that block rapid growth.

First, unsuccessful reforms perpetuate institutional features that inhibit growth or change one version of a system that blocks innovation-based growth into another (the unproductive transition discussed above).

A successful reform package has to aim at the liberal system. However, it is only a necessary but not sufficient condition, as there are unsuccessful reform packages that have the proper direction. What distinguishes them from the successful ones? The former leave some important growth barriers intact—that is, they are crucially incomplete or hollow, like the reforms under socialism that left in place all the anti-innovation incentive structures (Balcerowicz 1995). Unsuccessful reforms with a proper direction also include packages that remove some if not most inherited growth barriers but introduce new ones. This is the case of badly structured reform packages; a prominent example was the reforms in East Germany, which introduced a very good legal system together with a social policy framework that was destructive for a low-productivity economy. Successful reforms eliminate all the inherited growth barriers and do not introduce the new ones.

Finally, lasting growth accelerations may be undermined not only by remaining growth barriers but also by remaining vulnerabilities, the features of an institutional framework that are likely to produce, sooner or later, a macroeconomic crisis. Successful reform packages remove all such institutional vulnerabilities and do not introduce the new ones. Unsuccessful reform packages leave intact some serious vulnerabilities or introduce the new ones.

Institutions, Macroeconomic Shocks, Long-Run Growth

I have discussed so far what one may call "systemic" forces of growth in various institutional systems. By definition, they operate all the time, although possibly with varying intensity. They determine the power of relative incentives to innovate, save, and invest. The most important institutional variables behind these forces are the structure and level of protection of property rights and related factors: the degree of an economy's openness, the extent of anticompetitive regulations, the fiscal position of the state. Variables responsible for systemic forces of growth may be called *propelling* institutions, and institutional growth barriers may be equated with weak propelling institutions.

However, such institutions are not the only reason for slow growth. A look at growth trajectories of various countries reveals that they differ enormously in their variability (Easterly and Levine 2000). Some countries grow steadily, albeit at different paces, while others are plagued by frequent and serious development breakdowns. This has been especially prevalent among the African countries, where the standard deviation of GDP growth per worker over 1960–2000 was the highest among all regions of the world, and where as a result "growth has been episodic and not restrained" (Fosu 2007).

Sudden slowdowns, even if followed by rapid spurts of growth, may lower an economy's average long-term rate below that achievable under steadier growth. Indeed, a recent study has found that the 18 most successful developing countries in growth "show remarkably narrow fluctuations in their growth rates over time" (World Bank 2005). In another paper Viktoria Hnatkovska and Norman Loayza (2003) investigated 79 countries during 1960–2000 and concluded that "volatility and long-run growth are negatively related" and that "this negative link is exacerbated in countries that are poor, institutionally underdeveloped, undergoing intermediate changes of financial development, or unable to conduct countercyclical fiscal policies." They add that this link does not result from small cyclical deviations but from "large drops below output trend." Therefore, "it's the volatility due to crisis, and not due to normal times, that harms the economy's long-run growth performance."

An important question for further research is why some slowdowns in growth can have such long-lasting consequences. One possibility could be that some disruptions damage the propelling institutions; they would then be "destructive distractions" and not "creative distractions." Another, that there are some limits to the speed of short-term growth, even after a deep decline; therefore time is required to compensate for the slowdown. Finally, opportunities for growth may be time dependent, and a country that suffers a slowdown may lose some of them.

Differences in the frequency and severity of growth breakdowns are partly due to differences in external shocks that hit economies. However, many negative shocks are produced at home. Countries also differ in their ability to cope with external shocks. And the very vulnerability to shocks, due for example to the composition of domestic output, is an important variable that can have domestic institutional roots.

Since Keynes, the economic profession has focused on analyzing the self-equilibrating properties of macroeconomy under just one institutional system, that of free market capitalism. Much effort has been spent both trying to show that this system has serious deficiencies in this respect and refuting this claim. However, a broader issue of instabilities under *different* institutional frameworks has been largely neglected. Meanwhile, there is little doubt that the worst breakdowns in economic growth have occurred under extended and not laissez-faire states, and because of the actions of

the former states. An important question awaiting more research is which features of countries' institutional systems determine their propensity to suffer growth breakdowns. One can call these features the *stabilizing institutions*; they may range from very weak (destabilizing) to very strong. Preventing frequent or deep breakdowns of growth clearly belongs to growth strategy. But this issue is omitted from most growth theories.

As a first approximation one can divide the stabilizing institutions into the proximate and the underlying ones. The former include:

- *Monetary regime and rate of exchange system*: These determine the stability of money and the risks of overvaluation;
- *Fiscal regime*: This imposes constraints (if any) on public spending and public debt, which influence the risks of fiscal crisis;
- *Financial supervision and the extent of allowed market discipline*: These affect financial institutions and the risks of financial crises.

Some variables may be thought of as belonging to both propelling and stabilizing institutions. The ownership of banks matters both for their efficiency and for the risks of a banking crisis, as state-owned banks are much more susceptible to polarization than private ones and are prone to incur more nonperforming loans (see, e.g., World Bank 2001). Institutional constraints on the flexibility of the labor market are relevant both for long-run unemployment and for the economy's response to external shocks. Fiscal institutions shape the fiscal position of the state, and this matters for the systemic forces of growth as well as for the probability of fiscal crises. Monetary and rate of exchange regime determine both the probability of catastrophic inflation and the rate of less spectacular growth of prices, which, however, weakens the systemic forces of growth (Fischer 1991).

The shape and strength of proximate stabilizing institutions depend on a key feature of the political regime: whether it includes limits to political power (and what these constraints are) or power is unlimited. If the latter is the case, the stabilizing institutions must be very weak as, by their very nature, they are supposed to constrain policies (i.e., the actions of political rulers). Policy restraint is then a function of the leader's personal characteristics and not of impersonal institutional limitations. Only if political power is institutionally limited is there room for strong stabilizing institutions. To what extent this room is used to institutionalize constraints on macroeconomic policies (or, in other words, to depoliticize them) depends on factors that are specific to countries with limited government (rule of law).[58]

The political regime influences macroeconomic stability and thus growth through other, more political channels, too (see Acemoglu et al. 2002). Un-

58. For example, an independent central bank was introduced in West Germany in 1950, but in Britain only in the 1980s.

limited political power attracts ambitious but not necessarily highly ethical individuals and so may lead to frequent power struggles and related instability. Conversely, unlimited power can for a long time reside in the hands of one individual, who may launch catastrophic policies; Lenin and Stalin in the former USSR, Mao in China, Kim Il Sun in North Korea, and Mugabe in Zimbabwe are only the most spectacular examples of this danger.

Note that division of political regimes into those with limited and those with unlimited political power is not identical to the distinction between democracies and nondemocracies. Democracies with weak constitutional constraints may also be prone to bad economic policies that provoke growth breakdown. This was the case, for example, during the rule of Alan Garcia in Peru in the 1980s.

Institutional limits on political powers are thus crucial prudential safeguards for any society, both because they reduce the risk of various destabilizing economic follies (of the rulers) and because they enable the creation of specialized stabilizing institutions. Needless to say, such limits are also necessary for the existence of strong propelling institutions.

Concluding Comments

This chapter is based on certain conceptual building blocks that I have found useful for explaining differences in the speed of long-term growth.

First, I have distinguished between innovation-based growth (which includes technology transfer as the main convergence force) and other growth mechanisms. The former is potentially lasting and universal, the latter are situation-specific and transitional in nature.

Second, I have introduced the notion of countries' institutional systems as a complex variable that differs in the type of decision-making positions and in the mechanisms of access to these positions. The first variable dimension produces, given individuals' dispositions, the situational impact of the institutional systems on countries' performance. The second generates what I call their selectional impact. I focus on the first influence as fundamentally important, while noting that more research is needed on the second.

Innovation-based growth may be blocked by either the information or the incentive barrier. The former exists whenever innovative proposals are absent from the feasible sets of appropriate decision makers in a given society. In the modern world this absence is due to institutionally determined isolation. However, the factors that produce such isolation tend to produce an incentive barrier with respect to innovation, too. Also, isolation weakens the incentive to innovate because of the reduced scope of the market and of market competition.

The incentive barrier with respect to innovations exists whenever their expected utility (defined in terms of individuals' general utility function)

or that of the required investment is low relative to alternative actions. Two types of institutional systems block innovation-based growth by producing an incentive barrier. The first group limits investment, including investment that would require new technology. Low investment may be caused by low or highly uncertain individual returns from private investment or from a low savings ratio when access to foreign savings is limited. Behind low returns from private investment are institutional systems (e.g., communal property rights, prohibitive taxation) that equalize returns regardless of individual effort. Behind highly uncertain individual returns from investment are various combinations of official and private predation (predatory or failed states). Returns from private investment may be high but the rate of investment low because of a low savings ratio. The most likely reason for such a situation is an overextended welfare state.

With the second type of institutional system, innovation-based growth may be blocked by an incentive barrier that directly affects innovation without necessarily constraining the rate of investment. Various systems can produce such a situation. They include not only frameworks that combine restrictive working practices and firms' monopoly rights (Parente and Prescott 1999, 2002) but also other types of institutional systems that block competition.

With the start of modern economic growth in Britain, there began a new era of convergence and divergence and of growth accelerations and slowdowns. Episodes of slow growth (divergence) may also be explained by institutional systems that blocked innovation-based growth or by the transition to such systems.

Positive episodes (those of accelerated growth, or convergence) fall into two categories. The first, numerically very small, includes the total growth trajectories of countries that have maintained a relatively unchanged liberal system (i.e., a large scope of economic freedom and reasonably high protection of that freedom). The second, much larger group comprises countries that transformed a growth-retarding system through a successful reform package (i.e., one that produced potentially lasting acceleration of growth).

The scope of successful reform packages depends on the initial conditions, including inherited institutional systems. These systems differ in the number and type of growth barriers—the institutional variables that block lasting growth regardless of the shape of other variables.

The more barriers of this type in the initial institutional systems the larger must be the required reform package. However, the inherited conditions may also contain some situation-specific mechanisms of transitional acceleration of growth, which can be released before comprehensive reforms are completed, or by more limited reforms.

Long-term growth depends not only on the systemic forces but also on the frequency and severity of growth breakdowns. The former forces are linked to what I have called propelling institutions (the structure and pro-

tection of property rights and related variables); the latter are related to stabilizing institutions, which may range from very weak to very strong. At the proximate level they include the monetary and rate of exchange systems, the fiscal constitution, and financial supervision. The strength and shape of these proximate, stabilizing institutions ultimately depend on the nature of a country's political regime, which also influences its vulnerability to economic shocks through more political channels.

Finally, let me point out some issues that merit further research. They include mechanisms of upward social mobility and how they interact with the types of decision-making positions that influence innovation-based growth. More information is needed on what are the main institutional growth barriers; and more generally, how productive—for long-term growth—are various changes in the respective variables, given different initial situations. It would also be worth exploring what mechanisms of transitional growth are present in various initial conditions.

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