MAKING INSTITUTIONAL CHOICES

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Professor Raj instilled in me an abiding interest in institutional structures as well as in the practicalities of initiating change. In writing this paper, I benefited from many conversations with Raaj Sah as well as comments from T.C. Ananth, Omkar Goswami, and Stephanie Gerard. Robert Bruce and Hugh Lantzke will recognize here some of their ideas.

1. INTRODUCTION

Interest in institutions has recently revived to assess why growth rates of economies have diverged significantly over long periods of time. East Asia grew dynamically over almost three decades while many developing countries stagnated. Formal statistical analyses show that while income levels have converged within specific groups of countries (for example, within the group of industrialized countries), the income levels between disparate groups have diverged over time.

Such divergence is not easy to explain within the traditional neoclassical framework, which predicts that the marginal rate of return to capital will tend to decline in advanced countries, slowing the pace of investment; at the same time, high rates of investment (reflecting high returns to capital) in lower income countries will raise their per capita incomes.

The so-called 'new growth theorists' have challenged the assumption that the marginal rate of return to capital declines in the advanced nations, arguing that, in fact, there may be increasing returns to scale which make capital investment more productive in a developed economy. If the increasing returns operate at the level of the economy rather than at the level of the firm, social returns to investment will exceed private returns, a proposition for which Paul Romer (1987) has claimed empirical support.

Increasing returns may arise for a variety of reasons. One old argument recently revived is that there may be coordination failures, requiring a 'big-push'. An argument is thus created for government subsidy to investment or, alternatively, direct government involvement as an investor or coordinator.

Not surprisingly, such conclusions have not gone unchallenged. One line of attack has claimed that the high return to capital in developed nations and in newly industrializing East Asian economies reflects high investment in education. Interestingly, the empirical validity of this proposition tends to depend upon how education is measured (e.g., average years of schooling, percentage of workforce with primary education, percentage of workforce with secondary education). It seems safe to say that the existing measures are almost surely incomplete since training imparted within firms and organizations is not captured and this is influential in determining the pace of growth.

A more promising, if open-ended, approach is to ask why physical and human capital are better utilized in certain economies. Benhabib and Jovanovic (1991) show that the data analyzed by Romer can be reinterpreted to conclude that production conditions are neoclassical in character (with marginal returns to capital falling as the stock of capital increases); however, differences in growth rates can persist over a number of decades if certain countries have better capacity to absorb knowledge. Such capacity is, in turn, linked to the institutional features of the economy.

Institutions have a strong inertia and can, therefore, condition growth prospects over long periods of time. Benhabib and Jovanovic (1991) refer to ‘corporate, legal, or bureaucratic structures, or even attitudes towards work’. They state that ‘these elements can greatly enhance or retard the effective use and operation of factors of production’ and that while such ‘institutional or organizational structures may not be permanent, they tend to be quite persistent, so that productivity in different economies can diverge over

extended periods of time'. (See also Romer (1991), where the role of institutional differences in explaining long-term differences in growth rates is discussed.)

The challenge then is to explain the evolution of institutions and their influence on the productive use of resources. While a careful discussion of 'institutions' is deferred to the next section, I use the term to describe non-market interactions. Institutions, for my purpose, are best thought of as mechanisms that allocate resources through administrative methods rather than through price signals.

Governments are a particular, though often influential, institutional form. The deep involvement of governments in East Asian economies has been difficult to ignore, even by strong believers in the virtues of the market; it is, however, sometimes argued that the performance of these governments is difficult to replicate. East Asia, in this view, is a statistical outlier worthy of awe and admiration but not to be seriously considered as a model for development.

It is possible, and even likely, that the East Asian countries' experience cannot be easily replicated. However, that should not prevent us from raising broad analytical questions that arise from their successful performance. A constructive approach would be to ask what the goals of government action were and what alternative institutional forms could perform the functions required.

The goal, I wish to assert, is the creation of a flexible economy, an economy that is able to absorb new information rapidly, process such information, and then act upon it. Paradoxically, any institutional form, even one that appears responsive to external

influences, begins eventually to display its inherent inertial characteristics. On the other hand, decisions based on completely atomistic decisions of individuals (implying the lack of any institutions) will also tend to be suboptimal from the point of view of the economy. I will argue, therefore, that decentralized institutions have a comparative advantage in absorbing and processing specific types of information impart the greatest flexibility to the economy.

Specifically, there is a class of intermediate institutions that are neither governmental nor private but are more in the nature or alliances, communities and coalitions. These institutions interact with each other and can potentially serve the 'public good', which includes not just the specific group but also a wider interest. The main aim of this paper lies in understanding the role such institutions play and in identifying the conditions under which they can be catalyzed.

To prevent this paper from becoming a dry exercise in abstract theorizing, a number of examples are discussed throughout. However, it is fair to warn that these examples are not in any way representative and are drawn from my own recent research, which has focused on the interrelated issues of industrial organization, technical change, and the economics of infrastructure regulation.

Section 2 provides the building blocks of the discussion. Institutions are defined and their rationale and features described. The central origin of institutions is identified in the inability of the market to provide sufficient information to set social goals and achieve them. In Section 3, the costs and benefits of decentralized institutional structures are

discussed. Lack of information prevents the functioning of specific markets, and the function of institutions is to create markets where none exist; functioning markets also have to be regulated sometimes. Creation and regulation are discussed in Section 4. Finally, implicit in the whole discussion is the notion that the evolution of institutions constructive ways. Section 5 deals with this issue of mechanisms to stimulate institutional change.

2. INSTITUTIONS: DEFINITION AND TAXONOMY

In a well-known article, Martin Weitzman(1974) made a distinction between transactions based on prices and transactions based on quantities. Quantity transactions occur when pre-specified quantities of goods or services are exchanged, with the price of the exchanged goods/services being left partly or wholly indeterminate at the time of the exchange. Barter is the simplest form of transaction. However, many modern transactions take on the character of a quantity transaction when the cost (and price) uncertainty are high, making it possible that an important transaction may not finally occur at the price offered. Exchange of information through so-called 'strategic alliances' between firms is an example of quantity-based transactions (see Mody 1991).

In practice, both price and quantity obligations of transactions are often pre-specified. When a quantity obligation arrangement is set in advance, an institutional arrangement is needed. Institutions, therefore, may be defined as conduits for quantity-based transactions.

Consistent with this definition, the term institution may be used in at least three contexts. Rules, norms, standards are all examples of quantity obligations and are part of the institutional structure of an economy. The term 'institution' is also used to denote an organization. Such usage is consistent with the quantity price distinction. Within an organization, decisions are made through administrative rules. It has been noted that organizations have different 'architectures'; some are rigidly hierarchical and others are more decentralized (Sah and Stiglitz 1986, and Sah 1991). Even when decentralized, decisions on allocation of resources are made on the basis of rules (relating to voting or veto powers, for example). It is true that certain organizations, such as firms, conduct some of their internal operations on the basis of market prices and principles. This only implies that the legal organizations are not congruent with an economic definition of institutions.

Finally, long-term relationships among organizations are also examples of institutions that have a significant influence on the growth performance of an economy. These relationships (or alliances/associations/communities) play an important role in creating non-market linkages and are especially important as conduits of information. Strong alliances within an economy can help build-up its 'fabric', as a common information base and a sense of purpose are created. Alliances, however, can also lead to centers of power that exercise a harmful influence on economic and social progress.

Emphasizing the quantity transactions implicit in an institutional setting highlights the rationale for an institution. First, the emphasis underscores the fact that price signals

often do not carry enough information to allow the completion of a transaction and, hence, additional information is needed. The additional information is provided by specifying the norms or rules under which the transaction will be conducted. These rules may be economy-wide, specifying the nature of property rights, for example; they may be rules within an organization, or they may be rules governing the conduct of organizations within a network (or association) of organizations.

Second, the quantity relationship points to an underlying commitment by the transacting parties to adhere to these norms or rules, a commitment that usually arises on the expectation of continued interaction.

Institutions, therefore, serve two functions. They alleviate both informational shortcomings and failures. In addition, by creating binding commitments, they lower the rate at which the future is discounted. North (1990) has claimed that an increase in security of property rights through a set of formal and informal institutional innovations led to a sharp decline in rates of interest charged in seventeenth- and early eighteenth-century Europe.

It could well be argued that it is low discount rates that cause binding commitments rather than the other way around. Identification of causation is never easy when dealing with such long-term phenomena. However, I will describe below an example where it would appear that discount rates fall in response to institutional arrangements that are ‘engineered’.

Uncertainty, information, and fallibility

The existence of institutions has been attributed to informational failures of various types. Different contractual forms in agriculture have been explained as the result of a trade-off between incentives and risks. Incentive failures arise because employers cannot perfectly monitor the actions of their employees; at the same time the risk-bearing capabilities of employers and employees vary. Incentives for performance are enhanced when the risk is transferred to the employee; however, the employee may be unwilling to undertake such risk. This trade-off leads to organizational forms such as share-cropping (Stiglitz 1989).

While providing a useful starting point, an explanation of institutions as arising from incentive failures and risks has a number of limitations. First, the underlying models predict, for example, that the share-cropping ratios will vary continuously and will be sensitive to a number of parameters such as the degree of uncertainty and effectiveness of monitoring 'technology'. In fact, share-cropping ratios are stubbornly focused on a few well-known fractions (e.g., one-third, one-half). Second, the emphasis on motivational failures, or an inherent propensity on the part of human beings to cheat, is perhaps overdone. Instead, Sah (1991) points out that individual human beings are fallible, or commit errors, not necessarily because they wish to cheat but because they are not fully equipped to deal with the decisions they are required to make. Sah (1991) quotes Nisbett and Ross (1980) who state: ' . . . many phenomena generally regarded as motivational . . .

can better be understood as products of relatively passionless information-processing errors than of deep-seated motivational forces'.

Finally, the focus on incentives and risks fails to discuss issues arising from the relative 'power balance' of the participants and hence misses an important element of the dynamics of institutional development. [Marxists and the Chicago School economists both agree on the importance of 'power' or 'interest' groups; predictions and prescriptions, however, are not the same! (See Pranab Bardhan 1989, and Sam Peltzman 1989.)1 Thus, while there is room to be generous in interpreting the inadequate performance of individuals as arising from mistakes rather than malfeasance, institutional interests and motivations deserve careful scrutiny and analysis.

These limitations of the incentives/risk approach point then to important ingredients of a theory of institutions. The relative stability of norms and rules and their focus on a few, well-accepted terms of exchange point to the importance of limitations in information processing and the role of history. The fallibility of human beings helps focus on the need for decentralized institutions (which I earlier referred to as alliances, associations, and communities).

Dynamics of alliance formation

An important decentralized institutional form is, as discussed above, an alliance. Uncertainty, and the resulting need to engage in quantity transactions, result in a variety of long-term relationships. Weitzman (1974) noted the example of vertical integration of

different stages of production to ensure input supply under conditions of cost uncertainty. More recently, attention has been focused on horizontal relationships between firms that bring together complementary inputs. I have argued that such relationships are often designed to jointly experiment with new product ideas or to jointly explore new markets (Mody 1991).

A variety of contractual forms support these relationships. They range from loose informal links to strong equity ties. Following a period of experimentation, these links either break-up, evolve into a unified firm, or continue to remain apparently informal. An attempt is sometimes made to explain contractual forms in terms of the costs of transacting business through market exchange (Williamson 1975 and 1985, Crocker and Masten 1988, and Pisano 1989).

However, the precise contractual form depends upon both the history of the specific relationship as well as the prevalence of long-term relationships among peers (competitors, suppliers and buyers). Ronald Coase (1988) recounted the origins and meaning of his celebrated article, 'The Nature of the Finn'. He noted that in 1926 General Motors fully acquired Fisher Body, from which it purchased automobile bodies. However, another major supplier A.O. Smith, with whom GM had an intimate relationship over a half-century, worked at arm's length even though much of its production was geared towards GM's needs. Coase describes GM's relationship with A.O. Smith as 'harmonious' and concludes that the specific contractual forms (vertical

integration or a series of short-term contracts) are a function of the historical relationships and communication channels built among organizations.

In Japan, these apparently 'harmonious' alliances are much more widespread than in the United States. Japanese alliances take on many forms. Large firms have clubs for information exchange (Goto 1982). Subcontracting relationships with suppliers are widely prevalent and occur not only for provision of inputs but also for shared learning. Geographically-based or sectorally-based associations for sharing experience on production problems and for sharing minor innovations in the production process are also common (Cole 1989).

The Japanese experience shows that not only history but also the presence of other firms that are engaged in long-term relationships is influential in determining the formation of alliances. Other successful alliances in the system are important because they demonstrate the feasibility of such relationships and also because they allow a firm to plug into a whole 'network' by entering into a few alliances. Thus, a firm benefits directly or indirectly through other partnerships that its alliance partners have entered into. A network externality is thereby created. As the size of the network grows, the value of entering into partnerships increases, creating a self-reinforcing momentum towards alliance building. A question of some importance, therefore, for economic performance is: how can such networks be seeded or catalyzed? I suggest a few possibilities in Section 4.

To summarize, institutions exist in many forms. Rules and norms of behavior, specific organizations with varying architectures, and links between organizations are the manifestations of institutions. Rules and norms, if they are to be useful need widespread acceptance. That does not, however, imply that they need to be set by a central authority; they may well evolve through interactions between individuals or through 'committee' deliberations that seek a consensus. Similarly, the architecture of an organization may be hierarchical or decentralized. Relationships between organizations also may be either of a vertical, input-output type or horizontal cooperative arrangements reflecting common interests and synergies.

Whether these institutional forms are based on coordination and cooperation of decentralized units, or whether they reflect central command, influences economic performance. In Section 3 below I discuss some properties of decentralized institutional structures and then follow up (in section 4) with examples where decentralization appears to work effectively.

3. COSTS AND BENEFITS OF INSTITUTIONS

It is argued here that decentralized institutional structures are to be preferred to no institutions at one extreme or highly centralized institutions at the other extreme. (See Sah 1991 for a similar conclusion.) In making this proposition, l will note also that decentralization entails certain costs, and not all economies can easily move towards such a structure. This leads to the further conclusion that a role exists for the government in

catalyzing the organic evolution of specific institutions. The government does not have to, and in fact should not, run such institutions; however, it can create the basis for autonomous institutional formation.

The case for no institutions is very weak and has already been considered above. Information failures arising from uncertainty, fallibility, and weak incentives require the existence of rules and norms to guide market transactions. Institutions are required both to create markets where none exist and to regulate markets when they do not function effectively. In the next two sections, various examples of market creation and regulation are discussed.

At the other extreme, creating all-powerful monolithic institutions carries its own dangers. The social objective that I am addressing in this discussion is the need for maintaining an economy that is capable of readily absorbing new knowledge and responding flexibly. It is unlikely that any one institution can perform this function on a continuing basis as external circumstances evolve. Given the power of history and the inertia this implies in institutional forms, a single institution will outgrow its utility over a period of time even if it was the appropriate one to begin with. Alternative and/or competing institutions partially insure an economy against the possibility of being 'locked into' inappropriate institutions.

An important merit of decentralization is the generation and availability of specialized, local knowledge. It is useful here to consider alternative organizational structures within a firm to appreciate the significance of localized knowledge. Aoki (1990)

has contrasted the Japanese firm (J-firm) structure with the American firm (A-firm). In the J-firm, decentralized teams operate, acting on local information. These teams interact with each other, sharing information, rotating employees, and creating peer pressure for performance. In contrast, the A-firm is hierarchically organized, with orders flowing from top to bottom.

The main virtue of the J-firm is that it is able to respond rapidly to changing conditions. As new information becomes available at the 'shopfloor' level, employees are able to act upon it and/or communicate it to the relevant peer group. This contrasts with the situation where knowledge has first to be transmitted up the hierarchy and then decisions conveyed down again to the shop-floor; both time and the full value of the information are lost.

The A-firm is not without its benefits. However, these benefits tend to be of a static nature, with the J-firm turning in a superior long-run performance. The A-firm is better positioned than the J-firm to control errors and shirking at the shop-floor level. Errors at the local level are more likely to occur when workers have limited education and training, however. Thus, while the J-firm capitalizes on trained workers by giving them greater autonomy and enhanced opportunities for training (through, for example, worker rotation), the A-firm can tie itself into a structure that starts with a limited pool of human capital and is unable to promote internal learning, hence reinforcing the need to maintain the hierarchical structure.

This somewhat grim assessment of inertia in institutional structures should not be considered as unrelenting. Indeed, there are an increasing number of examples of A-firms that are adopting the J-firm structure. A particularly interesting case is that of US steel minimills, arguably one of the most dynamic sectors in the US economy. These mills have many of the organizational features of Japanese firms: emphasis on worker training, flexibility and autonomy. There are fewer levels of hierarchy in the minimills than in the average American company, and responsibility rests at the point of action. A further point of interest is that many of these mills are located in areas not specially known for well-qualified production workers. Starting from the available base, training in various forms has resulted in operationally autonomous workers.

The importance of education and training to growth (and yet the weak and uncertain relationship between macro indicators of growth and educational attainment) can now be partially explained. It is evident from the above description that institutional forms depend upon the capabilities of individuals that make up these institutions. However, the institution also amplifies and transforms in specific ways the educational endowment of its constituents. In some instances the transformation may be benign; in other cases, the inertial nature of the institution could prevent further development of talent. The interaction between institutional structures and educational attainments has not yet been studied, to the best of my knowledge. This is clearly an important area for research. However, substantial insights will not emerge from aggregative cross-country

studies; rather, systematic micro-analysis based on case studies and surveys will be required.

It was noted above that certain institutions can help lower the rate at which society discounts the future. There is some basis for expecting that decentralized institutions are most effective in this regard. When firms form an alliance, for example, they are forced to take a longer view. Even loose and informal alliance involves the costs of finding a partner and creates a commitment (to the relationship and to intangible investments); it is not rational to walk out of the partnership unless major changes occur. Wilson (1987) has noted that when competitive pressures are high, firms will become more 'impatient' to make deals. If they have a long-term understanding with their partners, they will be less impatient.

It should be emphasized that the informality of these alliances, and hence continued independent interests of the individual firms in the partnerships, is an important characteristic with a bearing upon the time horizons of the firms. If firms merge and create a new centralized organization (in contrast to the decentralized alliance structure), some of the ongoing investment in building relationships will stop, and the horizon of the new firm may actually decline.

Additional arguments in favor of decentralization have been made by Sah (1991). He notes that when there are several preceptors (or those that exercise significant societal authority), there exists a greater mix of characteristics that can respond to changed conditions. If there are only a few preceptors they may not be able to respond to changed

conditions for reasons of inertia. A larger pool of characteristics (implied by decentralization) creates a better possibility of successful response when conditions change. Thus, Sah (1991) concludes: 'Diversification here not only reduces in a standard, static sense, but it also has a deeper, longer-term advantage in an environment that is changing and is essentially unpredictable'.

The static case for decentralization is based on the trade-off between mean returns and their variability. Decentralization reduces the possibilities of highly risky and hence potentially debilitating actions. Centralized institutions can achieve higher mean returns if they are well coordinated. If the gains from coordination are limited, decentralization will be the preferred institutional setting.

Even if the above arguments in favor of decentralization hold, difficult questions remain to be addressed. How does one, for example, identify the appropriate level of decentralization somewhere between completely atomistic units and a fully centralized structure? The benefits of localized knowledge, a wider pool of preceptor characteristics, possibly longer time horizons, and less volatility in actions and performance need to be weighed against some degree of economic and political power conferred upon institutions (even when they are small and operating in a decentralized setting) and potential coordination failures when institutions with differing objectives act independently. 'Optimal' decentralization of institutions, even when well defined, may in practice be very difficult to achieve. This would be true not only because the various forces may be

difficult to measure for arriving at the desired solution, but because history and inertia create long lags in adjustment.

This, however, does not lead to a nihilistic position with regard to the possibilities of constructive institutional change. Without aiming at the perfect structure, I believe that a method and process can be applied to institutional development with beneficial effects. Two concepts of importance are ‘yardsticks’ and ‘countervailing power’. The concept of peer pressure referred to above is an example of ‘yardsticks’. Yardsticks imply the existence of transparent standards. They are relevant for coordination and as an incentive mechanism within organizations; in addition, they are important for the creation of markets as well as for market regulation. Countervailing power is a central mechanism for regulating market performance.

4. CREATING AND REGULATING THE MARKET

In contrast to some who prefer to think of the market as an institution also, I have deliberately chosen to distinguish between institutions and markets. Institutions are the arena for quantity-based decision-making, and markets are run on price-based transactions. Such a clear distinction does not generally occur in practice; however, it does serve to highlight the fact that markets depend upon institutions for their functioning.

For a variety of reasons (e.g. lack of information, coordination failures), markets do not always exist. institutions can help create markets by defining rules and norms that reduce information gaps and enable coordination. In addition, markets that exist do not

always function effectively (e.g., there may be barriers to entry, or collusive practices may result in high prices and a reduced pace of technical change). Institutional efforts to regulate the functioning of markets could result in more efficient functioning.

It is, however, important to state that institutional efforts at creating and regulating markets are not always benign. Stiglitz (1989) has noted that even the creation of a market through institutional mechanisms can lead to a decline in welfare; failures of regulation through rent-seeking behavior are well-known.

The following comments are, therefore, intended to outline key areas where there may be broad agreement on the efficacy of institutions. Even in this context, there are pitfalls, which I will note.

Standards

Standards are mechanisms for creating performance benchmarks (or yardsticks). When standards are enforced, they create a focal point for the activity of a large number of organizations. Thus they enable coordination. Creation of new benchmarks forces organizations to undertake new tasks that they may be unwilling to perform because of a status quo bias or because there are externalities creating under-investment in the new activity. A good example of such new tasks are the investments in environmental pollution control made necessary by increasingly stringent pollution standards.

Standards have been widely used as mechanisms for information transmission and coordination in East Asian economies. When bicycle manufacturers in Taiwan were

setting off on their quest for international markets, the producers' association, in cooperation with a local government-run research institute, made a careful study of international standards and used them as a teaching tool for educating local producers on the specifications and tolerances demanded in international markets.

Both Taiwan and Japan used mandatory quality standards for producers who wished to export their products. A system of inspections to ensure that quality standards were being met was carefully enforced over a number of years. The apparent objective was to create a reputation that each country sold goods of acceptable quality, but in addition an educational purpose was served.

Standards may, therefore, be voluntarily accepted by associations of producers (as in the bicycle example); or they may be enforced by a central mandate. A third possibility is that one economically powerful organization may set a standard which others are forced to follow. In the computer industry, standards set by International Business Machines (IBM) have to be treated with great deference (though in recent years, alternative standards have acquired strong followings).

Though there exists no general theory of standards formation, it has been shown that standards set through cooperative efforts are generally more efficient than those set unilaterally through central command or by a limited number of players in the relevant market (Farrell and Saloner 1988). Such consensus building is slow but reduces the risk of establishing significantly inefficient standards.

Unfortunately, matters are not so simple. Centrally-mandated standards are often required to catalyze a pattern of behavior, following which voluntary standards on a cooperative basis could evolve. For example, in Germany tight standards on pollution levels were set by the government in the early 1980s. This led to a major shift in behavior of firms who began purchasing a wide range of pollution-control equipment. A pollution-control equipment industry, therefore, grew and is now a substantial sector. At this stage, a new set of voluntary standards are beginning to emerge. These standards relate to auditing and so-called 'eco-labelling'. By cooperatively developing and submitting to these standards, firms are helping in a process of information sharing and diffusion while contributing to the achievement of economy-wide standards set by the government.

While good standards have many beneficial effects, it is not always evident how such standards can be devised. The possibility cannot be ruled out that standards are ill-directed and even harmful. Especially in the areas in which I have worked and am familiar with (environment, telecommunications, quality control), I believe a good case exists for borrowing from international best practice.

Borrowing need not (and should not) imply uncritical copying. Indeed, adapting international standards and developing a group of local support standards is an important activity to which more resources should be devoted than is currently the case in most developing countries. However, international best practice provides a useful reference point against which to judge one's standards and is likely to create a counterweight to rent-seeking activities (and the resultant realization of inefficient standards). In addition,

international standards contain a history of institutional experimentation which can be useful for avoiding pitfalls during a period of implementation.

A ‘small country’, according to trade theorists, is one which accepts the prices prevailing in international markets as unchangeable and makes production and investment decisions on that basis. Except in the early part of their drive towards increased share of world markets, East Asian economies have not seen themselves as ‘small economies’. They have consciously tried to influence prices; moreover, they have recognized that economies of scale exist in marketing channels and that long-term relationships with buyers are of value in accessing markets and information. On the other hand, these countries have to a greater extent acted as small economies in accepting the quality, specifications, and transactional requirements placed upon them by world markets. By thus accepting the norms of international institutions, they have been better able to communicate with their interlocutors.

Regulation and Antitrust

The discipline of regulation and antitrust is required particularly when international standards can have only a limited influence. In many infrastructure sectors, economies of scale coupled with the non-tradable nature of the service implies the need for regulation. In tradable sectors, coalitions among firms sometimes serve useful functions but can also have anticompetitive effects.

An important implication of the principle of decentralization is that entry into production and other activities should be as open as possible. Creating regulatory barriers to entry is likely to be bad not only for static reasons (creation of monopolies and consumer welfare losses) but also because experiments with different ideas and institutional forms will not occur.

It is the case that in a number of industries which were apparently characterized by significant technological economies of scale (such as electricity generation and telecommunication services), the advantages of size have declined over time. Economies of scale have not disappeared; however, the benefits of allowing new entry are considered by many to outweigh the losses due to inefficient scale size.

In an interview with the *Financial Times* (17 February 1992), the British electricity industry regulator has said: 'I do believe that it is both possible and desirable for competition (to occur) at the domestic level. I look forward to a situation where the domestic customer can look in the Yellow Pages for a supplier of electricity like a supplier of oil'. In telecommunications, not just declining scale economies but also several viable competing media of transmission make it possible to offer specialized services, each requiring somewhat different capabilities.

These new technologies with limited scale economies are of particular relevance to developing economies. They create the possibility of leapfrogging from the current situation, which is often characterized by technologically- and economically-outdated systems, to the most modern systems. However, the evidence of the past decade also

shows that to leapfrog in a technological sense requires commensurate organizational and institutional leapfrogging. For example, where infrastructure is supplied by a government-owned monopoly, permitting competition requires the creation of one or more independent regulators; in addition, policymaking that was earlier the preserve of the monopolist, now must become user-directed and thus bring into its fold a multiplicity of interests. Creating and sustaining such institutions requires a clear understanding of the process and a strong commitment to change.

Allowing greater entry does not imply that incumbents should be shackled. A specific and important issue is how one deals with alliances. These, as noted, can have beneficial effects. On the other hand, they can also become centers of power and indulge in collusive practices. However, antitrust or other laws that deal with controlling economic power need to consider alliance activity on a case-by-case basis (using the so-called 'rule of reason') rather than declaring such institutions harmful per se. Cooperative activity in alliances is best tempered through competition.

5. INITIATING INSTITUTIONAL CHANGE

Throughout this discussion, I have suggested that an activist role with regard to institutional development is possible. Not only the government, but groups of organizations can, I have argued, bring about institutional change. This contrasts with the view that institutions are 'endogenously determined' or, in other words, are reflections of changing factor endowments and technological capabilities of an economy.

The endogenous institutions hypothesis has been applied in many contexts. In agriculture, the evolution of specific contractual relationships has long been treated by some as the outcome of particular land-man ratios and technical possibilities (Stiglitz 1989 argues along these lines).

The Chicago School has applied the endogenous institutions idea to develop a theory of regulation. In this view, regulation emerges when market imperfections (based on technical conditions) create the possibility of rents. Producer interests (which are easily mobilized) then coalesce to exploit these rent-earning possibilities at the expense of other interest groups that have limited capacity to organize themselves. When the basis for rents erodes (either due to reduced demand for the product or due to changed cost conditions), the demand for regulation declines. Thus, regulation and deregulation are passive responses to underlying demand and cost factors.

Noll (1989), among others, has questioned this mechanistic understanding of institutional evolution. He proposes that there is a basic unpredictability about institutional evolution. The specific history of the economy and combinations of interest groups can lead to a multiplicity of possible institutional forms. However, that results in societies imposing upon themselves a certain structure that constrains the ability to experiment with all possible institutions.

The imposed structure tends to persist for a number of reasons (see Arthur 1989 and North 1990). There are large set-up costs in creating institutions. Once they are set up, a learning process is generated that generally tends to reinforce existing institutions.

Patterns of coordination that evolve from existing institutions are difficult to change. And finally, agents develop expectations that make them behave in ways that reinforce current institutions.

This view of institutional evolution carries less certainty on the direction of change. It allows for the possibility that institutions that develop may be socially inefficient, but once in place (on account of specific historical events) may be difficult to dislodge. As North (1990) notes, unproductive institutions can persist: 'The increasing returns characteristics of an initial set of institutions that provide disincentives to productive activity will create organizations and interest groups with a stake in the existing constraints.'

Within this context, change has to focus on specific elements of the existing structure. If these elements are crucial to holding the structure in place, the possibilities of change are enhanced. However, several small efforts at change can also cumulate. One analogy is that of creating holes in a dyke. A few holes can be plugged, but soon the water begins to create its own momentum of change.

This notion of incremental change is related to the concepts of 'change agents', 'political entrepreneurs', and 'demonstration effects'. A political entrepreneur, as defined by Noll (1989), is 'a person who invents in a way to undo structure-induced stability'. The person need not be an individual. For example, Noll states that courts often upset the status quo. Such entrepreneurship presumes a certain minimum decentralization in

institutional working that allows the possibility for specific entrepreneurs to initiate change.

The underlying philosophy is that focused change in well-defined and hospitable contexts can lead to more widespread change via demonstration as well as linkage effects. Take the example of export promotion. Many fiscal incentives and much institutional support are ostensibly provided to exporters in India. Such support is typically unfocused. In particular, it does not cater to the needs of particular sectors or regions. While focusing on sectors is in disrepute, regional targeting is more in vogue and can have significant positive effects. Following the example of focused efforts within China on the southern coastal provinces, India can fruitfully explore the possibility of identifying clusters with a track record of exports and then supporting, through institutional and infrastructural mechanisms, rapid acceleration of exports from these regions. The town of Tirrupur, 60 km from Coimbatore, exports about a quarter of India's garments, despite drinking water being supplied to the town only once a week, electricity supply being so limited that almost all producers require their own generators, and the telecommunications facilities being barely adequate. Given the success achieved despite these handicaps, this, if any, is a hospitable environment for change that could have positive multiplier effects.

Such a decentralized approach to change is complementary to the more comprehensive 'big bang' approach. The chief merit of a decisive and widespread break with the past is presumed to be enhanced credibility of government intentions. However, the case for credibility has been overstressed, as recently noted by some authors (Rodrik

1989, Calvo 1989, and Daveri 1991). Inconsistencies of various kinds can arise even when a comprehensive effort is made. Decentralized and focused efforts complement the more comprehensive and macro efforts through their demonstration and learning effects. A decentralized change process allows the possibility of observing the various interactions among variables of interest; it can serve as a good advertisement for success while providing a relatively low cost method of learning from failures.

Once again, however, it is worth noting that change brought about in a decentralized manner is not without its own traps and will often not achieve the most desired result. Political entrepreneurs can create change by appealing to the 'rational ignorance' of concerned actors. This makes it all the more important that certain standards of transparency and wide information diffusion be a firm goal of governmental action.

6. CONCLUSIONS

This paper began by asking why levels of income across countries did not converge over time. The argument that there are increasing returns to scale in capital investment was shown to be incomplete because it only raised the further question of what the institutional sources of such increasing returns were. Similarly, it was noted that educational attainments in different countries provided only a partial (and sometimes inconclusive) explanation of growth differentials.

The focus on basic institutional structures that provide the fabric or the context within which physical and human capital decisions are made appears to be a fruitful

approach towards explaining persistent differences in income levels. Institutions interact with physical and human capital to determine their productivity. Increasing returns to capital, as found in many empirical studies, could well reflect increasing returns from investments in institutions.

Since institutions are a response to uncertainty and other informational failures, they must be capable of evolving as circumstances change. Change must reflect local or grass-roots knowledge and conditions to allow the most efficient use of information as well as to prevent extreme and volatile actions. Decentralized institutional structures are, therefore, desirable. Decentralization in rules and standards making, in the architecture of specific organizations, and in the links between organizations (leading to network formation) are to be recommended.

Though the virtues of decentralization were stressed in this paper, it was also pointed out that significant trade-offs are embedded in any institutional form and that history and inertia are unlikely to allow the formation of an optimal institutional structure. Coexistence of and coordination between institutions with different degrees of centralization is another important goal, which is also difficult to fully realize in practice.

Those making institutional choices, therefore, need to see themselves as catalysts encouraging transparency in transactions, fruitful use of localized information, multiplicity of attainments and characteristics in the population, and mechanisms for countervailing economic and political power.

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