

# **Law and the Poverty of Nations**

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# Chapter 1

## The Mystery of Growth

Imagine a banker who asks to be paid by placing one penny on the first square of a chess board, two pennies on the second square, four on the third, etc. Using only the white squares, the initial penny would double in value thirty-one times, leaving \$21.5 million on the last white square. As this example suggests, growth compounds faster than the mind can grasp. The question of whether growth is faster in rich or poor nations will determine whether living standards in the world converge or diverge. If poor nations grow significantly faster than rich nations, the gap between them will close surprisingly quickly. Conversely, if rich nations grow significantly faster than poor nations, the gap between them will widen surprisingly quickly.

In fact, no general pattern exists for poor countries to catch up or fall farther behind. Instead, some poor countries have grown faster than some rich countries, thus closing the gap, and some rich countries have grown faster than some poor countries, thus widening the gap. Our perceptions of rich and poor diverge dramatically from the recent past. To illustrate, in 1900 Argentina's income per capita resembled Canada, and today Canada's is more than three times higher. Similarly, in 1900 Japan's income per capita resembled the Philippines, and today Japan's is six times higher. To take an extreme case of very fast change, after World War II, Korea and Nigeria has similar national income per capita, and today Korea's is nineteen times larger. Most people cannot imagine China's economic influence in the world surpassing the U.S, but, if current trends continue, China will surpass the U.S. in national income in 2014.<sup>1</sup> Lifting so many of the world's people out of poverty will be one of history's remarkable accomplishments. (China's income per capita will still

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<sup>1</sup> This prediction was made by C. J. Dahlman, Luce Professor of International Affairs and Information of Georgetown University, in remarks to the Chinese Reform Summit, National Development and Reform Commission (NDRC), Beijing Diaoyutai State Guesthouse, July 12th-13th, 2005. The prediction was made by extending existing trends and allowing for a modest slowing of Chinese growth rates, using the purchasing power parity method of comparison.

be lower, so the average American will still be richer.<sup>2</sup>) In contrast, GDP per person in sub-Saharan Africa has decline since 1975, roughly by the order of 25%.<sup>3</sup>

Why are some nations poor? In the modern world, nations are poor because their economies fail to grow. Compared to sustained growth, other sources of wealth are insignificant. Our explanation of national poverty, consequently, begins with an explanation of economic growth.

## I. Separation of Ideas and Capital

Growth occurs partly because of innovation. A steady flow of innovation sustains growth and compounds wealth. Economic innovation occurs when someone discovers a better way to make things or better things to make. Some economic innovations are primarily technological and others are primarily entrepreneurial. Technological innovation improves material things such as machines, plants, fabrics, medicines, or fuels. Entrepreneurial innovation improves organizations and markets, such as audit committees, real estate investment trusts, team production in manufacturing, extended warranties, and incentive contracts. Both types of innovation involves developing a new idea. Uniting capital and ideas encounters a fundamental obstacle, as illustrated by this example. An economist who works at a Boston investment bank received a letter that read: "I know how your bank can make \$10 million. If you give me \$1 million, I will tell you." The letter concisely illustrates the problem of financing innovation: The bank does not want to pay for information without first determining its worth, and the innovator fears to disclose information to the bank without first getting paid.

To give another real-life example, a Berkeley mathematician named Richard Niles invented bibliographic software called "EndNote" that many professors use. In the early stage of developing Endnote, his hope and fear was to receive a call from Microsoft. The hope was that Microsoft would examine EndNote and decide to buy his company, thus making him rich. The fear was that Microsoft would examine Endnote and decide to build a competing product, thus bankrupting EndNote. Like

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<sup>2</sup> Since China's population is 4 to 5 times greater than the U.S., China's income per capita in 2014 will still be  $\frac{1}{4}$  to  $\frac{1}{5}$ <sup>th</sup> that of the U.S.

<sup>3</sup> GDP per person in sub-Saharan Africa has decline since 1975, roughly by the order of 25%. (2005). "Special report: Aid to Africa -- The \$25 billion question," The Economist, July 2nd, 2005, pages 24-26.

the Boston bank, Microsoft would not buy an innovation without determining its worth, and understanding the innovation would reduce the need to buy it. Niles eventually got a call from Microsoft, which he answered with trembling, but Microsoft was merely trying to sell him software. Later Niles got his sweet reward when Thomson, a very large publisher, bought EndNote.

To stimulate innovations, people must get paid for good ideas. To get paid, the idea must be developed and applied. Developing an idea requires capital. To get capital, innovators must disclose information to investors. After the investors have the information, they have less need to pay for the innovation. So the problem of economic growth is to unite ideas and capital. This characteristic of ideas separates them from capital.

To analyze this problem, we use the economics of information. Economists distinguish public information from private information. Public information is available to everyone who seeks it. To illustrate, general principles of science are published in books and taught in schools. In contrast, private information is available only to a few people. For example, the recipe for Coca Cola is a commercial secret. An innovator who makes a discovery possesses private information that other people lack. If the innovation is useful, its development gives the innovator a competitive advantage over others, which yields exceptional profits. Exceptional profits, however, attract competitors who try to learn what the innovator knows. For example, Coca Cola attracted Pepsi. As competitors come to understand what the innovator knows, the innovator's private information becomes public. As information about the innovation becomes public, the innovator loses his competitive advantage, so his profits return to the normal level. The diffusion of the innovation, however, has raised productivity and made people richer.

This tendency of competition to convert valuable private information into public information creates a characteristic life cycle of innovations. First, someone has a new idea and obtains capital to develop it. The innovator may form a new firm and find outside investors, or an established firm that employs the innovator may supply the capital. At this stage only a few people understand the innovation. Once the innovation succeeds in the market, the innovator's organization enjoys exceptional profits and expands faster than its competitors. Observing these facts, competitors try

to discover what the innovator knows. As they come to understand the innovation, competition erodes the innovator's profits and slows its growth. In the end, competitors fully assimilate the innovation, the innovator's profits return to normal, and the organization stops expanding faster than its competitors. In this life cycle, the innovator understands the innovation in the first stage, the innovators and some competitors understand it in the second stage, and the public understands it in the third stage.

These three stages in the development of an innovation correspond to three stages of finance for a startup firm in Silicon Valley. According to a popular quip, the initial funding for startup firms comes from "the 3 Fs": family, friends, and fools. Family and friends have confidence in the innovator, even when they cannot understand the innovation. These "angel investors" are often motivated by personal relationships. Filled with exuberance, the fools think that they know a good investment without having much information about it. As we see in the next chapter, the biggest fools are government officials and the joke is on the taxpayers. Postponing our discussion of fools, we refer to the first stage as "relational finance."

Most innovators have too few personal relationships with wealthy people to achieve the scale necessary to finance an innovation's development. The second stage of funding comes from "venture capitalists," who are not family, friends, or fools. Venture capitalists are experts at ascertaining risks in the early stages of an innovation's development. Venture capitalists are also experts at reorganizing startups to make them profitable. If the founders fail to meet profitability goals, the financial contracts allow venture capitalist to replace them with new management. Replacement is often necessary because good inventors are often bad managers. Unlike relational finance, venture capital is a form of private finance. Finance is private because it comes from a small group of experts with a good understanding of the innovation.

In the third stage, a successful startup sells its stock to the public. In order to sell stock to the public, a U.S. firm must comply with rules of the Securities Exchange Commission, which require divulging much information to the public. The information allows many people to understand the innovation and decide whether or not to invest in its further development. The third stage is public finance.

Notice the tight connection between ideas and capital in the life cycle of a Silicon Valley startup. Only the innovator understands the innovation in the first stage, so finance is relational. A small group of specialists understand the innovation in the second stage, so finance is private. The idea diffuses broadly in the third stage, so finance is public.

Like biological mutations, most startups fail and a few succeed spectacularly. The first stage, consequently, is the most risky for investors, and also potentially the most lucrative. Since the risk of failure is so great, first-stage investors get the stock at a low price. At the end of the first stage, those startups that survive have a substantial product to show venture capitalists. Second-stage investment is still very risky, however, because the product has not proved its profitability in the market. Second-stage investors get the stock cheap, but not as cheap as first-stage investors. Finally, having proved its profitability in the market, a successful firm that moves to the third stage ceases to be a startup. Third-stage investors face lower risk and pay a higher stock price. In each stage of finance, the risk and potential profits for investors move in the same direction--down.

In every country, growth occurs through innovation, but the form of innovation differs with the level of development. In Silicon Valley, innovations often consist in technological innovations, such as new computer chips or programs that were previously unknown to the world. In developing countries, in contrast, innovators usually consist in introducing goods, techniques, and organization into a locality that were invented elsewhere. Whereas biological evolution proceeds by eliminating the unfit, economic evolution proceeds by emulating the most productive. Introducing a new good, technique, or organization requires adapting it to fit local conditions. Adaptive-innovation in developing countries has many of the same characteristics as invention in developed countries. In both cases, the innovator has a valuable idea requiring capital for development, which is highly risky. In both cases, successful development reduces risk and profitability, and competition converts private information into public information.

Economists traditionally distinguish innovation from another source of growth called "factor mobilization," which consists in moving a factor of production from a lower-valued use to a higher-valued use. To illustrate, assume that a technology

company makes computers and cell phones. If the company earns 10% from its computer division and 15% from its cell phone division, then it could make more money by re-allocating capital from computers to cell phones. Throughout history, removing barriers to the mobility of factors enables market forces to re-allocate them to higher valued uses, which increases production. For example, freeing the serfs in Russia in 1861 enabled more of them to move from relatively unproductive farming to relatively productive industrial jobs. Similarly, World War II freed many American women from restrictive social norms that restricted their employment outside the home. As a final example, the European Union established the “four freedoms” – mobility of goods, capital, services, and labor – and the dramatic growth of wealth among its members is perhaps the greatest economic accomplishment in the second half of the twentieth century.

Moving factors to higher valued uses requires adapting organizations and markets. This is especially true in the world where so many of the prohibitions are gone due to legal reforms, treaties, and international organizations like the World Trade Organization. Once prohibitions are gone, mobilizing factors is a job for entrepreneurs, who must adapt organizations and markets. We have described this process as “entrepreneurial innovation,” because it involves the same problem of uniting information and capital as technological innovation in Silicon Valley. (A more technical discussion for economists is in chapter \_\_.)

Biologists sometimes say, “Ontogeny recapitulates phylogeny,” which means that the development of a single organism from fetus to adult resembles in some ways the evolution of the entire species. Similarly, the three stages of finance in Silicon Valley resemble in some ways three levels of development in capital markets. First, in countries without capital markets, businessmen mostly borrow from family and friends. Finance remains at the first stage in Silicon Valley, which is relational. Second, in countries where banks dominate finance, an elite of wealthy insiders lend to businesses based on private information. Bank finance corresponds to the second stage in Silicon Valley. Finally, in countries with public capital markets, businesses raise most money by sales of bonds and stocks. In these capital markets, brokers quickly distribute information to the investors whom they advise. Rapid conversion of

private information into public information is the defining characteristic of public finance, which is the third stage in Silicon Valley.

As an economy develops, it adds additional sources of finance. Very poor countries mostly finance innovation through relationships, which usually keeps business small and local. Some peoples, notably Chinese and Jews, have extensive and far-flung family networks that extend relational contracts beyond the usual bounds. Relationships, however, constrain the amount of capital to available to sustain growth. To overcome this constraint, an economy that grows must supplement relational finance with private finance in order to increase the scale and reach of business. Some countries or regions, such as Japan and northern Italy, have achieved affluence mostly through private finance. As countries become affluent, however, they usually need to supplement private finance with public finance, which means selling stocks and bonds to the general public.

## **II. Law for Growth**

What determines whether a country is limited to relational finance, or whether it also enjoys private and public finance? We have a simple answer: law. The three levels of finance correspond to three levels in the development of effective law. At the lowest level, a person who foresees that thieves will probably steal everything has little incentive to produce anything. Any investment, consequently, requires protection of basic property rights. For relational investment, nothing more is required from law. Uniting ideas and capital is risky for the innovator and investor. Each side needs to have confidence in the other's promises. Relationships provide information on the trustworthiness of others and means for enforcing promises. If necessary, informal means can carry the burden of enforcing promises. Relational finance can get by without contract law, so long as basic property law protects against theft.

Private finance, in contrast, involves promises among people whose relationships are too thin for informal mechanisms to carry the burden of enforcement. Clans or gangs can provide some enforcement of promises among unrelated people, but an effective state provides much more reliable enforcement



through law and courts. Besides basic property law, private finance cannot flourish without effective contract law.

Finally, public finance requires outside investors to put their funds under the control of insiders who manage organizations. Given control over funds, the managers have many possibilities for appropriating the investors. Protecting outside investors from inside managers requires the law of corporations, securities, and bankruptcy, which form the core of business law.

In sum, relational finance requires property law, private finance requires contract law, and public finance requires business law. In many poor countries, the written law closely resembles that of a rich country. For example, property and contract law-on-the-books in India and Nigeria resemble English common law, and property and contract law-on-the-books in Peru resembles the Spanish civil codes. Since property and contract law on-the-books is sound in England and Spain, it should be sound in India, Nigeria, and Peru. In poor countries as compared to rich countries, however, property and contract law-on-the-books tend to be ineffective. Laws are mostly obligations backed by sanctions. A credible threat of a sanction deters most lawbreakers. By “ineffective” we mean that sanctions are not credible and do not deter lawbreakers. When we speak of “law” as the foundation of economic growth, we mean law that controls behavior, not law that is merely written down. Ineffective law is like a toothless gear that spins without moving the vehicle forward. Similarly, ineffective property and contract law do not move the economy forward.

Some societies, especially tribes, have no law on-the-books because they have no books. These societies may not have a state. Anthropologists have long recognized that societies without books or states still have law. In this context, law means obligations backed by sanction, usually with third-party adjudication of disputes. An obligation can be backed by a sanction even though the obligation is not written in a law book and the sanction is not administered by the state, in which case it is sometimes called a “social norm.” Stateless societies have social norms and no state norms. Social norms, however, remain influential in societies with states. As we will explain later, empirical research by sociologists and economists have shown that social norms stand behind much state law and make it effective. For

example, social enforcement is primary and state enforcement is secondary for many contracts. This book presents a legal theory of economic growth, but our conception of “legal” is not limited to state law.

For property and contract law to be effective, victims of theft and breach need practical remedies that deter wrongdoers and compensate victims. Sanctions come from society and state. Damage to reputation, shunning, and refusal to deal are important social sanctions. Liability, fines, and imprisonment are important state sanctions. In our view, the most fundamental defect in the law of poor countries is ineffective social and legal enforcement of property and contract law

To illustrate this fact, we turn to some examples inspired by the three stages of finance. At the lowest level, ineffective protection of property rights has devastating economic effects, as illustrated by this example.

African Diamonds: Diamond miners in central Africa use hand-tools to dig in a riverbed under the guard of teenage soldiers with Kalashnikov rifles. The miners sell the diamonds to a military officer at a small fraction of world market prices. The diamonds subsequently pass through various intermediaries until they reach Europe. Finally a courier arrives at the central railway station in Antwerp, Belgium, walks quickly to one of the nearby diamond shops, the merchant examines the diamonds and pays in cash, and the courier leaves the city by train within the hour.

In central Africa, producing and transporting diamonds in recent years occurred in conditions that approached anarchy, so central Africa produced few diamonds and received much less than the world price for them. (We say nothing here about unspeakable cruelties and heinous abuse of human rights). If anarchy were replaced by a secure system of property rights, central African nations could produce diamonds with better technology, export them through the regular channels of trade, and receive the world price.

Moscow Security: In Moscow a man opens a small shop selling household goods. A month later three young men visit him with copies of his bank records. Using these numbers, the men calculate a monthly fee that he must pay them to “protect his shop from hooligans.” If he does not pay, they will destroy his shop. The shopkeeper pays and his business succeeds.

Unlike diamond thieves, Moscow criminals who sell security do not want to take everything from their clients. Selling protection presupposes something to protect. In this example, the Moscow criminals impose a “security tax” that leaves

room for the shopkeeper to succeed. However, security is a “natural monopoly,” which means that states can provide it more cheaply and reliably than private parties. The Moscow criminals, consequently, impose a heavier burden than states in successful economies. Compared to successful states, when organized criminals provide security, the “tax” is higher and security is lower.

Our two examples illustrate that private security of property is better than anarchy and worse than effective state law. Now we turn from property to contracts:

Indonesian Textiles: In Jakarta, a businessman manufactures cloth, makes the cloth into dresses, hand-decorates them, and exports the finished product. The entire process occurs inside a single factory where cotton and silk come in the door and decorated dresses go out the door. Managers in the factory are mostly relatives of the owner. Rural households outside Jakarta would gladly do the hand-decorations at lower wages than factory workers earn in the city. The villagers, however, do not have enough capital to buy undecorated dresses and sell decorated dresses back to the businessman. Furthermore, the businessman is unwilling to leave the dresses in rural households in exchange for a promise by the household to decorate them.

In countries with weak legal institutions, economic cooperation and exchange tends to involve people with personal ties, especially relatives and friends. In the example from Jakarta, the businessman gathers everyone needed to produce a particular product into a single factory, where he can monitor everyone’s behavior with the help of his relatives. However, people do not have enough relatives and friends to achieve the scale of trade and production required for affluence. An enforceable contract can lower the cost of monitoring, which facilitates dispersed production, wider markets, and larger organizations. Extending the sphere of trade to strangers requires property and contract law.

The example of Indonesian textiles illustrates that weak contract law keeps trade too local and organizations too small. In our view, the most pervasive and fundamental defect in the legal framework of poor countries is inadequate institutions to enforce property and contract law. Enforcement involves ordinary citizens and state officials. Citizens enforce legal obligations informally through social pressures, reputation, and esteem. Police, courts, and other state officials enforce legal obligations formally through legal sanctions.

One of the most pervasive obstacles to business development in poor countries is the inability of creditors to collect debts through courts. To illustrate, Mexican courts assess interest against delays in collecting a debt at rates below the market rate of interest. Debtors, consequently, gain by using the law to delay repayment. One of Mexico's richest businessmen, Ricardo Salinas, began to build his fortune by figuring out how to avoid courts and still collect debts from poor people who buy consumer durables. (His debt collectors keep the names of each borrower's relatives and enlist their help in collecting the debt.) The situation is worse in India where collecting a debt through the courts takes years or even decades. In some countries, the judges regularly take bribes to decide a case. An Indonesian friend told us that, instead of trying cases, his country's lower courts "auction" them.

As another example of ineffective private law, many countries have constitutions that guarantee a citizen's right to a trial. In Chile and some other Latin American countries, this right is interpreted to mean that the court should not assess fees against the parties to a legal dispute. The absence of fees increases the quantity of cases. Heavy case loads cause judges to dispose of most cases on the basis of written documents, without oral arguments in court. The absence of oral arguments reduces the information available to judges and undermines the quality of their decisions.

A different kind of financial problem known as the "soft-budget constraint" exists in countries with a socialist tradition:

Chinese steel: When the government privatized a steel company in northern China, one-third of the shares could be bought and sold by the public ("tradable" shares) and two-thirds could not be bought and sold by the public ("non-tradable" shares). Of the latter shares, the state owns 70% and various insiders own the remaining 30%. Although the steel company is unprofitable, it has many employees and politically influential managers. Using its political muscle, it finances its losses by pressuring a state bank to buy its bonds, even though they are commercially unsound. Given access to soft loans from the government, the steel firm postpones the painful changes necessary to become profitable.

From China to the Czech Republic, partly privatized companies subsist from soft government loans. In the case of China, their voracious appetite for cash crowds out the bonds of profitable companies that are the engine of China's growth. Without

access to the bond market, profitable private firms must rely too heavily on relational finance.

Now we turn to specialized business law, such as corporations, banking, securities, and bankruptcy. For property and contract law, our general theme is that poor countries under-enforce it. For business law, our general theme is that poor countries under-enforce and under-develop it. Here is an example.

Ecuadorian stocks: In Ecuador a family has a successful business building shrimp farms on coastal mangrove swamps. To grow faster, the business needs to obtain more capital, either by selling stocks or bonds. The family knows that shrimp prices could fall in the international market. If the family sells stocks, investors will receive dividends when shrimp prices are high, and nothing when shrimp prices are low. If the family sells bonds, however, the investors must receive their periodic payments, regardless of whether shrimp prices are high or low. To reduce its risk, the family wants to sell stock, not bonds. The family seeks advice from a financial expert in Guayaquil, who explains that Ecuadorian investors in a recent year bought at least 150 times more bonds than stocks. The small size of the Ecuadorian stock market makes selling stock impractical in this case. Since the family regards selling bonds as too risky, it decides not to borrow and to grow more slowly.

When people invest in a company that they do not control, they run the risk that the people who control it will appropriate their investment. Securing non-controlling investors against appropriation requires effective corporate and securities laws. The problem is harder to solve for stocks than bonds. Stocks entitle their holders to a share of profits. The people who control a company can manipulate reported profits in ways that are difficult to detect and prove in court. The stock market cannot flourish in most poor countries because ineffective corporate and securities laws provide insufficient protection against manipulation of non-controlling investors. Unlike stocks, bonds prescribe an exact repayment schedule that the issuer must meet or go bankrupt. The repayment obligation for bonds is easier for courts to enforce than profit sharing obligations for stocks. Consequently, the bond market can flourish under conditions where the stock market languishes.

Since most new businesses fail and a few succeed spectacularly, attracting capital to startup businesses requires offsetting the high probability of failure by guaranteeing the investors a substantial fraction of the possible gains. Skewing finance towards bonds and away from stock deprives investors of the possible gains,

which makes them less likely to invest. Also, when entrepreneurs must borrow at fixed interest rates rather than borrowing against a share of future profits, their risk is greater. To illustrate, assume that an entrepreneur uses his money to start a company and then obtains additional funds by selling bonds. If revenues do not flow into the business fast enough to pay bondholders, he will go bankrupt and lose his entire investment. In contrast, if he were able to sell stocks rather than bonds, he would not need to make fixed payments, so revenues could grow more slowly without precipitating bankruptcy.

We have explained why bond markets tend to flourish in countries like Ecuador whereas stock markets languish. In these circumstances, business expansion is mostly financed by bank loans. When entrepreneurs must borrow at fixed interest rates rather than borrowing against a share of future profits, their risk is greater. A larger stock market that permitted businessmen to sell more stocks and fewer bonds would encourage entrepreneurs by allowing them to spread their risk. The skew in financing away from stocks dampens investment in startups and slows the pace of innovation.

### **III. Conclusion**

In the past, the uneven distribution of natural resources condemned some countries to poverty, but vast improvements in science have suspended the sentence. Nations can overcome poor natural resources with good technology. Unending possibilities for invention can sustain growth. Relative to sustained growth, everything else is insignificant for lifting nations out of poverty. Sustained growth comes from many people continually finding better ways to make things or better things to make. Each innovation brings new information, new information brings exceptional profits to the innovator, competition diffuses the information, diffusion increases productivity and wealth, the innovator's profits return to normal, and the stage is set for the next innovation. By this process, nations become rich.

Science and technology mostly flow from developed countries to developing countries through international trade, investment, and educational exchanges. By the end of the last century, most international obstacles preventing poor countries from acquiring science and technology were removed by the absence of major wars, the collapse of communism, the lowering of tariffs, and falling transportation costs. The

remaining obstacles are mostly domestic. To acquire technology, developing countries must adapt their organizations and markets, which requires financing innovation by uniting ideas and capital. To finance innovation, the innovator must trust that the investor will not appropriate his idea and the investor must trust that the innovator will not appropriate his money. Law and social norms provide the basis of trust between innovator and investor.

When people fear that others will steal what they make, they lose the confidence needed to invest in the future, so many suffer economic deprivation and unspeakable cruelty. To illustrate, as we will explain in Chapter \_\_, collectivization of agriculture caused starvation in Russia and China that apparently killed more of their citizens than World War II. Confidence to invest in the future comes from effective property law, which deters hoodlums, mafias, dishonest accountants, ponzi artists, conniving state regulators, thieving politicians, and other predators. Given effective property law, extended families can finance business development, even without effective contract law. As development proceeds, however, sustaining growth requires finance from non-relatives, which is difficult to organize without effective contract law. Contract law underpins markets for loans, banks, and direct foreign investment. A contract for repayment on a fixed schedule, however, concentrates risk on the borrower, which constrains innovation. Spreading risk, which is necessary to sustain growth and achieve affluence, requires stock markets, which presuppose effective business law. Subsequent chapters in the book explain in detail the defects in property, contract, and business law that impede growth in poor countries.

After ineffective law, the most important obstacle to growth is defective policies, which are the subject of the next chapter.

## Chapter 2

### Less Is More

Economic innovation resembles biological mutation that is unpredictable before it occurs and understandable afterwards. It is unpredictable because it begins with an innovator discovering something and guarding the secret in the hope of earning extraordinary profits. It is understandable because it ends with the public figuring out the innovation and the innovator's profits returning to an ordinary level. Government officials who rely on public information, consequently, cannot predict which firms or industries will surge, although, after the surge ends, they can understand why it occurred.

These facts are decisive for laws and policies to promote economic growth. Relying on public information, the state cannot pick the winners in the competition among firms and industries, and it should not try to do so. Industrial policy that invests in selected firms or industries cannot increase growth rates except by chance. Not only do state officials lack the information to invest in winners, they also lack the motivation. Instead of trying to invest in the most promising opportunities, politicians mostly invest in their friends and supporters.

The performance of state officials in trying to direct growth is dismal. To illustrate, inflation-adjusted oil prices increased sharply from the mid 1970s until 1980, and then fell back to the previous low levels where they remained until turning up again in 2002. Whereas public officials predicted a sharp rise in oil prices, they remained stable for twenty years. U.S. politicians, however, used the prediction of rising oil prices to justify subsidies for private companies to construct and operate plants to extract oil from shale. The plants were uneconomic at current prices, but politicians and state officials predicted that prices would rise enough to justify the investment. In fact, the process never became economic, the plants closed down after the subsidies expired, U.S. taxpayers lost a massive amount of money, and some very large energy companies profited handsomely.



Besides wasting public money on uneconomic industries, aggressive state policies for growth crowd out private investment in economic industries. To direct the economy, public law must expand, which conflicts with property law, contract law, and business law (corporations, securities, banking, bankruptcy). When developed aggressively, state leadership crowds out individual initiative. To illustrate, the state sought total control over the economy through central planning under communism. In China in the 1950s, the collectivization of agricultural and the “Great Leap Forward” in industry were colossal blunders with tragic consequences. Besides misdirecting state funds for investment, China’s policy and administration crowded out the private sector.

Instead of the direct approach to growth, the state should take the indirect approach by providing a framework for competition among businesses. To unite ideas with capital and produce growth, business needs freedom through law. The framework especially includes secure property and contract rights, and effective business law (corporations, securities, banking, bankruptcy). With a good framework, competition naturally produces innovations and the economy grows.

This chapter uses the economics of innovation to compare the state’s actual and ideal role in promoting economic growth in poor countries. In contrast, the 18<sup>th</sup> century mercantilists believed that a rich country required government to oversee, regulate, and constrain business. Adam Smith attacked mercantilist policies as a cause of national poverty. By demonstrating that economic freedom increases the nation’s wealth, and state management of the economy reduces it, Adam Smith worked an intellectual revolution. Smith’s critique of the mercantilists in his day applies to state-led growth today. Following Smith’s prescription, rich countries today mostly rely on the private sector to produce growth. According to our theory of innovation, poor countries should do the same.

## I. Policy for Growth?

According to the quizzical baseball star Yogi Bera, “Predictions are hard to make, especially about the future.” To foresee the future of science and technology, a person would need to know what has not yet been discovered. Discovery and foresight are substantially inconsistent. After a discovery has been made, however, it is understandable. Sometimes people who understand a discovery think that it was predictable, a “sure thing,” but this conviction is false. Like innovations in science and technology, innovations in markets and business organization are unforeseeable. In business, no investment is a “sure thing”, although it may seem that way after it succeeds. Every business investment, furthermore, is sufficiently new in some way to be risky and uncertain.

Compared to science, innovations in markets and business organization have an additional cause of unpredictability: strategy. In some simple games like tic-tac-toe, an intelligent person can calculate all the possible moves and counter-moves, and play out the entire contest in his mind. These games have a predictable outcome for intelligent players, which is why intelligent people seldom play them. In other games like poker, calculating all the possible moves is too difficult. Furthermore, the players decrease their predictability by bluffing and randomizing. In this respect, business competition resembles poker. For each move there is a counter-move. The most successful strategy is the one that is hardest to counter, and the hardest move to counter is unforeseen.

Since discovery begins as private information, people with public information cannot foresee which organizations will innovate, become more productive, and grow faster than their competitors. The growth of competing economic organizations is inevitably unpredictable for the public, including most experts and officials of the state. After the cycle of growth is complete and the private information becomes public, the public can understand why the innovator’s organization grew so fast.

In this respect, organizations resemble mutations. Biologists can seldom predict when mutations will occur or how far successful mutants will expand.

After expansion stops, however, the biologists can understand what occurred. Viral epidemics are an example. To illustrate concretely, biologists did not predict the appearance and spread of the SARS virus in 2003. As the pace of the SARS epidemic slowed, however, scientists increasingly understood its origins and why it spread as it did. Similarly, economists cannot predict which economic organizations will grow in a competitive system, but economists can understand why an economic organization grew faster than its competitors after it stops doing so.

The unpredictability of business innovation limits how laws and policies can foster economic growth. In many states, public officials proclaim the goal of economic growth and manipulate markets to achieve it. Manipulations involve taxes, subsidies, tariffs, licenses, and regulations. These manipulations are called “industrial policy” because state policy guides industrial development. Alternatively, these manipulations are called “technology policy” because state policy guides technological development. With industrial policy and technology policy, state officials choose the business organizations that will grow, rather than market competition choosing them.

With some exceptions, public officials have performed dismally in channeling investments to enhance growth. To illustrate, in the last half of the 20<sup>th</sup> century many poor countries pursued industrial policies that favored manufacturing over agriculture, heavy industry over light industry, dirty industry over clean industry, fishing and cutting wood over sustainable production, and import substitution over exports. Most economists now view these policies as mistakes that retarded economic growth.

The failure of industrial policy to stimulate economic growth has two causes. The first cause is motivation. The motivation of public officials to make wealth for the nation is weak because they cannot keep it. Public officials, however, can keep the wealth that they receive in salaries and bribes. By steering industrial development, officials increase their responsibilities and justify higher salaries, and they also increase their opportunities for bribes. Industrial

policy is rife with political favoritism, chicanery, cronyism, and corruption. Even so, people with a strong will to believe in the state convince themselves that politicians and officials will make more wealth using other people's money than private investors can make using their own money.

The second cause is information. Even if officials were motivated to make wealth for the nation, they do not have the information needed to guide industrial development. The life cycle of innovation explains their lack of information. In the first phase of the life cycle, an innovator has a new idea. When combined with capital, the new idea causes a spurt in growth and profitability. The idea only becomes public at the end of the life cycle when rapid growth ceases. Consequently, the public cannot predict growth rates of competing organizations.

Empirical studies in finance confirm this prediction. Specifically, empirical studies in finance demonstrate that investors who possess only public information cannot do better than chance when trying to invest in companies that will grow.<sup>1</sup> The technical name for this proposition is the "efficient market hypothesis." In this phrase, "efficient" refers to the use of information by investors in stock markets. Investors use information to predict the future dividends that a stock will pay. If the present value of expected future dividends exceeds the price, then the stock is under-priced and a buyer expects extraordinary profits. According to the efficient stock market hypothesis, investors with private information find under-priced stocks and bid up their prices. Specifically, when a company innovates and expects extraordinary profits for a while, people with private information quickly buy the company's stock. According to the efficient market hypothesis, when information about the innovation becomes public, the stock's price has already risen sufficiently so that the stock is no longer a bargain.

According to the efficient market hypothesis, stock markets convert private information into public information quickly and completely, so anyone who buys

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<sup>1</sup> According to the efficient market hypothesis, market prices incorporate all public information, so no one investor can do better than chance when relying on public information. This is the "semi-strong" form of the efficient market hypothesis. See Chapter 7 for details.

and sells stocks on public information cannot earn extra-ordinary profits except by chance. The efficient market hypothesis explains why economists, who devote themselves to studying the economy, seldom get rich. Economists mostly use public information to study markets. Since they do not have private information, they cannot predict which stocks will surge in price, although they can explain a surge after it occurs. In this respect, economists are in the same situation as state officials who are technical experts.

As another illustration, many investors pay brokers for advice on buying and selling stocks. The brokers, however, usually base their advice on public information. According to the efficient market hypothesis, their advice is worthless. “Churning” refers to wasteful and unnecessary trading that generates commissions for investment advisors without increasing profits for investors. From the perspective of the efficient market hypothesis, much investment advising is churning. This realization has changed the way many private investors manage their portfolios. Instead of paying investment advisors to pick growth stocks, private investors who have studied finance tend to favor “passive” mutual funds, meaning funds whose managers buy a diverse portfolio of stocks and hold it.

Just as private investors cannot profit by trading on public information except by chance, so public officials cannot accelerate growth by industrial policies except by chance. Like a broker who churns a client’s portfolio, policies that allegedly redirect capital to growth industries mostly waste resources without increasing growth rates. The waste comes from using taxes to pay public officials to perform unproductive activities, which is equivalent to churning a private portfolio of stock. The waste also comes from unproductive expenditures on political influence and bribery.

In the private sector, investment bankers use private information to finance innovations that earn extraordinary profits. By financing innovation in its early stages, investment banks increase the rate of the economy’s growth. Should state officials emulate investment bankers and use *private* information to

make *public* investment decisions? Allowing state officials to invest in particular firms or industries based on private information carries large risks for the nation. Much like diplomatic maneuvers in foreign affairs, policies based on private information involve secrecy. Secrecy makes diverting wealth to friends and cronies easier for officials. In contrast, requiring officials to explain and justify their policies by using public information creates a basis for accountability. Public discussion, debate, and criticism dampen nepotism, favoritism, cronyism, and corruption. The citizens in most democracies, consequently, expect officials to base economic policies on public information. Allowing public officials to base economic policies on private information is too risky for the citizens.

We have explained that state officials, like private investors, cannot generally identify growth industries based on public information, and allowing state officials to make economic decisions based on private information invites corruption. In some circumstances, however, public officials have successfully used private information to make investment decisions. For example, the best and brightest staff Korea's Ministry of Finance and Japan's MITI. As part of their esprit de corps, these officials have mutual understanding and trust that allows them to share information with each other. In the second half of the 20th century, ministries in Korea and Japan selected industries and firms to expand, directed capital to them, and actively manipulated markets. During this period, these two countries enjoyed rapid economic growth.

Perhaps state leadership in development was desirable in Japan immediately after World War II and in Korea immediately after the Korean War. In those times, world capital markets were much weaker than today. In 1950 world capital markets probably could not finance industrial development in poor countries, but this is no longer true. In addition, the development plan in these countries followed a logical progression that made sense: First develop relatively basic manufacturing industries (e.g. textiles, steel), and then proceed to more complex goods (e.g. cars, electronics).

Experts dispute whether state activism caused rapid growth in Korea and Japan, or merely coincided with it. By directing investment, MITI may have caused Japanese firms to flourish in the 1950s and 1960s, or MITI may have simply participated in a rapidly rising market without contributing to the rise. To illustrate the latter view, a recent article argues that MITI did not have a political mandate to direct growth in Japan and it never did so. According to this article, the claims to the contrary were often made by self-interested officials and Marxist social scientists who poorly understood markets.<sup>2</sup> In any case, MITI significantly reduced its intervention and guidance of the economy in the 1980s and has never resumed its former role.

The experience of the two Chinas provides some support for this theory. Taiwan has no equivalent of Japan's MITI or Korea's Ministry of Finance. With little state leadership, Taiwan has grown faster than Japan and comparably to Korea since 1990.<sup>3</sup> In the case of mainland China, a market economy was added to the centrally planned sector in the 1980s, which triggered a growth spurt without historical precedent for quickly lifting large numbers of people out of poverty. The contemporary engine of growth in China is the private, unplanned sectors of the economy like textiles, not the heavy industries that continue to operate with much government involvement. Similarly, India's suffocating state planning, which has retreated to make way for vibrant businesses, did not foresee or support the computer software industry, which is the brightest star in India's recent economic growth.

Perhaps MITI withdrew from guiding the Japanese economy because, as production shifted from basic to complex goods, it no longer had information about the best investments to make. To clarify this point, distinguish the complexity of goods into three types: quantity, quality, and creativity. With

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<sup>2</sup> Yishiro, M. and J. M. Ramseyer (2002). "Capitalist Politicians, Socialist Bureaucrats? Legends of Government Planning from Japan." Harvard Law and Economics Discussion Paper No. 385. In contrast, Aoki argued that the Japanese state enhanced markets in the first few decades of the post-war period by allowing for "cooperation-contingent rents." GET AOKI CITE AND CHECK THAT REFERENCE IS CORRECT. ALSO CHECK THE CONCLUSION OF The East Asian Miracle (World Bank, 1993).

<sup>3</sup> Note: check numbers and insert them.

quantity production, the emphasis is on mass-producing undifferentiated products. Mass production enables relatively untrained workers to make goods quickly by using machines. Examples include manufacturing textiles, growing wheat, and mining coal. With quality production, the emphasis shifts to differentiated goods, such as elegant clothes, fine automobiles, and boutique banks. Unlike quantity production, quality production requires workers to pay careful attention to the goods that they make, because each one is valuable. Also, services are differentiated goods that require attention to quality. With creativity, the emphasis shifts to inventing new goods and services such as drugs, computer chips, derivative securities, and designer clothes. Innovation requires well-educated workers who relentlessly seek novelty.

All three types of production co-exist in a developed economy, but emphasis shifts as development proceeds. These three types of production, consequently, correspond roughly to three stages of economic development. Industrialization often begins in a poor country by mass-producing undifferentiated products. As income and education increase, more resources shift to producing higher quality goods. Finally, with further increases in income and education, emphasis shifts to creativity. With each stage, workers require more education, intrinsic motivation, and discretion. As more discretion is needed, centralized direction of production becomes more difficult. Perhaps MITI withdrew its guidance of the Japanese economy in the 1980s because state leadership became more difficult as production shifted from quantity to quality, and from quality to creativity.

## **II. When Larger Is Better**

The centrality of private information in the process of innovation argues against state-led growth. Development economists and politicians who justify state-led growth in developing countries, however, usually invoke a different argument that does not involve private information or innovation. This argument concerns increasing returns to scale in production. We will explain how to use and abuse this concept.



### ***A. From Infant Industries to Industrial Dinosaurs***

Starting with a very small company, the average cost of production usually falls as the size of a company increases. Before a company becomes competitive, its size must reach a certain minimum level, called the “minimum efficient scale.” The minimum scale for selling fruit from a cart on the street is small, and the minimum scale for refining oil is large. In some industries, returns to scale continue to increase even after the business is large. In these special cases, only extremely large businesses can compete.

To illustrate, designing large commercial airplanes is so expensive that the world probably has room only for a few manufacturers. Noting this fact, the Europe Union created the Airbus consortium to achieve sufficient size to compete with the Boeing Corporation, which is a very large U.S. company. European governments heavily subsidized the creation of Airbus, but once it achieved a prominent position in world markets, the consortium was privatized and the subsidies were allegedly removed. (Airbus and Boeing often trade accusations that governments clandestinely subsidize the other firm in violation of the World Trade Organization’s rules.) In the case of Airbus, private capital markets allegedly did not have enough funds to finance the company at the scale needed for profitability, so European states provided the capital.

Was the European Union prudent to use state funds to create Airbus? Commentators disagree. Perhaps Airbus is one of those exceptional cases of a good investment that is too large for the private market to finance. Or perhaps Airbus is an uneconomic folly, like the super-sonic passenger airplane named the Concorde, which was built using British and French subsidies. The Concorde, whose commercial service began in 1976 and effectively ended with a deadly crash in Paris in 2000, set speed records for commercial aircraft. Travelers, however, preferred cheap fares to high speeds. With few customers, Concorde never came close to recouping the massive government investments in it by Great Britain and France.

The argument for state subsidies of Airbus, Concorde, and ...is the same one that many development economists use to justify state-led growth in poor countries. The basic idea is that private companies in rich countries already exceed the minimum size for profitability, whereas business organizations in poor countries remain below the minimum size for profitability. According to this theory, unprofitable companies in developing countries would turn profitable if the industry increased sufficiently in size. Private capital markets in poor countries allegedly lack funds to finance the growth of business organizations to the point where they will become profitable. The state, consequently, should subsidize domestic companies and protect them from foreign competition until they reach the minimum efficient scale to compete internationally, at which point subsidies and protection can be removed. According to the usual metaphor, industries in poor countries are like infants who need nourishment from subsidies and protection from competition in order to grow strong.

Many poor countries followed this prescription for infant industries. Instead of growing strong, however, subsidies and protection mostly make companies fat. In poor countries and rich countries alike, the typical outcome resembles Concorde, not Airbus. From Poland to India, the legacy of state-led growth is “industrial dinosaurs” that are too large and clumsy to survive.

Under contemporary conditions, capital markets rarely encounter profitable opportunities that are too large for private finance. Capital markets balk at financing projects favored by politicians because they are unprofitable, not because they are too large.

State assistance for firms and industries is organized through public law. The “public law approach” to economic development gives central place to administrative and regulatory law. Whereas private law provides a framework for competition among businesses to determine the path of economic growth, the public law approach allows state officials to direct the economy.

We reject the public law approach and the dominant tradition in development economics for two reasons. Under contemporary conditions

investment banks rarely encounter profitable opportunities that are too large for private finance. Cases like the Airbus are rare exceptions, not the typical situation of companies and industries in poor countries. The argument that subsidies will enable companies and industries to expand and turn profitable seems no more true in poor countries than in rich countries. In many poor countries, state officials have channeled subsidies to preferred industries that have performed dismally, like the Concorde. Instead of infants growing into sturdy youths, state-led growth produced dinosaurs that are too large to survive.

In close, we note how state-led growth connects to class and ideology. The state's economic activism creates more jobs with higher pay for employees of the state and non-profit organizations. The selection of people for these jobs relies heavily on academic performance in schools and exams. Some people who excel in school imagine that they could easily excel in business. When they go to work for the state or non-profit organizations, they view themselves as rejecting wealth and choosing non-material values. Aristocrats in Europe and the higher castes in India despised the bourgeois entrepreneurs who made wealth, and these attitudes transferred to leftist intellectuals in the 20<sup>th</sup> century. Since they feel superior to entrepreneurs, many modern intellectuals imagine that, in spite of their lack of experience, they know how to direct the economy. In this way, state-led growth creates a class of beneficiaries who develop a self-serving ideology to buttress their privileges. In chapter \_\_ we discuss strategies for reform to overcome ideology and interests within the state.

### ***B. Physical Infrastructure***

Development economics has a long history of defending industrial policy based on misplaced arguments about minimum efficient scale. Scale economies, however, are important for another kind of state investment that helps growth rather than hindering it. Industry needs infrastructure such as roads, water, electricity, airports, harbors, and industrial parks. These projects sometimes face obstacles that only the state can overcome. In particular, developing infrastructure often requires assembling large tracts of land, which

encounters the obstacle of fragmented private ownership. To illustrate concretely, a proposed road may pass across land owned by many different people. Voluntary purchase of land to construct the road encounters a fatal problem: Owners who holdout by refusing to sell their land can holdup the project and command a higher price.

To avoid holdouts, most legal systems allow the state to compel owners of land to sell it – the power of “eminent domain.” Property law prevents private persons from compelling the owners of land to sell it. The power of eminent domain belongs to the state, not to private organizations. When an infrastructure project requires eminent domain to avoid holdouts, state officials have a necessary role in it. If a development requires assembling parcels of land with different owners, the state must take the lead. Although land use decisions by the state are notoriously corrupt, they are sometimes unavoidable. Note, however, that some forms of infrastructure, such as cell phone networks, do not face a holdout problem, so they do not need state leadership.

After construction, some forms of infrastructure are “natural monopolies,” which means that efficiency requires a single owner. For example, most towns do best with a single grid of electricity wires connecting homes and businesses. Similarly, a single super-highway connects many towns. In the case of natural monopoly, the operator may be the state. Alternatively, the operator may be a private firm that the state regulates by setting prices. In any case, natural monopoly usually requires state participation as operator or regulator.

Infrastructure and innovation differ with respect to information. When deciding whether or not to build a road, the state should compare costs and benefits, which technicians can infer from public information. Besides the analysis of costs and benefits, which is technical, citizens in democracies discuss and debate infrastructure decisions. Discussion and debate also require public information. Unlike innovation, public officials can make most infrastructure decisions by using public information as part of cost-benefit analysis and

democratic processes. That is why we commend infrastructure policy and not industrial policy.

### ***C. Financial Infrastructure***

Besides legal and physical infrastructure, the government should provide the financial infrastructure of the economy. A reliable supply of money lubricates almost all economic transactions, thus increasing the supply of real goods. Conversely, rapid inflation or currency fluctuations burden almost all economic transactions, thus reducing the supply of real goods. Furthermore, to control the timing of investment and consumption, people need to store wealth securely in banks. Savings stored in banks can be loaned for productive use, so wealth stored in banks is fecund. Conversely, an unstable banking system causes people to store wealth in real goods such as jewels, furniture, art, or real estate. Real goods are far more difficult than money to loan for productive use, so wealth stored in real goods is sterile. The financial infrastructure includes money and the banking system, as discussed in Chapter \_\_\_ on banking and securities.

### ***D. Public Goods Security, Safety, Environment, Education, Health, Poverty Relief, Taxation, Trade***

We have been discussing laws and policies that cause economic growth. The primary effect of economic growth is on wealth, but growth also has secondary effects on goods supplied by the state such as security, safety, environment, education, health, and income distribution. As in any social system, these effects feedback on their causes. In particular, innovation depends on the education and health of workers, where heavy responsibility falls on government. Subsequent chapters of the book will discuss state policies with respect to these goods.

## **III. Economic Liberty**

Like biological mutations, spectacular successes in entrepreneurial innovation drive change, but failures far outnumber successes. To get results, entrepreneurs need freedom to experiment with organizations and markets. The first principle of law for growth is *economic liberty: People can freely organize and exchange to make wealth*. Freedom releases the energies of entrepreneurs and allows innovation to take its creative, unpredictable path. Freedom to organize includes the right to create, modify, dissolve, join, or quit economic organizations. Economic organizations include sole proprietorships, partnerships, corporations, trusts, associations, cooperatives, mutual funds, pension funds, health maintenance organizations, agricultural banks, and condominiums. Freedom to exchange means the right to buy and sell as you please, including marketing goods.

Economic liberty is the first principle of law for growth, but many countries, especially poor countries, systematically violate it. They restrict entry to industries by licenses, charters, and regulations. With restrictive laws, state officials can enrich their friends and extract bribes by choosing who is allowed to do business. These practices are endemic in poor countries, as subsequent chapters describe.

Many people underestimate the importance of free exchange because they do not understand its function. To appreciate exchange, consider the familiar example of a used car sale.

Li, who lives in a small town near Wuhan, has a Xiali automobile in good repair. The pleasure of owning and driving the car is worth \$3,000 to Li. Wu, who has been coveting the car, inherits some money and decides to try to buy the car from Li. After inspecting the car, Wu decides that the pleasure of owning and driving it is worth \$4000 to her.

A sale will transfer the automobile from Li who values it at \$3,000 to Wu who values it at \$4,000. The gain of \$1,000 is surplus from the exchange. In general, voluntary exchange creates a surplus by moving a resource from a lower valued use to a higher valued use. Once the person owns the good who values it the most, no further possibilities remain for a surplus from exchange, so it ceases.

What is the sale price of the car? In this example, Li will not sell the car for less than \$3,000, and Wu will not buy the car for more than \$4,000. Consequently, the price of a sale must be more than \$3,000 and less than \$4,000. A higher price gives more of the \$1,000 in surplus to Li, and a lower the price gives more to Wu. Each of them must receive part of the surplus as the condition for agreeing to the exchange. If one of the parties did not expect to benefit, the exchange would not occur. Voluntary exchange, consequently, benefits both parties. This is true for cars, computer programs, office buildings, oil, haircuts, or any other good or service. And it is true regardless of whether or not one party is much richer than the other. No matter how unequal their wealth, voluntary exchange benefits both parties by giving part of the surplus to each of them. This is true for international trade between poor and rich countries, and for employment of poor people by rich people.

While a sale changes ownership, it does not necessarily change the good physically. Because the good is physically unchanged, some philosophers have said, "Exchange is barren." Similarly, Marxists insist that factory workers create all of a good's value and deny that marketing contributes anything. These conceptual errors cause hostility towards "middlemen" who buy and sell without producing anything. Middlemen create wealth by moving goods from people who value them less to people who value them more.

This process fuels innovation. Exchange gives market value to goods. Entrepreneurs use the market value of goods to borrow money, develop innovations, and make more money. Conversely, when exchange is blocked, the good has no market value, so entrepreneurs cannot borrow and make more money from it. When capital, which is the market value of the stock of goods, cannot grow, it is dead. As we explain in the next chapter, much of the capital in poor countries is dead.

#### **IV. Conclusion**

If a worker who emigrates from a poor country and finds a job in a rich country, his wages sharply increase, which reflects a sharp increase in

productivity. The immigrant's productivity increases sharply because his labor is imbedded in better organizations and markets. Poor countries have cheap labor in abundance. The challenge is to fit workers into organizations and markets that release their productivity.

Releasing the productivity of low wage workers requires innovations in organizations and markets, which we call "entrepreneurial innovation." Entrepreneurial innovation combines capital and new ideas about organizations and markets. The new ideas are private information. Allowing state officials to invest public funds based on private information corrodes democracy. Conversely, restricting state officials to using public information precludes them from identifying promising innovations at a rate that exceeds chance. According to the efficient market hypothesis, industrial subsidies churn the state's portfolio without increasing growth.

Instead of subsidizing and protecting particular firms, the state should support innovation indirectly. Indirect support involves state provision of infrastructure – legal, physical, and financial. Infrastructure investment can be based on public information as required for transparency and democracy.

Like biological mutations, spectacular successes in entrepreneurial innovation drive change, but failures far outnumber successes. To get results, entrepreneurs need freedom to experiment with organizations and markets. Responding to these facts, rich countries mostly on the private sector as the engine of growth. The best approach for rich countries is also best for poor countries. Unfortunately, some politicians and development economists regard poor countries as exceptions that require the state to directed the economy. Ranked by importance, the first obstacle to economic growth is the absence of effective law, and second obstacle is the presence of defective policies. The presence of effective law and the absence of defective policies are both needed to give entrepreneurs the freedom to experiment and find the innovations that drive growth.