

Development Strategies for Inclusive Growth in Developing Asia

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A continuous flow of technology/ industrial innovation is the key to sustained dynamic growth. Developing countries have an “advantage of backwardness” as they can borrow technology/industry from the developed countries. In an open, competitive market, the optimal technology/industrial structure of a country is endogenously determined by the country’s endowment structure, which is exogenously given at any specific time. However, the governments in most developing countries after World War II adopted an inappropriate development strategy to accelerate the build-up of developed countries’ capital-intensive industries, which deviated from the optimal technology/industrial structure determined by their own endowment structures. This strategy made firms in the priority sectors nonviable in an open, competitive market and was responsible for many policy distortions and for failures in catching up and achieving inclusive growth. A transition to a policy regime that facilitates industrial development along the countries’ comparative advantages is necessary for developing countries to improve their growth performance and to allow the poor to benefit from growth. As many distortions in the developing countries are endogenous to the viability problem of firms in the priority sectors of previous development strategies, governments have to find a way to resolve the firms’ viability problem to achieve dynamic growth in their transition processes.

I. INTRODUCTION

One of the most outstanding achievements in the history of world economic development in the 20th century was that several of Asia’s countries and regions were able to create economic miracles and catch up with western developed countries. Table 1 shows that Japan and the newly industrialized economies in East Asia, including Hong Kong, China; Republic of Korea (Korea); Singapore;

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and Taipei, China, whose initial conditions after World War II were not more favorable than other developing countries in other parts of the world (Maddison 2001), have become the only group of economies that have successfully reached the per capita income level of western developed countries or substantially narrowed their income gaps with developed countries. However, as shown in Figure 1, for Asia as a whole, like most other parts of the world, the gaps between their per capita income and that of the developed countries in effect have widened after World War II. In 2002, there were about 690 million people in Asia still in extreme poverty, living on less than US\$1 a day. If a more generous standard of \$2 a day was used, 1.9 billion Asians, or about half of the population in Asia, were poor in that year (ADB 2004). Those poor people have no guarantee for their basic daily nutrition needs, access to improved sanitation, and so on. How to eradicate poverty and how to close the income gaps between developing Asia and the developed countries are daunting challenges for the region.

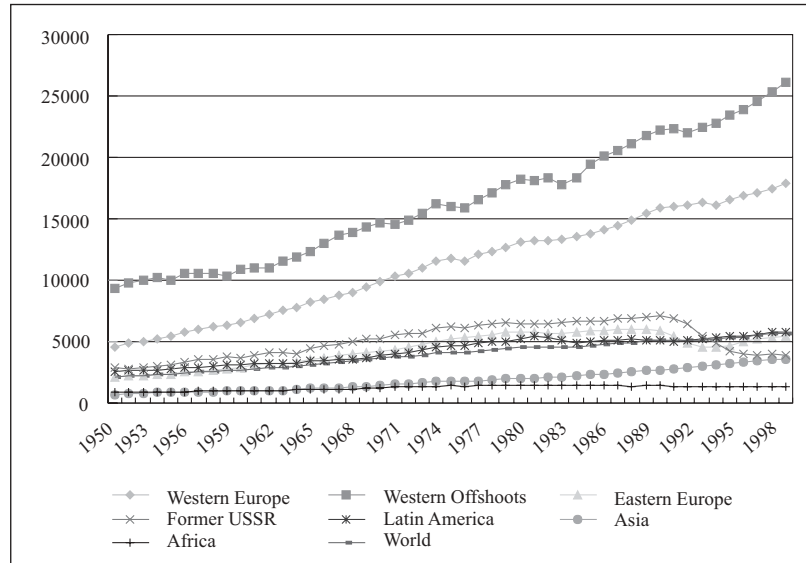
In this lecture, I would like to argue that for the countries in developing Asia, like developing countries in other parts of the world, if their governments adopt the right development strategy, they have good opportunities to achieve dynamic growth and equitable income distribution in the process of development. However, many of them followed an inappropriate strategy and impeded their opportunities to realize this growth potential. I would also like to propose an approach for developing countries to transit from the old to the new development strategy smoothly.

Table 1. **Per Capita GDP in 1970 and 2003 (current US dollars)**

	1970		2003	
	Per Capita GDP	Per Capita GDP as a Percentage of the Level in North America (%)	Per Capita GDP	Per Capita GDP as a Percentage of the Level in North America (%)
Asia	237	4.95	2416	6.71
Japan	1982	41.37	33819	94.00
Hong Kong, China	978	20.41	22618	62.87
Korea	275	5.74	11059	30.74
Singapore	914	19.08	21195	58.91
Taipei, China	386	8.06	12680	35.24
Africa	233	4.86	759	2.11
Europe	1854	38.70	16772	46.62
Northern America	4791	100.00	35977	100.00
World	881	18.39	5751	15.99

Source: United Nations Statistical Division.

Figure 1. Per Capita GDP in 1990 International Geary-Khamis Dollars, 1950-1998



Source: Maddison (2001, 330).

My main arguments are as follows: A continuous flow of technology/industrial innovation is the key to sustained dynamic growth by any country. Developing countries have an “advantage of backwardness” as they can borrow technology/industry from the developed countries. However, in an open, competitive market, the optimal technology/industrial structure of a country is endogenously determined by the country’s endowment structure, which is exogenously given at any specific time. Therefore, to benefit from the advantage of backwardness, a developing country needs to have an appropriate strategy that guides their technology/industrial borrowing from the developed countries. However, the governments in most developing countries after World War II adopted an inappropriate development strategy that defied their comparative advantages determined by their endowment structures, for the purpose of building up the developed country’s capital-intensive industries on a relatively capital-scarce endowment structure. This strategy made firms in the priority sectors nonviable in an open, competitive market and was responsible for many policy distortions in the developing countries and for failures of developing countries to catch up with the developed countries and achieve inclusive growth. A transition to a policy regime that facilitates industrial development along the countries’ comparative advantages is necessary for developing countries to improve their growth performance and to allow the poor to benefit from growth. However, many distortions in the developing countries are endogenous to the viability problem of firms in the priority sectors of previous development strategies. Governments

have to find a way to resolve the exogenous cause of those endogenous distortions for their transition process to be smooth.

This lecture is organized as follows: Following the introduction, Section II reviews the literature on the determinants of economic growth. Section III analyzes the impacts on firm viability, distortions, and economic and social consequences of a comparative advantage-defying (CAD) strategy adopted by a developing country's government. Section IV discusses the effect of such strategy on the poor in developing Asia. Section V explores an alternative comparative advantage-following (CAF) strategy and what the government role is in this strategy. Section VI discusses the appropriate approach for transiting from a CAD strategy to a CAF strategy. Some concluding remarks are provided in Section VII.

II. LITERATURE REVIEW

Why developing countries cannot catch up with the developed countries has been a challenging question and puzzling phenomenon to economists. The neoclassical growth theory (Solow 1956), with its assumption of exogenously given technology, predicts that a developing country would grow faster than the developed countries, that per capita income in less developed countries (LDCs) would converge to the level of developed countries, and that GDP growth rate in any country will eventually be the same as its population growth rate. However, with a few exceptions in East Asia, most developing countries' per capita income failed to converge to the level in developed countries (Pearson et al. 1969, Romer 1994), and the economic growth rates in developed countries continue to exceed their population growth rates. Unsatisfied with the neoclassical growth theory, Romer (1986) and Lucas (1988) pioneered the new growth theory, which treats technological innovation as endogenously determined by the accumulation of human capital, research and development (R&D), learning by doing, and so on, and argues that the failure of LDCs to converge to developed countries is due to their lack of investment in those factors that are important for technological innovations. The argument of this theory is insightful for the continuous growth of per capita income in developed countries. Nevertheless the new growth theory fails to provide a satisfactory explanation for the extraordinary growth and convergence of the newly industrialized economies in Asia, including recently People's Republic of China, during the last three decades of the 20th century (Pack 1994, Grossman and Helpman 1994). During the catching up process, these newly industrialized economies' investments in R&D, human capital, and learning by doing were much lower than those of the developed countries.

Many economists now believe that the developing countries failed to catch up with the developed countries because of bad institutions due to government interventions and regulations, including widespread corruption, weak protection to investors, and high degree of social conflicts (Shleifer et al. 1998; Rodrick

1998; Acemoglu et al. 2001a, 2001b, 2002a, 2002b; Djankov et al. 2002 and 2003). As Rodrick (2003, 7) stated, “institutions have received increasing attention in the growth literature as it has become clear that property rights, appropriate regulatory structure, quality and independence of the judiciary, and bureaucratic capacity could not be taken for granted in many settings and that they were of utmost importance to initiating and sustaining economic growth.”

Many economists have tried to understand how government intervention and regulation occurs and how and whether it can be subsequently sustained (Rodrik 1996). The classical theory for the role of government (Pigou 1938) has been called the “helping hand” view. An alternative strand of the “grabbing hand” view (Shleifer and Vishny 1998) holds that government interventions are pursued for the benefit of politicians and bureaucrats. Politicians use regulation to favor friendly firms and other political constituencies, thereby obtaining campaign contributions and votes. In addition, “an important reason why many of these permits and regulations exist is probably to give officials the power to deny them and to collect bribes in return for providing the permits” (Shleifer and Vishny 1993, 601). A recent paper presented by Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2002) provides an empirical test on the theories of the grabbing hand, say, the barrier for business entry might arise from the corruption of bureaucrats.¹ Other economists attribute the government’s interventions and regulations to the legal origin (La Porta et al. 1998 and 1999) and colonial institutional inheritance (Acemoglu et al. 2001a, b; Engerman and Sokoloff 1997).²

¹This grabbing hand hypothesis may not be appropriate for most interventions and regulations in developing countries. Suppose that the government’s regulations in the developing countries could arise from the grabbing hand of government, or political elites. The unsolved question in the literature is how to understand the evolution of institutional structure under government interventions. In developing countries, the institutional structure shaped by government interventions is so complicated. We wonder what the incentives for political leaders to design such complicated systems are, because the increase of costs of expropriations and political control due to the complexity of institutions would diminish the gains of the grab. Corruption induced by special interest groups might not be a good answer for this question either, because the benefited groups are often taxed or suppressed alongside the protections/subsidies. Moreover, many interventions do not have obvious beneficiary groups.

²If a developing country’s existing institution that is detrimental to economic growth is endogenous to colonial heritage or natural endowment, knowledge is not useful for development policy as we can do nothing at the present time about the colonial heritage or natural endowment from several hundred years ago.

III. COMPARATIVE ADVANTAGE-DEFYING STRATEGY, VIABILITY, AND ENDOGENOUS DISTORTIONS

I agree that poor economic performance in developing countries is attributable to inappropriate interventions and regulations. However, I would like to propose an alternative hypothesis for the existence of government interventions and regulations in developing countries. My argument is based on the conflicts between the government's development strategy in a developing country and the country's endowment structure (Lin 2003).

As suggested by Kuznets (1966), a continuous innovation and upgrading of technology and industries is key to dynamic growth in any economy in modern times. A developing country could have an advantage in speed of technology innovation than a developed country because the developing country could have a low-cost, low-risk technology "borrowing" from the developed country, whereas the developed country needs to engage in high-cost and high-risk invention to obtain technology innovation (Hayami 1997). The higher speed of technology innovation will enable the developing country to have a higher return to capital, resulting in a high rate of capital accumulation, industrial upgrading, and a larger room to reallocate labor and other resources from low value-added industries to high value-added industries. Consequently, a developing country could potentially have a higher economic growth rate than developed countries and achieve convergence with the developed countries. However, whether or not a developing country could benefit from the "advantage of backwardness" very much depends on the government's development strategy and the resulting economic policy regimes.

Generally speaking, the government is the most powerful and important institution in a developing country. Its economic policies shape the macro incentive structure for every economic agent in the country. However, the development strategy with its resulting interventions and regulations adopted by governments in most developing countries after World War II denied opportunities to benefit from the "advantage of backwardness."

Many of the early generation of political leaders in both socialist and nonsocialist developing countries, such as Nehru in India, Nasser in Egypt, Sukarno in Indonesia, Mao Zedong in People's Republic of China (PRC), and Ho Chi Minh in Viet Nam, were elites taking part in the independent movements or revolutions for the purpose of nation building. The institutions laid down by the early generation of political leaders were endogenously shaped by the conflicts between the elites' ambitious drives of industrialization/modernization for nation building and their nations' economic realities. The key to the argument is the

viability issue of firms in the priority sectors of government's industrialization drives.³

The term viability is defined as follows: "If, without any external subsidies or protections, a normally managed firm is expected to earn socially acceptable profits in a free, open, and competitive market, then the firm is viable. Otherwise the firm is nonviable" (Lin 2003, 280). It is obvious that no one will invest in a firm if it is not expected to earn a socially acceptable normal profit. Such a firm will exist only if the government gives it financial support or protection.

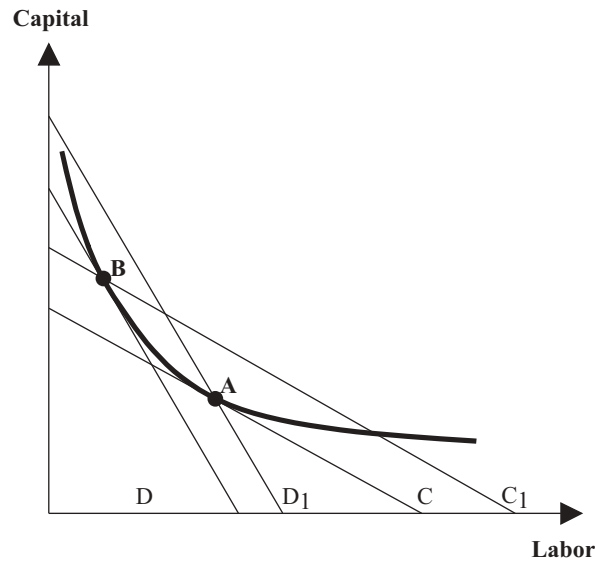
In an open, competitive market, the management of a firm will affect its profitability, which is a known proposition. However, the expected profitability of a firm also depends on its industry/technology choice.

To illustrate this idea, I will discuss the case of a simple economy that possesses two endowments, capital and labor, and produces one product. As shown in Figure 2, each point on the isoquant represents a production technology or a combination of capital and labor required to produce a given amount of a certain product. The technology represented by *A* is more labor-intensive than that of *B*. *C*, *C*₁, *D*, *D*₁ are isocost lines. The slope of an isocost line represents the relative prices of capital and labor. In an economy where capital is relatively expensive and labor is relatively inexpensive, as represented by isocost lines *C* and *C*₁, the adoption of technology *A* to produce the given amount of output will cost the least. When the relative price of labor increases, as represented by the isocost lines by *D* and *D*₁, production will cost least if technology *B* is adopted.

In a free, open, and competitive market economy that produces only one product as illustrated in Figure 1, a firm will be viable only if it adopts the least-cost technology in its production. In Figure 1, if the relative prices of capital and labor can be presented by *C*, the adoption of technology *A* costs the least. The adoption of any other technology, such as *B*, will have a higher cost. Market competition will make firms that adopt technologies other than *A* nonviable. Therefore, in a competitive market with given relative prices of labor and capital, the viability of a firm depends on its technology choice.

³The bureaucrats in lower levels of government in a developing country may subsequently use the interventions/regulations endogenous in the nation-building attempt for their personal grabbing-hand purpose. However, the grabbing hand of bureaucrats should be viewed as a consequence instead of the cause of the distortions and regulations that were created by the first-generation leaders who did not have much personal purposes other than the dream of nation building. Similarly, various groups may subsequently take advantage of these interventions/regulations and seek rents to benefit themselves. However, the vested interest group's rent seeking was an unintended consequence instead of the first generation leaders' motivation for the interventions/regulations.

Figure 2. Relative Price of Production Factors and Technique Choice



In a competitive market, the relative prices of capital and labor are determined by the relative abundance/scarcity of capital and labor in the economy's factor endowments. When labor is relatively abundant and capital is relatively scarce, the isocost line will be something like that of line *C* in Figure 2. When capital becomes relatively abundant and labor relatively scarce, the isocost line will change to something like line *D* in Figure 2. Therefore, the viability of a firm in an open, competitive market depends on whether its choice of technology is on the least cost lines determined by the relative factor endowments of the economy.

The above analysis can be extended to a multiproduct and multi-industry case. In an open, competitive market, whether a firm is viable depends on whether the firm's industry, product, and technology choices are consistent with the comparative advantages determined by the economy's endowment structure.⁴ If a firm's choices are not consistent with this condition, the firm cannot earn acceptable profit in an open, competitive market even under normal management and its survival will rely on government subsidies and/or protection.

It is important to note from the above discussion that in an open, competitive market, without government intervention, only viable firms will exist.

⁴It is worth noting that the viability of a firm and the comparative advantages of an economy are highly related. Viability is a concept that focuses on a firm's technology, product, and industry choices in a competitive market, whereas comparative advantage refers to the competitiveness of an economy's product/industry in an open economy. However, both are determined by the country's endowment structure.

Therefore, an economy's industry, product, and technology structure in an open, competitive market is in effect endogenously determined by the economy's endowment structure.

Most developing countries are characterized by relative abundance of labor and scarcity of capital.⁵ As such, in an open, competitive market, the structure of industry and technology in a developing country will be relatively labor-intensive. However, unaware of the endogeneity of the industrial/technology structure and inspired by the dream of nation building, political leaders, economists, and social elites alike in developing countries often aim, as their development drive, the build-up capital-intensive industries and adoption of advanced technologies similar to those of developed countries within the shortest period. I call such type of development approach comparative advantage-defying strategy because the government attempts to encourage firms to ignore the existing comparative advantages of the economy in their choice of industry and technology.⁶ Most firms in the priority sectors of a CAD strategy are not viable in open, competitive markets. Therefore, the developing country's government has to subsidize and protect those firms through various interventional measures.

If a government adopts a CAD strategy and the deviation of the firms' choices of technology/industry from the optimal ones determined by the economy's endowment structure is small, and the number of nonviable firms that the government attempts to support is limited, the government may subsidize the firms directly by tax transfers as in the case of agricultural protection in many countries of the Organisation for Economic Co-operation and Development. However, when a developing country's government adopts a CAD strategy, the distance of deviation from their comparative advantages is often very large, the number of nonviable firms numerous, and the government's taxation capacity very weak. The developing country's government often turns toward implicit measures of subsidies through price distortions, limitations on market competition, direct administrative allocation of resources, and so on.⁷ As a matter

⁵The other possibility for a less developed country is relative abundance in natural resources and relative scarcity in capital and labor. The discussions and conclusions in this paper can be easily extended to cover such case.

⁶The CAD strategy includes the heavy-industry-oriented development strategy in the socialist countries and in developing countries, such as India, and the secondary import substitution strategy in many Latin American and African countries. The strategy also includes the protection of certain industries that have lost comparative advantage due to development of the economy, such as protection of agriculture in many countries of the Organisation for Economic Co-operation and Development.

⁷From the above perspective, the root of intervention in a developing country is not the grabbing hand of government officials or the manipulation of interest groups but the dream of nation building of political elites. Corruption may be an endogenous phenomenon of the distortions and interventions arising from the conflict between the economy's endowment structure and the political leaders' ambitious and unrealistic development attempts. From this

of fact, the traditional planning systems that existed before economic transition in the socialist economies were typical institutional arrangements for supporting and protecting the nonviable heavy-industry firms (Lin, Cai, and Li 1994, chapter 2).

Moreover when a developing country's government adopts the CAD strategy, the government cannot exactly know how large the subsidies would be due to information asymmetry. The firms in the priority sector will have incentives to use their viability problem as an excuse and use resources to lobby the government officials not only for more ex ante policy favors, such as access to low-interest loans, tax reductions, tariff protection, and legal monopolies but also for ex post ad hoc administrative assistances, such as more preferential loans or tax arrears. The economy will be full of rent-seeking activities and corruption. Because the firms can use the viability problem as an excuse to bargain for more government support and because it is hard for the government to shun such responsibility, the firm's budget constraints become soft (Lin and Tan 1999).⁸ When the soft budget constraint exists, the firm will face no pressure to improve productivity and the firm's efficiency will be low. Moreover, with the subsidies/protections and soft budget constraints for the firms in the priority sectors, entry into those sectors becomes a privilege. The political leaders in a nonsocialist developing country may select their own close friends or political supporters to invest in those priority sectors, resulting in the phenomenon of crony capitalism.

Besides, if the government in a developing country adopts the CAD strategy, the economy will become more inward-oriented than otherwise. This is because the CAD strategy attempts to substitute the import of capital-intensive manufactured goods through domestic production, causing the reduction of imports. Exports will also be suppressed due to the inevitable transfers of resources away from the industries for which the economy has comparative advantage to the priority sectors of the CAD strategy. The exchange rates are likely to be overvalued to facilitate the import of technology/equipment for priority industries, effectively hampering export opportunities. In addition, under the CAD strategy, the carriers of a government's development strategy are normally large firms. To support the financial needs of nonviable large firms, the

perspective, the political target should be separated from the corruption view of the grabbing hand approach or the "Leviathan" approach.

⁸The soft budget constraint is a term coined by Kornai (1986) to explain the problem in the socialist countries. According to Kornai, the soft budget constraint arises from the paternalistic nature of the socialist government toward the state-owned firm. His argument cannot explain why the soft budget constraint exists in nonsocialist economies and why the soft budget constraint still exists 10 years after privatization in Russia and Eastern European transitional economies (World Bank 2002). Dewatripont and Maskin (1995) argue that the soft budget constraint arises from banks' imperfect information on investment projects and the time-inconsistent problem of the project. However, this argument cannot explain the prevalence and persistence of soft budget constraints in developing countries.

government often nationalizes the firms and uses direct fiscal appropriation, skipping financial intermediation, to support these firms. Such was the case in the former socialist planned economies and continues to be the case in many developing countries. Even if the government relies on private firms to carry on the CAD strategy, the financial needs of large firms will be huge and can only be met by a heavily regulated oligopolistic banking system or an administratively intervened stock market, resulting in the phenomenon of financial depression (McKinnon 1973, Shaw 1969). In either case, the financial system in the country will be very inefficient.

Development of nonviable firms relies heavily on external financial support. The government first mobilizes domestic resources to support these firms through the above interventions in the financial system. Once domestic financial resources are depleted, the government often allows the nonviable firms to turn to international financial markets to support their further development. Fiscal deficits, bad loans, external debts, and financial fragility will be exacerbated, and macroeconomic stability will become unsustainable, leading to eruptions of financial crises (Lin 2000), which may also trigger serious social conflicts and political instability (Rodrik 1998, Caselli and Coleman 2002).

From the above discussions, we can see that many of the interventions and regulations and their resulting inefficiency in developing countries are endogenous to the viability problem of the firms in the government's priority sectors.

IV. COMPARATIVE ADVANTAGE-DEFYING STRATEGY AND THE POOR IN DEVELOPING ASIA

The adoption of a CAD strategy is most detrimental to the poor in Asia, most of whom earn a living from agriculture. Table 2 shows that, like other developing countries in the world, more than 70 percent of the population in developing Asia subsisted on agriculture in 1961. However, the arable land per agricultural labor force in developing Asia was only about 45 percent of the world average, and was 20 percent less than the average of the developing countries as a whole.

In addition to the scarcity of arable land endowment, developing Asia is facing another challenging issue. Deforestation, desertification, depletion or contamination of groundwater, soil salinity, soil erosion, and so forth are common problems in many parts of Asia, making the environment fragile.

Table 2. Population and Arable Land in 1961 and 2002

	Population (million)			Agricultural Labor Force (million)	Arable Land (million has.)	Arable Land per Agricultural Labor (has.)
	Total	Rural	Agriculture			
2002						
Asia	3,776	2,321	1,956	1,051	512	0.49
Developing Asia	3,568	2,253	1,934	1,040	474	0.46
Developed Countries	1,325	352	94	45	612	13.51
Developing Countries	4,900	2,882	2,495	1,288	793	0.62
World	6,225	3,234	2,588	1,333	1,404	1.05
1961						
Asia	1,702	1,348	1,243	613	410	0.67
Developing Asia	1,605	1,312	1,214	598	404	0.68
Developed Countries	981	382	253	114	648	5.66
Developing Countries	2,099	1,647	1,542	736	631	0.86
World	3,080	2,030	1,795	850	1,279	1.50

Source: FAO (2004).

The above two problems are interwoven. Most poor people live in the environmentally stressful marginal areas and, the poorer people are, the more likely they would live on the type of agricultural production that is detrimental to the environment. Therefore, in most areas the problem of environmental sustainability and problem of rural poverty need to be solved simultaneously.

In solving the poverty issue it is important to understand that the most important asset of the poor is their own labor. The rich have other assets: land, capital, good education, personal relations, and political-economic network. But for the poor, except for their labor, they may not have other assets that could bring them income. Because of this, unless their labor becomes relatively scarce and valuable, it is impossible to increase their income and improve their social status.

The production activities of rural people living under the poverty line have their own characteristics as well. Because they are poor, they produce mainly farm products, such as grain, which have low income and price elasticity. Because of the low elasticity of income, overall economic growth will have only minimum effects on the demand for farm produce. Because of the low price elasticity, the production increase of an individual rural household may increase household income. However, if most households would increase production, the price will go down, resulting in little effect on the increase of farm income.⁹ These two

⁹If the increased produce could be exported to international markets, it will help increase the price elasticity of farm produce. Unfortunately, most countries have imposed various barriers for the import of farm produce. Therefore, the opportunity for a developing country to increase its agricultural exports is pessimistic. In addition, the overvalued exchange rate in most developing countries further impairs the competitiveness of their export of farm produce.

characteristics make the attempt to increase the rural poor people's income by increasing agricultural production through investments in infrastructure and technology ineffective.

In my view the most important way to win the antipoverty war and achieve environmental sustainability in developing Asia is to reduce the rural labor force. When the rural labor force declines, people living on agriculture in rural areas will have more land and resources to work on. At the same time, when the farm workers become nonfarm workers, they will change from suppliers to consumers of agricultural products. The supply curve of agricultural products will thus shift to the left and the demand curve to the right. Consequently, the prices of agricultural products will go up and so will the marginal product value of farm labor and its earnings. The income of rural people will in this way increase as farm labor keeps on decreasing. Apart from this, the reduction of rural labor and the rural population will also help ease the tension between population and the environment, avoiding overpressure on the environment due to production and living activities, which destroy the environment's ability of self-recovery making it unsustainable.

To reduce the rural population and labor force, it is necessary to ensure that people who have stopped farming could find jobs in nonagricultural sectors in urban areas. Otherwise, labor migrated from rural areas will only turn into unemployed urban poor. The overall social welfare will not improve.

Unfortunately, as argued in Section III, the governments of many developing countries in Asia as well as in other parts of the world adopted the CAD strategy to build up the capital-intensive industries. These industries required a large amount of investment but created only a small number of job opportunities, making little room for the absorption of out-migrated rural labor. This will result in either of the following consequences:

- (i) The government puts restrictions on migration from rural areas to urban areas, and lets the population under the poverty line stay in rural areas, just as the PRC did before its transition to a market economy in 1979. As such, not only rural poverty will remain but also, with the increase of the rural population and the intensification of living and production activities, environmental conditions worsen.
- (ii) The government allows rural people to migrate to urban areas. But since industries in urban areas cannot create enough jobs and job opportunities in the tertiary industries are also depressed due to slow income growth, most rural out-migrants only change from the status of rural poor to urban poor. The urban living environment will also deteriorate.

The operation of nonviable firms in the CAD strategy needs continuous financial support. When the domestic funds are exhausted, the government often allows the nonviable firms to borrow from international sources. But since they

are in the CAD sector, it is hard for them to profitably export their product to international markets. When they have to repay foreign loans, financial and monetary crises may occur. Furthermore, due to the development of noncomparative-advantage industries, domestic industries that have the comparative advantages cannot be fully developed for lack of investments. Under these circumstances, if the country is forced to open its doors and adopt a free trade policy, it will be a big shock to the domestic economy. Then, the poor, no matter where they are, will be the group that is most seriously hurt, as what happened in the 1997 Asian financial crisis (Lin 2000). Therefore, in order to catch up with the developed country, to win the antipoverty war in rural areas, and to achieve environmental sustainability, it is imperative to find a new development strategy.

V. COMPARATIVE ADVANTAGE-FOLLOWING STRATEGY AND THE ROLE OF GOVERNMENT

Governments in developing Asia as well as in other developing countries could adopt an alternative strategy, which I call a comparative advantage-following strategy, to encourage firms in the country to enter the industries for which the country has comparative advantages, and to adopt production technologies that will make these firms viable.

When the government adopts a CAF strategy, all the firms existing in the markets are viable and in sectors that are the country's comparative advantages. The firms have no excuse to need government subsidies and protection, reducing the possibility of firms' rent seeking, and the possibility for the government to undergo financial depression just to mobilize resources for the priority sectors. Market competition will force the managers of firms to improve their management or face the danger of being competed out of the markets. Therefore, competition pressure will force existing firms to be competitive domestically and internationally, which in turn enhances the economy's ability to withstand outside shocks. International trade will be more important under the CAF strategy than under the CAD strategy, as the economy under the CAF strategy will import what are not their comparative advantages and export what are their comparative advantages. Openness of the economy will enhance the firms' ability to borrow technology from developed countries, contributing to the realization of the advantage of backwardness. The economy will have a larger surplus, accumulate more capital, and have a faster upgrading of its endowment structure than what is possible under the CAD strategy. The economy will have a better income distribution as well because the CAF strategy will create more job opportunities for the poor and, with dynamic growth and faster accumulation of capital, the labor force will change from relatively abundant to relatively scarce, and wage income will increase faster than under the alternative CAD strategy, creating the

desirable consequence of “growth with equity” (Fei, Ranis, and Kuo 1979; Hasan and Quibria 2004).

As discussed in Section III, the industries for which the economy has comparative advantages and the technologies that are appropriate for production are all endogenously determined by the country’s factor endowments structure. However, the managers of firms, as micro agents, have no knowledge or concern for the actual endowments. Their only concerns are the prices of their outputs and the costs of their production. They will enter the industry and choose the appropriate production technology only if the relative factor prices correctly reflect the relative factor abundances, which can be achieved only if the markets are competitive. Therefore, when the government in a developing country adopts a CAF strategy, its primary policy is to remove all possible obstacles for the function of free, open, and competitive product and factor markets, as suggested by neoclassical economics.

However, the government in a developing country that adopts the CAF strategy can play a role that is larger than what is required by a minimum government, whose function is limited to maintaining law and order. When the factor endowment structure of the economy is upgraded, firms should upgrade their products, technologies, or industries accordingly from being less capital-intensive to being more capital-intensive. Such technology and industry may already exist in the more developed countries. However, the information for what exact technology and industry to borrow and learn from the advanced countries may not be freely available. It is necessary to invest resources for information search and analysis. If a firm carries out these activities on its own, it will keep the information private, and other firms will be required to make the same investment to obtain the information, hence creating repetition in information investments. However, with information having a public good nature, after the information has been gathered and processed, the cost of information dissemination is close to zero. Therefore, the government can collect the information about new industries, markets, and technology, and make them available in the form of industrial policy for all firms.

The upgrading of technology and industry in an economy often requires coordination of different firms and sectors in the economy. For example, the human capital or skill requirements of new industries/technologies may be different from that used with older industries/technologies. A firm may not be able to internalize the supply of new human capital. Therefore, the success of a firm’s industry/technology upgrade also depends on the existence of an outside supply of new human capital. In addition to human capital, the firms that are upgrading their technology and industries may also require new financial institutions, trading arrangements, marketing and distribution facilities, and so on. Therefore, the government may also use industrial policy to coordinate firms in different

industries and sectors to make necessary investments for the upgrade of industry/technology in the economy.

The upgrading of industry/technology is an innovation, and it is risky by nature. Even with the information and coordination provided by the government's industry policy, a firm's attempt to upgrade its industry/technology may fail due to the upgrade being too ambitious, the new market being too small, the coordination being simply inadequate, and so forth. The failure will indicate to other firms that the targets of the industrial policy are not appropriate, and, therefore, they can avoid that failure by not following the policy. That is, the first firm pays the cost of failure and produces valuable information for other firms. If the first firm succeeds, the success will also provide externalities to other firms, prompting these firms to engage in similar upgrades. These subsequent upgrades will also dissipate the possible rents that the first firm may enjoy, so there is an asymmetry between the costs of failure and the gains of success that the first firm may have. To compensate for the externality and the asymmetry between the possible costs and gains, the government may provide some forms of subsidy, such as tax incentives or loan guarantees, to the firms that initially follow the government's industrial policy.

It is worthwhile to note that there is a fundamental difference between the industrial policy of the CAF strategy and that of the CAD strategy. The promoted industry/technology in the CAF strategy is consistent with the comparative advantage determined by changes in the economy's factor endowments, whereas the priority industry/technology that the CAD strategy attempts to promote is not consistent with comparative advantage. Therefore, the firms in the CAF strategy should be viable, and a small, limited-time subsidy should be enough to compensate for the information externality. By contrast, firms following a CAD strategy are not viable, and their survival depends on large, continuous policy favors/support from the government.¹⁰

A comparison of the successes and failures of industrial policies on automobile production in PRC, India, Japan, and Korea is a good illustration of the differences between CAF and CAD industrial policies. The automobile industry is a typical capital-intensive heavy industry. The development of an automobile industry is the dream of every developing country. Japan adopted an industrial policy to promote its automobile industry in the mid-1960s and achieved great success. Japan's experience is often cited as a supporting argument

¹⁰Dynamic comparative advantage is an often-used argument for the government's industrial policy and support to the firms (Redding 1999). However, in our framework it can be clearly seen that the argument is valid only if the government's support is limited to overcoming information and coordination costs and the pioneering firms' externality to other firms. The industry should be consistent with the comparative advantage of the economy and the firms in the new industry should be viable, otherwise the firms will collapse once government support is removed.

by advocates of an industrial policy for heavy industries in developing countries. Korea instituted an industrial policy for automobile production in the mid-1970s. Korea has also achieved a limited degree of success in automobile production. The automobile industries in the PRC and India were started in the 1950s, and the industry in both countries has required continuous protection from the government since that time. What can explain why a similar industrial policy can yield success in one instance and failure in another? This will be clear once we compare the per capita income of these countries with the per capita income of the US at the time when the US initiated its policies (see Table 3).

Table 3. **Level of Per Capita Income (in 1990 Geary Khamis dollars)**

	US	Japan	Korea	India	PRC
1955	10,970	2,695	1,197	665	818
1965	14,017	5,771	1,578	785	945
1975	16,060	10,973	3,475	900	1250

Source: Maddison (1995, 196-205).

Per capita income is a good proxy for the relative abundance of capital and labor in an economy. Capital is abundant and wage rates are high in a high-income country. In a low-income country, the opposite holds true. Table 3 indicates that when Japan initiated its automobile production policy in the mid-1960s, its per capita income was more than 40 percent that of the United States. The automobile industry was not the most advanced, capital-intensive industry at that time nor was Japan a capital-scarce economy. The Ministry of International Trade and Industry (MITI) only gave support to Nissan and Toyota. However, more than 10 firms, ignoring MITI's prompting to not enter the industry, also started automobile production and were successful, even though they did not receive any support from MITI. The above evidence indicates that the Japanese automobile firms were viable, and MITI's promotion of the automobile industry in the 1960s was a CAF strategy. When Korea initiated its automobile industry development policy in the 1970s, its per capita income was only about 20 percent that of the US, and about 30 percent that of Japan. This may explain why the Korean government needed to give its automobile firms much greater and longer support than the Japanese government to their firms. Even despite the support, two of the three automobile firms in Korea recently fell into bankruptcy. When the PRC and India initiated their automobile industry development policies in the 1950s, their per capita incomes were less than 10 percent that of the United States. The automobile firms in the PRC and in India were not viable at all. Even until today, their survival still depends on heavy government protection.¹¹

¹¹Most big push attempts by the less developed countries in the 1950s and 1960s failed. However, there is renewed interest in the idea after the influential articles by Murphy, Shleifer, and Vishny (1989). Their papers show that a government's coordination and support

VI. VIABILITY, ECONOMIC REFORM, AND TRANSITION

Empirical evidence shows that adoption of a CAD strategy is detrimental to growth, macro stability, and income distribution in a developing country (Lin 2003, Lin and Liu 2002, Lin and Liu 2004). However, the CAD strategy with its resulting government interventions is good at mobilizing scarce resources initially for investment in a few clear, well-defined priority sectors (Ericson 1991). The countries that adopt the CAD strategy can also enjoy a period of investment-led growth so long as it is possible to mobilize resources administratively from domestic or international sources for investing in the priority sectors. Therefore, because of the lack of knowledge about the long-term consequences of the CAD strategy, the aspiration for quick nation building, or the concern for immediate performance during their tenure in offices, the CAD strategy was attractive to political leaders in the LDCs and had been adopted by almost all governments in the LDCs after World War II (Chenery 1961). However, once financial resources from domestic and international sources were depleted, the economy stagnated and the inherited problems of the CAD strategy started to appear.¹² The economy would encounter all kinds of difficulties, and voluntarily or involuntarily market-oriented reforms have become an unavoidable choice in the LDCs, socialist and nonsocialist alike, since the late 1970s (Krueger 1992).

When the reforms started, most LDCs focused their attention on the distortions and government interventions and attempted to establish institutions considered essential for markets to function efficiently (Williamson 1997, Kolodko 2001). However, except for PRC, Viet Nam, and a few other countries, the growth performance of socialist economies in transition is miserable. The disappointing performance of transition economies in the former Soviet Union

are required for setting up a key industry and that the demand spillovers from the key industry to other industries will enhance economic growth. However, for the “big push” strategy to be successful the pushed industry must be consistent with comparative advantage, which is determined by the relative factor endowment of the economy, and the firms in the pushed industry must be viable after the push. Deviation from comparative advantage in the pushed industries and the consequent lack of viability of the chosen firms are the reasons why so many big-push attempts by the less developed countries in the 1950s and 1960s failed.

¹²How long the CAD strategy can be sustained in a country depends on how rich the natural resources per capita in the country are (Ranis and Syed 1992). In addition, the period may also depend on the size of population in a country. In the early 1950s, East Asian economies such as Korea; Singapore; and Taipei, China also followed the CAD strategy. However, due to their poor natural endowments and small populations, their economies immediately encountered huge fiscal deficits, high inflation, and external imbalances. Therefore, they were forced to give up the CAD strategy. Due to their governments’ inability to subsidize nonviable firms, the CAF became the *de facto* strategy. This may explain the successful development experiences of these economies.

and Eastern Europe (FSUEE) is especially striking. When transition started in the FSUEE in the late 1980s and early 1990s, most economists were optimistic about their expected outcomes due to the fact that these countries adopted a shock therapy,¹³ which attempted to restore market institutions as soon as possible. Ten years after the transition started, contrary to early optimism, the countries experienced a prolonged period of rampant inflation, output collapse, sharp widening of inequality, and worsening of other social indicators (World Bank 2002, Blejer and Skreb 2001, Roland 2000). The cumulative output declines were much more serious in all countries in the Commonwealth of Independent States and in most countries in Central and Southern Europe and the Baltics than the decline in the US during the Great Depression (World Bank 2002).

Not only was the performance from transition to market economy in the FSUEE disappointing but also in other developing countries. The poor performance is puzzling because, as the study of Easterly (2001) shows, variables that are considered important in the growth regressions—such as financial deepening, trade and exchange rate liberalization, health, education, fertility, and infrastructure—generally improved compared to the situation before the transition/reform in 1960–1979. Easterly speculates that worldwide factors like the increase in world interest rates, the increased debt burden of developing countries, the growth slowdown in the industrial world, and the skill-biased technological change contribute to the developing countries' stagnation in the last decades of the 1980s and the 1990s. However, Easterly's hypothesis is not consistent with the PRC's remarkable annual GDP growth rate of 9.6 percent in 1980–2000 and Viet Nam's 6.5 percent in 1985–2000.

As argued in Section III, many distortions and government regulations in the socialist economies and developing countries, which are considered detrimental to economic performance from the viewpoint of neoclassical economics, are in fact endogenous to the viability problem of firms in the priority sectors of the CAD strategy previously adopted by the governments. Since neoclassical economics implicitly assumes that all firms existing in the market are viable, the reform advice, based on neoclassical economics and capsulized in the Washington Consensus, attempts to get rid of the distortions and interventions directly (Lin 2005). However, without first appropriately addressing the viability problem of firms in the priority sectors during the transition, eliminating or liberalizing those endogenous distortions or regulations may result in changing institutions from second-best to third-best, causing economic performance to deteriorate after the reform/transition. This is because if all the distortions and regulations are removed, the viability problems of firms in the priority sectors will

¹³The key elements of shock therapy include price liberalization, privatization, and macro stabilization.

turn from implicit to explicit. Those nonviable firms will immediately become bankrupt if they do not receive any subsidy or protection.

If the number of nonviable firms and the number of workers employed are both small and the political determination for giving up the CAD strategy is strong, a shock therapy can succeed. The elimination of distortions and protections may cause the few firms to fall into bankruptcy but the viable firms in the previously depressed sectors may grow rapidly after the liberalization, and overcompensate for the loss of output and employment from the bankruptcy of the nonviable firms.¹⁴ However, if the number of nonviable firms and the number of workers employed are large, a forceful elimination of those distortions and protections will lead to widespread unemployment, resulting in economic collapse instead of recovery, such as what happened in the FSUEE and recently Indonesia. Social and political stability would be difficult to maintain. To prevent the dreadful consequences, after the initial attempt of forceful implementation of the reforms, the government often finds other ways to subsidize or protect the nonviable firms, resulting in half-done reform and a worse economic performance than that in the prereform situation. The failure of some countries in the FSUEE is such an example and deserves further analysis.

Most developing countries begin with a large number of nonviable firms, set up under the previous CAD strategy, when they embark on reforms. The direct implementation of many policy reforms based on existing neoclassical economics, which implicitly assumes that firms are viable, may not be appropriate. There is a need to find a way to revive economic dynamism while solving the viability issue of firms in the priority sectors and allowing the economy to gradually move toward a well-functioning market system. The PRC's experience may provide a useful example for other economies in the transition processes or those about to start their transition.

The PRC started its transition in 1979 with a piecemeal, gradual, dual-track approach. At the beginning of reforms, the PRC government gave partial autonomy to managers of state-owned enterprises (SOEs) and decollectivized the farms to improve incentives. However, the government still provided protection and support to nonviable SOEs in the traditional sectors to buffer them from the threat of bankruptcy. This incentive improvement resulted in productivity increase in both agriculture and industrial sectors (Lau et al. 2000, Lin 1992, Li 1997, Groves et al. 1994, World Bank 1992). At the same time, the government relaxed its strict control on entry, consistent with the PRC's comparative advantages, and which was depressed under the previous CAD strategy. This resulted in the rapid growth of labor-intensive, small- and medium-size, nonstate-owned firms such as

¹⁴Bolivia is such a case for the Washington Consensus. It was a small economy with only a 5.6 million population in 1980. The number of nonviable firms that government could support was small. Therefore, the shock therapy recommended by Jeffrey Sachs was successful.

township and village enterprises (TVEs), joint venture firms, and private enterprises. The rapid development of TVEs is illustrative. From 1978 to 1996, the number of TVEs increased from 1.52 million to 23.36 million; and the number of workers hired increased from 28.27 million to 135.08 million, or in terms of percentage of total rural labor force, an increase from 9.5 to 29.8 percent. Equally remarkably, TVEs have become one of the major forces behind the PRC's overall sustained growth. The industrial output value of the TVEs increased from 9.1 percent of the national total in 1978 to 57.9 percent in 1997. Rural industry is no longer merely a supplement to agricultural production, but has become an indispensable source of growth nationwide. It is widely acknowledged that export has been one of the leading factors contributing to the PRC's recent success; the TVEs' share of exports in total exports increased from 9.2 percent in 1986 to 45.8 percent in 1997 (Lin and Yao 2001).

Viet Nam is another country that has achieved dynamic growth after transition. As in the PRC, Viet Nam started transition with the decollectivization of agriculture, enlargement of SOE autonomy, and promotion of small- and medium-size nonstate enterprises in sectors that were previously repressed in the planned economy. State-owned enterprises maintained their dominant role in the industrial sector.¹⁵ Through this cautious and gradual approach, the average annual GDP growth rate in Viet Nam reached 6.5 percent in 1985–2000.

In FSUEE after the initial transition recession, recovery also came mainly from the entry of small- and medium-size enterprises into the previously repressed labor-intensive sectors. In 1998 new small enterprises, which employed fewer than 50 workers, contributed about 50 percent of employment in the leading reformers such as Czech Republic, Hungary, Latvia, Lithuania, and Poland, whereas in the poor performing countries, such as Belarus, Kazakhstan, Russia, and Ukraine, the employment share of small enterprises was only between 10 and 20 percent (World Bank 2002, 39).

The entry of small- and medium-size firms to the repressed sectors in a CAD strategy allowed the PRC and a few other economies to enjoy dynamic growth in the transition process. However, a country's completion of transition and reform to a market economy will not be complete until the viability issue of firms in the priority sectors of the CAD strategy is solved. Otherwise the government needs to maintain its intervention in markets in order to protect/subsidize the nonviable firms and prevent the inevitable distortions such actions will entail. For example, along with the rapid economic growth in the PRC's transition, the share of nonperforming loans looms large and corruption is widespread (Lardy 1998). These problems have their roots in the viability problem of SOEs. After 1983, the approach adopted by the PRC government to

¹⁵In fact, in Viet Nam the GDP share of SOEs increased from 33 percent in 1989 to 39 percent in 1996 (Sun 1997).

support the SOEs changed from direct fiscal appropriation to offering low interest-rate loans from state-owned commercial banks. Currently, over 70 percent of bank loans are lent to the SOEs, but due to their poor performance, many SOEs have been unable to repay the loans. Therefore, the banks accumulate large amounts of nonperforming loans. To support the SOEs, the government also limits market entry into certain sectors so that the SOEs can enjoy monopolistic rents. Many SOEs (and non-SOEs) seek rents from the government to acquire more low-interest loans or licenses for market entry to those regulated sectors, thus adding fuel to the widespread corruption.

The effective approach to resolve the viability issue of existing SOEs may be different from one country to another. For the case of the PRC, my coauthors and I recommend four measures, depending on the nature of the SOEs' outputs (Lin, Cai, and Zhou 1997 and 1998). First, if the SOE's output is essential for national defense, the government is required to use fiscal appropriation continuously to support the operations of the firm. Second, if the SOE's output has a large domestic market, the SOE can get access to internal capital by either forming a joint venture with multinational companies or listing in international equity markets. Third, if the SOE's output does not have a large domestic market but the SOE has good engineer and management capacity, the SOE can rely on its strength in human capital and shift to producing those types of products that are consistent with the PRC's comparative advantage and which have a large domestic market. Fourth, if the SOE's output does not have a large domestic market and the SOE does not have engineer and managerial strength either, the SOE should be allowed to go bankrupt. As long as the economy can maintain dynamic growth, the economy should be able to create enough jobs to absorb workers released from the bankrupted firms and enough resources to compensate for losers in the transition process.

Only after the problems of viability are solved, whether or not an SOE can earn acceptable profit in a competitive market becomes the manager's own business.¹⁶ The government will no longer need to find ways to intervene in the

¹⁶In the case of the PRC, the SOEs have another burden, which I call the social burden, comprising redundant workers and pension for retired workers. The PRC government was responsible for providing jobs to urban residents. However, in spite of large investments each year, the CAD strategy could not create enough jobs for the urban residents. To solve the employment problem, the government assigned several workers for one position at the SOEs. Before the reforms, redundant workers were not a burden on the SOEs because the SOEs submitted all revenues to the state and the state covered all SOE expenditures, including wage bills, by fiscal appropriation. After the reforms, the SOEs stopped submitting their revenues to the state and had to pay their own wage bills. Therefore, the redundant workers become a burden on the SOEs. Similarly, before the reforms, the government paid low wages to SOE workers and provided old-age pensions directly by the fiscal appropriation. After the reforms, the responsibility of providing old-age pension switched to SOEs. Therefore, the older the SOEs, the heavier the pension burden became. If the SOEs' social burden is not eliminated, the

markets in order to protect or subsidize the firms. Only then can the elimination of distortions and government interventions, as stipulated in the Washington Consensus, be carried out wholeheartedly and successfully. However, whether the government will follow the required policy reforms for a well-functioning market system also depends on whether the government has the wisdom and determination to give up the CAD strategy and switch to the CAF strategy.¹⁷

VII. CONCLUDING REMARKS

In this lecture, I argue that many development efforts in the developing countries after World War II failed because of their political leaders' failure to understand the endogeneity nature of industry/technology structure in an economy and their adoption of a CAD strategy to build up modern capital-intensive sectors on the basis of their capital-scarce endowment structure. For carrying out such a strategy, the government introduced various interventions and distortions to protect and subsidize the nonviable firms in the government's priority sectors. I also argue that the reforms and transitions in the 1980s and 1990s in many socialist and nonsocialist developing countries failed to set their economies on a new dynamic growth path because their reformers, based on the teaching of existing neoclassical economics, which assumes all firms existing in the market are viable (Lin 2004), failed to understand that many interventions and distortions are endogenous to the needs of protected nonviable firms in the priority sectors of the previous development strategy. The countries in developing Asia could benefit from the "advantage of backwardness" and achieve dynamic, inclusive growth if their governments could find ways to address their existing firms' viability issue properly, successfully switch to an alternative CAF strategy, and adopt required institutions accordingly.

In this lecture I only focused on the issues related to the government's development strategy on technology and industry. Currently 63 percent of the population in developing Asia still lives in rural areas and 54 percent still relies on agriculture for living. If the countries in developing Asia successfully switch to

government will be required to give SOEs protection or subsidies. The social burden will become a source of SOEs' soft budget constraints. The PRC government now adopts a policy, called *xiagang*, allowing SOEs to lay off their redundant workers and helping the laid-off workers with training and reemployment. The government also set up a social pension system to resolve the SOEs' burden of old-age pension.

¹⁷The traditional heavy industries may not be attractive to the developing countries anymore. However, in many societies the obsession for heavy industries has been replaced by the information technology, biotechnology, and other high-tech industries. If a developing country's government wants to accelerate the growth of these new industries in its economy, firms in these industries will be nonviable and would require government subsidies and protection as is the case in the traditional CAD strategy. The institutional reforms toward a well-functioning market economy cannot be completed successfully.

the CAF strategy, it is expected that agricultural employment will decline quickly and urbanization will proceed rapidly. The governments should have an appropriate education strategy for the rural population in order to increase their ability to cope with the challenges of nonagricultural jobs and urban living. The governments should also invest in agricultural technology and rural infrastructure in order to help those people still staying on in the rural agricultural sectors. The governments also need to cultivate an environment that encourages indigenous innovations in various social, economic, and political institutions in order to facilitate their countries' transition from traditional agriculture to modern industrial societies. With the joint efforts of governments, people from all walks of life, and the international community, developing Asia will have a new era of dynamic, inclusive growth.

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