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# Development and Transition:

# Idea, Strategy, and Viability*

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# Cambridge University

## Marshall Lectures

Development and Transition:

Idea, Strategy, and Viability

By

Justin Yifu Lin

on

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(Preliminary draft)

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# I

## Development, Transition and Divergence

The consequences for human welfare involved in questions like these are simply staggering: Once one starts to think about them, it is hard to think about anything else.
— Robert E. Lucas, Jr. (1988)

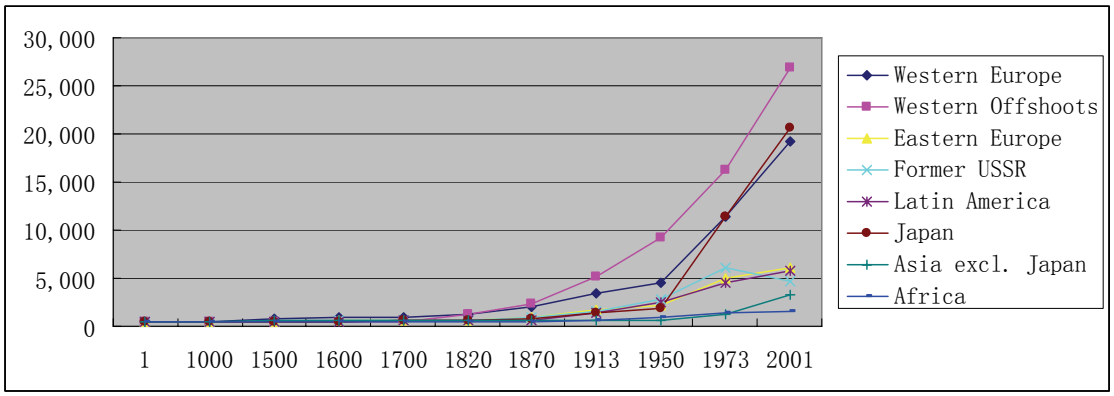
When I was a student at the University of Chicago in the early 1980s, I had the opportunity of observing Professor Robert Lucas preparing his 1985 Marshall Lectures. It is a great honor for me to follow Professor Lucas' steps to give the distinguished Lectures twenty-two years later. I returned to China in 1987 after graduating from the University of Chicago and doing one year of post-doctoral research at Yale University's Growth Center. As the first person to return China from abroad with a PhD degree in economics after the reform started in 1979, I have had the privilege of experiencing in person the miraculous changes in China's social and economic life and carrying out *in situ* research of China's development and transition in the past twenty years. Therefore, I would like to use this occasion to share with you my observations of developing country's economic development and transition, based primarily on my experiences in China.

It is a well-known fact that before the modern era, most countries were in the development stage of a relatively backward agricultural economy—disturbed from time to time by war and natural calamities, and afflicted by the Malthusian trap. Except for the ruling classes, craftsmen and merchants—who represented a minority of the population—most people worked in agriculture. The allocation of resources in such agrarian economies was close to optimal through generations of practice; therefore, the gains from improvement in the allocation of resources were small (Schultz, 1964). Further economic development was feasible only with some exogenous technological shocks to the system. The accidental discovery of better technology during the daily work of peasants and craftsmen is one example of such a shock.[1] Another is the Great Geographic Discovery of

[1] The adoption of certain technologies—for example, the replacement of the three-field cropping system

America in the fifteenth century, which brought back gold and silver to Europe as well as new crops—such as maize and potatoes—with better adaptability to various soil and climatic conditions. In this pre-modern era, economic development was manifested mainly in the form of population increase and the aggregate size of the economy. There was extensive growth, but per capita income did not change much (Clark, 2007; Kuznets, 1966; Perkins, 1969). The income gap between areas that today would be considered developed and those that would be considered developing was relatively small from today's viewpoint—estimated to be at most 50 per cent (Maddison, 2006; Bairoch, 1993). Some of today's developing countries—such as China and part of India—were believed to be richer than Europe at that time (Cipolla, 1980; Pomeranz, 2000; Smith, 1776). Until the late eighteenth century, the overall performance of markets—in terms of integration—in China and Western Europe was comparable (Shiue and Keller, 2007).

Figure I.1 **Per capita GDP of various regions, 1–2001 AD**




**Note:** Gross domestic product (GDP) is calculated with 1990 international Geary-Khamis dollar. The Geary-Khamis dollar—also known as the international dollar—is a sophisticated aggregation method of calculating purchasing power parity (PPP). This facilitates comparing countries with one another. See, for example, the statistical definition at http://unstats.un.org/unsd/methods/icp/ipc7_htm.htm

**Source:** Maddison, A. (2006). *The World Economy*. Paris: Organisation for Economic Cooperation and Development, 642.

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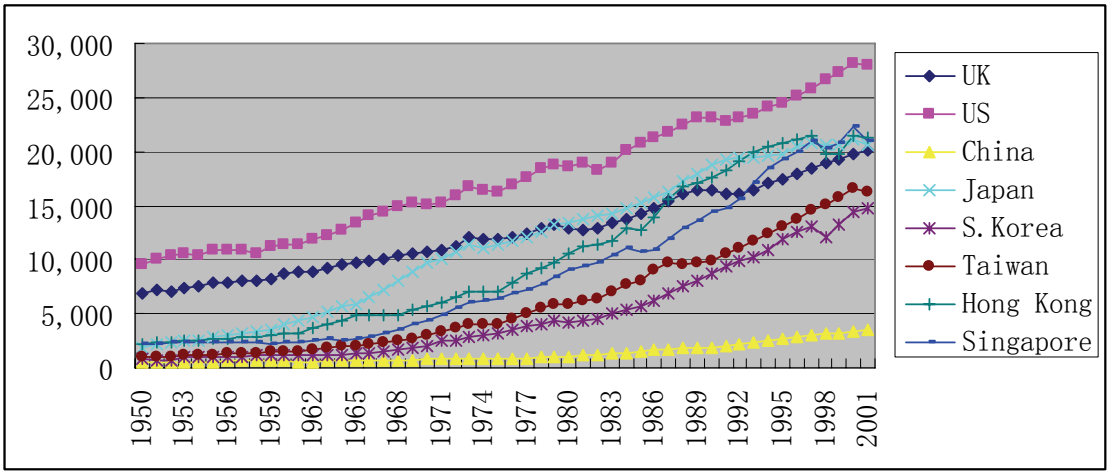
with the more intensive two-field system in Europe—might be endogenous to the increase in population pressure, as argued by Boserup (1965). The invention of new technologies at that time, however, came about mostly through accidental discovery by peasants and artisans rather than through specific research efforts (Needham, 1969).

After the Industrial Revolution began in England in the mid-eighteenth century, experiments conducted in laboratories become the major source of technological invention and innovation (Lin, 1995; Landes, 1998; Needham, 1969; Rosenberg and Birdzell, 1986). This was especially true for those macro-inventions that consisted of radical new ideas and involved large, discrete, novel changes, as defined by Mokyr (1990). For developed countries at the technological frontier, such a transformation of the method of technological invention enabled them to accelerate technological advances through investment in research and development, and technological invention and innovation became endogenous (Romer, 1986; Lucas, 1988). With increasing investment in research and development, technology change accelerated, industrial structures upgraded continuously and productivity increased. As a result, developed countries began to take off and the divergence between the North and the South appeared (Baumol, 1994; Braudel, 1984; Bairoch, 1983; Clark, 2007; Clark and Feenstra, 2001; Jones, 1981; Kuznets, 1966; Maddison, 2006; Rostow, 1960).

Figure I.1 shows the per capita income in various regions of the world from 1–2001 AD, based on the estimation of Maddison (2006, p. 642). It shows that from an insignificant difference at the beginning of the eighteenth century, per capita income in the developed countries of Western Europe and its offshoots had increased to more than 20 times that of the developing countries by the end of the twentieth century. As Lucas (1988) reflected in his 1985 Marshall Lectures, '[S]uch diversity across countries in measured per capita income levels is literally too great to be believed.'

It is natural that governments and people in poor countries all over the world aspire to achieve the success of the rich countries in Europe and North America. Except for a few newly industrialised economies (NIEs) in East Asia, however—as shown in Figure I.2—since World War II, most developing countries have failed to achieve their economic development goals and have even encountered frequent crises in spite of the many efforts of their governments independently or with assistance from international development agencies, such as the World Bank and the United Nations Development Agency.

Figure I.2 **Per capita GDP of the United States, the United Kingdom and the East Asian NIEs**



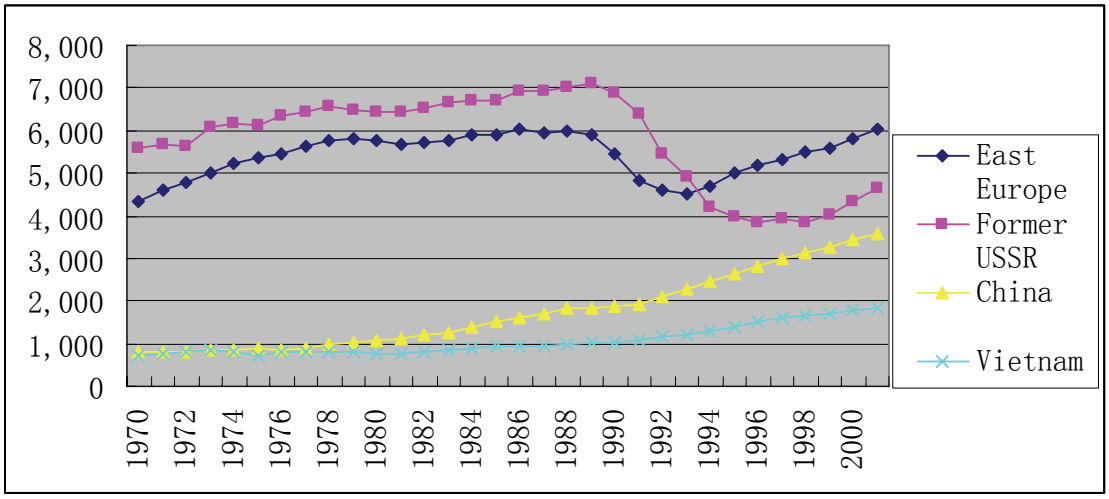

**Note:** GDP is calculated with 1990 international Geary-Khamis dollars.

**Source:** Maddison, A. (2006). *The World Economy*. Paris: Organisation for Economic Cooperation and Development.

In most developing countries after World War II, governments adopted various policy measures to promote industrialisation (Chenery, 1961; Krueger, 1992; Lal, 1983). At that time, most economists were expecting to see rapid growth in resource-rich countries in Africa and Latin America, but the real success stories appeared in East Asia, where the endowment of natural resources was extremely poor. Japan was the first of these countries, followed by Korea, Taiwan, Hong Kong and Singapore—the four East Asian NIEs—and, recently, by Thailand, Malaysia and Indonesia. In these economies in the early 1950s, the per capita gross domestic product (GDP) of less than 2,000 international Geary-Khamis dollars—measured by 1990 purchasing power parity (PPP)—was the same as China at that time and was less than that in Eastern European and Latin America. Since the 1960s, the economies of the four East Asian NIEs maintained an annual growth rate of 10 per cent for two to three decades. Such growth has completely changed the poor and backward state of their economies. Figure I.2 shows that—measured by PPP—income levels in Japan in the 1970s and in Singapore and Chinese Hong Kong in the 1990s surpassed that of the United Kingdom. More importantly, wealth distribution in these economies became more equitable during their economic growth (Fei et al., 1979).

To some extent, they have realised their long-pursued goal of catching up with developed countries and building equitable societies—a dream held by many developing-country revolutionary leaders and social élites, such as Vladimir Lenin, Sun Yat-sen, Mao Zedong, Jawaharlal Nehru and Gamal Abdel Nasser.

Figure I.3 **Per Capita GDP of China, Vietnam, Eastern European countries and the former Soviet Union, 1970–2001**




**Note:** GDP is calculated with 1990 international Geary-Khamis dollars.

**Source:** Maddison, A. (2006). *The World Economy*. Paris: Organisation for Economic Cooperation and Development.

Since the late 1970s, China and other socialist countries that implemented a planned economic system began the transition to a market economy in order to improve their economic performance. Figure I.3 shows that such a transition brought about rapid economic growth in China and Vietnam for more than two decades. The transitions that began in the early 1990s in the former Soviet Union and Eastern European countries, however, led to dramatic declines in their economies and deterioration in most aspects of social development (World Bank, 2002a). A survey conducted in 2006 by the European Bank for Reconstruction and Development (EBRD, 2007) and the World Bank of 29,000 people in 29 countries—including Eastern and southeastern Europe, the Baltic states, the Commonwealth of Independent States and Mongolia—found that only 30 per cent

believed their lives were better than in 1989. During the same period, most developing countries in other parts of the world followed the advice of the International Monetary Fund (IMF) and the World Bank to implement reforms to reduce government intervention and enhance the role of the market. The result has, however, been disappointing. The economic performance of most developing countries has deteriorated (Barro, 1998; Easterly, 2001a).

Continuous technological innovation and upgrading of industrial structures—as well as corresponding institutional changes—are the driving forces of long-term economic growth in modern times (Hayami and Godo, 2005; Kuznets, 1966; Landes, 1969; Marx, 1867–94; Rosenberg and Birdzell, 1986). By borrowing technology and institutions, a developing country has the advantage of backwardness (Gerschenkron, 1962; Landes, 1969; Veblen, 1915). Like Germany, France and other countries in Western Europe in the nineteenth century and Japan and the NIEs in East Asia after World War II, a developing country can learn from the experience of developed countries in technology and institutions—and, like China and Vietnam, a transitional country can also emulate the well-functioning market institutions in the developed countries. This advantage enables them to undertake rapid technological improvements, upgrade their industry and adapt institutions at a relatively low cost and with less risk. Such an advantage can enable developing and transitional countries to maintain rapid economic growth for several decades, to narrow the gap between them and developed countries and even to overtake some of them. While Western European countries in the late nineteenth century and Japan and the NIEs in East Asia after World War II developed successfully, and while China and Vietnam succeeded in their transition, most other developing and transitional countries have failed to exploit such potential fully. This is the question that I will explore in the Lectures.

# II:

## The search for a fundamental and changeable cause of prosperity

But, soon or late, it is ideas, not vested interests, which are dangerous for good or evil.
— John Maynard Keynes (1935)

The dominant social thought shapes the institutionalized order of society…and the malfunctioning of established institutions in turn alters social thought.
— Theodore W. Schultz (1977)

How to develop a country is a subject that Adam Smith analysed in *The Wealth of Nations* (1776), which marked the birth of modern economics. The very diverse performances in economic development among various developing countries and in the transition among various socialist countries have recently revived economists' interest in economic development.

Recent studies have tried many ways to identify the determinants of economic growth in a country and have proposed various theories to explain why a country becomes wealthy and what actions a government in a poor country can take to improve its economic performance. Looking at the issue from an accounting perspective, the differences in per capita income between countries can be explained by the differences in their physical capital, human capital and productivity. From this point of view, the way for a country to become rich is to invest in physical and human capital and to adopt new and better technologies. Such differences are, however, just the proximate causes of the income differences between countries, as the accumulation of physical and human capital and productivity growth are themselves endogenous (Acemoglu et al., 2005; Lewis, 1955; Rodrik, 2003). It is necessary, therefore, to look for other fundamental factors that underpin the proximate causes of income differences between countries.

Economists have proposed many fundamental determinants for the economic performance of a country. Acemoglu (2007) classifies these into four main causes. The

first is luck: uncertainty, heterogeneity in coordination, credit markets and government policies can enable one country experiencing otherwise identical conditions to another to escape poor equilibrium (Blanchard and Summers, 1987; Howitt and McAfee, 1988; Krugman, 1981, 1987, 1991; Leibenstein, 1957; Matsuyama, 1991; Murphy, et al., 1989; Myrdal, 1968; Nelson, 1956; Rosenstein-Rodan, 1943). The second is geography, which affects the proximate causes of growth through soil fertility, availability of certain key resources, the disease environment, transportation costs and so on (Diamond, 1997; Myrdal, 1968; Pomeranz, 2000; Sachs and Warner, 1997, 2001). The third factor is institutions, which shape the incentives to work and to invest in technology and physical and human capital (Acemoglu et al., 2001, 2002, 2005; Dollar and Kraay, 2003; Easterly, 2001b; Easterly and Levine, 2003; Needham, 1969; North, 1981, 1990; North and Thomas, 1973; Olson, 1982; Rodrik, 2003; Roland, 2007; Rosenberg and Birdzell, 1986). The fourth factor is culture and social capital, including beliefs, values, preferences and trust, which affect people's attitudes towards wealth, occupations, creativity and cooperation with others (Abramovitz, 1995; Bockstette et al., 2002; Chanda and Putterman, 2007; Grief, 1994, 2004; Lal, 2005; Landes, 1998; Mokyr, 1990; North, 1994; Putnam 1993; Weber, 1930).

Rodrik (2003) classifies the fundamental determinants of the economic performance of a country into three categories. In addition to geography and institutions in Acemoglu's list, he adds integration or trade, which is determined by empirical evidence from studies by Dollar (1992), Edwards (1998), Frankel and Romer (1999) and Sachs and Warner (1995) and which is advocated strongly by international organisations, including the World Bank, the IMF, the World Trade Organization (WTO) and the Organisation for Economic Cooperation and Development (OECD).

Luck as a fundamental determinant of income divergence in the long run is theoretically sound in models with multiple equilibria. However, the question is why the government and people of a country trapped in poor equilibrium would not change their behaviour or improve their coordination to shift from a bad equilibrium to a good equilibrium. In fact, we have seen that some countries that have been trapped in poverty for centuries

suddenly embark on dynamic growth, such as the East Asian NIEs in the 1960s and China after the reforms in 1979. Then what is the factor that triggers the sudden change?

Although geography is the only exogenous variable in the list of fundamental determinants, it is not destiny (Rodrik, 2003). Most of Australia is arid, desert or tropical land; Singapore and Mauritius are tropical countries; Switzerland and Botswana are landlocked. All these conditions are considered disadvantages for long-term economic growth in the geography hypothesis; however, Switzerland, Australia and Singapore are among the world's richest countries and Mauritius and Botswana have enjoyed dynamic growth in recent decades. European countries in the eighteenth century and earlier were plagued with many diseases (Clark, 2007): it was economic development that enabled them to eradicate those diseases and improve their environment. The impoverished environment in poor countries is, therefore, a consequence and not a cause of their failure to achieve economic development.

Some economists regard trade and integration—or, more carefully, government policy towards trade—as a fundamental determinant. It is true that successful countries have benefited from trade and foreign direct investment. Careful examination of the empirical evidence, however, shows that specific public policies directed at international economic integration or disintegration do not correlate well with economic performance (Rodríguez and Rodrik, 2001). Moreover, it will be clear from this Lectures that trade or the openness of a country is endogenous to the government's development strategy. Trade should not, therefore, be considered the fundamental determinant of long-term growth in a country.

The proponents of the culture hypothesis argue that through its effects on shaping people's attitudes towards work, leisure, risk, education, creativity and trust in other people, a country's culture determines its economic performance. Culture is, however, a given or slowly changing factor. The difficulty of taking culture as the fundamental determinant of economic development is that it cannot explain why a country suddenly

starts to take off after a period of long stagnation—such as the NIEs in East Asia in the 1960s and China and India after the 1980s. Neither can it explain why countries with the same culture—such as South Korea and North Korea, as well as West and East Germany—have dramatic differences in economic performance. Moreover, culture can change as a result of economic development—rather than being a cause of it. The hard-working attitude of Japanese workers has been impressive and praised throughout the world today, however, a quotation from a report written in 1915 by an Australian expert invited by the Japanese government to visit the country will suffice to illustrate the above point:

> My impression as to your cheap labour was soon disillusioned when I saw your people at work. No doubt they are lowly paid, but the return is equally so; to see your men at work made me feel that you are a very satisfied easy-going race who reckon time is no object. When I spoke to some managers they informed me that *it was impossible to change the habits of national heritage* [emphasis added]. (Cited in Bhagwati, 1983)

Economists working on development and transition have come to believe that institutions—which shape the incentives of a society—are the fundamental determinant of economic performance and long-run growth in a country. They believe that a country will have dynamic growth and become rich if it has good institutions, which provide incentives for work, accumulate human and physical capital, acquire better technology and improve resource allocation. If a country has poor institutions—which deprive people of the incentives to do the right thing for economic growth—it will be poor and will stagnate. Institutions are, however, endogenous, and are determined by other social, economic and political factors in the economy (Binswanger and Ruttan, 1978; Friedman, 2005; Hayami and Ruttan, 1985; Marx and Engels, 1848; Lin, 1989; Lin and Nugent, 1995; North, 1981; North and Thomas, 1973). Moreover, most institutions are also a slowly changing factor although a few institutions may be able to change quickly (Roland, 2007). For the proponents of the institutional hypothesis, therefore, two questions need

to be answered: first, what causes some countries to have good institutions and others to have bad institutions; and second, without significant changes to their bad institutions, why do some countries start to have a new path of dynamic growth?

The proponents of the institutional hypothesis focus their studies mostly on the first question and approach the issue from the conflicts of vested interests. Olson (1982) emphasises the effect on institutions of the growth of distributional coalitions in a country, which is a function of the duration of stability in a country. He argues that as time goes on without a revolution or other upheaval in the social structure, more and more special interests will form successful coalitions for rent seeking and the society will become increasingly 'sclerotic' because of this and because of the growth of bureaucratic sluggishness within the special-interest organisations themselves.

Grossman and Helpman (1996, 2001) see the structure of government regulations and interventions in a country as a result of political equilibrium in which special-interest groups bid for protection with their campaign support and politicians maximize their own welfare, which depends on total contributions collected and on the welfare of voters. Using trade policy as an illustration, they argue that the special-interest groups may prefer inefficient distortions to transfer income rather than more efficient means.

Based on the studies of economic development in the New World of North and South America, Acemoglu et al. (2001, 2002, 2005) propose that in places where Europeans faced high mortality rates, they could not settle and were more likely to set up extractive institutions; whereas in places with low mortality rates, they formed neo-European societies with institutions carried from Europe. Those bad and good institutions persist to the present.

Similarly, based on the early history of colonies in the New Word after the sixteenth century, Engerman and Sokoloff (1997) emphasise the pervasive influence of factor endowments on the quality of institutions. According to their argument, in the colonies that were endowed with climates and soils that gave them a comparative advantage in

plantation of sugar and coffee—lucrative crops at that times—or were rich in minerals, the production used a large number of slave labour because of the economies of scale in using such type of labour. The powerful colonial élites were able to establish social and political institutions that guaranteed them disproportional shares of political power and income distribution in order to maintain their status, at the cost of economic growth—which Engerman and Sokoloff (1997) argue is the case in Latin America. Meanwhile, they argue that the soil and climate in what became the United States and Canada were not favourable for large-scale plantation and mineral production and there was no large native population to provide labour. The development of the United States and Canada depended, therefore, mostly on labourers of European descent who had relatively high and similar levels of human capital. The distribution of land was more equal because of the limited advantages to large-scale production of grain and hay; therefore, wealth and political power were distributed more equally, which contributed to the formation of institutions that provided the population with broad access to economic opportunities and incentives for investment in human and physical capital as well as technology, enabling the countries to sustain long-run growth and prosperity.

While the hypothesis of the importance of institutions is agreeable and vested-interest groups may influence the formation of institutions that affect economic growth—as proposed by Olson (1982), Grossman and Helpman (1996, 2001), Acemoglu et al. (2001, 2002, 2005) and Engerman and Sokoloff (1997), the question why the growth in some countries suddenly takes off still remain unanswered. As already discussed, countries such as the East Asian NIEs after the 1960s, Chile after the 1970s and China, Vietnam and India in the 1980s, which escaped the poverty trap and started a new era of dynamic growth, did not have observable changes in the duration of their social stability and in the deprivation of the élite's political and economic powers—at least in the beginning. Moreover, socialist countries with initial similar powerful vested-interest groups have adopted different transitional institutions and have achieved dramatically different economic performances in their transitions to a market economy. We need, therefore, to search for other fundamental but changeable determinants.

I agree with Keynes (1935, p. 384) when he wrote as the concluding sentence in *The General Theory of Employment, Interest, and Money* 'But, soon or late, it is ideas, not vested interests, which are dangerous for good or evil'. The hypothesis I would like to propose is as follows.

The various institutions that hinder economic development in most former socialist and developing countries today are shaped by their governments, which followed inadequate ideas about the priority development of capital-intensive heavy industry in the 1950s when the capital in their economies was scarce. The failure of many former socialist and developing countries to achieve dynamic growth in their transitional processes is due also to their governments' specific transition strategy based on inadequate ideas, which ignored the existence of large amounts of non-viable firms in the economy, and the fact that the distorted institutions that existed before the transition were in fact second-best arrangements for protecting the non-viable firms.

The government is the most important institution in any country as the membership in a state is universal and the State has powers of compulsion over its citizens not given to other economic organisations (Stiglitz, 1989),. Because of its compulsive power, the government has a substantial degree of freedom in adopting policies that will affect the functions of other institutions in society. With good use of its power, a developing-country government can gradually reform its backward institutions, improving incentives for entrepreneurs and workers, increasing savings and accumulation in the national economy for investment in new industries and technologies, and improving resource-allocation efficiency in the economy. It can also encourage and facilitate enterprises to learn from developed countries and upgrade their industrial structures and technology. On the other hand, with incorrect use of its power, the government can create distortions in the system and consequently hurt incentives for entrepreneurs and workers. It can further distort resource allocation and create rampant rent-seeking behaviour, causing unequal income distribution and giving rise to low efficiency and frequent economic and financial

crises. The policies adopted by a government are, therefore, key to the success or failure of that country's economic development. As Lewis (1955, p. 376) insightfully observed, '[N]o country has made economic progress without positive stimulus from intelligent governments…on the other hand, there are so many examples of the mischief done to economic life by governments that it is easy to fill one's pages with warnings against government participation in economic life.' This is especially true in developing countries, as the constraints on government power are generally weaker than in developed countries. A more interesting question is whether the government has the incentive and ability to design and impose suitable institutions to facilitate the economic development in the country.

Political leaders operate the government. If we want to analyse the quality of a government's policies and institutions, we need to understand what motivates the political leaders to determine government policies (Lin, 1989). A political leader certainly worries about the security of his/her tenure in office and his/her own position in the nation's history. Regardless of the political system, the best way to achieve security of tenure and to establish a leader's historical status is to bring prosperity to the nation. As Alfred Marshall (1920, p. xvii) put it, '[E]conomic motives are not exclusively selfish. The desire for money does not exclude other influence; and may itself arise from noble motives.' The motivation and behaviour of political leaders are not necessarily shaped by narrow, selfish, pecuniary interests. I will argue in next section that many political leaders in developing countries in the 1950s and 1960s—especially the first-generation leaders who brought political and economic independence to their countries through long periods of revolution or struggle—were motivated by their desire for their nation's modernisation rather than by selfish vested interests. In pursuing modernisation, the leaders adopted certain strategies—which consisted of a set of policies—as a vehicle to achieve their goals.[2] The set of policies shaped the institutions in their countries, which in turn affected

[2] My definition of 'strategy' is similar to that of Rodrik (2005).

their economic performance.[3] The strategy adopted by political leaders was, however, influenced by the dominant social thinking at the time, which—as defined by Schultz (1977)—consisted of various social, political and economic ideas. Due to the complex nature of dynamic growth in a developing country and the political leaders' bounded rationality in understanding the subject, it is practical for political leaders to follow the dominant social thinking in the pursuit of national development. Moreover, following the dominant social thinking will make it easier for political leaders to mobilise public support for their policies. As argued by Schultz, therefore, it is the dominant social thinking that shapes the institutional order of developing countries.[4]

As I will argue, however, the dominant social thinking about achieving modernisation in the 1950s and 1960s was based on incorrect perceptions of the causes for and constraints on a developing country's modernisation. Except for a few economies in East Asia, which escaped the influences of the dominant social thinking at that time, the established institutions in the developing countries performed poorly and not only failed to deliver the promise of making the countries as successful as developed countries but caused frequent crises and even disastrous consequences in their economies. The failure of economic strategies and established institutions in turn altered the dominant social thinking and led developing countries—socialist and non-socialist—to start the institutional reforms and transitions that occurred in the 1980s, as predicted by Schultz. The dominant social thinking about the approach for transition in the 1980s and 1990s was, however, again based on an incorrect understanding of the underlying causes of the poor performance and constraints on the developing countries. Except for a few countries, such as China and Vietnam—whose governments were not influenced by the dominant

[3] Lewis (1955) emphasises the role of political leaders in a country's development. The case study of Botswana by Acemoglu et al. (2003) found that a number of far-sighted decisions by post-independence political leaders shaped good institutions, which in turn helped Botswana achieve an average annual growth rate of more than 9 per cent since independence in 1965. Empirically, it was found that an exogenous change in the national leader had a significant impact on a country's growth rate, from a panel data set including 130 countries since World War II (Jones and Olken, 2005).

[4] The importance of ideas in determining the institutions is also emphasised by North (1996), Lal (1994), and Lal and Mynit (1996).

social thinking at that time—most developing countries encountered severe set-backs in their economies during the transition process.[5]

In the following sections, I will analyse why the dominant social thinking about developing countries' modernisation in the 1950s and 1960s and about transition in the 1980s and 1990s were incorrect and how they shaped government policies and the established institutions in developing countries. I will also discuss why the governments of a few economies in East Asia escaped the influence of the dominant social thinking in the 1950s and 1960s and why China and Vietnam did not follow the transitional approach advocated by the dominant social thinking in the 1980s and 1990s.

[5] If the propositions of Olson (1982), Acemoglu et al. (2001, 2002, 2005) and Engerman and Sokoloff (1997) are valid, the destiny of a nation depends on its history. As argued by Arthur Lewis (1955, p. 418), however, 'If we ask why a people has made a certain choice, the answer lies usually in its history; but if we ask why it has had that particular history, we are back among the mysteries of the universe. Fortunately, not all the answers depend upon history.' According to my proposition, the destiny of a nation can change. When the leadership in a country follows a new idea and adopts new policies, it can set off dynamic growth.

# III

## Aspiration and Social Thought of Modernization

Without heavy industry there can be no solid national defense, no well-being for the people, no prosperity and strength for the nation.
— Mao Zedong (1945)

No country can be politically and economically independent, even within the framework of international interdependence, unless it is highly industrialized and has developed its power resources to the utmost.
—Jawaharlal Nehru (1946)

Keynes (1926, p. 16) wrote, '[A] study of the history of opinion is a necessary preliminary to the emancipation of the mind.' In this section, I will review the evolution of social thinking regarding the role of the government in the industrialisation and transition of developing countries.

Before the Industrial Revolution in the eighteenth century, China was more industrialised than the West (Cipolla, 1980; Elvin, 1973; Jones, 1981; Needham, 1969). In the seventeenth century, the Indian Subcontinent was not significantly less developed than Britain and, before 1800, India was a major supplier of cotton and silk textiles in international markets, including Europe (Dutt, 1992). After the Industrial Revolution in Britain in the mid-eighteenth century, and in Western Europe in the nineteenth century, the West was quickly industrialised and enhanced its economic, military and political power to achieve a dominant position in the world—and the great divergence between the industrialised North and the agrarian South emerged. India, like many other parts of the world, became a colony. China was defeated repeatedly by the industrialised powers after the Opium War in 1840, and became a quasi-colony, ceding extraterritorial rights in treaty ports to 20 foreign countries; its customs revenue was controlled by foreigners; and it surrendered territory to Britain, Japan and Russia. Like China and India, most

developing countries were unable to control their own fate; their economies were plundered and exploited by the colonisers.

After World War I, nationalism became a popular trend and, after World War II, most colonies became independent—led by veteran leaders of the various independence movements. The emergence of previous colonies or semi-colonies as newly independent states in Asia and the Middle East, and later in Africa, was accompanied by strong nationalist sentiments. Compared with developed countries, these developing countries had an extremely low economic growth rate and per capita gross national product (GNP), high birth and death rates, low average educational attainments and very little infrastructure—and they were heavily specialised in the production and export of primary commodities and imported most of their manufactured goods. Thus, it was central to every developing government's national agenda to develop its economy independently so as to achieve a rapid economic take-off and eliminate poverty. As such, many developing country governments regarded economic growth as their direct and prime responsibility.

Lack of industrialisation—especially the possession of large heavy industries, which were the basis of military strength and economic power—had forced China, India and other areas in the developing world to yield to the colonial powers. It was natural, therefore, for the political and social élites in the developing world to adopt an ideology of economic nationalism and to prioritise the development of large heavy, advanced industries in their countries after they gained political independence from colonial rule (Lal and Mynt, 1996, chapter 7). In effect, the political leaders in Australia and Germany, France and other countries in Western Europe in the nineteenth century pursued exactly the same goal when they saw the contrasts between Britain's rising industrial power and the backwardness of their own predominately agrarian economies (Gerschenkron, 1962).

The desire to develop heavy industries existed before the social élites obtained political power. Dr Sun Yat-sen, the father of modern China, proposed the development of 'key and basic industries' as a priority in his plan for China's industrialisation in 1919 (Sun,

1929).[6] Similarly, before the success of the socialist revolution, in a meeting in 1944, Mao Zedong, the leader of Communist Party of China, advocated:

> [T]he root cause of China's backwardness is the lack of modern industries. …. Therefore, it is our nation's mission to extricate ourselves from the backwardness. The people support the Communist Party of China because the Party represents the demands of our nation as well as our people. If we cannot solve economic problems, if we are unable to build up modern industries, and if we are incapable of enhancing productivities, the people would not necessary support us.' (Quoted from Mao, 1944, pp. 146–8, translated by the author).

.Zhou Enlai—the prime minister after the founding of the People's Republic of China in 1949 and an intimate associate of Mao—also quoted Mao in a speech given in 1953:

> [C]hairman Mao once said: our nation has obtained political independence, but if our nation wants to achieve complete independence, the completion of industrialisation is necessary. If the industry is not developed, a country may become the other country's vassal even after the country has obtained independence. As a socialist country, can we have a dependence mentality? For example, let the USSR develop heavy industries and national defense industries and let our nation develop light industries. Can we do that? In my opinion, we cannot do that. (Zhou, 1953, p. 253, translated by the author)

The Communist Party won the revolution and founded the People's Republic of China in 1949. After three years' recovery from the wars, under the leadership of Mao, China started its First Five-Year Plan in 1953. The purpose of the plan was expressed explicitly as: 'Concentrating nation's efforts on the industrial development with heavy industries as the core in order to build up the primary base of socialist industrialization.'(CPC, 1955).

[6] Understanding the lack of capital in China, Dr Sun planned to borrow foreign capital for China's industrialisation. His position was different from Mao's and many other revolutionary leaders in China and in other developing countries, who advocated the idea of self-reliance.

In 1957, Mao further proposed to make China's industrial power exceed that of Great Britain in 10 years and to catch up with that of the United States in 15 years (Teiwes with Sun, 1999).

Similarly, the leadership of the freedom movement in India pressed hard for industrial development, even while the political struggle was going on. The Congress Party established a National Planning Committee to chart industrial development nearly a decade before India became independent (Dhar, 2003). In a speech, Jawaharlal Nehru—India's leader in the independence movement and the country's first prime minister—proclaimed:

> [N]o modern nation can exist without certain essential articles which can be produced only by big industry. Nor to produce these is to rely on imports from abroad and thus to be subservient to the economy of foreign countries…Big industry must be encouraged and developed as rapidly as possible, but the type of industry thus encouraged should be chosen with care. It should be heavy and basic industry, which is the foundation of a nation's economic strength and on which other industries can gradually be built up. (cited in Srinivasan, 1994)

Under the leadership of Nehru, therefore, the Indian government's industrial policy resolutions of 1948 and 1956 entrusted the public sector with responsibility for developing basic and heavy industry and saw such development as a precondition for the development and expansion of the private sector (Dutt and Sundharam, 2006). With the assistance of Professor Prasanta Mahalanobis, India began to pursue the development of basic and heavy machine-building industries in its second five-year plan, which began in 1956.

In Latin America, political leaders and social élites were influenced strongly by the deterioration in the terms of trade, the economic difficulty encountered during the Great Depression in the 1930s and by the thesis developed by Prebisch (1950) and Singer (1950). They believed that the decline in terms of trade against the export of primary

commodities was secular, resulting in the transfer of income from resource-intensive developing countries to capital-intensive developed countries—something that could be combated only by efforts to develop domestic manufacturing industries through a process known as import substitution.

The idea of prioritising the development of heavy industry in developing countries also drew on the intellectual support of the writing of Marx and Lenin and the USSR's successful experience of industrialisation before World War II. In *Das Kapital*, Marx—based on Quesnay's *Tableau Économique* (1758–59)[7]—used a two-sector model, in which the first sector produced the means of production (that is, heavy industry) and the second sector produced consumer goods (that is, light industry and agriculture) to study the reproduction process. In the analysis, Marx argued that the means-of-production sector should grow faster than the consumption-goods sector in the modern production mode.

Following Marx, Lenin stressed the needs to prioritised development of large heavy industry in a frequently cited article entitled 'On the so-called question of the market', written in 1893. The position was reaffirmed in 'The immediate tasks of the Soviet government', written after the Bolshevik Revolution (Lenin, 1918), in which Lenin said, '[T]he raising of the productivity of labour first of all requires that the material basis of large-scale industry shall be assured, namely, the development of the production of fuel, iron, the engineering and chemical industries.' Due, however, to the chaos and destruction of the civil war (1918–20) immediately after the Bolshevik Revolution, Lenin was unable to put into practice the prioritisation of heavy-industry development and adopted the New Economic Policy (NEP) in 1921 to restore the shattered agricultural economy. After succeeding Lenin and consolidating his power, Stalin started to pursue earnestly the prioritised development of heavy industries in 1929 through a series of five-year plans (Gregory and Harrison, 2005; Gregory and Stuart, 2001). The share of heavy industry in Soviet industrial output rose rapidly (Moravcik, 1965; Allen, 2003) and the Soviet Union

[7] For an authoritative compilation of the various editions of the *Tableau*, see Kuczynsky and Meek (1972).

quickly became a global military power before World War II.[8]

Running parallel with the aspiration for heavy-industry development in developing countries, in academic circles was a dominant view of 'market failure' due to structural rigidities and coordination problems—the body of thought that became 'development economics'. [9] Under the influence of Keynesianism and belief in the economic success of the Soviet Union, the mainstream theories in development economics at that time held that the market encompassed insurmountable defects and the government was a powerful supplementary means to accelerate the pace of economic development. Many development economists at that time advocated that the government should play a leading role in the industrialisation push, directly allocating the resources for investment, setting up public enterprises in the large heavy industries to control the 'commanding heights' in

[8] In 1929, the Great Depression began in the West. During the 1930s, economic development in the West was beset with crises and stagnation. Led by Stalin, the Soviet Union adopted a planned economic system and prioritised the development of heavy industries. As the country with the most abundant natural resources per capita in the world, it had great potential to sustain its investment-led growth by mobilising natural resources to support investment. Before World War II, the Soviet Union had already become industrialised, with strong military industries. The disadvantages of the planned economy were not revealed until the 1970s. The sharp contrast in economic performance between the Soviet Union and the developed capitalist countries in the 1930s had a profound impact on the thinking and policies of social élites and political leaders in the developing world after World War II.

[9] The new field of development economics was regarded as covering underdevelopment because 'conventional economics' did not apply (Hirschman, 1982). Early trade and development theories and policy prescriptions were based on some widely accepted stylised facts and premises about developing countries (Krueger, 1997); these included: 1) developing economies' production structures were oriented heavily towards primary commodity production; 2) if developing countries adopted policies of free trade, their comparative advantage would forever lie in primary commodity production; 3) the global income elasticity and the price elasticity of demand for primary commodities were low; 4) capital accumulation was crucial for growth and, in the early stage of development, it could occur only with the importation of capital goods. Based on these stylised facts and premises, it was a straight step to believe that the process of development was industrialisation, and industrialisation consisted primarily of the substitution of domestic production of manufactured goods for imports (Chenery, 1958).

order to overcome market failures (Hirschman, 1958; Nurkse, 1953; Rosenstein-Rodan, 1943).

The idea that the government in a lagging country needs to support the manufacturing industry in order to catch up with developed countries can be traced to the writings of List (1841), the 'father' of the infant-industry argument for protection. He argued that each lagging nation should foster the development of its own manufactures by import duties and even outright prohibitions and only by this means could countries such as Germany, Russia and the United States—which at that time were less developed than Britain—ever hope to compete on equal terms with Britain. After List's death in 1846, Otto von Bismarck—the prime minister of Germany's Second Reich—put the ideas List advocated into practice, in 1879. Bismarck used protective tariffs and direct government support in the development of iron, steel and other large heavy industries and turned Germany from a relatively less-developed agrarian economy into a major industrialised power in a short time. List's ideas and Germany's industrialisation experience impressed social élites and national leaders in India and other parts of the developing world and shaped their thinking about the government's role and industrial policies in their national development—even to this day (Dhar, 2003).

Lal (1983) calls List's policy recommendations and the early development economics '*dirigiste* dogma'. Based on the teachings of development economics at that time, the international development agencies that were established after World War II—such as the World Bank, the IMF and the United Nations Commission for Trade and Development (UNCTAD)—advised enthusiastically the governments in developing countries to play an active role in overcoming market failures in their industrial development.

Aspirations and ideas have consequences. After World War II, most developing countries—including socialist and non-socialist countries in Asia, Latin America and Africa—adopted a development strategy that prioritised large advanced, capital-intensive industries (referred to commonly as the heavy industry-oriented development strategy or import-substitution strategy) to ensure their nations' independence, to achieve higher

living standards for their people and to avoid exploitation by developed countries. They hoped that this strategy would help to establish an industrial system that was similar to those in developed countries. I will argue in next section, however, that it is incorrect to refer to the lack of spontaneous development of heavy industry in a developing country as a market failure. Advanced capital-intensive heavy industry does not fit with the comparative advantages of developing countries; firms in heavy industries will not be viable in undistorted, open, competitive markets. It is the viability problem—and not market rigidities or coordination failures—that causes the lack of large advanced, capital-intensive industry in developing countries. I will show that, due to this incorrect diagnosis, government policies based on the dominant social thinking at the time resulted in pervasive government failures in developing countries, which have been discussed extensively by Bauer (1984), Lal (1983) and Krueger (1990)—to name just a few.

# IV.

# Development strategy, viability and Performance

The key characteristic of the endowment structure[10] in developing countries is a relative abundance of natural resources or unskilled labour and a scarcity of human and physical capital. In developing countries with abundant unskilled labour or resources but scarce human and physical capital, only the labour-intensive and resource-intensive industries will have comparative advantages in open, competitive markets; and in developed countries with abundant capital and relatively scarce labour, capital-intensive industries will be the most competitive[11] (Ohlin, 1967; Heckscher and Ohlin 1991; Lin, 2003; Lin and Zhang, 2007). The development strategy advocated by the dominant social thinking in development economics in the 1950s and 1960s in essence was a comparative advantage-defying (CAD) strategy.

Under a CAD strategy, firms in prioritised industries cannot survive in an open, competitive market because they are in conflict with the comparative advantages determined by their endowment structure and will require higher costs to produce goods than firms in countries with a comparative advantage in the same industries. Even if they are well managed, they cannot earn a socially acceptable profit in an undistorted, open,

[10] Endowment structure refers to the relative abundance of capital, labour and natural resources.

[11] The principle of comparative advantage—based on different labour productivity—has its origin in the works of David Ricardo, J. S. Mill and Alfred Marshall. The modern version of comparative advantage proposed by Heckscher and Ohlin (1991) is based on the comparative cost, due to the differences in the factor endowment structure. I draw inspiration from Heckscher and Ohlin (1991). In their model, however, the technology in each industry is assumed to be identical in the developed and developing countries and a country should produce more goods that use its abundant factor intensively to exchange for goods that use its scarce factor intensively. However, more realistically, the technologies used in the developed and developing countries are not identical. Lin and Zhang (2007) build a dynamic model to show that a country should go into the industries and adopt the technologies that use its abundant factor intensively to produce goods. They model allows a country to move up its technology and industry ladders along with the upgrading of its endowment structure from relative scarcity in capital to relative abundance in capital.

competitive market. I refer to these firms as non-viable.[12] In other words, these non-viable enterprises are unable to survive in an open, competitive market even if they are well managed; and, unless the government provides subsidisation and protection, no one will invest in or continue to operate such firms. The lack of capital-intensive industries in developing countries is not, therefore, due to market rigidity but to the non-viability of the firms in an undistorted, open, competitive market.[13]

As I will show in the mathematic model in the appendix, in order to implement a CAD strategy, a developing-country government has to protect numerous non-viable enterprises; however, because these governments usually have limited tax-collection capacities, such large-scale protection and subsidisation cannot be sustained with their fiscal resources. The government has to resort to administrative measures—granting the non-viable enterprises in prioritised industries a market monopoly, suppressing interest rates,[14] over-valuing domestic currency and controlling prices for raw materials—to reduce the costs of investment and operation for the non-viable enterprises. Such

[12] A normally managed firm is expected to earn a socially acceptable profit in a free, competitive market without government protection or subsidisation; I call such firms viable. There could be many factors that affect the viability of a firm. In this Lectures, as well as in my other works, I use the term 'non-viability' to describe the inability of normally managed firms to earn socially acceptable profits due to their choice of industry, product and technology away from those deemed optimal by the economy's endowment structure.

[13] The models based on increasing returns, such as Krugman (1981, 1987, 1991) and Matsuyama (1991), and coordination of investments, such as Murphy et al. (1989), assume that the endowment structure of each country is identical, and, therefore, that firms will be viable in an undistorted, open, competitive market once the government helps the firms overcome market failure and escape the poor-equilibrium trap. Such models could be appropriate for considering the government's role in assisting firms to compete with those in other countries in a similar stage of development. Such models are, however, inappropriate as policy guidance for developing countries that are attempting to catch up with developed countries because the endowment structures in developing and developed countries are different. With government help, a developing country might be able to set up firms in advanced capital-intensive industries; however, because of the scarcity of human and physical capital, the comparative cost of production of firms in the developing country will be higher than for firms in a developed country. The firms will, therefore, still be non-viable in an undistorted, open, competitive market. The government needs to support and protect the firms continuously after they have been set up.

[14] The financial repression discussed by McKinnon (1973) and Shaw (1973) is a result of this strategy.

intervention will cause widespread shortages in funds, foreign exchange and raw materials. The government, therefore, needs to allocate these resources directly to these enterprises through administrative channels, including national planning in the socialist countries and credit rationing, investment and entry licensing in non-socialist developing countries.[15] Although these administrative measures can build up industries that are in conflict with the comparative advantage of the economy, serious information problems arise. Under information asymmetry, because the government cannot participate directly in the management of firms, it is impossible to determine the necessary amount of protection and subsidisation. When an enterprise incurs a loss, therefore—even if it is due to mismanagement or the moral-hazard problems of managers—the blame will fall on the government for insufficient protection and subsidisation, and the enterprise will use this as an excuse to ask for even more protection. When the government is responsible for the losses of such enterprises, soft-budget constraint problems will arise (Lin and Tan, 1999)[16] and rent-seeking behaviour will be pervasive (Krueger, 1974). It is also inevitable that some government officials will use their power to intervene with the management of the enterprises and elicit bribery, when the government needs to protect and subsidise the enterprises repeatedly.

After the adoption of a CAD strategy, in addition to the problems discussed above, a developing country might no longer benefit from the advantage of backwardness. It can no longer borrow technology from developed countries to accelerate its technological innovation and upgrade its industrial structure, because the development of new technology—either through independent research or foreign borrowing—requires capital investment. Under a CAD strategy, because the limited capital resources are used to develop prioritised capital-intensive industries, the labour-intensive industries that have

[15] The excessive regulation and administrative control will cause many private activities to escape into informal sectors (de Soto, 1987).

[16] The soft-budget constraint is a term coined by Kornai (1986), which became a popular research subject after the article by Dewatripont and Maskin (1995). According to Kornai, the soft-budget constraint is a result of the paternalism of a socialist state; and, according to Dewatripont and Maskin, it is an endogenous phenomenon, arising from a time inconsistency problem. In Lin and Tan (1999) and Lin and Li (forthcoming), I argue that the soft-budget constraint arises from the policy burdens imposed on enterprises.

comparative advantages cannot receive sufficient financial support and have to rely on traditional technologies. Firms in the prioritised industries are unable to produce an economic surplus due to the violation of comparative advantage.[17] Firms in the industries consistent with the economy's comparative advantage will produce fewer surpluses than they could otherwise produce because of their difficulty in accessing necessary capital for investment. Therefore, little economic surplus is generated and the surplus available for investment in the next period is limited. For those newly established capital-intensive industries—even though they are quite advanced in technology at the time of investment—the technology gap with developed countries will soon widen. Due to patent protections and embargoes on advanced technology from developed countries, it is difficult to borrow new advances at low cost in the advanced industries. At the same time, independent research and development will require too much capital investment and involve too high risk. With an overall poor economic performance and limited surplus, the ability to carry out such research will inevitably fall short. After a few years, these once advanced industries will become obsolete. As a result, technological progress in the prioritised industries and the whole economy will be very slow.

A CAD strategy will also affect income distribution. In socialist countries that have eliminated capitalists, the development of prioritised industries can be realised through direct government investment, accompanied by suppression and equalisation of wage rates though administrative measures. The equality is artificial. In other market-based countries, however, income distribution will be polarized (Lin and Chen, 2007). In those countries, only wealthy and crony capitalists with intimate relationships with the government and opportunities to access bank loans and fiscal resources have the ability to invest in the prioritised capital-intensive industries. Since subsidies to the prioritised industries have to come from workers and peasants—either directly or indirectly. Even if a fast investment-led growth is achieved at the begin, the poor will not benefit from the

[17] With the government's protection and subsidisation, firms in the prioritised industries might appear to be very profitable. These profits, however, come from the transfer of surplus from other industries through the government's administrative measures. Such profits do not constitute a 'real' economic surplus in the economy.

growth (Lal and Myint, 1996) Therefore, the adoption of a CAD strategy will inevitably worsen income distribution. Meanwhile, because the prioritised industries are capital intensive, they can generate only limited employment opportunities. The labour-intensive industries that could generate more employment opportunities cannot develop fully due to the lack of capital. As a result, large numbers of labourers are either retained in rural areas or become unemployed or semi-employed, leading to further polarisation in income distribution.

In summary, while the adoption of a CAD strategy can establish some advanced industries in developing countries, it inevitably leads to inefficient resource allocation, suppressed working incentives, rampant rent-seeking behaviour, deteriorating income distribution and poor economic performance. In the end, more haste, less speed. The adoption of a CAD strategy will not narrow the gap with developed countries; instead, the gap will become wider and wider.[18]

What the political leaders and social élites fail to recognise is the fact that the industrial and technological structures in developed countries are determined endogenously by their economic endowment structures. Without government interventions, industries in developing countries are more labour and resource intensive because human and physical capital is relatively scarce and labour and resources are relatively abundant. Since industrial and technological structures are endogenous to the endowment structure of the

[18] In the models of Olson (1982), Acemoglu et al. (2001, 2002, 2005), Grossman and Helpman (1996 and 2001) and Engerman and Sokoloff (1997), government intervention, institutional distortions and rent seeking arise from the capture of government by powerful vested-interest élites. Logically, their models can explain some observed interventions and distortions, such as import quotas, tax subsidies, entry regulations and so on. Their theories cannot, however, explain the existence of other important interventions and distortions—for example, the pervasiveness of public-owned enterprises in developing countries, which are against the interests of the powerful élites. Appendix I will provide a formal model for the observed distortions and interventions in developing countries based on the need to support non-viable firms arising from the conflicts between the CAD strategy pursued by the government and the given endowment structure in the economy. However, once the government introduces a distortion, a group of vested interests will be created even if the distortion is created for noble purpose. The vested-interest argument could be appropriate for explaining the difficulty of removing distortions.

economy, the goal of a government's development strategy should be to upgrade the endowment structure—instead of upgrading industry and technology directly without taking measures to upgrade their endowment structure first. Once the endowment structure is upgraded, relative factor prices will change and the profit motive and competition pressures will force enterprises to upgrade their industrial and technological structures spontaneously.

Upgrading the endowment structure requires capital to accumulate faster than the growth of labour and natural resources; this applies to material capital and human capital. Capital accumulation depends on the total economic surplus and savings in the economy. If the development of industries and the adoption of technology in a developing country follow the comparative advantage determined by its endowment structure at every phase of development, the industries will be most competitive in the domestic and world markets at all times.[19] As a result, products will acquire the largest possible market share and generate the largest possible surplus. Since the capital investment has acquired the largest possible return, the returns on savings will also be the highest possible. Consequently, households will have the highest savings propensity, resulting in the fastest possible upgrade of the endowment structure. I will refer to the set of policies that facilitates the development of industries and the adoption of technology in a developing country to follow the comparative advantage determined by its endowment structure at every phase of development as a comparative advantage-following (CAF) strategy.

[19] Porter (1990) makes the term 'competitive advantage' popular. According to him, a nation will have competitive advantage in the global economy if the industries in the nation fulfill the following four conditions: 1. their production intensively uses the nation's abundant and relatively inexpensive factors of production, 2. their products have large domestic markets, 3. each industry forms domestic clusters and 4. markets are competitive. The first condition in effect means that the industries should be the economy's comparative advantage determined by the nations' endowments. The third and the fourth conditions will hold only if all industries are consistent with the nation's competitive advantage. Therefore, the four conditions can be reduced to independent conditions: the comparative advantage and domestic market size. Among these two independent conditions, the comparative advantage is more important than the domestic market size because if an industry is the nation's comparative advantage, the industry's product will have a global market. This is the reason why among the richest countries in the world, many of them are very small.

An enterprise's selection of industry and technology depends on the relative prices of capital, labour and natural resources. Only when relative prices fully reflect the relative scarcity of these production factors will the enterprise's selection be consistent with the comparative advantage determined by the endowment structure. This requires that the product and factor markets be fully competitive. Since markets in developing countries are usually not fully competitive, the adoption of a CAF strategy requires the government to improve various market institutions so as to create and protect effective competition in the product and factor markets—as advocated by Smith (1776), Marshall (1920) and recently by Bauer (1984), Lal (1983) and Little (1982).

The government in a developing country could, however, play a more active role than just maintaining market competition. When the government follows a CAF strategy, as capital accumulates, the endowment structure will upgrade, causing the relative factor prices to change. Enterprises need to upgrade their industries and technologies accordingly in order to maintain market competitiveness. In the process, enterprises in developing countries can fully utilise the industrial and technological gap with developed countries and acquire industrial and technological innovations that are consistent with their new comparative advantage through learning and borrowing from developed countries, especially from those countries whose stage of development is higher than but not too far away from theirs.[20] Compared with innovation through independent research

[20] This is one of the most important principles for the successful application of the advantage of backwardness. Historically, for those countries relying successfully on the advantage of backwardness to achieve industrialisation—that is, the continental countries in Western Europe in the nineteenth century and the Asian NIEs after World War II—they all borrowed technology from countries whose per capita income was not too much greater than theirs. In such circumstances, the borrowed technology will be consistent with the borrowing country's comparative advantage and the enterprises using the borrowed technology will be viable. According to the estimations of Maddison (2006), the per capita incomes of the continental countries in Western Europe were about 60 per cent of that of the United Kingdom in 1870. Similarly, in post-World War II development, the four East Asian NIEs borrowed technology from Japan instead of North America and Western Europe. In addition, the technology and industry transferred from Japan to the East Asian NIEs followed a flying-goose pattern in the initial stage (Akamatsu, 1962)—that is, industrial development in the East Asian NIEs followed one step behind the Japanese industries (Kim, 1988). For the

in developed countries, such acquisition of innovation has a lower cost and less risk. The speed of technological innovation will therefore be faster in the developing country that adopts a CAF strategy than in the developed country.[21]

In the above discussions, I assume that the information about the product markets, industries and production technologies is available freely to the firms in the economy.[22] When the factor-endowment structure of the economy is upgraded, therefore, the enterprises can upgrade their technologies or upgrade smoothly from a less capital-intensive industry to a relatively more capital-intensive industry. Such information might not, however, be available; therefore, it is necessary to invest resources to search for, collect and analyse the industry, product and technology information. If an enterprise carries out the activities on its own, it will keep the information private, and other enterprises will be required to make the same investment to obtain the information. There will be repetition in the information investment. The information does, however, have a public goods aspect. After the information has been gathered and processed, the cost of its dissemination is close to zero. The government can, therefore, collect the information about the new industries, markets and technology and make it available to all firms in the form of an industrial policy.

The upgrading of technology and industry often requires coordination of different enterprises and sectors in the economy. For example, the human capital or skill requirements

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poorer countries in Eastern Europe—such as Hungary and Russia—whose per capita income was about 30 per cent of that of the United Kingdom in 1870, an attempt similar to that by Western European countries in the late nineteenth century resulted in a much higher degree of government intervention and direct involvement, causing various difficulties and economic stagnation after the industries were established (Gershenkron, 1962). When borrowing technology from advanced countries, however, developing countries often aim for the most advanced technology.

[21] The above discussion does not mean that a country that follows a CAF strategy does not need to engage in indigenous innovation. To be successful, the country needs to undertake process innovation to make the borrowed technology suitable to local conditions. The country also needs to do indigenous product innovation in sectors in which the country has already been the world leader or has been just a step behind the world leader. For further discussions, see Lin and Ren (2007).

[22] The next six paragraphs on the government's role in overcoming information, coordination and externality issues are drawn from Lin (2003).

of new industries/technologies might be different from those used with older industries/technologies. An enterprise might not be able to internalise the supply of the new requirements and will need to rely on outside sources; therefore, the success of a firm's industry/technology upgrade depends also on the existence of an outside supply of new human capital. In addition to human capital, the firms that are upgrading might require support for new financial institutions, trading arrangements, marketing and distribution facilities, intellectual property rights protection and so on. The government might, therefore, also use industrial policy to coordinate firms in different industries and sectors for the upgrading of industry/technology in the economy.[23] Developing countries generally lag behind in their infrastructure, financial institutions, legal systems and other social development, so the government needs also to invest in the infrastructure and strengthen the development of legal, financial and social institutions along with the industrial upgrading. The government needs also to build up its administrative capacity in order to carry out the above functions.

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, an enterprise's attempt to upgrade its industry/technology might fail due to the upgrade being too ambitious, the new market being too small, the coordination being simply inadequate and so on. 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 enterprise pays the cost of failure and produces valuable information for other enterprises. If the first enterprise succeeds, the success will provide externalities to other enterprises, prompting them to engage in similar upgrades. These subsequent upgrades will

[23] Most 'big-push' attempts by the less-developed countries (LDCs) in the 1950s and 1960s failed. There has, however, been renewed interest in the idea since the influential articles by Murphy et al. (1989). Their paper showed that government coordination and support were required for setting up a key industry and that the demand spill-overs from the key industry to other industries would enhance economic growth. For the big-push strategy to be successful, the 'pushed' industry must be consistent with the 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 LDCs in the 1950s and 1960s failed.

dissipate the possible rents that the first enterprise might enjoy, so there is an asymmetry between the costs of failure and the gains of success that the pioneer enterprise might have. To compensate for the externality and the asymmetry between the possible costs and gains, the government could provide some form of subsidy—such as tax incentives or loan guarantees—to the enterprises that initially follow the government's industrial policy.

As many studies of the success stories of the East Asian NIEs suggest, it is therefore desirable for the government to have an industrial policy to overcome the information, coordination and externality problems that are unavoidable in the process of development (Amsden, 1989; Chang, 1994; Wade, 1990). It is worthwhile noting, however, that there is a fundamental difference between the industrial policy of a CAF strategy and that of a 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. The enterprises in the CAF strategy should therefore be viable after they are established with the government's help in information and coordination, and a small, limited subsidy should be enough to compensate for the externality issue. In contrast, enterprises following a CAD strategy are not viable and their survival depends on large, continuous policy favours/support from the government.[24]

A comparison of the successes and failures of industrial policies for automobile production in Japan, Korea, India and China is a good illustration of the differences between the CAF and CAD industrial policies. The automobile industry is a typical capital-intensive heavy

[24] The dynamic comparative advantage is another argument often used for the government's industrial policy and support to firms (Redding, 1999). In my framework, however, it can be seen clearly that the argument is valid only if the government's support is limited to overcoming information and coordination costs and the pioneering firm's 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 the government's support is removed. The required lengthy support to the firms for the dynamic comparative advantage will crowd out the resources available to other firms that are consistent with the competitive advantage of the economy and slow economic growth and capital accumulation. The economy will therefore reach the stage targeted by the dynamic-advantage policy later than an economy that follows a CAF strategy.

industry. The development of an automobile industry is the dream of most developing countries. Japan adopted an industrial policy to promote its automobile industry in the mid-1960s and achieved great success. Japan's experience is cited often as a supporting argument by advocates of an industrial policy for heavy industries in developing countries. South Korea instituted an industrial policy for automobile production in the mid-1970s and has achieved a limited degree of success. The automobile industries in China and India were started in the 1950s, and in both countries required continuous government protection 30 years after their establishment (Maxcy, 1981). What can explain why a similar industrial policy yields 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 United States at the time when the former initiated their policies (Table VI.1).

Table VI.1 **Level of per capita income** (1990 Geary-Khamis dollars)

| | United States | Japan | South Korea | India | China |
|---|---|---|---|---|---|
| 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 | 1,250 |

**Source:** Maddison, A. (1995). *Monitoring the World Economy, 1820–1992*. Paris: Organisation for Economic Cooperation and Development, 196–205.

Per capita income is a good proxy for the relative abundance of capital and labour 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 1 indicates that when Japan initiated its automobile-production policy in the mid-1960s, its per capita income was more than 40 per cent of that in 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) gave support only to Nissan and Toyota; however, more than 10 firms—ignoring the MITI's prompting not to enter the industry—also started automobile production and were successful, even though they did not receive any support from the MITI. As those firms did not receive government support and were successful in open, competitive markets, this evidence indicates that the Japanese

automobile firms were viable, upgrading of the automobile industry reflected the upgrading in Japan's endowment structure and the MITI's promotion of the automobile industry in the 1960s was consistent with the requirement of a CAF strategy. When South Korea initiated its automobile-industry development policy in the 1970s, its per capita income was about only 20 per cent of that of the United States and about 30 per cent of that of Japan. This could explain why the South Korean government needed to give its automobile firms much greater and longer support than the Japanese government did. Even despite the support, two of the three automobile firms in South Korea fell into bankruptcy. When China and India initiated their automobile-industry development policies in the 1950s, their per capita incomes were less than 10 per cent of that of the United States. The automobile firms in China and India were not viable; therefore, their survival depended for a long time on heavy government protection.[25]

In short, a developing-country government that follows a CAF strategy needs, on the one hand, to build up and maintain competitive market institutions so that the relative factor

[25] Similarly, Bismarck's industrialisation push did not cause Germany to be caught in the Listian trap, but other developing countries could not escape this trap when they adopted the same set of policies to boost their development of capital-intensive heavy industries (Hayami and Goto, 2005, Ch. 8). As discussed in Footnote 19, the difference is attributable to the fact that in 1870 GDP per capita in Germany was $1,821—measured in 1990 international dollars—which was 57 per cent of Britain's per capita GDP of $3,191 (Maddison, 2006, p. 264). Compared with the gap between the developed and the developing countries in the 1950s and 1960s, the gap between Germany and Britain (the most advanced country at that time) was relatively small. Bismarck's industrial policy was, therefore, consistent with the requirement of a CAF strategy. Philosophically, the success of the iron and steel policies in Bismarck's Germany and the automobile-industry policy in Japan in the 1960s—and the failure of industrial policies in most other developing countries—are good examples of the maxim that 'quantity difference leads to quality difference'. The industrial policies of Bismarck and Japan's MITI were CAF strategies to overcome the information, coordination and externality problems arising from industrial upgrading, according to the requirements of their factor endowments. The best proof is that once the industries were set up in Germany and Japan, their products could compete effectively in international markets without further government subsidisation and protection. Although the industries targeted in other developing countries were similar to those in Germany and Japan, due to their low endowment structures, their industrial policies were in the nature of a CAD strategy. Even after the industries were set up, their survival depended on continuous government protection and subsidisation.

prices will reflect the changes in the relative abundance of factor endowments in the economy so as to guide the enterprises to make appropriate choices and upgrade industry and technology dynamically. On the other hand, the government needs to play an active role in collecting and disseminating technology and industry information plausibly in the form of industrial policy, in coordinating the enterprises' investment, compensating for externalities, and in strengthening legal, financial and social institutions to facilitate the enterprises' upgrading of industry and technology. If the developing-country government plays the right roles, the country can benefit from the advantage of backwardness and is able to upgrade its endowment, industrial and technological structures more rapidly than a developed country. Lin and Zhang (2007) show that in the end the income level of this developing country will converge successfully to that of the developed countries.[26]

Unlike the adoption of a CAD strategy—which will worsen income distribution, as discussed previously—the adoption of a CAF strategy could improve income distribution in the dynamic development process. When the economy's development is in its early stage—with relatively abundant labour and scarce capital—enterprises will initially enter

[26] To implement the above functions, the government needs to have substantial capacity; therefore, once the governments of countries such as India, China, Japan and the NIEs in East Asia change their ideas of development and perform an appropriate role, the countries can take off quickly. This could be the reason why Chanda and Putterman (2007) find that old states such as China and India have been experiencing more rapid economic growth in recent decades: most developing countries lag behind developed countries not only in industry and technology, but in legal, financial and social institutions and state capacity. In addition to overcoming the coordination failure in investment, therefore, it is imperative for the government to play an active role in supporting social, economic and political institutional development along with economic development. My view on the government's role is similar to that of proponents of the development-state theory. For a recent review of development-state theory, see the article by Fritz and Menocal (2007) and 10 articles in *Development Policy Review*, Volume 25, No. 5 (September 2007). The term 'developmental state' could cause some confusion because the government that adopts a CAD strategy also does that for the purpose of national development. As Lewis (1955, p. 376) observed, '[G]overnments may fail either because they do too little, or because they do too much.' If the government in a developing country follows the teaching of minimum state and does not play an active role in the development of industry, markets and institutions—as required by a CAF strategy—it is doing too little. If, however, the government adopts a CAD strategy, it is doing too much.

labour-intensive industries and adopt more labour-intensive technologies. This will create as many employment opportunities as possible and will transfer labour from traditional sectors to modernised manufacturing sectors. Accompanied with an upgrade in the endowment structure, labour abundance will be replaced gradually with labour scarcity and capital scarcity will gradually become capital abundance. Accordingly, the cost of labour will increase and the cost of capital will decrease. Because capital income is the major source of income for the rich, while labour is the major source of income for the poor, such changes in relative prices will make it possible to achieve simultaneously economic development and equity (Lin and Liu, 2007).[27].

Moreover, a country that follows a CAF strategy will be more outward-oriented than a country that follows a CAD strategy. The CAF country will develop and export goods in which it has comparative advantages and import the goods in which it does not have comparative advantage. On the contrary, the CAD country will attempt to produce goods in which it does not have comparative advantages and imports will be reduced; meanwhile, its exports will also be reduced due to the relocation of resources away from sectors that are consistent with its comparative advantages to sectors violating its comparative advantages. From the above comparison, the degree of openness to trade is endogenous to the government's development strategy. Therefore, the hypothesis that trade is a fundamental determinant of growth in a country could just reflect the fact that the successful countries are following the comparative advantages in their economic development.[28]

[27] The above argument does not belittle the government's role in achieving an equitable income distribution. For example: the government needs to provide minimum living support to disabled and temporarily unemployed people as well as investing in education and vocational training to assist labourers to meet job requirements. If, however, all able-bodied labourers are employed, it will be much easier for the government to achieve an equitable society than otherwise.

[28] The above discussion assumes that a country relies on its own capital for investment. The existence of international capital flow will not change the main conclusions. International capital could come to a developing country in two ways: by borrowing or direct investment. If the government borrows capital to invest in infrastructure or in industries that are consistent with the economy's comparative advantages, the capital inflow will benefit the economy's growth. If capital is borrowed to invest in sectors that are against

# V.

## Viability and strategies of transition

No matter it is a white cat or a black cat, as long as it can catch mouse it is a good cat.
Cross the river by groping the stones.
—Deng Xiaoping[29]

In a country that adopts a CAD strategy, it is likely that in the early stage, the economy will enjoy a period of rapid investment-driven growth. As has been observed, however, in Latin America and many other developing and socialist countries, economic growth will inevitably slow down, leading to eventual stagnation and even frequent crises due to the depletion of economic surplus, which is required for investment arising from the misallocation of resources, suppression of incentives, soft-budget constraints and rent-seeking activities.

As predicted by the hypothesis of Schultz (1977) about the interaction of social thought and institutions, the malfunctioning of established institutions in the CAD strategy in turn alters social thinking about the role of government in economic development. Since the late 1970s, a new social thinking has arisen: Wiles (1995) labels it 'capitalist triumphalism' and its policies are encapsulated in the package of 10 policy

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comparative advantages—whether it is borrowed by the government or by the private sector—a period of investment-led growth could be prolonged, but the poor performance will not change and the economy could encounter crisis when it is time to repay the foreign debt. Foreign capital could come also as direct investment, for which there could be two possible purposes: to use the developing country as an export production base or to penetrate into the developing country's domestic markets. Investment for the former will be in sectors that are consistent with the country's comparative advantages; for the latter, the goods produced by the foreign-owned firms will be more advanced and capital-intensive than those produced by domestic firms. To reduce production costs, however, the foreign-owned firms will substitute the capital with low-cost local labour to the extent that the technology permits. Therefore, the capital intensity of the foreign subsidiary in a developing country will be lower than that in the home, developed country.

[29] Deng Xiaoping (1904-1997) was the leader who led China to transit from a planned economy to a market economy in 1979 by following a piece-meal, tinkering, gradual approach without a blue print.

recommendations in the 'Washington Consensus'—a term coined by Williamson (1989).[30] The main idea of the Washington Consensus is to eliminate government intervention and distortion so as to create a private property-based open, competitive market economy. The shock therapy that was promoted to Eastern Europe and the former Soviet Union for their transition to a market economy was a version of the Washington Consensus.

Economists are known to have diverse views on practically all issues, however, as Summers (1994) writes, when it comes to reforming a socialist economy, there is a surprising consensus among mainstream economists for adopting shock therapy.[31] One element of shock therapy is the need for rapid privatisation. Arguments for this are as follows: private ownership is the foundation for a well-functioning market system, real market competition requires a real private sector (Sachs and Lipton, 1990), most problems encountered by state-owned enterprises in a transitional economy can be ameliorated by rapid privatisation (Sachs, 1992) and privatisation must take place before state-owned enterprises can be restructured (Blanchard et al., 1991).[32] Another early consensus view for transition is the need for total big-bang price liberalisation. An influential article by Murphy et al. (1992) attributed the fall in outputs in the Soviet

[30] The package of policies includes fiscal discipline, redirection of public spending from indiscriminate subsidies towards broad-based provision of pro-growth, poverty-alleviating services, broadening the tax base, interest rate liberalisation, competitive exchange rates, trade liberalisation, uniform tariffs, liberalisation of inward foreign direct investment, privatisation of state enterprises, deregulation of market entry, prudent oversight of financial institutions and legal protection of property rights.

[31] Certainly, a few economists had dissenting views: Stiglitz was a notable example. In his book *Wither Socialism?*, Stiglitz (1994) questioned the desirability of privatisation and other basic tenets of the Washington Consensus.

[32] There were some economists arguing for an evolutional, gradual approach to privatisation in the transition. For example, Kornai (1990) argues that private property rights cannot be made to work by fiat in the transitional economies where entire generations are forced to forget the civic principles and values associated with private ownership and private rights, and become a mere imitation of the most refined legal and business forms of the leading capitalist countries. Kornai also believes, however, that private ownership is the foundation for a well-functioning market system and privatisation is the only way to eliminate state-owned enterprises' soft-budget constraints.

Union in 1990–91 to partial price liberalisation. They argue that a dual-track pricing system will encourage arbitrage, corruption, rent seeking and diversion of scarce inputs from high-value to low-value use. The last element in shock therapy is the need to tighten the government's fiscal discipline to maintain macroeconomic stability so that prices can serve as a guide for resource allocation and the market mechanism can work well.

The three integral constituents of shock therapy—like the 10 policy recommendations of the Washington Consensus—are logically consistent and the arguments to support them are persuasive. Proponents expected that the simultaneous implementation of price liberalisation, rapid privatisation and fiscal discipline would allow the countries to experience a 'J-curve' in their growth path—that is, a short-term transition recession followed by a quick and dynamic growth rebound after implementing the package of reforms. As shown in Figure I.3, however, the transitional economies in Eastern Europe and the former Soviet Union encountered deep recessions. For the Eastern European economies, their per capita income levels did not recover until 2000 to the levels experienced before the transition in 1990; and, for the economies in the former Soviet Union, they have still not recovered.[33] Other developing countries under the guidance of the IMF followed the Washington Consensus package of reforms in the 1980s and 1990s and their economic performance was also disappointing (Barro, 1998; Easterly, 2001). Because of the failure of the Washington Consensus reforms to bring about rapid economic development and to eradicate poverty in Latin America, there has been a resurgence of socialist ideology in there and in South America in recent years and some governments have decided to re-nationalise or to take majority shares in some privatised enterprises (Ishmael, 2007).

China, Vietnam and other East Asian transitional economies did not follow the

[33] Slovenia is an exception in Eastern Europe. It has enjoyed rapid growth in its transition to a market economy. Slovenia joined the European Union in May 2004 and the Eurozone on 1 January 2007. Slovenia did not, however, practice shock therapy. In addition to its excellent infrastructure, a well-educated workforce and an excellent central location, its privatisation did not gain momentum until 2002–05. Similarly, Poland—the other best performer in Eastern Europe—did not start to privatise its large state-owned enterprises until recently.

Washington Consensus and adopted a dual-track, gradual approach—referred to by some economists as an 'Asian approach' (Rana and Hamid, 1995; Chang and Noland, 1995). In China, for example, instead of rapid privatisation of its state-owned enterprises, the government continued its ownership of the enterprises and gave them subsidies through preferential access to subsidised credit. It also allowed private enterprises—including joint ventures—to enter the previously suppressed sectors (Perkins, 1998). This approach was once asserted to be the worst possible transition strategy—one that would invite rent seeking and corruption and result in unavoidable economic collapse (Sachs et al., 2000).[34] Likewise, most state-owned enterprises in Vietnam have not been privatised and still enjoy priority access to subsidised bank credits (Sun, 1997). Instead of collapsing, China has been the most dynamic economy in the world in the past three decades. It has moved close to becoming a fully fledged market economy (Naughton, 1996) and to achieving the ideal Pareto improvement result of reform without losers (Lau et al., 2000; Lin et al., 1996). Similarly, Vietnam's economy has been very dynamic since the start of its transition in the early 1980s.

Why has the Washington Consensus failed? Again, what's wrong is not the goal of setting up an open, competitive market system but the failure to recognise the endogenous nature of the distortions in the economic system before transition.

The objectives of the Washington Consensus reforms are to eliminate government distortions and interventions in socialist and developing countries and to set up a well-functioning market system. If this goal is realised, market competition will determine the relative prices of various products and production factors and the relative prices will reflect their relative scarcities in factor endowments. Given these prices, market competition will induce enterprises to choose industries, products and technology that are

[34] Sachs and Woo (1994) attributed the remarkable growth rate during China's transition process to its large rural labour force, which could be reallocated to high-value manufacturing industries. Mongolia and many transitional economies in central Asia also have a large rural labour pool; however, unlike China, they did not have a dynamic growth performance in the transitional process, but encountered a collapse similar to that in the more industrialised former Soviet states.

consistent with the comparative advantages determined by the economy's endowment structure. Consequently, the economy will be able to make full utilisation of the advantage of backwardness, and will prosper.

What the Washington Consensus ignores, however, is that in a country that adopts a CAD strategy, there exist many non-viable enterprises. Without government protection and subsidisation, they are unable to survive in an open and competitive market. If there are only limited numbers of such non-viable enterprises, the output value and employment in them will be limited; shock therapy that eliminates all government intervention at once could be applicable. With the abolition of government protection and subsidisation, these non-viable enterprises will become bankrupt. The originally suppressed labour-intensive industries will, however, thrive, and the newly created employment opportunities in these industries could surpass the losses from the non-viable firms. As a result, the economy could recover quickly from the bankruptcies of the non-viable firms.

On the other hand, if the number of non-viable firms is too large, their output value and employment make up too large a share in the national economy and shock therapy is inapplicable. Its application will result in economic chaos due to large-scale bankruptcies and dramatic increases in unemployment. In order to avoid such dramatic increases in unemployment or to sustain these 'advanced' non-viable enterprises, the government has no choice but to continue its protection and subsidisation for these firms—either explicitly or implicitly—in a more disguised way than the previous distortions: that is, changing the previous second-best distortions to even worse third or fourth-best distortions. Even if the firms are privatised, soft-budget constraint problems will continue. The subsidies to the non-viable firms could even increase due to the private owners having greater incentives to lobby for subsidies and protection (Lin and Li, forthcoming). In effect, this is what happened in Russia and many other countries in Eastern Europe and the former Soviet Union (Brada, 1996; Frydman et al., 1996; Lavigne, 1995; Pleskovic, 1994; Stark, 1996; Sun, 1997; World Bank, 2002a). In the end, the economy could find itself in an awkward situation of shock without therapy (Kolodko, 2000).[35]

[35] The difference in the shares of non-viable firms in the economy might explain why the shock

Facing the endogenously formed distortions and the existence of large-scale non-viable enterprises in the economy, the dual-track gradual approach adopted by the Chinese government is arguably better than shock therapy (McKinnon, 1993). First, the Chinese government adopted a 'micro' approach to improve incentives for farmers and state-owned enterprise workers by adopting the individual household-based farming system to replace the collective farming system and introduced profit-retention and managerial autonomy to state-owned enterprises, making farmers and workers partial residual claimants. This reform greatly improved the incentives and productivity in agriculture and industry (Grove et al., 1994; Jefferson et al., 1992; Jefferson and Rawski, 1995; Lin, 1992; Li, 1997; Weitzman and Xu, 1995). Second, the government allowed the private enterprises, joint ventures, state-owned enterprises and collective township and village enterprises to use the resources under their control to invest in labour-intensive industries that had been suppressed in the past. Meanwhile, the government required farmers and state-owned enterprises to fulfil their obligations to deliver certain quotas of products to the State at preset prices. The former reform improved the efficiency of resource allocation and the latter ensured the government's ability to continue subsidising the non-viable firms. Therefore, economic stability and dynamic growth were achieved simultaneously.

Finally, with the shrinking of the state-owned enterprises' share in the economy during the dynamic growth path, the government gradually eliminated price distortions and

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therapy recommended by Sachs succeeded in Bolivia but not in the economies of Eastern Europe and the former Soviet Union. Bolivia is a poor, small economy; therefore, the resources that the government could mobilise to subsidise the non-viable firms were small and the share of non-viable firms in the economy was also relatively small. Stiglitz (1998) questioned the universal applicability of the Washington Consensus. He pointed out that it advocated use of a small set of instruments—including macroeconomic stability, liberalised trade and privatisation—to achieve a relatively narrow goal of economic growth. He encouraged governments to use a broader set of instruments—such as financial regulations and competition policy—to achieve a broader set of goals, including sustainable development, equity of income distribution and so on. How to deal with the issue of non-viable firms in developing and transitional economies and the implications for policy choices were not discussed.

administrative allocation and privatised the small and medium-sized enterprises—most of which were in the labour-intensive sectors (Lin et al., 1994, 1996; Naughton, 1995; Nolan, 1995; Qian, 2003). Although there was no mass privatisation and the property rights of the collective township and village enterprises were ambiguous, market competition increased and economic performance was improved (Li, 1996; Lin et al., 1998).

The transitional strategy in Vietnam is similar to that employed in China. Through this cautious and gradual approach, China and Vietnam have been able to replace their traditional Soviet-type systems with a market system while maintaining remarkable records of growth and price stability.

Incidentally, Mauritius has since the 1970s also adopted a dual-track approach to open up its CAD strategy-type import-substitution economy. It set up export-processing zones to encourage exports and maintained import restrictions to protect non-viable enterprises in domestic import-competing sectors. This reform strategy saw Mauritian GDP grow at 5.9 per cent per annum between 1973 and 1999—an exceptional success story in Africa (Rodrik, 1999; Subramanian and Roy, 2003).

# VI

# Development Strategy and Development and Transition Performances: Empirical Analysis

The previous sections discussed the effects of development strategy on institutional arrangements, economic growth, income distribution and transition performance in a country. From those discussions, I derive several testable hypotheses.

1. A country that adopts a CAD strategy will require various government interventions and distortions in its economy.
2. Over an extended period, a country that adopts a CAD strategy will have poor growth performance.
3. Over an extended period, a country that adopts a CAD strategy will have a volatile economy.
4. Over an extended period, a country that adopts a CAD strategy will have less equitable income distribution.
5. In the transition to a market economy, a country's overall economic growth will be improved if it creates conditions to facilitate the development of formerly repressed labour-intensive industries.

This section will report the results of empirical testing of the above hypotheses, some of which were conducted by myself and my co-authors in previous studies.

## VI.1. Proxy for development strategy

In order to test the above hypotheses, a proxy for a country's development strategy is required. Lin and Liu (2004) propose a technology choice index (TCI) as a proxy for the development strategy implemented in a country. The definition of the TCI is as follows:

$$TCI_{i,t} = \frac{AVM_{i,t} / LM_{i,t}}{GDP_{i,t} / L_{i,t}} \qquad (1)$$

where $AVM_{i,t}$ is the added value of manufacturing industries of country $i$ at time $t$; $GDP_{i,t}$ is the total added value of country $i$ at time $t$; $LM_{i,t}$ is the labour in the manufacturing industry and $L_{i,t}$ is the total labour force. If a government adopts a CAD strategy to promote its capital-intensive industries, the TCI in this country is expected to be larger than otherwise. This is because if a country adopts a CAD strategy, in order to overcome the viability issue of the firms in the prioritised sectors of the manufacturing industries, the government might give the firms monopoly positions in the product markets—allowing them to charge higher output prices—and provide them with subsidised credits and inputs to lower their investment and operation costs. The above policy measures will result in a larger $AVM_{i,t}$ than otherwise. Meanwhile, investment in the manufacturing industry will be more capital intensive and absorb less labour—*ceteris paribus*. The nominator in Equation 1 will therefore be larger for a country that adopts a CAD strategy. As such, given the income level and other conditions, the magnitude of the TCI can be used as a proxy for the extent that a CAD strategy is pursued in a country.[36] The data for calculating the TCI are taken from the World Bank's *World Development Indicators* (2002) and the United Nations Industrial Development Organisation's *International Yearbook of Industrial Statistics* (2002). The means and variations of the TCI for each of the 122 countries in the period 1962–99 are reported in the Appendix II.

## VI.2. Development strategy and institutions

To assess the effects of development strategy on the government's distortions and interventions in the economy—as postulated in Hypothesis 1—I use several proxies for the institutions: 1) the 'black-market premium' is used as an index of price distortion; 2)

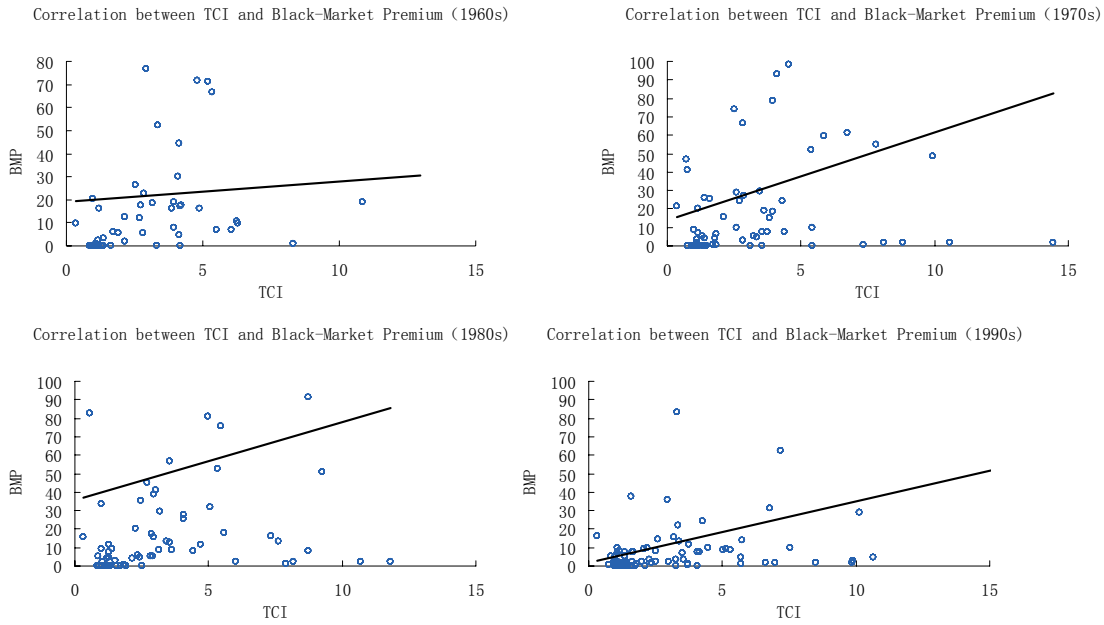
[36] Lin (2003) constructs another index—based on the ratio of capital intensity in the manufacturing industry and the capital intensity in the whole economy—as a proxy for measuring the degree with which a CAD strategy is pursued. That proxy is correlated highly with the current proxy and the results of empirical analyses based on that proxy are similar to the results reported in this section. The data for capital used in a country's manufacturing industry are, however, available for only a small number of countries. To enlarge the number of countries in the studies, I therefore use the proxy based on the added value of manufacturing industries as defined in Equation 1 in this section.

the index of economic freedom (IEF) and the expropriation risk are used as indices of government intervention; 3) the number of procedures required for a start-up firm to obtain legal status and the 'executive *de facto* independence' are used as indices of enterprise autonomy; and 4) the trade dependence ratio is used as an index for openness. The means and variations of each proxy for each country are reported in the Appendix.

### VI.2.1 Development strategy and price distortion

The black-market premium of 105 countries is adopted from the *Global Development Network Growth Database* provided by the Development Research Institute of New York University. The relationship between the TCI and the black-market premium across four decades (1960–69, 1970–79, 1980–89, 1990–99) is shown in Figure VI.1.

Figure VI.1 **The TCI and black-market premium**



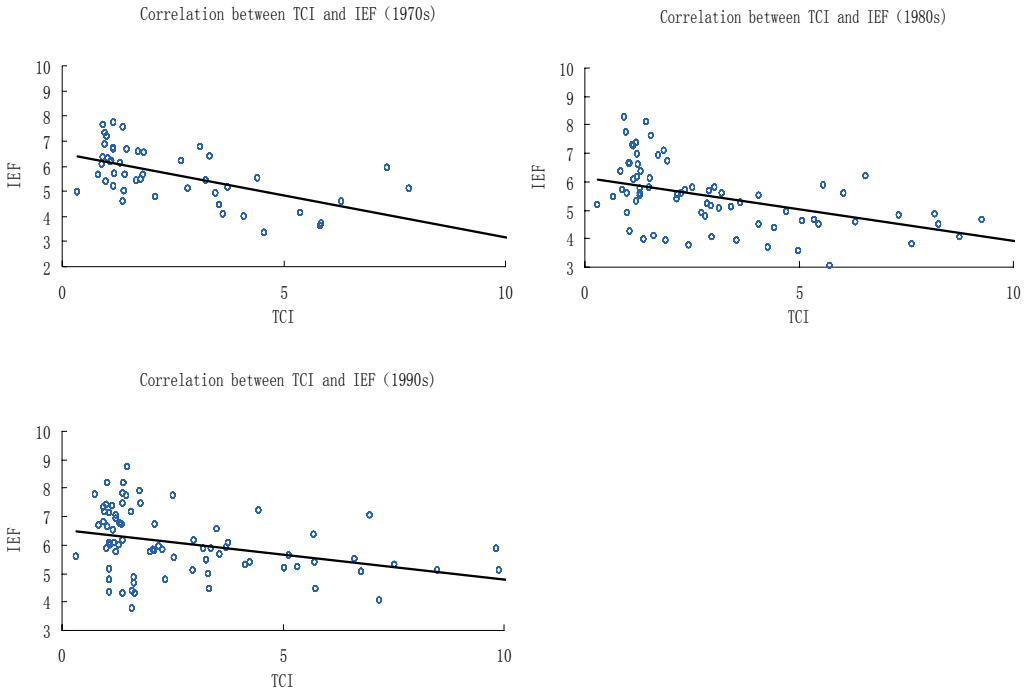

The above graphs show that the TCI and the black-market premium had positive

relationships throughout the four decades, which implies—as predicted by Hypothesis 1—that a higher degree of CAD strategy is associated with a larger black-market premium.

### VI. 2.2 Development strategy and government intervention in resource allocation

To measure government intervention, I use the index of economic freedom (IEF) and the expropriation risk. The observations of IEF from 91 countries are adopted from *Economic Freedom of the World* (Fraser Institute, 2007), which are available from 1970 onwards. This index ranges from zero to 10. A higher value means a higher degree of economic freedom. The correlations between the TCI and the IEF averaged across a decade for each country are shown in Figure VI.2.

Figure VI.2 **The TCI and the IEF**

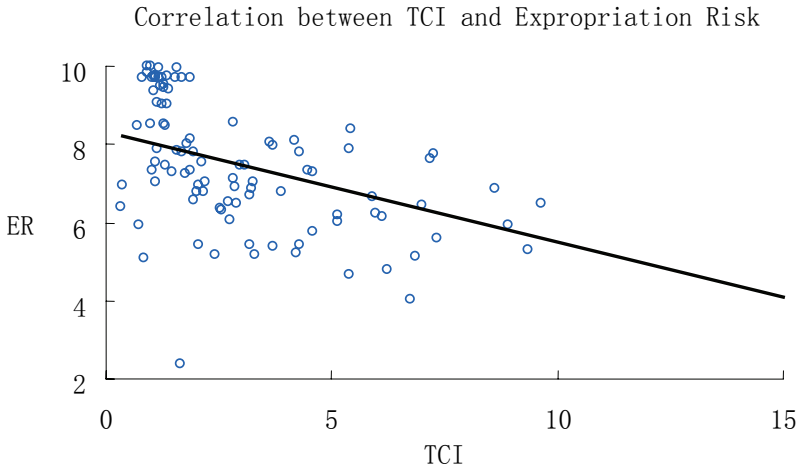



There is a strong negative relationship between the TCI and the IEF in each of the above panels, which is consistent with the prediction that the more aggressive a government

pursues a CAD strategy, the more government invention is required, and the less economic freedom there is.

The expropriation risk of 102 countries is adopted from the *International Country Risk Guide*. The expropriation risk is the risk of outright confiscation and forced nationalisation of property. This variable ranges from zero to 10. A higher value means that a private enterprise has a lower probability of being expropriated. Figure VI.3 plots the relationship between the TCI and the expropriation risk. Both variables are calculated as the average values from 1982 until 1997.

Figure VI.3 **The TCI and expropriation risk**




As shown, there is a negative relationship between the TCI and expropriation risk, which is consistent with the expectation that the more aggressive a government adopts a CAD strategy, the more likely it is that the government will confiscate or nationalise an enterprise.

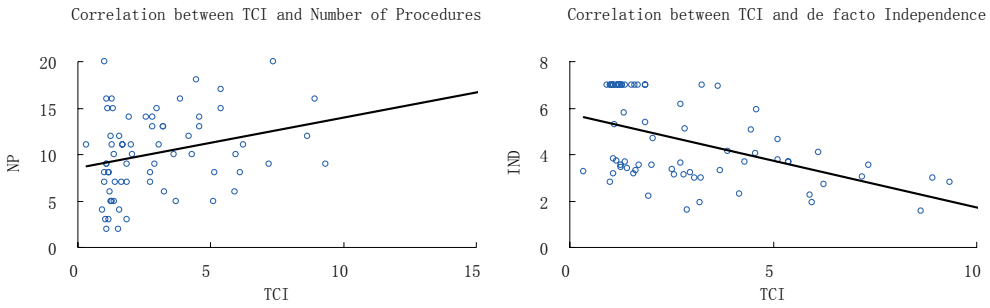
### VI.2.3 Development strategy and enterprise autonomy

To analyse the relationship between the government's development strategy and enterprise autonomy, the study uses two indexes—including the number of procedures and the

executive *de facto* independence used in Djankov et al. (2002)—to represent the extent of enterprise autonomy. There are 69 countries in the samples.

The 'number of procedures' is the number of administrative procedures that a start-up firm has to comply with in order to obtain legal status—that is, to start operating as a legal entity. 'Executive *de facto* independence' is an index of 'operation (*de facto*) independence of the chief executive', descending from 1 to 7 (1 = pure individual; 2 = intermediate category; 3 = slight to moderate limitations; 4 = intermediate category; 5 = substantial limitations; 6 = intermediate category; 7 = executive parity or subordination). Both indexes are the average values for the years from 1945 until 1998.

Figure VI.4 **The TCI and enterprise autonomy**



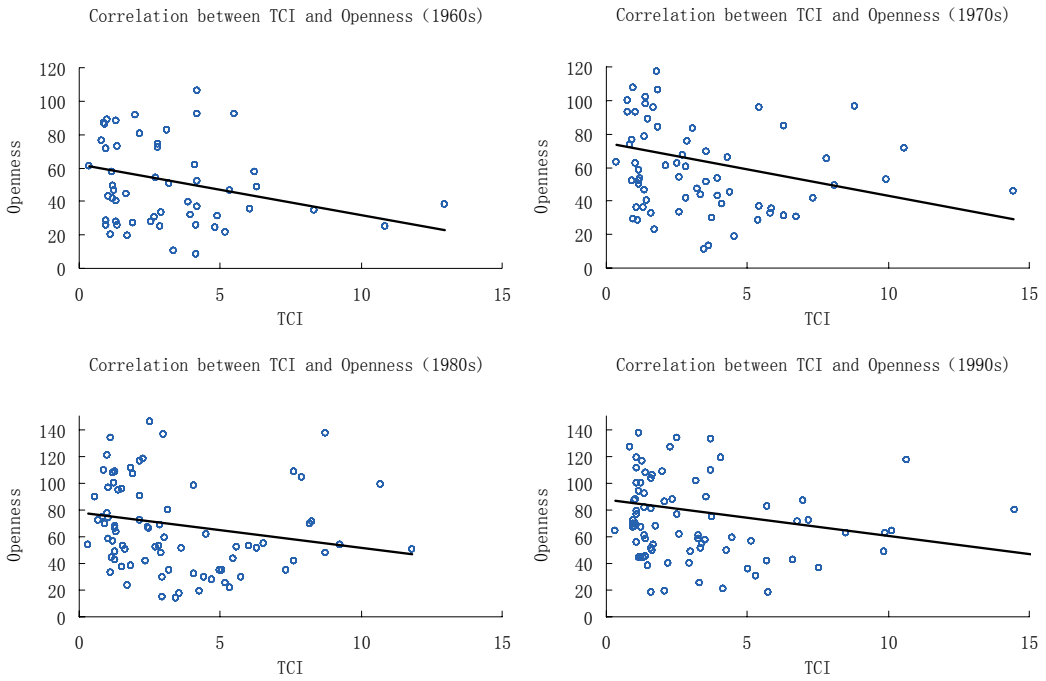

The positive relationship between the TCI and the number of procedures and the negative relationship between the TCI and the executive *de facto* independence shown in Figure VI.4 indicate that a high degree of CAD strategy is associated with low enterprise autonomy, which confirms the prediction of Hypothesis 1.

### VI.2.4 Development strategy and openness

The trade-dependence ratio of 115 countries—taken from Dollar and Kraay (2003)—is used to reflect the openness of a country. The correlations between the TCI and openness averaged across the past four decades in each country are shown in Figure VI.4.[37]

[37] The samples are 86 for the 1960s, 97 for the 1970s, 107 for the 1980s and 114 for the 1990s.

Figure VI.4 **The TCI and openness**




We find that the TCI and openness have a negative relationship, which is consistent with the hypothesis that if a developing-country government adopts a CAD strategy, its economy will become more inward-oriented than otherwise. This is because the CAD strategy attempts to substitute the import of capital-intensive manufactured goods with domestic production, causing a reduction in imports. Exports will also be suppressed due to the inevitable transfer of resources away from the industries that have comparative advantage to the prioritised sectors determined by the CAD strategy. The more a country follows a CAD strategy therefore, the less openness there will be in the country.

## VI.3. Development strategy and economic growth[38]

Hypothesis 2 predicts that over an extended period, a country adopting a CAD strategy will have a poor growth performance. The following econometric model is used to test the hypothesis:

[38] Sections 3, 4 and 6 draw on Lin and Liu (2004).

$$GROWTH_{i,t} = C + \alpha TCI_{i,t} + \beta X + \xi \qquad (2)$$

where $GROWTH_{i,t}$ is the economic growth rate in a certain period in country $i$, $X$ is a vector that includes the initial per capita GDP to control the effect of the stage of development, the initial population size to control the effect of market size, the indicator of rule of law to reflect the institutional quality—which was constructed by Kaufmann et al. (2002)—the trade-dependent ratio to reflect openness, the distance from the Equator and whether the country is land-locked. The last two explanatory variables are included to capture the effects of geography. The instrumental variable for controlling the endogeneity of institutional quality is the share of population that speaks English and the share that speaks a major European language (Hall and Jones, 1999), which are used to capture the long-run impacts of colonial origin on current institutional quality. Similarly, the fitted values of trade predicted by a gravity model are used as the instrument for openness. This approach was proposed by Frankel and Romer (1999) and revised by Dollar and Kraay (2003). In the regressions that use panel data, the instrument for openness is the single-period lagged value of itself. Table VI.1 summarises the definition of each variable and the data source.

Table VI.1 **Variable definition and data source**

| **Variable** | **Definition** | **Mean** | **Std dev.** | **Sources** |
|---|---|---|---|---|
| LnGDP60 | Log of real GDP per capita in 1960 | 7.33 | 0.80 | World Bank *World Development Indicators* |
| LnGDP80 | Log of real GDP per capita in 1980 | 7.91 | 1.05 | World Bank *World Development Indicators* |
| LnGDP | Log of real GDP per capita in 1960, 1970, 1980, 1990 | 7.73 | 1.02 | World Bank *World Development Indicators* |
| LnTCI1 | Log of the average technology choice index from 1963 to 1999 | 0.96 | 0.90 | World Bank *World Development Indicators* and UNIDO (2002) |
| LnTCI2 | Log of the average TCI per decade in 1960s, | 0.85 | 0.84 | World Bank *World Development* |

| | | | | |
|---|---|---|---|---|
| | 1970s, 1980s, 1990s | | | *Indicators* and UNIDO (2002) |
| LnTCI70 | Log of the average TCI from 1970 to 1979. If not available, we use the log of the average TCI from 1980 to 1985 | 0.91 | 0.92 | World Bank *World Development Indicators (2002b)* and UNIDO (2002) |
| ΔTCI | Log of the average TCI from 1999 to 1990 minus LnTCI70 | 0.07 | 0.38 | World Bank *World Development Indicators (2002b)* and UNIDO (2002) |
| RL01 | Rule of law in 2000–01 | 0.003 | 0.95 | Kaufmann et al. (2002) |
| LnOPEN1 | Log of the average (exports + imports)/GDP from 1960 to 1999 | -1.11 | 0.81 | Dollar, and Kraay (2003) |
| LnOPEN2 | Log of the decadal average (exports + imports)/GDP in 1960s, 1970s, 1980s, 1990s | -1.30 | 0.84 | Dollar and Kraay (2003) |
| LnPOP1 | Log of the total mid-year population from 1960 to 1999 | 15.2 | 2.11 | World Bank *World Development Indicators(2002b)* |
| LnPOP2 | Log of the total initial-year population in 1960s, 1970s, 1980s, 1990s | 14.93 | 2.12 | World Bank *World Development Indicators(2002b)* |
| LANDLOCK | Dummy variable taking value of 1 if country is land-locked; 0 otherwise | 0.18 | 0.39 | Dollar and Kraay (2003) |
| LnDIST | Log (DISTEQ+1), where DISTEQ is the distance from Equator, measured as absolute value of latitude of capital city | 2.96 | 0.88 | Dollar and Kraay (2003) |
| ENGFRAC | Fraction of population speaking English | 0.07 | 0.24 | Hall and Jones (1999), taken from Dollar and Kraay (2003) |
| EURFRAC | Fraction of population speaking a major European language | 0.22 | 0.38 | Hall and Jones (1999), taken from Dollar and Kraay (2003) |
| LnFRINST | Instrument variable for LnOPEN | -2.83 | 0.64 | Dollar and Kraay (2003) |
| INST | Predicted value of RL01 in the cross-section | .003 | .34 | |

| | | | | |
|---|---|---|---|---|
| | estimation (ENGFRAC and EURFRAC as the instruments) | | | |

We will use two approaches to test this hypothesis. In the first approach, the dependent variable is the average annual growth rate of per capita GDP for the period 1962–99, and in the second, the dependent variable is the average annual growth rate of per capita GDP for each decade of the 1960s, 1970s, 1980s and 1990s.

Table VI.2 reports the estimates from the first approach. Regression Model 1.1 and Model 1.2 use the OLS approach to obtain the estimates. The explanatory variables in Model 1.1 include only the proxy for the development strategy, LnTCI1, and the initial GDP per capita, LnGDP60, whereas Model 1.2 includes other explanatory variables that capture institutional quality, openness, geographic location and market size. Model 1.3 has the same explanatory variables but the model uses the 2SLS approach in order to control the endogeneity of institutional quality and openness.

The results show that the TCI has the expected negative effect and is highly significant in all three regressions. This finding supports Hypothesis 2 that the more aggressive is the CAD strategy pursued by a country, the worse the growth performance is in that country in the period 1962–99. The estimated coefficients of LnTCI1 have values ranging from –0.66 to –1.25. From the estimates, we can infer that a 10 per cent increase from the mean in the TCI can result in approximately 0.1 of a percentage point reduction in the country's average annual growth rate of per capita GDP for the whole period 1962–99.

The regression results also show that the initial per capita income and the population size have the expected signs and significant effects on the growth rate. Rule of law, openness and distance from the Equator also have the expected signs. Rule of law is not, however, significant in the 2SLS regression and distance from the Equator is not significant in the OLS regression. Whether the country is land-locked is insignificant in all three regressions.

Table VI.2 **The impact of the production mode on economic growth**[1]

| | **Model 1.1 (OLS)** | **Model 1.2 (OLS)** | **Model 1.3 (2SLS)** |
|---|---|---|---|
| Constant | 7.32*** (1.60) | 4.66** (1.87) | 3.26 (2.15) |
| LnTCI2 | -1.25*** (0.20) | -0.66*** (0.18) | -0.92*** (0.19) |
| LnGDP60 | -0.54*** (0.20) | -0.99*** (0.18) | -0.59*** (0.21) |
| RL02 | | 0.58*** (0.21) | |
| INST | | | 0.22 (0.41) |
| LnOPEN2 | | 0.70*** (0.22) | |
| TRADE2 | | | 0.93** (0.43) |
| LnDIST | | 0.20 (0.16) | 0.47*** (0.16) |
| LnPOP2 | | 0.33*** (0.09) | 0.22** (0.09) |
| LANDLOCK | | 0.07 (0.32) | 0.46 (0.38) |
| Adjusted-$R^2$ | .36 | 0.56 | 0.44 |
| Observations | 85 | 83 | 83 |

[1] dependent variable is the yearly average of per-capita GDP growth rate in 1962–99

* indicates significance at the 10 per cent level

** indicates significance at the 5 per cent level

*** indicates significance at the 1 per cent level

**Note:** Standard errors are reported in parentheses.

Table VI.3 reports the results from the second approach, in which the dependent variable is the average annual growth rate of per capita GDP in each decade from 1960–99. The regressions to fit the estimates are OLS for Models 2.1 and 2.2, one-way fixed effect for

Model 2.3, 2SLS for Model 2.4 and 2SLS and one-way fixed effect for Model 2.5. In the fixed-effect models, time dummies are added to control the time effects, whereas the 2SLS models are used for controlling the endogeneity of institutional quality and openness.

As in the results in the first approach, the estimates for the TCI have the expected negative sign and are highly significant in all regressions. The finding is once again consistent with the prediction of Hypothesis 1 that development strategy is a prime determinant of the long-run economic growth performance of a country.

The results for other explanatory variables are similar to those in Table VI.2.

Table VI.3 **Development strategy and economic growth**

| | **Model 2.1 (OLS)** | **Model 2.2 (OLS)** | **Model 2.3 (fixed effect)** | **Model 2.4 (2SLS)** | **Model 2.5 (2SLS, fixed effect)** |
|---|---|---|---|---|---|
| Constant | 7.15*** (1.61) | 8.36*** (2.16) | 3.83* (2.11) | -0.74 (2.56) | -2.70 (2.37) |
| LnTCI2 | -1.10*** (0.21) | -0.69*** (0.20) | -0.40** (0.19) | -0.69*** (0.24) | -0.47** (0.22) |
| LnGDP | -0.54*** (0.18) | -1.39*** (0.23) | -0.86*** (0.23) | -0.17 (0.27) | 0.17 (0.25) |
| RL01 | | 1.45*** (0.23) | 1.12*** (0.22) | | |
| INST | | | | -0.38 (0.42) | -0.67* (0.38) |
| LnOPEN2 | | 0.24 (0.23) | 0.35 (0.22) | | |
| TRADE2 | | | | 0.01 (0.29) | -0.06 (0.27) |
| LnDIST | | -0.04 (0.18) | -0.10 (0.17) | 0.27 (0.20) | 0.17 (0.18) |
| LnPOP2 | | 0.32*** (0.10) | 0.41*** (0.09) | 0.22* (0.12) | 0.27** (0.12) |

| | | | | | |
|---|---|---|---|---|---|
| LANDLOCK | | -0.31<br>(0.39) | 0.08<br>(0.36) | -0.23<br>(0.46) | 0.02<br>(0.43) |
| Adjusted-$R^2$ | 0.08 | 0.23 | 0.36 | 0.08 | 0.24 |
| Observations | 315 | 278 | 278 | 213 | 213 |

* indicates significance at the 10 per cent level

** indicates significance at the 5 per cent level

*** indicates significance at the 1 per cent level

**Notes:** Dependent variable is the average growth rate of GDP per capita in the decades 1960s, 1970s, 1980s, 1990s. Models 3.3 and 3.5 include the time dummy. Standard errors are reported in parentheses.

## VI.4. Development strategy and economic volatility

Hypothesis 3 is about the effect of a CAD strategy on the volatility of the economic growth rate. If a country follows a CAD strategy, there could be a period of investment-led growth, but it will not be sustainable and is likely to cause economic crisis. Therefore, a country that follows a CAD strategy is likely to be more volatile than otherwise. In the empirical testing of this hypothesis, the volatility of a country's per capita GDP growth rate in the period 1962–99 is measured as follows:

$$V_i = \left[ (1/38) \sum_{t=1962}^{T=1999} \left( \frac{g_{it}}{\left( \sum_{t=1962}^{T=1999} g_{it} \right) \Big/ 38} - 1 \right)^2 \right] \qquad (3)$$

where $g_{it}$ is the growth rate of GDP per capita of $i^{th}$ country in year $t$.

In testing Hypothesis 3, the dependent variable is the log of the above measurement of volatility, $V_i$, and the explanatory variables are the same as those used in testing Hypothesis 2. The approaches to fitting the regression equation are also similar to those used previously. Table VI.4 reports the results from fitting the regression models. As expected, the estimates of the TCI are positive and highly significant in all three regressions. The results support Hypothesis 3 and indicate that the deeper a country follows a CAD strategy, the more volatile is the country's economic growth rate. From the estimates, it can be inferred that a 10 per cent increase in the TCI could cause

volatility to increase about 4–6 per cent.

The estimates for other explanatory variables show that the quality of institutions, the degree of openness, whether the country is land-locked and the population size all have negative effects on economic volatility. Except for population size—which is a proxy for the size of the economy, and its coefficients are significant in the OLS and 2SLS models—the estimated coefficients for other variables are significant in the OLS model and the 2SLS model. The estimates for the initial per capita income in 1960 and the distance from the Equator are insignificant in all three regressions.

Table VI.4 **Development strategy and economic volatility**

| | **Model 3.1 (OLS)** | **Model 3.2 (OLS)** | **Model 3.3 (2SLS)** |
|---|---|---|---|
| Constant | 0.49<br>(1.06) | 3.03**<br>(1.44) | 3.63**<br>(1.56) |
| LnTCI1 | 0.64***<br>(0.13) | 0.41***<br>(0.14) | 0.56***<br>(0.14) |
| LnGPP60 | -0.04<br>(0.13) | 0.17<br>(0.14) | -0.07<br>(0.15) |
| RL01 | | -0.33**<br>(0.16) | |
| INST | | | -0.20<br>(0.29) |
| LnOPEN1 | | -0.46***<br>(0.17) | |
| TRADE1 | | | -0.53<br>(0.33) |
| LnDIST | | -0.003<br>(0.11) | -0.15<br>(0.11) |
| LANDLOCK | | -0.31<br>(0.24) | -0.53*<br>(0.28) |
| LnPOP1 | | -0.26***<br>(0.06) | -0.18**<br>(0.07) |

| | | | |
|---|---|---|---|
| Adjusted-$R^2$ | 0.29 | 0.47 | 0.37 |
| Observations | 103 | 93 | 93 |

* indicates significance at the 10 per cent level

** indicates significance at the 5 per cent level

*** indicates significance at the 1 per cent level

**Notes:** Dependent variable is the log of the growth rate's volatility for GDP per capita from 1962–99. Standard errors are reported in parentheses.

## VI.5. Development strategy and income distribution

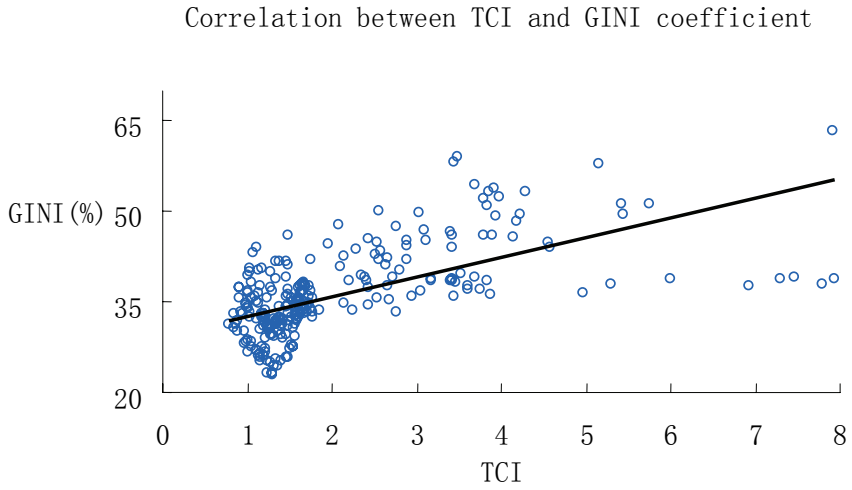
In testing the effect of development strategy on income distribution, the following regression equation is used:

$$GINI_{i,t} = C + \alpha TCI_{i,t} + \beta X + \varepsilon \qquad (4)$$

where $GINI_{i,t}$ is the index of inequality in country $i$ at time $t$, $TCI$ is a proxy for the development strategy and $X$ is a vector of other explanatory variables.

GINI coefficients are taken from a revised version of the data set in Deininger and Squire (1996). The data set includes the estimation of GINI coefficients for many countries in the various literature. Some are estimated according to the data on income; others are based on expenditure. The coverage differs between the different countries' GINI data. Deininger and Squire (1996) assessed the quality of GINI coefficient estimations; only those ranked as 'acceptable' were used in the regression. The original estimates of GINI coefficients based on income data are left unchanged, but those based on consumption expenditure are adjusted by adding 6.6, which is the average difference between the two estimation methods. For details of the calculation of the TCI index and data sources, see Lin and Liu (2003). Matching this GINI data with the TCI, I end up with a panel of 261 samples from 33 countries. Figure VI.3 shows the relationship between the TCI and the GINI coefficient.

Figure VI.5 **Development strategy and income distribution**




In order to test alternative hypotheses for the determination of inequality, I have included the explanatory variables—per capita income, $GDPPC_{i,t}$ , and its reciprocal, $GDPPC\_1_{i,t}$ —which test the Kuznets inversed-U hypothesis. If Kuznets' hypothesis holds, the coefficients for these two variables should be significantly negative.[39]

Based on the data set of Deininger and Squire (1996), Li et al. (1998) conducted a robust empirical test, and the result showed that the GINI coefficient for an individual country was relatively constant across different periods. Based on this conclusion, the GINI coefficient in the initial year in the data set is introduced into the regression, denoted by 'IGINI'. In this way, the historical factors that could affect income distribution and those non-observable factors across countries can be excluded. In the data set, the year of IGINI differs from country to country. In spite of this difference, the higher the IGINI, the higher are the subsequent GINI coefficients—regardless of the initial year. As a result, the coefficient of IGINI is expected to be positive.

[39] For this specification, please refer to Deininger and Squire (1996).

Corruption could also affect income distribution. Two explanatory variables are included in the regression: the index for corruption, $CORR_{i,t}$, and the quality of officials, $BQ_{i,t}$.

The data for these two variables are taken from Sachs and Warner (2000) and they differ from country to country but remain constant throughout the period studied. The larger the value is, the less is the corruption and the higher is the quality of officials. The coefficients of these two variables are expected to be negative.

Foreign trade could also affect income distribution. It affects the relative prices of factors of production (Samuelson, 1978) and market opportunities for different sectors in the economy. Consequently, trade—through its effect on employment opportunities (Krugman and Obstfeld,, 1997)—can affect income distribution. The regression therefore includes an index of economic openness, denoted by $OPEN_{i,t}$, which is the share of total import and export value in nominal GDP, as an explanatory variable. The data are taken from Easterly and Yu (2000). Openness could, however, have different impacts on skilled and unskilled labour, on tradable and non-tradable sectors and in the short run and in the long run. Its sign is therefore uncertain.

Table VI.5 reports the results from five regression models. Model 4.1 includes all explanatory variables: *TCI*, *IGINI*, *GDPPC*, *GDPPC*_1, *CORR*, *BQ* and *OPEN*. As *CORR*, *BQ* and *OPEN* are endogenous, other models exclude these variables to control the endogeneity problem. Because *IGINI*, *CORR* and *BQ* are time invariant, the one-way effects model is applied in fitting the regression of Models 4.1, 4.2 and 4.4. According to Hausman tests, the one-way random-effect model is used in the regressions of Models 4.1, 4.2 and 4.4, and the two-way fixed-effect model is used in the regression of Models 4.3 and 4.5.

The estimated coefficients of *TCI* are positive and significant at the 1 per cent level in all five regression models. These results strongly support the hypothesis that the more a country pursues a CAD strategy, the more severe will be the income disparity in that country. This result holds whether the initial income distribution is equal or unequal.

The estimated coefficients of IGINI are also positive and significant at the 1 per cent level in Models 4.1, 4.2 and 4.4. This result is consistent with the finding in Li et al. (1998): that is, the initial income distribution will have a carry-over effect in the subsequent period's income distribution.

The estimated coefficients of $GDPPC$ and $GDPPC\_1$ in Models 4.1, 4.3 and 4.4 are all insignificant and have an unexpected positive sign—except for *GDPPC* in Model 4.1. Kuznets' inversed-U hypothesis of income distribution is therefore rejected.

The results in Model 4.1 show that the coefficient for $CORR_{i,t}$ has an unexpected positive sign. One possible reason for this is that the effect of corruption on distribution is not reflected accurately in the surveys. The coefficient for bureaucracy quality, $BQ_{i,t}$, has an expected, but insignificant, negative sign. The coefficient for openness, *OPEN*, is positive, but not significant.

Table VI.5 **The effect of development strategy on inequality**

| | Model 4.1[r] | Model 4.2[r] | Model 4.3[f] | Model 4.4[r] | Model 4.5[f] |
|---|---|---|---|---|---|
| CONSTANT | 6.46 | 8.18*** | 31.5*** | 8.09*** | 32.6*** |
| | (4.72) | (2.40) | (1.75) | (3.16) | (0.97) |
| TCI | 1.32*** | 1.35*** | 1.84*** | 1.35*** | 1.72*** |
| | (0.33) | (0.31) | (0.48) | (0.32) | (0.46) |
| IGINI | 0.73*** | 0.71*** | | 0.71*** | |
| | (0.08) | (0.07) | | (0.07) | |
| GDPPC | -0.89 | | 0.43 | 0.74 | |
| | (11.3) | | (12.6) | (10.8) | |
| GDPPC_1 | 0.40 | | 1.91 | 3.21 | |
| | (1.84) | | (2.11) | (16.6) | |
| CORR | 1.03* | | | | |
| | (0.58) | | | | |
| BQ | -0.84 | | | | |
| | (0.58) | | | | |
| OPEN | 0.12 | | | | |
| | (1.68) | | | | |
| $R^2$ | 0.9040 | 0.8941 | 0.5495 | 0.8936 | 0.5780 |
| Hausman statistics | 3.32 | 1.19 | 23.91 | 1.99 | 7.98 |
| Hausman P-value | 0.19 | 0.28 | 0.00 | 0.37 | 0.00 |
| Sample | 261 observations from 33 countries | | | | |

[f] fixed-effect model

[r] random-effect model

* indicates significance at the 10 per cent level

** indicates significance at the 5 per cent level

*** indicates significance at the 1 per cent level

**Notes:** Null hypothesis of Hausman test: there is a random effect in countries and time. Standard errors are reported in parentheses.

From the results above, it is clear that development strategy and initial income distribution are the two most important determinants of income distribution in a country. As I argue in this Lectures, for a country in which the government follows a CAF strategy, income distribution will become more equal even if its initial income distribution is unequal. In effect, this is the 'growth with equity' phenomenon observed in Taiwan and other newly industrialised economies (NIEs) in East Asia (Fei et al., 1979).

## VI.6. Transition and economic performance

As argued in this Lectures, development of labour-intensive sectors—in which developing countries have comparative advantage—is repressed and many institutions are distorted if the government adopts a CAD strategy, resulting in poor resource allocation and inefficiency. The growth performance during transition to a market economy depends therefore on the country's ability to create an enabling environment for the development of labour-intensive sectors and at the same time find a way to solve the viability issue for firms inherited from the previous development strategy. A CAD strategy is associated with a high TCI. If, after the reform/transition, a country is able to successfully develop labour-intensive sectors, resource allocation and growth performance will improve, and the TCI will decline. A successful transition from a CAD strategy is therefore expected to result in a negative change in the TCI. The larger the negative change is, the higher is the expected growth rate. For the purpose of testing Hypothesis 5, therefore, a variable, ΔTCI, is created to measure the difference between the log of average TCI in the period 1990–99 and the log of average TCI in the period 1970–79—as the transition in socialist countries and the reforms in other developing countries started in the 1980s.

The dependent variable in the regressions is the log of the average annual growth rate of GDP per capita in the period 1980–99. In addition to ΔTCI, the explanatory variables include the log of average TCI in the 1970s, initial per capita GDP in 1980 and other explanatory variables—representing institutional quality, openness and population size—which are similar to those used in testing Hypothesis 1.

Two approaches are used to test the hypothesis. The first includes observations from all countries in the data set, while the second includes only the developing countries defined by Easterly and Sewadeh (2002). Both approaches try three regressions—two by OLS and one by 2SLS—to control the endogeneity problem of institutional quality and openness. Table VI.6 reports the results from the regressions.

Table VI.6 **Development strategy and the performance of economic reform/transition**

| | Model 6.1 (OLS) | Model 6.2 (OLS) | Model 6.3 (2SLS) | Model 6.4 (OLS) | Model 6.5 (OLS) | Model 6.6 (2SLS) |
|---|---|---|---|---|---|---|
| Constant | 2.53 | 3.79 | -2.94 | 4.28 | -4.50 | -9.03 |
| | (3.17) | (3.63) | (3.97) | (4.24) | (5.01) | (6.43) |
| ΔTCI | -1.25** | -0.91** | -1.12** | -1.16* | -1.02* | -1.30** |
| | (0.55) | (0.45) | (0.51) | (0.66) | (0.52) | (0.60) |
| LnTCI70 | -0.84** | -0.38 | -0.52 | -0.61 | -0.26 | -0.31 |
| | (0.41) | (0.34) | (0.38) | (0.48) | (0.38) | (0.45) |
| LnGDP80 | -0.04 | -1.32*** | -0.31 | -0.34 | -0.78* | -0.12 |
| | (0.35) | (0.37) | (0.38) | (0.50) | (0.45) | (0.57) |
| RL01 | | 1.31*** | | | 1.78*** | |
| | | (0.37) | | | (0.47) | |
| INST | | | 0.44 | | | 0.96 |
| | | | (0.60) | | | (1.18) |
| LnOPEN1 | | 0.71* | | | 0.54 | |
| | | (0.36) | | | (0.49) | |
| TRADE1 | | | 1.50** | | | 2.23* |
| | | | (0.70) | | | (1.26) |
| LnDIST | | 0.16 | 0.57* | | -0.06 | 0.34 |
| | | (0.28) | (0.29) | | (0.33) | (0.36) |
| LnPOP1 | | 0.52*** | 0.44*** | | 0.79*** | 0.78** |
| | | (0.17) | (0.16) | | (0.19) | (0.29) |
| LANDLOCK | | -0.87 | -0.06 | | -0.55 | 0.54 |
| | | (0.57) | (0.68) | | (0.73) | (1.15) |
| Adjusted-$R^2$ | 0.13 | 0.43 | 0.27 | 0.03 | 0.45 | 0.24 |
| Observations | 76 | 72 | 72 | 50 | 49 | 49 |

* indicates significance at the 10 per cent level

** indicates significance at the 5 per cent level

*** indicates significance at the 1 per cent level

**Notes:** Dependent variable is the average growth rate of GDP per capita from 1980–99. The data samples in the regression of Models 6.4–6.6 include only the developing countries defined by Easterly and Sewadeh (2002). Standard errors are reported in parentheses.

As expected, the sign of ΔTCI is negative and the estimates are significantly different

from zero in all six regressions. The results support the hypothesis that a larger reduction in the TCI from the level in the 1970s to the level in the 1990s has a larger positive effect on the average per capita GDP growth rate in the period 1980–99. For a country that adopts a CAD strategy, therefore, growth performance will be improved if the government manages well the transition from a CAD to a CAF strategy. From the estimates, we can infer that a 10 per cent reduction in the TCI level in the 1990s to the level of the 1970s could cause a 0.1–0.13 percentage point increase in the average annual growth rate of per capita GDP in the period 1980–99.

The other explanatory variables all have the expected signs; however, except for the population size—which is positive and highly significant in all six regressions—the other variables are either insignificant or significant in some regressions but not in others.

In a nutshell, as predicted by Hypothesis 5, the entry of small and medium-size firms into the repressed sectors under a CAD strategy is essential for the economy to achieve dynamic growth during the transition process.

## VI.7. Concluding remarks

The above empirical evidence strongly suggests that the development strategy is the fundamental determinant of a country's institutional distortions, economic performance and income distribution. If the government in a developing country adopts a CAD strategy, it will distort prices and various institutions to protect and subsidise the non-viable firms in the prioritised industries, which will repress incentives, worsen resource allocation, result in poor growth performance and cause the growth rate to be volatile. A CAD strategy will lead also to unequal distribution of income in the economy. During economic reform and transition, a country's economic performance depends on its government's ability to create an environment that facilitates the growth of labour-intensive industries, which have been suppressed in the past due to the government's pursuit of a CAD strategy.

# VII.

## Why are East Asian economies so special?

## Are there any general lessons to be learned from East Asian development and transitional experiences?

East Asian economies seem to be rather special in terms of their development and transition performance since World War II. Development 'miracles' occurred in the NIEs in East Asia and transitional miracles in China and Vietnam. If, as I argue in this Lectures, social thinking is the deepest fundamental determinant of government policy and social and economic institutions in a country—which in turn determines a country's economic performance—why, under similar social thinking about development in the 1950s and 1960s and about transition in the 1980s and 1990s, have the East Asian governments behaved so different and achieved such miraculous economic success? My analysis is incomplete without an answer to this question.

As discussed, China, Vietnam and other East Asian economies adopted a dual-track, gradual approach in their transition from centrally planned to market economies, which violated the basic tenets of the Washington Consensus and shock therapy. In effect, for its transition from a wartime economy after World War II, Japan also adopted a gradual approach, whereas Germany adopted a big-bang approach (Teranishi, 1994). In terms of development policies in Korea and Taiwan, both governments initially adopted a policy mix—including financial repression, over-valued exchange rates, deficit budgets and neglect of the agricultural sector—to support the development of labour-intensive primary manufacturing industries to substitute the imports of manufactured household products—referred to as 'primary import substitution'. The policy package was typical in countries that adopted a CAD strategy. What differentiated Korea and Taiwan from other developing countries were two factors, as discussed by Ranis and Mahmood (1992). First, after they succeeded in primary import substitution, they relied on their abundant labour resources and turned to primary export substitution: they changed their export mix from

primarily land-intensive agricultural products to labour-intensive manufactured products instead of jumping to secondary import substitution—that is, attempting to develop big, heavy industries to substitute imports of capital-intensive machinery and equipment—as many other developing countries did. They did not move to the 'secondary import cum substitution' phase until labour shortages occurred, real wages increased and the comparative advantages in labour-intensive industries were lost in the international market. Second, repression in the financial sector and the over-valuation of the exchange rate were rather mild. The real interest rate was kept positive at all times and the difference between the exchange rate on the black market and the official market was small. Therefore, the government's policy mix was close to what I have argued for: providing information and overcoming the issues of coordination and externality. The industrial upgrading in Taiwan and South Korea has basically followed their comparative advantages in each stage of their economic development. Similarly, in post-war Japan, the main industries upgraded from labour-intensive to capital-intensive industries in sequence—textile, simple machine tools, steel, shipbuilding, electronics, automobiles and computers—according to changes in comparative advantages (Shinohara, 1982; Ito, 1994). Singapore and Hong Kong also followed a similar pattern in their economic development (World Bank, 1993).

It was not, however, the intentional choice of the government in Japan and other East Asia economies to follow a CAF strategy in pursuit of economic development. Governments in East Asia also had a strong desire for the development of advanced capital-intensive industries—just like governments in other developing countries in the 1950s and 1960s. Their economies were, however, relatively small in population size and their natural resource endowments were extremely poor, which greatly constrained their ability to mobilise enough resources to subsidise the non-viable enterprises in the capital-intensive industries in the early stage of their development (Lin et al., 1996; Ranis and Mahmood, 1992). In the early 1950s, Taiwan was influenced by the fashionable post-war development thinking and tried to protect and subsidise the development of heavy industries by using quantitative restrictions, tariff barriers and subsidised credits via strict regulation of banks and other financial intermediaries. The attempt, however, caused

severe budget deficits and high inflation. The government in Taiwan had to give up the attempt and devalued its currency, liberalised trade and raised the real interest rate to encourage savings and contain inflation (Tsiang, 1984). Without preferential protection and subsidisation, industrial upgrading in Taiwan followed closely the changes in its comparative advantages.

The South Korean government, under the leadership of President Park Chung Hee, adopted an ambitious heavy and chemical industry drive in 1973. It was adopted, however, only after obtaining rapid economic growth by developing and exporting labour-intensive textiles, plywood, wigs and other light-industrial products for more than a decade in the 1960s. Therefore, the drive reflected partially the necessity arising from the demand for upgrading the industries. It was, however, too ambitious—causing the inflation rate, measured in the consumer price index, to jump from 3.1 per cent in 1972 to 24.3 per cent in 1973, 25.3 per cent in 1974 and maintained in two digits throughout the rest of the 1970s. By late 1978 and early 1979, President Park was increasingly concerned with stabilisation and social welfare and, after his assassination in October 1979, the South Korean government—like the Taiwanese government in the1950s—subdued its support to heavy and chemical industries (Stern et al., 1995).[40]

[40] Compared with most other developing countries, South Korea's industrial upgrading has followed quite closely its comparative advantage at each stage of its development, which can be inferred from the facts that Korean products are competitive in international markets once the government helps the enterprises with the initial supports and protection to build up the production capacities. So the enterprises in those industries are viable. Compared with Taiwan, however, South Korea's development strategy after the 1970s was more ambitious and the South Korean government was required to give protection for longer and more subsidies to its enterprises than Taiwan did. As the model by Krugman (1987) suggests, the heavy and chemical drive in the 1970s changed the human capital endowment in South Korea through the effect of learning by doing, enabling South Korean enterprises to jump from OEM (Original Equipment Manufacturer) directly to OBM (Original Brand Manufacturer), while Taiwanese enterprises in general followed step-by-step from OEM to ODM (Original Design Manufacturer) and finally to OBM (Lee, 2007). South Korea today is quite competitive in capital-intensive industries, such as steel, shipbuilding, automobiles and electronics, and these industries in general are heavier than in Taiwan. Taiwan's economic performance, however—measured in terms of the economic growth rate, per capita income levels and macro stability—has been better than South Korea's. Taiwan weathered the East Asian financial crisis in

A CAD strategy is very inefficient. How long such a strategy can be maintained depends on the level of resources the government can mobilise to subsidise the non-viable enterprises and to support the investment in the prioritised industries. Resource mobilisation is constrained by the natural resource endowment and population size. Contrasting with the case of 'resource curse' in many parts of the developing world (Diamond, 1997; Pomeranz, 2000; Sachs and Warner, 1997, 2001), the East Asian economies were lucky in the sense that their governments needed to be pragmatic in their policies and unintentionally follow a CAF strategy—even though their governments had strong motivations for nation building.[41] China's Confucian culture—which has a strong impact in East Asia—is pragmatic in nature. The core of Confucianism is '*zhongyong*', the golden mean, which advises people to maintain balance, avoid extremes and achieve harmony with the outside, changing world. The political philosophy and policy principles promoted by the communist leadership of Mao Zedong, Deng Xiaoping and Jiang Zemin, Hu Jingtao are, respectively, '*shishiqiushi*' (finding truth from the facts), '*jiefangsixiang*' (freeing one's mind from dogmatism), '*yushijujin*' (adapting to the changing environment) and *'hexie*' (harmony)—all reflecting the traditional Chinese culture of *zhongyong*.

When Deng Xiaoping started his reforms in 1979—in addition to his philosophy of freeing one's mind from the dogmatism of the left and the right—the adoption of a gradual, piecemeal approach could have reflected the political constraints he faced. Deng was one of the first generation of political leaders who introduced socialism and the

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the late 1990s without much harm, while the South Korean economy encountered a severe melt-down and was forced to accept a conditional IMF rescue. In the past few years, the South Korean economy has outperformed the Taiwanese economy, however, Taiwan's relatively poor performance is likely the result of its government's policies to obstruct the further integration of the Taiwanese economy with the economy of mainland China. In contrast, the South Korean government has been supportive of integration between its economy and the Chinese economy.

[41] An example is China's great leap forward in 1958–60, which aimed to use China's vast population to rapidly transform the country from a primarily agrarian economy dominated by peasant farmers to a modern, industrialised society. The result was a great famine in 1959–61, which caused 30 million extra deaths (Lin, 1990; Lin and Yang, 2000).

planned economy to China. In an Oriental society, the power of a leader is based mainly on the personal prestige that leader receives from the people, rather than on the office he or she holds,[42] and it is hard for a leader to renounce policies that they pursued in the past. Therefore, when Deng replaced Mao as China's supreme leader after the death of Mao in 1976, it was natural for Deng to carry out piecemeal, tinkering, Pareto-improving changes to the old system. Similarly, the reforms in Vietnam and other East Asian economies were initiated by the first-generation revolutionaries who had brought socialism and planned economies to their countries.

Ideas and social thoughts can be shaped by people's experiences. My first visit to India was in 1988 to attend the inauguration conference of the Indira Ghandi Institute of Development Research in Mumbai. I visited four other cities—Kolkata, Madurai, Ahmadabad and New Delhi—and met Indian economists. I found many were suspicious of the success of China's reforms and they repeatedly questioned the reliability of China's statistical data. I had the impression that they were quite pessimistic about the possibility of carrying out fundamental change and breaking the Indian growth rate of about 3 per cent per annum. After 1988, I visited India again every three or four years and, on each trip, I found Indian economists' perceptions of China's reforms were becoming increasingly favourable and India's own reforms gained momentum. The Indian economy has been growing at a rate of about 6–8 per cent in the past two decades. The unbreakable 'Hindu equilibrium'—a term used to describe the age-old combination of economic stagnation and cultural stability by Deepak Lal (2005)—has started to shatter. I do not know how large the impact of China's success will be on India's reform. I do, however, see clearly that most economists' ideas about the role of government and the market have changed in the past two decades and a new pro-market social thinking has emerged.

Before I answer the question of whether East Asia's success—especially its transitional experience—has a general implication for other developing and transitional economies, I

[42] In his final years, Deng's only formal position was as honorary chairman of China's bridge association. He was, however, the *de facto* supreme leader until his death.

need to provide an analysis of the failure of gradual reforms in Poland, Hungary and the former Soviet Union in the 1980s before their adoption of shock therapy. They also tried to reform their planning systems by giving state-owned enterprises more autonomy. Their partial reforms did not, however, have the positive results of the reforms in China and Vietnam. A number of explanations are in order. First, unlike in China and Vietnam—where state-owned enterprises, after fulfilling their plan obligations, were allowed to sell their extra outputs at market prices—the enterprises in Eastern Europe and the former Soviet Union were not allowed to set their prices (Sachs, 1993, p. 28). This price rigidity meant that excess demand and chronic shortages remained and the state producers did not have the incentives to allocate their products to more efficient users, who would then have been able to pay higher prices for their products. Second, market entry by non-state enterprises was subject to severe restrictions (Kornai, 1986). Production remained monopolised and international trade was centrally regulated (Sachs and Lipton, 1990). The existing state-owned enterprises therefore never faced real competition pressure from domestic or international sources and lacked the incentives to improve productivity. Third, in the traditional Soviet-type system, to prevent managerial discretion under the distorted macro-policy environment, state-owned enterprises were not allowed to set their workers' wage level. In the Chinese case, after the profit-sharing arrangement was introduced to the state-owned enterprises, wages were still controlled by the State. A worker's wage would increase only if the enterprise's profits exceeded a preset level. In Poland, Hungary and the former USSR, however, partial reforms gave the enterprises the autonomy to set their workers' wages. The weakening of state control on wages gave managers and workers an opportunity to increase their incomes at the expense of the State by absorbing whatever income flow and whatever assets they could obtain from state-owned enterprises. The State's revenues were thus greatly curtailed.[43] Fourth, wage inflation caused the shortage to become even more acute; governments in Poland and in the former USSR then tried to play a populist game. They increased the imports of

[43] China and Vietnam also encountered this problem to some extent. In spite of the increase in productivity, the profitability of the state-owned enterprises declined. As a result, the government's fiscal revenue from the state-owned enterprises was reduced substantially (McKinnon, 1995).

consumer goods and forced a heavy burden of foreign debt on their countries (Aslund, 1991). Because of this, instead of bringing continuous growth and a gradual transition to a market economy—as in China and Vietnam—the partial reforms led Poland and the former USSR to the brink of bankruptcy and hyperinflation.

The transition from a CAD-type economy to a market economy in socialist and developing countries proved difficult. A transitional economy's institutions must be weak and there will be severe distortions in prices and production structures. Shock therapy—which characterises a macro-first approach to building up the requisite market institutions—cannot deliver a rapid jump to a prosperous market economy. The experiences in China and other East Asian economies show that deep and extensive reforms are not required for dynamic growth at the onset of the transition (Rodrick, 2003). As such, the crucial issue in transition is to have a strategy of sequencing reforms that identifies the most pressing bottle-necks and concentrates resources on the relaxation of binding constraints, removing the suppression of incentives and inspiring people to improve performance to achieve a better life by their own efforts (McKinnon, 1993; Rawski, 1995). The IMF/World Bank's macro-first reform approach might be appropriate for an economy in which market institutions are more or less intact and the structural imbalance is small. To use the famous analogy in a somewhat different version, 'When the chasm is narrow, it's all right to jump over it.' The stabilisation program can achieve its goal immediately and the economy can soon operate in a normal market environment. In a country that has pursued a CAD strategy for a long time with severe distortions and a large number of non-viable enterprises, the chasm will be too wide and too deep. A jump without careful preparation will result in a disastrous fall. In such a situation, it is desirable to fill and narrow the chasm before making the jump. The East Asian experience suggests that with a small change that provides the right incentives for people it is possible to unleash dynamic growth on a weak institutional base, leading to an eventual transition to a fully fledged, well-functioning market economy. For a developing country that follows a CAD strategy, there must be distortions in the incentive system, which suppress individual efforts in production, and there must be industries that are

consistent with the economy's comparative advantages but which are repressed. The useful lessons from the gradual, dual-track, micro-first approach to transition in East Asia can be summarised as follows.

- The government can take measures to improve individual incentives by granting partial managerial autonomy and profit-sharing to farms and state-owned enterprises in order to improve incentives and allow the economy to move closer to the production frontier, which will induce a new stream of output growth.
- The government can introduce a dual-track price and allocation system to replace the old single-track plan. It can remove market entry restrictions to allow resources to be allocated increasingly by the non-state sector to the previously suppressed, more productive industries, while maintaining the quota obligations of state-owned enterprises and farms in order to secure adequate resources to subsidise the existing non-viable enterprises.[44]
- When the products in a sector are allocated largely by the market track, it is time for the government to introduce full market liberalisation in the sector.
- The government should introduce continually the necessary regulations and laws to strengthen market institutions during the above process.

The above principles or experiences of other countries should not be applied in a dogmatic way. One example is China's reform in 1979 of its household responsibility system, which leased collectively owned land to farm households for 15 years. Like many reforms in China, it was initiated by farmers, sanctioned by the government and introduced nation-wide only after its performance was demonstrated. This reform resulted in a dramatic increase in agricultural productivity and output growth (Lin, 1992). The government of the former Soviet Union under Mikhail Gorbachev adopted similar

[44] Prices here include foreign exchange rates, wage rates, interest rates and the prices of all products and services.

reforms of its state farms with 50-year leases. Theoretically, the Russian reforms seemed to be better than the Chinese reforms because of their longer and more secure tenure arrangements; however, the Soviet government had a hard time finding farmers willing to accept this arrangement. In hindsight, the failure of the Soviet Union's reforms might have been because its state farms were highly mechanised, depended heavily on purchased inputs—such as chemical fertilisers and fuel—in the production process and were far away from markets. As such, a small individual household farm was not viable. The opposite was true in China. In a gradual, piecemeal reform, therefore, the government should not have a predetermined, grand blueprint. Instead, it should follow a diagnostic approach, finding out the most crucial binding constraints on incentives and resource allocation and introducing reform measures that are effective but which can be regarded as 'half-way measures' by market fundamentalists—as argued recently by Hausmann et al. (2006). In the process, the government should encourage and pay attention to local and private initiatives in institutional innovations—as demonstrated convincingly by the experiences in China and the stories of Easterly (2006). In this regard, political wisdom derived from Chinese culture—*shishiqiushi* (finding truth from the facts), *jiefangsixiang* (freeing one's mind from dogmatism) and *yushijujin* (adapting to the changing environment)—could be relevant to reform-minded governments in other developing and transitional countries.

# VIII.

## Toward a Right Development and Transition Strategy

Freedom of the will…means nothing but the capacity to make decisions with knowledge of the subject.

— Friedrich Engels (1877)

So far, what I have argued in the Lectures are as follows:.

- Continuous technological upgrading is the most important driving force for a country's long-term dynamic growth in modern times. By using the advantage of backwardness, a developing country has the opportunity to catch up to and converge with developed countries' per capita income levels.
- Ideas are the most vital determinants of whether a developing country will be able to achieve long-term dynamic growth. With the guidance of right ideas, a developing country will be able to exploit the advantage of backwardness, achieve dynamic growth and converge with developed countries. Historical evidence shows, however, that the ideas reflected in the dominant social thinking about how a developing country should develop its economy are not correct because the idea wrongly took the result of development, that is possessing advanced industries in a country, as the cause of development in a country.
- The government is the most important institution in a developing country. The policies pursued by the government will shape the quality of other institutions and the incentive structure in the economy. Political leaders run the government, therefore, it is necessary to understand their motivation and behaviour in order to understand the country's policies. The political leader's motivation is not necessary selfish—as Alfred Marshall indicated—especially for those leaders who fight for their nation's independence and prosperity. A political leader's behaviour and policy choices are, however,

shaped by current social thinking as well as domestic and economic constraints. With good intentions therefore political leaders can adopt incorrect policies and cause government failure in the country's development.

- The endowments are the most important binding constraint on a country's choice of technology and industry. A country's endowments can be accumulated and altered through time. At any given time, they determine the total budget of the country and its endowment structure—that is, the relative abundance of human and physical capital, labour and natural resources—and the relative prices of capital, labour and natural resources, which in turn determine endogenously the most competitive technologies and industries in the country at that time.
- Comparative advantage is the most important guiding principle not only for trade, but for economic development in a developing country. A developing country that relies on its comparative advantages to guide its choice of industry and technology will be most competitive in domestic and international markets, producing the largest possible economic surplus, accumulating the largest possible capital and upgrading its endowment structure as well as its technology and industry in the fastest possible way. As such, the country will have the fastest speed of convergence with developed countries. On the other hand, if a developing country attempts to violate its comparative advantage in its choice of industry and technology, the economy will not be competitive in domestic and international markets. Not only will the country not be able to converge with developed countries, it could encounter stagnation and various crises.
- Viability is the most important concept for understanding the cause of various institutional distortions in developing countries. An enterprise will be viable in a competitive market only if its technology and industrial choices are consistent with its comparative advantages, determined by the economy's endowment structure. Due to the influence of inappropriate ideas and social thinking, however, most developing-country governments attempt to develop overly capital-intensive industries, making the enterprises in the priority

industries non-viable. Governments are therefore obliged to provide the non-viable enterprises with protection and subsidisation through various distortions. The institutional distortions are therefore endogenous to the viability constraints of the enterprises.

- Pragmatism is the most important policy guidance for economic transition. In developing countries' economic reform and socialist countries' transition to a market economy, policy recommendations based on the Washington Consensus are not adequate because they are based on assumptions that all enterprises in an economy are viable and the existing distortions are exogenous. A gradual, piecemeal approach to reform and transition—designed diagnostically and pragmatically according to reality—could enable the country to achieve stability and dynamic growth simultaneously and allow the country to complete its transition to a market economy.

Under their governments' leadership, the East Asian economies have been able to exploit the opportunities provided by the advantage of backwardness and they have achieved convergence with developed countries. China and Vietnam have been successful in achieving dynamic growth in their transition to market economies. These successes reflect the importance of their governments' policy choices because of their inability to follow the dominant social thinking due to their resource constraints. With their development policies closely following their comparative advantages and their transition policies designed pragmatically and diagnostically—and with the high social capacity inherited from their long-established civilisations—the East Asian economies have created one miracle after another in terms of economic development and transition since the end of World War II. The success of the East Asian economies has involved an element of luck, however, resource constraints and a long-established civilisation are not necessary or sufficient conditions for economic success—as demonstrated by the success of Botswana and Mauritius in Africa and Chile in South America. I therefore share Arthur Lewis's (1955, p. 418) optimism: '[A]ll nations have opportunities which they may grasp if only they can summon up the courage and the will.' From so many stories of success and failure in economic development and transition in modern times, again I agree with

Lewis's judgement, '[I]t is possible for a nation to take a new turn if it is fortunate to have the right leadership at the right time.' A political leader certainly worries about his/her security of tenure in office and his/her own place in the nation's history; the best way to ensure security of tenure and historical standing—regardless of the political system—is to bring prosperity to the nation. All political leaders in developing countries can therefore be safely said to have the motivation to do good for their country. The success or failure of economic development and transition in a developing country need not be a matter of destiny, if the political leader knows what the right policies for the nation are.

I hope that the Lectures will make a small contribution to the knowledge that helps developing and transitional countries jump from the kingdom of necessity to the kingdom of freedom in their pursuit of economic development and transition to a developed, wealthy market economy.

# Apendix I
# Development Strategy and Economic Institutions in Developing Countries*

## 1. Introduction

As discussed in the Lectures, after World War II, governments in the developing countries)—socialist and non-socialist—instituted a complicated set of regulations and distortions that suppressed the functions of markets, such as financial depression, trade restriction, rationing of capital and foreign exchange, licensing of investments, administrative monopoly and state ownership. It has been recognised now that, no matter what the motivation might be, these policies often lead to poor economic performance, low living standards and even frequent crises in the developing countries. There are many competing hypotheses about the cause and effect of those regulations and distortions. However, none reveals convincingly the relationships between various policies in the complicated set of regulations and distortions.

The classical theory for governments' regulations (Pigou, 1938) has been called the helping-hand view. Seeing the adverse effects of governments' regulations and distortions in the developing countries, economists have proposed an alternative 'grabbing-hand' view (Acemoglu, 2007b; Grossman and Helpman, 1994; Shleifer and Vishny, 1994; Sokoloff and Engerman, 2000). These authors proposed that government interventions were pursued for the benefit of politicians and bureaucrats—for example, favouring friendly firms and other political constituencies so as to obtain benefits such as campaign contributions and votes,[45] or benefiting selected groups within a country who had unusually strong political influence.

While government regulations and distortions in developing countries could theoretically arise from the rent extraction of the government or political élites, understanding the

* The appendix is prepared with the help of Pengfei Zhang. Binkai Chen, Zhaoyang Xu, all members of CCER Development Worshop and seminar participants at NYU provided helpful comments and suggestions. Much of Zhang's work was completed at CID Harvard University and NBER. Zhang would like to thank Martin Feldstein, Ricardo Hausman and Dani Rodrik as well as these two organizations for their kind hospitality.

[45] A recent paper presented by Djankov et al. (2002) provided an empirical test of the grabbing-hand theories and suggested that the barrier for business entry might arise from the corruption of bureaucrats.

complexity of such policies remains an unsolved question in the literature. In developing countries, the institutional arrangements shaped by government intervention are quite complicated. What are the governments' incentives to institute such a complicated system, which increases the costs of expropriations and political control and diminishes the gains of grab? Corruption induced by special-interest groups might not be a good explanation for this question either, because the groups that benefit from the regulations are often taxed or suppressed along with the protections and/or subsidies. In fact, many interventions do not have obvious beneficiary groups (Lin et al., 2007).

Beyond the arguments from the helping and grabbing-hand categories, some recent theoretical works suggest that government regulations and distortions in developing countries might be designed to alleviate the problems of tax collection. Gordon and Li (2005a, 2005b) argue that tax enforcement depends heavily on the availability of information from outside a firm about the scale of its economic activities. Such information comes largely from the firm's recorded transactions through the financial sector. Most production activities in a developing country are in the informal economy and rely on cash transactions—and they are virtually impossible to monitor and tax. Gordon and Li argue that tariff protection is used to compensate firms in the formal sectors that face high effective tax rates, control of lending is used to redirect credit to heavily taxed sectors, inflation is used as a tax on firms that rely on cash to avoid tax, and red tape and fees are used to impose non-tax costs on businesses that in practice pay little or no taxes. Esfahani (2000) proposes that, as the administrative weakness is exaggerated, the government is likely to control production capacity directly through state ownership. While this argument captures the intrinsic difficulty of taxation in developing countries, it offers few insights into the government's purpose for collecting taxes and why the government would not create a policy environment that allows the informal sectors to grow into formal sectors so as to enlarge the tax base.

In the Lectures, I propose an alternative explanation for the root cause and internal logic of the complicated interventionist policies in developing countries. Motivated by the dream of modernization, nation building, and gaining political as well as economic

independence, most developing countries' governments—socialist and non-socialist alike—adopted various measures that attempted to accelerate development of their then-advanced capital-intensive industries after World War II. An economy's optimal industrial structure is, however, determined endogenously by its endowment structure (Lin and Zhang, 2007). The firms in the government's priority industries are not viable in an open, competitive market because these industries do not match the comparative advantage of the particular economy. As such, it is imperative for the government to introduce a series of regulations and intervention in international trade, the financial sector, the labour market and so on in order to mobilise resources for setting up and supporting the continuous operation of non-viable firms. this kind of development mode—in which the economic institution is distorted as a coherent whole with its own inherent logic, necessary components and natural interaction of those components (Ericson, 1991; Kornai, 1992)—could be found in China and other Soviet-type economies before their transition to market economies in the 1980s or 1990s, and to a lesser extent in many other developing countries after World War II. This type of economy might be good at mobilising scarce resources and concentrating on a few clear, well-defined priority sectors (Ericson, 1991), but it will prove detrimental economy-wide (Sah and Stiglitz, 1987b) and will be highly costly for long-run growth (Acemoglu et al., 2006).

This appendix attempts to a model to reveal the intrinsic logic of various institutional components in a three-sector model with consideration of a government's pursuing a CAD strategy. The inefficient regulations and distortions in the model resemble those inefficient institutions in Acemoglu (2007b). Whereas Acemoglu's model emphasises the élite's use of political power to institute policies to increase their income through the direct or indirect transfer of resources from the rest of the society to themselves, I emphasise the governments' aim of building up advanced sectors at the early stage of their development with the benevolent purpose of nation building.

The remainder of the appendix is organised as follows: Section 2 presents the basic economic model and characterises equilibrium without governmental distortion—that is, under *laissez-faire*. Section 3 extends the basic model to analyse the formation of

distorted prices for products and essential factors of production, highly centralised, planned resource-allocation systems and a micro-management mechanism in which firms have no autonomy. Section 4 provides the concluding remarks.

## 2. The basic model

### 2.1 Model set-up

The analysis in the appendix is based on a simple three-sector model of a dual economy. I consider a small developing country that trades three final goods—that is, rural goods, labour-intensive industrial goods and capital-intensive industrial goods—at exogenously given world prices. The exogenously given world prices (shadow prices) for rural goods, labour-intensive goods and capital-intensive goods are $p_a$, $p_l$ and $p_c$ respectively. I assume that rural goods and labour-intensive goods can be used only for consumption, while capital-intensive goods can be used only for investment.[46] Consumption goods are assumed to be normal.

In the rural sector, natural resources (rural land) and rural labour are combined to produce rural output. The rural production function, which exhibits constant returns to scale, is $Y_a = F(T, H^1)$.

The variables $Y_a$, $T$ and $H^1$ refer to rural output produced, total natural resources—which are owned within the rural sector—and total rural labour employed in the sector, $a$. As in Sah and Stiglitz (1984), the role of incentives in the rural sector is also emphasised in our model.[47] I assume the rural sector's population to be $N^1$—thus, $H^1 / N^1 \equiv h^1$ denotes the hours worked by each rural worker and $T / N^1 \equiv t$ denotes natural resources per rural worker. I denote a rural worker's consumption of rural and labour-intensive goods to be $(c_a^1, c_l^1)$. The surplus of the rural good per rural worker is given by $S \equiv F(t, h^1) - c_a^1$. The utility function and budget constraint of a rural worker are

[46] I ignore the possibility of labour-intensive industrial goods being used for consumption and investment to avoid undue complexity, but the model in this appendix could easily be expanded to include this possibility.
[47] Lin (1990) emphasises the role of incentives in production team in rural sector owing to the difficulty of supervising rural work.

represented by $U^1 = U(c_a^1, c_l^1, h^1)$ and $p_a S \geq p_l c_l^1$ respectively.

The urban population is $N^2$, and an urban worker supplies $h^2$ hours of work inelastically. I normalise $h^2 = 1$ for simplicity; therefore, the total urban labour supply in this developing country is equal to the urban population—that is, $H^2 \equiv N^2$. I denote an urban worker's consumption of rural and labour-intensive goods as $(c_a^2, c_l^2)$. The utility function and budget constraint of an urban worker are given by $U^2 = U(c_a^2, c_l^2)$ and $p_a c_a^2 + p_l c_l^2 \leq w$ respectively, where $w$ is the wage of an urban worker per hour.

Capital and urban labour are combined to produce industrial output in the labour-intensive and capital-intensive sectors. The total capital stock in the developing country is $\overline{K}$, and $k \equiv \overline{K} / N^2$ is capital stock per urban worker.

The production function for the labour-intensive sector, $l$, is as follows:

$$Y_l = A_l K_l^{\beta} H_l^{1-\beta} \qquad (1).$$

Production of capital-intensive products requires $(1-\delta)\Gamma$ units of capital-intensive goods as fixed input firstly[48]—that is, it requires paying a sunk entry cost, $(1-\delta)\Gamma$, where $\delta$ is a constant. this satisfies $\delta \in (0,1)$, and then allows variable input—that is, capital and urban labour—to produce final output according to the following production function:

$$Y_c = A_c K_c^{\alpha} H_c^{1-\alpha} \qquad (2)$$

Here, the subscript $l$ denotes the labour-intensive sector and $c$ denotes the capital-

[48] We introduce fixed input or sunk entry cost $(1-\delta)\Gamma$ in the process of producing capital-intensive goods to reflect the basic characteristics of heavy industry in developing countries at their early stage of development, as summarised in Lin et al. (2003). One source of the fixed cost $(1-\delta)\Gamma$ is the time and resources spent on learning the technology from the developed country. The larger the technology gap between the developing countries and the developed country, the larger is the cost. The other source of the fixed cost for a capital-intensive firm in the developing country is the need to invest in production of most non-key components as well as key components by the firm itself, whereas the firm in a developed country could outsource most non-key components to other firms in the economy. The sunk entry cost, $(1-\delta)\Gamma$, could reflect the additional investment in production capacity for non-key components.

intensive sector. Because sector $c$ is more capital intensive than sector $l$, we have $\alpha > \beta$. The variables $A_j$, $Y_j$, $K_j$ and $H_j$ refer to total factor productivity, output produced, capital and urban labour employed in sector $j = l, c$. The Cobb-Douglas form of production functions is adopted for tractability.

For analytical convenience, as in Hansen and Prescott (2002), I also assume that firms operating in each sector are competitive—that is, the firms in sector $j = l, c$ are price takers—and I also assume that there is at most one firm (if this firm is viable) in each sector. As in Shleifer and Vishny (1994), I assume that $\sigma_j$ of the firm's profits, $\pi_j$, is owned by the manager, $m_j$, and fraction $1-\sigma_j$ is owned by the treasury, which is assumed to be passive in this appendix, where $j = l, c$.[49] For the sake of simplicity, I do not distinguish between the manager and the shareholders of the firm because I assume that the manager and the shareholders share common interests. I also assume that the labour-intensive firm's manager, $m_l$, and the capital-intensive firm's manager, $m_c$, are risk neutral—therefore, the utility function of the manager, $m_l$, can be expressed by $U_{m_l} = \sigma_l \pi_l$. The utility function of the manager, $m_c$, is expressed by $U_{m_c} = \sigma_c \pi_c$.

**2.2 Competitive equilibrium without government intervention**

Throughout this appendix, I consider a developing country whose capital stock per urban worker equals $\delta \underline{k}$, and $\underline{k}$ is a constant, which satisfies $\underline{k} = \left[ \frac{p_c A_c}{p_l A_l} \left( \frac{1-\alpha}{1-\beta} \right)^{1-\alpha} \left( \frac{\alpha}{\beta} \right)^{\alpha} \right]^{\frac{1}{\beta-\alpha}}$.[50]

Given rural population $N^1$, urban population $N^2$, natural resources per rural worker $t$, working hours of urban labour $h^2 \equiv 1$, total capital stock $\bar{K}$ in this developing country, and the exogenously given world prices (shadow prices) for rural goods $p_a$, labour-intensive goods $p_l$ and capital-intensive goods $p_c$, a competitive equilibrium without government intervention consists of a combination of the firm's allocations

[49] In the model, $\sigma_j$ describes the ownership of cash flows of the firm, which is close to zero in a publicly owned firm and close to 1 in a private firm.

[50] In our model, the extent of the scarcity in capital endowment in the developing country is an increasing function of $\delta \in (0,1)$.

$\{K_l, L_l, K_c, H_c\}$ , rural worker's allocations $\{c_a^1, c_l^1, h^1\}$ , urban worker's allocations $\{c_a^2, c_l^2\}$, a tuple of the net exports of rural goods, labour-intensive goods and capital-intensive goods $\{E_a, E_l, E_c\}$, a (nominal) wage rate $w$ for urban labour, and a (nominal) rental rate $r$ for capital, such that the following conditions are satisfied:

1. Given output prices and factor prices $\{p_a, p_l, p_c, w, r\}$, the $j$ firm's allocation $\{K_j, L_j\}$ solves the following profit-maximisation problem:

$$\max_{K_j, L_j} \ \pi_j \qquad (3)$$

Where $\pi_l = p_l A_l K_l^{\beta} H_l^{1-\beta} - rK_l - wH_l$

and $\pi_c = p_c[A_c K_c^{\alpha} H_c^{1-\alpha} - (1-\delta)\Gamma] - rK_c - wH_c$.

2. Given the output prices and wage rate for the urban worker $\{p_a, p_l, w\}$, the rural worker's allocations maximise $U^1 = U(c_a^1, c_l^1, h^1)$ subject to $p_a S \geq p_l c_l^1$, and the urban worker's allocations maximise $U^2 = U(c_a^2, c_l^2)$ subject to $p_a c_a^2 + p_l c_l^2 \leq w h^2$.

3. Markets clear:

$$K_l + K_c = \bar{K}$$

$$H_l + H_c = H^2$$

$$N^1 S = N^2 c_a^2 + E_a$$

$$q_l = N^1 c_l^1 + N^2 c_l^2 + E_l$$

4. Trade balance:

$$p_a E_a + p_l E_l + p_c E_c = 0$$

5. Investment equation:

$$I = \begin{cases} -E_c + q_c - (1-\delta)\Gamma, & \text{if} \quad q_c - (1-\delta)\Gamma > 0 \\ -E_c, & \text{if} \quad q_c - (1-\delta)\Gamma \leq 0 \end{cases}$$

Given output prices $(p_l, p_c)$ and factor prices $(w, r)$, the cost function of the labour-

intensive firm is $\varphi_l(q_l) = \frac{q_l}{A_l}\left(\frac{w}{1-\beta}\right)^{1-\beta}\left(\frac{r}{\beta}\right)^{\beta}$, and the variable cost function of the capital-intensive firm is $\varphi_c(q_c) = \frac{q_c}{A_c}\left(\frac{w}{1-\alpha}\right)^{1-\alpha}\left(\frac{r}{\alpha}\right)^{\alpha}$,[51] where $q_l$ and $q_c$ are the outputs produced by the labour-intensive firm and the capital-intensive firm respectively. Summarising the analysis above, I have the following proposition.

**Proposition 1:** For a developing country whose capital stock per urban worker equals $k = \delta \underline{k}$, the capital-intensive firm would have incurred a loss if it had been set up and operated[52]—therefore, only the labour-intensive firm is operated in this developing country.

**Proof:** Given output prices $\{p_l, p_c\}$, the diversification cone of production functions $Y_l = A_l K_l^{\beta} H_l^{1-\beta}$ and $Y_c = A_c K_c^{\alpha} H_c^{1-\alpha}$ is $[\underline{k}, \bar{k}]$, where $\bar{k} = \left[\frac{p_c A_c}{p_l A_l}\left(\frac{1-\alpha}{1-\beta}\right)^{1-\beta}\left(\frac{\alpha}{\beta}\right)^{\beta}\right]^{\frac{1}{\beta-\alpha}}$. Therefore, the capital-intensive production process would not be operated in a developing country whose capital stock per urban worker equalled $k = \delta \underline{k}$, even without the fixed costs $(1-\delta)\Gamma p_c$; only the labour-intensive firm is operated in this developing country. — *QED.*

From Proposition 1, we know that the equilibrium (real) wage and (real) rental rate of capital when labour-intensive good is used as *numeraire*[53] in the developing country are

$$\frac{r^*}{p_l} = A_l \beta k^{\beta-1} \qquad (4)$$

$$\frac{w^*}{p_l} = A_l (1-\beta) k^{\beta} \qquad (5)$$

[51] The form of total cost function of the capital-intensive firm in this appendix resembles that in Bernard et al. (2007).
[52] We could say a firm is non-viable when it incurs a net loss in the current appendix.
[53] The labour-intensive good is set as *numeraire* in the model.

The utility of manager $m_l$ is $U_{m_l} = 0$, and the utility of manager $m_c$ is $U_{m_c} = 0$. In fact, we can denote the reservation utility of manager $m_l$ and manager $m_c$ to be $\underline{U}_{m_l} = 0$ and $\underline{U}_{m_c} = 0$ respectively.

The indirect utility function of the rural worker is obtained from

$$V^1(p_a/p_l, t) = \max_{c_a^1, c_l^1, h^1} U(c_a^1, c_l^1, h^1) + \lambda^1 \left\{ \frac{p_a}{p_l}[F(t, h^1) - c_a] - c_l^1 \right\}$$

where $\lambda^1$ is the rural worker's positive marginal utility of (real) income. From the envelope, we have $\frac{\partial V^1}{\partial(p_a/p_l)} = \lambda^1 S > 0$, which means that the rural worker's utility is an increasing function of rural output price $p_a$ and a decreasing function of labour-intensive output price $p_l$. I assume that there is a lower bound value $\underline{p}_{al}$ for the relative price of rural products to labour-intensive products $p_a/p_l$ such that $V^1\left(\underline{p}_{al}, t\right) = \underline{V}^1$, where $\underline{V}^1$ is the subsistence level for the rural worker. That is, I assume an agricultural crisis would occur if the relative price of a rural product to a labour-intensive product were less than the threshold value $\underline{p}_{al}$, which would reduce the farmer's incentive to produce agricultural products.[54]

The indirect utility function of the urban worker is obtained from

$$V^2(p_a/p_l, w/p_l) = \max_{c_a^2, c_l^2} U(c_a^2, c_l^2) + \lambda^2 [\frac{w}{p_l} - \frac{p_a}{p_l} c_a^2 - c_l^2]$$

where $\lambda^2$ is the urban worker's positive marginal utility of real income. From the envelope theorem, I have $\frac{\partial V^2}{\partial(w/p_l)} = \lambda^2 > 0$ and $\frac{\partial V^2}{\partial(p_a/p_l)} = -\lambda^2 c_a^2 < 0$, which means

[54] Please see Lin (1990) as well as Lin and Yang (2000) for details of China's agricultural crisis and the Chinese famine in 1959–61. In fact, the problem of apparent food shortages emerged acutely and visibly in India in the late 1950s, and were experienced elsewhere as well (Krueger, 1995).

that the urban worker's utility is an increasing function of the real wage rate $w/p_l$ and a decreasing function of the relative price of a rural product to a labour-intensive product $p_a/p_l$. I also assume that, for a given relative price of rural product to labour-intensive product $\underline{p}_{al}$, there exists a threshold value, $\underline{w}_l$, for the real wage rate $w/p_l$, such that $V^2\left(\underline{p}_{al}, \underline{w}_l\right) = \underline{V}^2$, where $\underline{V}^2$ is the subsistence level for the urban worker. The minimum real wage in the developing country should, therefore, be not less than $\underline{w}_l$, or else the urban worker could not afford to buy adequate rural products or/and labour-intensive goods.

The additive Bergson-Samuelson social welfare function is given by

$$\psi = N^1 W^1\left[V^1\left(p_a/p_l, t\right)\right] + N^2 W^2\left[V^2\left(p_a/p_l, w/p_l\right)\right] \quad (6)$$

where $W^i(.)$ is a concave and increasing function of $V^i(.)$, $i = 1, 2$.

The amount of investment in this developing country without government intervention is

$$I = \frac{1}{p_c}\left\{p_a[N^1 F(t, h^1) - N^1 c_a^1 - N^2 c_a^2] + p_l(A_l H^2 k^{\beta} - N^1 c_l^1 - N^2 c_l^2)\right\}.$$

From the analysis above, it is obvious that given that resources are allocated by the market mechanism, producers will decide what to produce according to market prices of outputs and factors, and they will not produce capital-intensive goods in a developing country whose capital stock per urban worker equals $k \equiv \delta \underline{k}$. Consequently, if resources were allocated by the market mechanism, capital would not flow to the capital-intensive heavy-industry sector. Rather, industrialisation featuring light industry would occur, which would be contrary to the goal of implementing a catch-up type of CAD heavy industry-oriented development strategy in the developing countries. Therefore, without a cluster of intervention policies being enforced, the government in the developing country could not successfully enforce the catch-up type of CAD strategy.

## 3. The trinity of economic institutions under a CAD strategy

Now I analyse the intrinsic logic of government intervention policies in the developing countries and how these are generated by the catch-up type of CAD strategy. For this reason, I define the utility function of the government (politicians) in developing countries. Suppose that the government in a developing country benefits from adopting a catch-up type of CAD strategy—that is, the government $g$ in the developing country could gain utility $B(q_c)$ from the output of capital-intensive product $q_c$ produced in his/her country, where $B(q_c)$ is twice continuously differentiable, with $B'(q_c)>0$ and $B''(q_c)<0$ for all $q_c>0$ as well as $\lim_{q_c\to 0^+} B'(q_c)=\infty$. I assume that the utility function of the government, $g$, in the developing country is given by $U_g=\psi+\rho I+B(q_c)$, where $I$ is investment in the developing country, $\rho$ denotes the marginal social value of the investment and $\psi$ is given by (6).[55]

### 3.1 Distorting relative prices

**3.1.1 Output price distortion.** In order to set up heavy-industry projects, the government in the developing country could rely on collecting taxes from the rural and labour-intensive sectors to subsidise the capital-intensive sector.[56] I denote the tax rates in the rural sector and the labour-intensive sector to be $\tau_a$ and $\tau_l$ respectively, and the subsidy rate in the capital-intensive sector to be $\tau_c$. Now the prices in the rural, labour-intensive and capital-intensive sectors are $p_a-\tau_a$, $p_l-\tau_l$ and $p_c+\tau_c$ respectively. The total tax revenue raised from the rural and labour-intensive sectors is denoted as $\Re_a$ and $\Re_l$ respectively, and the total subsidy to the capital-intensive sector is denoted as $\Re_c$. As in Acemoglu (2007), I also introduce two parameters $\phi_j\in[0,1]$ to measure how much of the

[55] In the above utility function of the developing country government, $U_g$, $\psi+\rho I$ is borrowed from Sah and Stiglitz (1987a), and $B(q_c)$ is similar in form to $B(L)$ in Shleifer and Vishny (1994). The utility function used in this appendix, however, emphasises the strong motives of the developing country government to reach a higher level of industrialisation and to leap over some economic development phases by taking capital-intensive (heavy) industries or import substitution as a basic development path after achieving political independence, which is neglected in Sah and Stiglitz (1987a). Unlike in Shleifer and Vishny (1994), the developing country government in this appendix is benevolent, not leviathan.

[56] I assume that there are no non-distortionary lump-sum taxes available in the developing country.

tax revenue raised from sector $j = a, l$ can be redistributed to the capital-intensive sector.[57] Now the treasury's budget constraint is $\phi_a \Re_a + \phi_l \Re_l + (1-\sigma_l)\pi_l + (1-\sigma_c)\pi_c \geq \Re_c$.

I assume that $\phi_a = 0$ to reflect the fact that collecting tax from the small and scattered rural sector in the developing country is so difficult and costly that all tax revenue just covers the cost of collecting tax.[58] Now the treasury's budget constraint is given by

$$\phi_l \tau_l q_l + (1-\sigma_l)\pi_l + (1-\sigma_c)\pi_c \geq \tau_c q_c \qquad (7).$$

Given output prices $\{(p_l - \tau_l), (p_c + \tau_c)\}$, now the diversification cone of labour-intensive and capital-intensive production functions is $[\Delta \underline{k}, \Delta \bar{k}]$, where $\Delta \equiv \left[\frac{(p_l - \tau_l)p_c}{(p_c + \tau_c)p_l}\right]^{\frac{1}{\alpha-\beta}}$. After output price distortion, when $k < \Delta \underline{k}$, the capital-intensive firm, $c$, will still not be able to survive,[59] and $U_{m_c} < 0$, provided $q_c > 0$. When $k > \Delta \bar{k}$, the labour-intensive firm, $l$, would not survive and $U_{m_l} < 0$, provided $q_l > 0$. Summarising the analysis above gives the following lemma.

**Lemma 1:** As long as the capital-intensive production process is operated, output prices after distortion should guarantee that the factor endowments in the developing country belong to the new diversification cone $[\Delta \underline{k}, \Delta \bar{k}]$—that is, $k \in (\Delta \underline{k}, \Delta \bar{k})$, which means

$$\Delta < \delta < \frac{1-\beta}{1-\alpha}\frac{\alpha}{\beta}\Delta \qquad (8).$$

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[57] The parameter $\phi \in [0,1]$ in Acemoglu (2007) captures 'state capacity'—that is, the ability of states to penetrate and regulate production relations in a society, while in this chpater, $\phi_j \in [0,1]$ is interpreted as the efficiency of states to collect tax from sector $j$.

[58] I assume $\phi_a = 0$ to avoid undue complexity; even the main results in this appendix hold when $\phi_a \in (0,1]$.

[59] We define 'survivability' as a firm's ability to survive in an open, competitive market. With the government's subsidisation and/or protection, a non-viable firm could survive. Similarly, a viable firm might not survive if the government's tax is too heavy.

From expression(8), we know that as long as the capital-intensive firm is operated, we must have $\tau_l > 0$ and $\tau_c > 0$. Thus, at the root of output price distortion in this appendix is the developing country government's pursuit of a catch-up type of CAD strategy—that is, taxing labour-intensive firms to subsidise and set up capital-intensive firms.

**3.1.2 Depressing factor prices.** Given the distorted output prices $(p_c + \tau_c, p_l - \tau_l)$, the market-clearing equilibrium (if equilibrium exists) wage and rental rate of capital in the developing country when the capital-intensive firm is operated must be

$$r^{'} = (p_c + \tau_c) A_c \alpha (K_c^{'})^{\alpha-1} (H_c^{'})^{1-\alpha} = (p_l - \tau_l) A_l \beta (K_l^{'})^{\beta-1} (H_l^{'})^{1-\beta} \qquad (9)$$

$$w^{'} = (p_c + \tau_c) A_c (1-\alpha) (K_c^{'})^{\alpha} (H_c^{'})^{-\alpha} = (p_l - \tau_l) A_l (1-\beta) (K_l^{'})^{\beta} (H_l^{'})^{-\beta} \qquad (10)$$

where $K_j^{'}$ and $H_j^{'}$ are capital and urban labour used in the firm $j = l, c$ respectively after output price distortion.[60]

Comparing the equilibrium real wage rate $w^* / p_l$ and real interest rate $r^* / p_l$ before output price distortion with the market-clearing equilibrium (if equilibrium exists) real wage rate $w^{'} / (p_l - \tau_l)$, which is determined by (10), and the real interest rate $r^{'} / (p_l - \tau_l)$, which is determined by (9) after output price distortion, yields the following lemma.

**Lemma 2:** Whenever the capital-intensive sector is operated in the developing country, the market-clearing equilibrium (if equilibrium exists) real wage rate (labour-intensive good as the *numeraire*), $w^{'} / (p_l - \tau_l)$, after output price distortion, must be less than the equilibrium real wage rate $w^* / p_l$ without distortion. The market-clearing equilibrium (if equilibrium exists) real interest rate $r^{'} / (p_l - \tau_l)$ after output price distortion must be

[60] When producing capital-intensive products that do not require fixed input—that is, when $\Gamma = 0$ or $\delta = 1$—the wage rate $w^{'}$ and interest rate $r^{'}$ are the market-clearing equilibrium factor prices, and $K_j^{'}$ and $H_j^{'}$ are market-clearing equilibrium capital and urban labour used in the firm $j = l, c$ respectively after output price distortion, which guarantees that the factor endowments in the developing country belong to the new diversification cone $[\Delta \underline{k}, \Delta \bar{k}]$.

greater than the equilibrium real interest rate $r^*/p_l$ without distortion.

**Proof:** Substituting (5) into (10), we obtain $\frac{w^*/p_l}{w'/(p_l-\tau_l)}=\left[\frac{k}{K_l/H_l}\right]^{\beta}$. And $\frac{w^*}{p_l}>\frac{w'}{p_l-\tau_l}$ follows from $\frac{K_l}{H_l}<k<\frac{K_c}{H_c}$ as long as the capital-intensive sector is operated. Substituting (4) into(9), we obtain $\frac{r'/(p_l-\tau_l)}{r^*/p_l}=\left[\frac{k}{K_l/H_l}\right]^{1-\beta}$. For the same reason, we have $\frac{r'}{p_l-\tau_l}>\frac{r^*}{p_l}$. — *QED.*

Given the distorted output prices $(p_c+\tau_c, p_l-\tau_l)$ and the market-clearing equilibrium real wage rate $w'/(p_l-\tau_l)$, which is determined by (10), and real interest rate $r'/(p_l-\tau_l)$, which is determined by (9), from Euler's theorem on homogeneous functions, we know that the capital-intensive firm would incur a net loss of $(p_c+\tau_c)(1-\delta)\Gamma$ and thus would not survive, no matter how much $\tau_c$ and $\tau_l$ are. The net loss, $(p_c+\tau_c)(1-\delta)\Gamma$, is a decreasing function of the capital stock per urban worker, $k=\delta\underline{k}$.[61] The analysis above gives the following result.

**Proposition 2:** A developing country government could not implement a catch-up type of CAD strategy successfully just by a single policy instrument of distorting output prices. Therefore, the developing country government is obliged to manipulate factor prices as well as distort output prices to enforce a catch-up type of CAD strategy successfully—that is, in addition to distorting output prices, the government has no choice but to reduce interest rates or keep the nominal wage rate down, or depress both to successfully enforce a catch-up type of CAD strategy.

[61] Owing to the fact that the capital-intensive firm still could not survive after the output price distortion without factor price manipulation, the market-clearing equilibrium wage and rental rates in the developing country are still determined by $w^{**}=(p_l-\tau_l)A_l(1-\beta)k^{\beta}$ and $r^{**}=(p_l-\tau_l)A_l\beta k^{\beta-1}$ respectively.

We focus here on the role of a low interest rate policy in a developing country's enforcement of the catch-up type of CAD strategy in accordance with the widespread financial repression existing in the developing country, and investigate how a low interest rate policy can arise from the CAD strategy. To show this, first I need to specify the mechanism for urban wage determination.

Given the distorted relative prices of outputs $\{(p_a-\tau_a),(p_l-\tau_l),(p_c+\tau_c)\}$, I denote the manipulated wage and rental rate of capital in the developing country to be $w_d$ and $r_d$ respectively. The indirect utility function of the urban worker after output price distortion and factor price manipulation is obtained from

$$V^2\left(\frac{p_a-\tau_a}{p_l-\tau_l},\frac{w_d}{p_l-\tau_l}\right)=\max_{c_a^2,c_l^2}U(c_a^2,c_l^2)+\lambda^2[\frac{w_d}{p_l-\tau_l}-\frac{p_a-\tau_a}{p_l-\tau_l}c_a^2-c_l^2]$$

where $\lambda^2$ is the urban worker's positive marginal utility of real income. I assume that the government in the developing country can exercise direct control of the urban wage only when the real wage rate of urban workers is above subsistence levels. When the real wage rate of urban workers equals subsistence level, the government could not reduce the urban workers' real wage further arbitrarily[62]—otherwise, in order to compensate for the loss of the urban workers' utility, the government would be obliged to depress the relative price of rural products to labour-intensive products.[63] The lower bound value $\underline{p}_{al}$ for the relative price of rural products to labour-intensive products assumed above implies that, with the purpose of maintaining the utility of urban workers above their subsistence

[62] In Sah and Stiglitz (1987a), the government in a socialist economy can exercise direct control of urban wages without consideration of the urban workers' welfare; while in a mixed (non-socialist) economy, the urban wage is determined from $V^2(p,w)=\bar{V}^2$ —that is, the urban wage will be adjusted in the face of changing prices to preserve the welfare of urban workers, and the government in a mixed economy has no right to exercise direct control of urban wages. Even in a socialist, planned economy, the government still has an obligation to urban workers' survival by guaranteeing them with enough food and living necessities. This is the reason why, during the agricultural crisis in China in 1959–61, the famine existed in rural areas instead of urban areas (Lin and Yang, 2000).

[63] Though the assumption of $\phi_a=0$ implies that a developing country cannot collect tax directly from the rural sector to subsidise the capital-intensive sector, the government still wants to lower the price of rural products to compensate for the loss of the urban worker's welfare. Thus, a large proportion of the costs of heavy industry development, through such a mechanism, were transferred implicitly to traditional economic sectors such as agriculture (Lin et al., 2003).

levels, the minimum real wage rate should be no less than $\underline{w}_l$, which satisfies $V^2\left(\underline{p}_{al}, \underline{w}_l\right) = \bar{V}^2$.

Let us assume that urban population $N^2$ and capital stock $\bar{K}$ in the developing country, productivity parameters $(A_c, A_l)$, fixed input $\Gamma$, the subsistence level for urban workers and rural workers $(\bar{V}^1, \bar{V}^2)$, the lower bound value $\underline{p}_{al}$ for the relative price of rural products to labour-intensive products, the minimum (real) wage in the developing country $\underline{w}_l$, and exogenous parameters $(\alpha, \beta, \delta)$ in the developing country satisfy the following assumption: in order to guarantee that the capital-intensive firm will survive, the government needs to distort the relative prices of labour-intensive products to capital-intensive products to such an extent that

$$w'/(p_l - \tau_l) < \underline{w}_l \qquad \text{(A1)}$$

where $w'/(p_l - \tau_l)$ is determined by (10), which is the market-clearing equilibrium (if equilibrium exists) real wage in the developing country when the capital-intensive firm is operated.

Consequently, depending on whether Assumption (A1) holds, the government might or might not be able to exercise direct control of urban wages at will. When assumption (A1) holds, the government cannot exercise direct control of urban wages arbitrarily after distorting relative prices of outputs $\{(p_a - \tau_a), (p_l - \tau_l), (p_c + \tau_c)\}$—therefore, the urban wage encountered by labour-intensive and capital-intensive firms is $w_d \equiv \underline{w}_l(p_l - \tau_l)$.[64] Throughout, I presume that Assumption (A1) holds, which ensures the necessity of further depressing the interest rates affecting capital-intensive firms in order for the

[64] Depending on whether Assumption (A1) holds, there is a possibility of excess demand or excess supply of urban workers in this developing country. When assumption (A1) holds, the redundant employment in the urban sector would result endogenously from the government's pursuit of a catch-up type of CAD strategy.

government to enforce a catch-up type of CAD strategy successfully, and I denote the interest rates affecting the capital-intensive and the labour-intensive firms to be $r_d^c$ and $r_d^l$ respectively. Considering low interest rates would reduce the supply of capital—therefore decreasing the availability of capital in the developing country—I assume that the (nominal) interest rate faced by firm $j = l, c$ should be no less than $\upsilon_j r^*$, where $\upsilon_j$ is an exogenously given positive parameter; thus, we have $\upsilon_j r^* \leq r_d^j$.

Given distorted relative prices of outputs $\{(p_l - \tau_l), (p_c + \tau_c)\}$ and depressed factor prices $\{w_d, r_d^c\}$, the profit function of the capital-intensive firm is

$$\pi_c(p_c, \tau_c, r_d^c, w_d) = \text{Max}\left\{\max_{K_c, H_c}(p_c + \tau_c)[A_c(K_c)^{\alpha}(H_c)^{1-\alpha} - (1-\delta)\Gamma] - r_d^c K_c - w_d H_c, 0\right\} \quad (11).$$

The above capital-intensive firm's profit maximisation implies that the amount of capital and labour used in this firm must satisfy

$(p_c + \tau_c)A_c\alpha(K_c)^{\alpha-1}(H_c)^{1-\alpha} \geq r_d^c$ or $(p_c + \tau_c)A_c(1-\alpha)(K_c)^{\alpha}(H_c)^{-\alpha} \geq w_d$ (12)

with at least one strict inequality in (12). $(p_c + \tau_c)A_c(1-\alpha)(K_c)^{\alpha}(H_c)^{-\alpha} > w_d$ is, however, impossible according to Assumption (A1). Thus, we have $(p_c + \tau_c)A_c\alpha(K_c)^{\alpha-1}(H_c)^{1-\alpha} > r_d^c$, which implies that we have $r_d^c < r^{'}$. Summarising the analysis above gives the following result.

**Proposition 3:** In order to enforce a catch-up type of CAD strategy successfully, the government of a developing country is obliged to depress the interest rate from $r^{'}$ to $r_d^c$ as well as distorting output prices, and the depressed interest rate $r_d^c$ should guarantee that the capital-intensive firm will survive—that is, the RHS in (11) is non-negative.

### 3.2 The planned resource-allocation system

Following Bénassy (2006), as I will study the non-clearing markets, we must make an important distinction between demands of factors on the one hand and the resulting

allocations of factors on the other. The demands of factors, denoted by $\tilde{n}_{ji}$, are signals of factor $i = H, K$ transmitted by firm $j = l, c$ to the government before exchange/allocation takes place.

Facing the distorted relative prices of outputs $\{(p_l - \tau_l), (p_c + \tau_c)\}$ and the depressed factor prices $\{w_d, r_d^c\}$, the capital-intensive firm's demands of factors $\tilde{n}_{ci}$ satisfy

$$\begin{aligned}(p_c + \tau_c) A_c \alpha (\tilde{n}_{cK})^{\alpha-1} (\tilde{n}_{cH})^{1-\alpha} &= r_d^c \\ (p_c + \tau_c) A_c (1-\alpha)(\tilde{n}_{cK})^{\alpha} (\tilde{n}_{cK})^{-\alpha} &= w_d\end{aligned}.$$

Because $r_d^c < r'$ and $w' < w_d$, we have $\tilde{n}_{cK} > K_c'$ and/or $\tilde{n}_{cH} < H_c'$, where $K_c'$ and $H_c'$ are determined by (9) and (10) simultaneously.

Given the distorted relative prices of outputs $\{(p_l - \tau_l), (p_c + \tau_c)\}$ and the depressed factor prices $\{w_d, r_d^l\}$, the profit function of the labour-intensive firm is

$$\pi_l(p_l, \tau_l, r_d^l, w_d) = \text{Max}\left\{\max_{K_l, H_l}(p_l - \tau_l) A_l (K_l)^{\beta} (H_l)^{1-\beta} - r_d^l K_l - w_d H_l, 0\right\}.$$

The above labour-intensive firm's profit maximisation implies that the amount of capital and labour used in this firm must satisfy

$(p_l - \tau_l) A_l \beta (K_l)^{\beta-1} (H_l)^{1-\beta} \geq r_d^l$ or $(p_l - \tau_l) A_l (1-\beta)(K_l)^{\beta} (H_l)^{-\beta} \geq w_d$.

From Assumption (A1), $(p_l - \tau_l) A_l (1-\beta)(K_l)^{\beta} (H_l)^{-\beta} > w_d$ could not be true. Thus, we must have $r_d^l \leq r'$ as the result of $(p_l - \tau_l) A_l \beta (K_l)^{\beta-1} (H_l)^{1-\beta} \geq r_d^l$.

Facing the distorted relative prices of outputs $\{(p_l - \tau_l), (p_c + \tau_c)\}$ and the depressed factor prices $\{w_d, r_d^l\}$, the labour-intensive firm's demands of factors $\tilde{n}_{li}$ satisfy

$$\begin{aligned}(p_l - \tau_l) A_l \beta (\tilde{n}_{lK})^{\beta-1} (\tilde{n}_{lH})^{1-\beta} &= r_d^l \\ (p_l - \tau_l) A_l (1-\beta)(\tilde{n}_{lK})^{\beta} (\tilde{n}_{lH})^{-\beta} &= w_d\end{aligned}.$$

Owing to $r_d^l \le r^{'}$ and $w^{'} < w_d$, we must have $\tilde{n}_{lK} \ge K_l^{'}$ and/or $\tilde{n}_{lH} < H_l^{'}$, where $K_c^{'}$ and $H_c^{'}$ are determined by (9) and (10) simultaneously.

Therefore, we must have $\tilde{n}_{cK} + \tilde{n}_{lK} > K_c^{'} + K_l^{'} \equiv \bar{K}$ and/or $\tilde{n}_{cH} + \tilde{n}_{lH} < H_c^{'} + H_l^{'} \equiv H^2$. Summarising the analysis above gives the following lemma.

**Lemma 3:** When assumption (A1) holds, a shortage of capital and/or a surplus of urban labour will be created in the developing country due to the introduction of a catch-up type of CAD strategy. Thus, some rationing will necessarily occur.[65]

As we know, the forms of rationing include uniform rationing, queuing, priority systems and proportional rationing, depending on the particular organisation of each market (Bénassy, 2006). No matter what form the rationing takes, the resulting allocations, denoted by $n_{ji}^*$, are exchanges/allocations made by the developing country government, the allocation process must satisfy the resulting allocations and the factor supply, denoted by $Z_i^*$, must be identically balanced for each factor market $i = H, K$ —that is, $N_i^* = \sum (n_{li}^* + n_{ci}^*) = Z_i^*$ for $i = H, K$, where $Z_H^* \equiv H^2$ and $Z_K^* \equiv \bar{K}$.

Owing to the surplus of urban labour, labour-intensive or capital-intensive firms, or both, should be forced to employ more labour than what is demanded, which is expressed by $\tilde{n}_{lH} \le n_{lH}^*$ and (or) $\tilde{n}_{cH} \le n_{cH}^*$.

In our model, therefore, the form of rationing chosen by the developing country government violates the first property of rationing schemes in Bénassy (2006)—that is, *voluntary exchange* in the labour market.

[65] Shleifer and Vishny (1992) present a new theory of pervasive shortages under socialism, based on the assumption that planners are self-interested, and provide an overview of the standard explanations of shortages of goods under socialism. These explanations do not, however, include our reasoning of shortages in Developing countries, which is based on the governments' enforcement of a catch-up type of CAD strategy.

Furthermore, given distorted relative prices of outputs $\{(p_l-\tau_l),(p_c+\tau_c)\}$ and the resulting allocations of capital $n_{ji}^*(i=L,K)$ to firm $j=l,c$ by the developing country government, the MVP of capital in the capital-intensive firm is

$$(p_c+\tau_c)A_c\alpha(n_{cK}^*)^{\alpha-1}(n_{cH}^*)^{1-\alpha} \qquad (13)$$

and the MVP of capital in the labour-intensive firm is

$$(p_l-\tau_l)A_l\beta(n_{lK}^*)^{\beta-1}(n_{lH}^*)^{1-\beta} \qquad (14).$$

As long as (13) is not equal to (14), there always exists a mutually advantageous exchange between labour-intensive and capital-intensive firms by transferring the capital allocated by the government from one firm to another. Consequently, in our model, the form of rationing chosen by the government might violate the second property of rationing schemes in Bénassy (2006)—that is, *efficient* in the capital market.

Considering that the rationing scheme adopted by the government does (might) not satisfy two properties in Bénassy (2006), we obtain the following proposition.

**Proposition 4:** When assumption (A1) holds, the successful implementation of a catch-up type of CAD strategy in the developing country implies that the only form of rationing that could be adopted by the government is allocating capital and urban labour to the labour-intensive and capital-intensive firms through priority systems.

In fact, resource allocation is extremely complex and difficult owing to the information asymmetry between the government and the firms. I assume that the factor markets were visited sequentially (in an order that gave priority to capital-intensive firms) and effective demands of factors $\tilde{n}_{ci}(i=L,K)$ were expressed by capital-intensive firms firstly, after the resulting allocations of factors $n_{ci}^*(i=L,K)$ to capital-intensive firms were realised; then the remaining factors were allocated to labour-intensive firms, which means $n_{li}^*=Z_i^*-n_{ci}^*(i=L,K)$.[66]

[66] The equilibrium of resource allocation with non-clearing markets in this appendix is reached through the

Moreover, in view of the possibility of manager $m_j$ transferring resources outside firm $j$ to firm $-j$, we should make a critical distinction between the resulting allocations of factors to firm $j = l, c$, denoted by $n_{ji}^*(i = L, K)$, on the one hand and the equilibrium amount of factors used in firm $j$, denoted by $\tilde{n}_{ji}^*(i = L, K)$, on the other. The equilibrium amount of factors used in firm $j$ is the quantity of factor $i$ finally used in firm $j$ where all economic forces are balanced, and in the absence of external shocks, $\tilde{n}_{ji}^*$ will not change.

### 3.3 Depriving a firm of autonomy

Under the conditions in which prices were distorted and factors were allocated to firms by the government through priority systems, profits and losses could no longer reflect management performance. Because of information asymmetry, the government's costs of monitoring manager were prohibitively high.[67] Thus, how to guarantee the factors allocated by governments to be used in the priority sector—that is, in capital-intensive firms—and to avoid the investment arbitrage is of vital importance to the government's successful enforcement of a catch-up type of CAD strategy. As in the pioneering work of Grossman and Hart (1986), as well as Hart and Moore (1990), I assume that all of the factors used in capital-intensive and labour-intensive firms are *ex ante* non-verifiable and non-contractible. That is, I suppose that it is costly for the government and managers to write detailed long-term contracts that specify precisely the uses of factors allocated to firms by the government as a function of every possible eventuality and that, as a result, the contracts are incomplete (Hart and Moore, 1990). Therefore, the controlling right over the use of factors allocated by the developing country government, rather than the incentive contract, becomes the critical determinant of the equilibrium of resource allocation with non-clearing markets.

Following Shleifer and Vishny (1994), I distinguish firms based on who owns their cash

non-tâtonnement process in Bénassy (1977).

[67] In the present model, there will be no asymmetries of information between the government and the manager.

flows (the treasury or manager $m_j$ of firm $j = l, c$) and who has control rights of the use of factors (the government or manager $m_j$).[68] In terms of the model above, parameter $\sigma_j$ describes the ownership of cash flows of firm $j = l, c$, while either the government or the managers can control the exact use of the resulting allocation of factors $n_{ji}^*$. The allocation of rights over cash flow and control in our model also have an economic interpretation like that in Shleifer and Vishny (1994), which means that in a conventional state-owned enterprise (SOE), the government controls the exact use of the resulting allocations of factors $n_{ji}^*$, and the cash flow is owned mostly by the treasury ($\sigma_j$ is low). What is more, the allocation of the control right in our model also has a new economic interpretation—that is, when the government has full control of the exact use of the allocations of factors $n_{ji}^*$, firms are deprived of autonomy in production and management.

In order to prove that the developing country government prefers to deprive a firm of autonomy, we need to compute the equilibrium of resource allocation with non-clearing markets where the manager and the government have the control rights respectively, and then contrast these two equilibria. For the sake of the model's tractability, I assume that the resulting allocation of labour in the capital-intensive firm, $n_{cH}^*$, equals $\Xi \equiv H_c^{'} + \varepsilon$, under government control and under manager control, and $\Xi$ is an exogenously given constant for simplicity, where $\varepsilon$ is a scalar—that is, we have $n_{cH}^* = \Xi$ for simplicity. Thus, the resulting allocation of labour in the labour-intensive firm, $n_{lH}^*$, equals $H^2 - \Xi$—that is, $n_{lH}^* = H^2 - \Xi$. To highlight the mechanism of depriving a firm of autonomy in the simplest possible way, let us assume that managers cannot transfer labour outside from one firm to another.[69]Now the unresolved question is to determine who—the government or manager $m_j$—has the control right over the exact use of the

[68] Grossman and Hart (1986) define that a firm consists of those assets that it owns or over which it has control. They do not distinguish between ownership and control and virtually define ownership as the power to exercise control.

[69] This assumption might seem too extreme at first glance, but it could be true in some developing countries—for example, China, which carries out strict personnel controls through a census registry (*hukou*) institution.

resulting allocations of capital, $n^*_{jK}$, in firm $j = l, c$.

Before proceeding to compute equilibrium, as a matter of convenience, I need to once more describe the utility function of the government in the developing country. Given the distorted output prices $(p_a - \tau_a, p_c + \tau_c, p_l - \tau_l)$ and the depressed wage rate $w_d \equiv \underline{w}_l(p_l - \tau_l)$, the utility function of the government can be expressed by

$$U_g = \psi + \rho I + B(q_c) \qquad (15)$$

where

$$\psi = N^1 W^1\left[V^1\left(\frac{p_a - \tau_a}{p_l - \tau_l}, t\right)\right] + N^2 W^2\left[V^2\left(\frac{p_a - \tau_a}{p_l - \tau_l}, \frac{w_d}{p_l - \tau_l}\right)\right]$$

$$V^1\left(\frac{p_a - \tau_a}{p_l - \tau_l}, t\right) = \max_{c_a^1, c_l^1, h^1} U(c_a^1, c_l^1, h^1) + \lambda^1\left\{\frac{p_a - \tau_a}{p_l - \tau_l}[F(t, h^1) - c_a] - c_l^1\right\}$$

$$V^2\left(\frac{p_a - \tau_a}{p_l - \tau_l}, \frac{w_d}{p_l - \tau_l}\right) = \max_{c_a^2, c_l^2} U(c_a^2, c_l^2) + \lambda^2[\frac{w_d}{p_l - \tau_l} - \frac{p_a - \tau_a}{p_l - \tau_l}c_a^2 - c_l^2]$$

$$I = \frac{p_l - \tau_l}{p_c + \tau_c}\left[\frac{p_a - \tau_a}{p_l - \tau_l}\left\{N^1[F(t, h^1) - c_a^1] - N^2 c_a^2\right\} + \left(q_l - N^1 c_l^1 - N^2 c_l^2\right)\right] + q_c - (1 - \delta)\Gamma .$$

Furthermore, assumption (A1) implies that we have $(p_a - \tau_a)/(p_l - \tau_l) \equiv \underline{p}_{al}$ and $w_d/(p_l - \tau_l) \equiv \underline{w}_l$ as well as

$V^1\left(\underline{p}_{al}, t\right) = \underline{V}^1$, and $V^2\left(\underline{p}_{al}, \underline{w}_l\right) = \underline{V}^2$.

Thus, the utility function of the government can be expressed by

$$U_g = N^1 W^1\left(\underline{V}^1\right) + N^2 W^2\left(\underline{V}^2\right) + B(q_c) +$$
$$\rho\left\{\frac{p_l - \tau_l}{p_c + \tau_c}\left[\underline{p}_{al}\left\{N^1[F(t, h^1) - c_a^1] - N^2 c_a^2\right\} + \left(q_l - N^1 c_l^1 - N^2 c_l^2\right)\right] + q_c - (1 - \delta)\Gamma\right\} \qquad (16).$$

In the following subsections, I first compute equilibrium under government control—that is, the government has the control right over the exact use of the resulting allocations of capital, $n^*_{jK}$, in firm $j = l, c$—then solve equilibrium under the manager's control—that is, manager $m_j$ has the control right over the exact use of the resulting allocations of capital, $n^*_{jK}$, in firm $j$. Finally, I compare equilibrium under government control with that under manager control.

**3.3.1 Equilibrium under government control.** When the government in a developing country has the control right over the exact use of resulting allocations of capital, $n^*_{jK}$, in firm $j = l, c$, there is no possibility for manager $m_j$ to transfer capital outside from firm $j$ to firm $-j$; thus, we must have $\tilde{n}^*_{ji} \equiv n^*_{ji}$—that is, the resulting allocations of factors to firm $j = l, c$ will always be equal to the equilibrium amount of factors used in that firm. In this way, the government can choose distorted output prices $(p_a - \tau_a, p_c + \tau_c, p_l - \tau_l)$, depressed interest rates $(r^c_d, r^l_d)$ for capital-intensive and labour-intensive firms respectively, and the resulting allocations of capital, $n^*_{jK}$, in firm $j$ to maximise utility—which was expressed in (16) subject to the treasury's budget constraint (7)—as well as the constraints that manager $m_j$ be kept to his/her reservation utility of zero: $U_{m_j} \equiv \sigma_j \pi_j \geq 0$.

Given distorted output prices $(p_c + \tau_c, p_l - \tau_l)$, depressed factor prices $(r^c_d, r^l_d, w_d)$ and the resulting allocation of factors $n^*_{ji}(i = K, H)$ in firm $j = l, c$,[70] the utility of manager $m_c$ is given by

$$U_{m_c} \equiv \sigma_c[(p_c + \tau_c)A_c(n^*_{cK})^{\alpha}(\Xi)^{1-\alpha} - r^c_d n^*_{cK} - w_d \Xi - (p_c + \tau_c)(1-\delta)\Gamma] \quad (17)$$

and the utility of manager $m_l$ is given by

$$U_{m_l} \equiv \sigma_l[(p_l - \tau_l)A_l(n^*_{lK})^{\beta}(H^2 - \Xi)^{1-\beta} - r^l_d n^*_{lK} - w_d(H^2 - \Xi)] \quad (18).$$

[70] We have $n^*_{cH} = \Xi$ and $n^*_{lH} = H^2 - \Xi$ based on the assumption that I made above.

It is evident that the constraints that manager $m_j$ be kept to his/her reservation utility of zero are binding, which implies that $\pi_j = 0$. Owing to $\pi_j = 0$, the treasury's budget constraint can be expressed by

$$\phi_l \tau_l q_l \geq \tau_c q_c \qquad (19).$$

The government's utility maximisation problem above can be solved as follows:

- Given output price $(p_l - \tau_l, p_c + \tau_c)$, the resulting allocations $n_{ji}^*$ and depressed wage rate $w_d$, the government in the developing country sets the depressed interest rate $r_d^j$ affecting firm $j = l, c$ to maximise the profits of firm $j$. It is evident that the equilibrium interest rate $r_d^{*jg}$ under government control in firm $j$ equals $\upsilon_j r^*$—that is, we have $r_d^{*jg} = \upsilon_j r^*$.

- Given the resulting allocations of labour to capital-intensive firm $n_{cH}^* = \Xi$ and the resulting allocations of labour to labour-intensive firm $n_{lH}^* = H^2 - \Xi$, if the equilibrium amount of capital used in the capital-intensive firm is $n_{cK}^*$, then the equilibrium amount of capital used in the labour-intensive firm is $n_{lK}^* = \bar{K} - n_{cK}^*$; and the equilibrium output of labour-intensive and capital-intensive products produced in the developing country satisfy

$$q_l = A_l \left(\bar{K} - n_{cK}^*\right)^{\beta} (H^2 - \Xi)^{1-\beta} \quad \text{and} \quad q_c = A_c \left(n_{cK}^*\right)^{\alpha} \Xi^{1-\alpha} \qquad (20).$$

- Plugging the equilibrium output of labour-intensive and capital-intensive products in (20) into (16), where $N^1 W^1\left(\bar{V}^1\right) + N^2 W^2\left(\bar{V}^2\right)$ is a constant and can be passed over, the utility function of the government in the developing country can be expressed by

$$\tilde{U}_g = B\left(A_c \left(n_{cK}^*\right)^{\alpha} \Xi^{1-\alpha}\right) + \rho \frac{p_l - \tau_l}{p_c + \tau_c} \bar{p}_{al} \left\{N^1[F(t, h^1) - c_a^1] - N^2 c_a^2\right\} +$$

$$\rho \frac{p_l - \tau_l}{p_c + \tau_c}\left(A_l \left(\bar{K} - n_{cK}^*\right)^{\beta} (H^2 - \Xi)^{1-\beta} - N^1 c_l^1 - N^2 c_l^2\right) + \rho\left[A_c \left(n_{cK}^*\right)^{\alpha} \Xi^{1-\alpha} - (1-\delta)\Gamma\right].$$

- Finally, the government in the developing country chooses the distorted

extent of relative prices of labour-intensive products to capital-intensive products $(p_l-\tau_l)/(p_c-\tau_c)$, and the resulting allocations of capital to capital-intensive firm $n^*_{cK}$ to maximise $\tilde{U}_g$, subject to the constraint that manager $m_j$ be kept to his/her reservation utility of zero and the treasury's budget constraint, which can be expressed by $\phi_l\tau_l A_l\left(\bar{K}-n^*_{cK}\right)^{\beta}(H^2-\Xi)^{1-\beta}\geq\tau_c A_c\left(n^*_{cK}\right)^{\alpha}\Xi^{1-\alpha}$.

Solving the government's utility maximisation problem yields the following first-order conditions:

$$
\begin{aligned}
&-\frac{\rho}{p_c+\tau_c}\underline{p}_{al}\left\{N^1[F(t,h^1)-c^1_a]-N^2c^2_a\right\}+\\
&\frac{-\rho}{p_c+\tau_c}\left(A_l\left(\bar{K}-n^*_{cK}\right)^{\beta}(H^2-\Xi)^{1-\beta}-N^1c^1_l-N^2c^2_l\right)+\\
&\hbar^g\phi_l A_l\left(\bar{K}-n^*_{cK}\right)^{\beta}(H^2-\Xi)^{1-\beta}-\lambda^g_l\sigma_l A_l(\bar{K}-n^*_{cK})^{\beta}(H^2-\Xi)^{1-\beta}=0
\end{aligned}
\tag{21}
$$

$$
\begin{aligned}
&-\rho\frac{p_l-\tau_l}{(p_c+\tau_c)^2}\underline{p}_{al}\left\{N^1[F(t,h^1)-c^1_a]-N^2c^2_a\right\}+\\
&-\rho\frac{p_l-\tau_l}{(p_c+\tau_c)^2}\left(A_l\left(\bar{K}-n^*_{cK}\right)^{\beta}(H^2-\Xi)^{1-\beta}-N^1c^1_l-N^2c^2_l\right)\\
&-\hbar^g A_c\left(n^*_{cK}\right)^{\alpha}\Xi^{1-\alpha}+\lambda^g_c\sigma_c[A_c(n^*_{cK})^{\alpha}(\Xi)^{1-\alpha}-(1-\delta)\Gamma]=0
\end{aligned}
\tag{22}
$$

$$
\begin{aligned}
&B'\left(A_c\left(n^*_{cK}\right)^{\alpha}\Xi^{1-\alpha}\right)A_c\alpha\left(n^*_{cK}\right)^{\alpha-1}\Xi^{1-\alpha}+\\
&-\rho\frac{p_l-\tau_l}{p_c+\tau_c}A_l\beta\left(\bar{K}-n^*_{cK}\right)^{\beta-1}(H^2-\Xi)^{1-\beta}+\rho A_c\alpha\left(n^*_{cK}\right)^{\alpha-1}\Xi^{1-\alpha}\\
&+\hbar^g\left[-\phi_l\tau_l A_l\beta\left(\bar{K}-n^*_{cK}\right)^{\beta-1}(H^2-\Xi)^{1-\beta}-\tau_c A_c\alpha\left(n^*_{cK}\right)^{\alpha-1}\Xi^{1-\alpha}\right]\\
&+\lambda^g_c\sigma_c[(p_c+\tau_c)A_c\alpha(n^*_{cK})^{\alpha-1}(\Xi)^{1-\alpha}-r^c_d]\\
&+\lambda^g_l\sigma_l[-(p_l-\tau_l)A_l\beta(\bar{K}-n^*_{cK})^{\beta-1}(H^2-\Xi)^{1-\beta}+r^l_d]=0
\end{aligned}
\tag{23}
$$

where $\hbar^g$, $\lambda^g_c$ and $\lambda^g_l$ are the Lagrange multipliers under government control for the treasury's budget constraint and the constraint that managers $m_c$ and $m_l$ are kept to their reservation utility of zero respectively.

From the first-order conditions above, I can solve the equilibrium tax rate in labour-

intensive firm $\tau_l^{*g}$, the equilibrium subsidy rate in capital-intensive firm $\tau_c^{*g}$ and the resulting allocations of capital $n_{jK}^{*g}$ in firm $j = l, c$,[71] which are equal to the equilibrium amount of capital used in that firm, $\tilde{n}_{jK}^{*g}$, under government control. The equilibrium tax rate in the rural sector, $\tau_a^{*g}$, and the equilibrium (nominal) urban wage $w_d^{*g}$ under government control are determined by

$$\tau_a^{*g} = p_a - \underline{p}_{al}(p_l - \tau_l^{*g})$$

$$w_d^{*g} = \underline{w}_l(p_l - \tau_l^{*g}).$$

Finally, the other equilibrium endogenous variables under government control—for example, the equilibrium surplus of the rural good per rural worker $S^{*g}$, equilibrium investment $I^{*g}$, equilibrium output of capital-intensive product $q_c^{*g}$ and equilibrium output of labour-intensive product $q_l^{*g}$ under government control—can be determined after $\tau_a^{*g}$, $\tau_l^{*g}$, $\tau_c^{*g}$, $\tilde{n}_{ji}^{*g}$, $w_d^{*g}$ and $r_d^{*jg}$ have been solved.

Moreover, the constraint that manager $m_j$ is kept to his/her reservation utility of zero implies that I can replace Lagrange multipliers $\lambda_c^g$ and $\lambda_l^g$ in (21), (22) and (23) with $\lambda_c'^g = \lambda_c^g \sigma_c$ and $\lambda_l'^g = \lambda_l^g \sigma_l$ without changing equilibrium under government control. Thus, we have the following proposition.

**Proposition 5:** Equilibrium with non-clearing markets under government control is independent of $\sigma_j$—that is, it is independent of the ownership of the firm's cash flow.[72]

**3.3.2 Equilibrium under manager control.** Now I need to compute equilibrium with non-clearing markets under manager $m_j$'s control of the exact use of the resulting

[71] Equilibrium under the circumstances is identical to the case of complete contracts for the government in the developing country (the 'first best' equilibrium from the government's point of view).

[72] Similar empirical results can be found in Morck and Yeung (2004), who emphasise that political influence is proportional to what one controls, not what one owns, notwithstanding the fact that the precise meaning of control in this appendix is not identical to that in Morck and Yeung (2004).

allocations of capital $n_{jK}^{*}$ in firm $j$. Under manager control, as long as manager $m_j$ has an incentive to transfer capital allocated by the government outside from firm $j$ to firm $-j$, the resulting allocations of capital to firm $j = l, c$ could not be equal to the equilibrium amount of capital used in that firm—that is, $n_{jK}^{*} \neq \tilde{n}_{jK}^{*}$.

As in Shleifer and Vishny (1994), however, in our model, the fact that manager $m_j$ has the control right over the use of capital allocated by the government does not mean the manager will transfer all of the resources outside from firm $j$ to firm $-j$. Indeed, the government could try to convince managers $m_c$ and $m_l$ to produce an acceptable quantity of capital-intensive products, $q_c$, and a desirable quantity of labour-intensive products, $q_l$, by means of changing the distorted extent of the relative output prices $(p_c + \tau_c)/(p_l - \tau_l)$, whereby the government might affect the relative return of capital between labour-intensive and capital-intensive firms. Therefore, based on the cooperative game theory, the government $g$, manager $m_c$ and manager $m_l$ could bargain to a superior allocation by producing an appropriate quantity of capital-intensive products and labour-intensive products and distorting the relative output prices $(p_c + \tau_c)/(p_l - \tau_l)$ to an appropriate extent simultaneously.

Following Hart and Moore (1990), in the model presented below, I assume that the relationships among the government $g$, manager $m_c$ and manager $m_l$ could be described and analysed by an incomplete contract and I also assume that the *ex post* distribution of pay-off is governed by a (multilateral bargaining) coalitional form game. The solution concept that I adopt for the coalitional game is the Shapley Value (Shapley, 1953; Osborne and Rubinstein, 1994; Winter, 2002).[73]

The chronology of all agents' main events and their decisions is shown as follows:

- The government distorts the relative output prices $(p_c + \tau_c)/(p_l - \tau_l)$ and

[73] The application of the Shapley value to impute joint costs or interrelated revenues was suggested first by Shubik (1962).

gives priority to the capital-intensive firm by allocating capital with price $r_d^c$ and urban labour with price $w_d$ to this firm. The amount of capital and urban labour allocated to the capital-intensive firm is $n_{cK}^*$ and $n_{cH}^* = \Xi$ respectively. After the resulting allocations of factors $n_{ci}^*(i = L, K)$ to the capital-intensive firm have been realised, the remaining factors with price $r_d^l$ and $w_d$ are allocated to the labour-intensive firm, which means $n_{li}^* = Z_i^* - n_{ci}^*(i = L, K)$.

- Manager $j = l, c$ decides how much of the resulting allocations of capital will be diverted from firm $j$ to firm $-j$. I denote the amount of the resulting allocations of capital diverted to be $\chi$. In fact, there are only two possible directions of capital transfer: from the capital-intensive firm to the labour-intensive firm or vice versa. If $\chi$ is permitted to be negative, the above decision problem of manager $m_l$ and/or manager $m_c$ will always be described equivalently, as manager $m_c$ decides how much of the resulting allocations of capital, denoted by $\chi$, to be diverted from his/her firm to the labour-intensive firm. When manager $m_c$ has an incentive to transfer capital to a labour-intensive firm, we have $\chi > 0$, and when manager $m_l$ has an incentive to transfer capital to a capital-intensive firm, we have $\chi < 0$. Thus, there is a wedge, denoted by $\chi$, between the equilibrium amount of capital used in the capital-intensive firm, denoted by $\tilde{n}_{cK}^*$, and the resulting allocations of capital, denoted by $n_{cK}^*$—that is, $\tilde{n}_{cK}^* = n_{cK}^* - \chi$.
- The government, manager $m_l$ and manager $m_c$ decide on the division of the pay-off by a (multilateral bargaining) coalitional form game.
- Output is produced and the pay-off is distributed according to their Shapley values.

I will use a sub-game perfect equilibrium to characterise the non-market clearing equilibrium under manager control, and the pay-offs distributed in all sub-games are

determined by the Shapley values. Borrowing some notations used in Winter (2002), in the present model I can describe the coalitional game among the government $g$, manager $m_c$ and manager $m_l$ in an explicit way—that is, a coalitional game on a finite set of three players is a function, $\nu$, from the set of all $2^3 = 8$ coalitions to the set of real numbers $\Re$ with $\nu(\varnothing) = 0$. $\nu(S)$ represents the total pay-off the coalitions, $S$, could get in the coalitional game, $\nu$. A value is an operator $\phi$ that assigns to each game $\nu$, a vector of pay-offs, $\phi(\nu) = (\phi_g, \phi_{m_c}, \phi_{m_l})$ in $\Re^3$. $\phi_\iota(\nu)$ stands for player $\iota$'s ($\iota = g, m_c, m_l$) pay-off in the game.

Each player $\iota$'s Shapley value is an operator that assigns the player the expected marginal contributions or the average contributions to all coalitions, $S$, that consist of players ($\iota = g, m_c, m_l$) ordered in all feasible permutations. More specifically, I denote $\Pi$ to be a permutation of the set of players and $\bar{\Pi}$ to be the set of all feasible permutations. Let us imagine the players appearing one by one to collect their pay-off according to the order $\Pi$ (Winter, 2002); then the marginal contribution of player $\iota$ with respect to that order, $\Pi$, is $\nu(\perp_\Pi^\iota \cup \iota) - \nu(\perp_\Pi^\iota)$ if I denote by $\perp_\Pi^\iota = \{\kappa : \Pi(\iota) > \Pi(\kappa)\}$ the set of players preceding player $\iota$ in the order $\Pi$ for each player $\iota$. Under these circumstances, the player $\iota$'s Shapley value in the coalitional game $\nu$ is

$$\phi_\iota^{\text{Shapley}}(\nu) = \frac{1}{3!}\sum_{\Pi \in \bar{\Pi}} [\nu(\perp_\Pi^\iota \cup \iota) - \nu(\perp_\Pi^\iota)] \quad (24).$$

As in Shubik (1962), I can give the characteristic function for the above coalitional game in an explicit way: $\nu(\{\varnothing\}) = 0$

$$\nu(\{g\}) = \underset{\tau_1, \tau_c, n_{cK}^*, r_d^l, r_d^c}{\text{Max}} N^1 W^1\left(\bar{V}^1\right) + N^2 W^2\left(\bar{V}^2\right) + B(A_c(n_{cK}^* - \chi)^\alpha \Xi^{1-\alpha}) +$$

$$\rho\left\{\begin{array}{c} \dfrac{p_l - \tau_l}{p_c + \tau_c} p_{al} \left\{N^1[F(t, h^1) - c_a^1] - N^2 c_a^2\right\} + A_c(n_{cK}^* - \chi)^\alpha (\Xi)^{1-\alpha} - (1-\delta)\Gamma \\ + \dfrac{p_l - \tau_l}{p_c + \tau_c}\left[A_l(\bar{K} - n_{cK}^* + \chi)^\beta (H^2 - \Xi)^{1-\beta} - N^1 c_l^1 - N^2 c_l^2\right] \end{array}\right\}$$

$$\nu(\{m_c\}) = \text{Max}\{\sigma_c[(p_c + \tau_c) A_c (n_{cK}^*)^\alpha (\Xi)^{1-\alpha} - r_d^c n_{cK}^* - w_d \Xi - (p_c + \tau_c)(1-\delta)\Gamma], 0\}$$

$$v(\{m_l\}) = \text{Max}\{\sigma_l[(p_l-\tau_l)A_l(\bar{K}-n_{cK}^*)^{\beta}(H^2-\Xi)^{1-\beta} - r_d^l(\bar{K}-n_{cK}^*) - w_d(H^2-\Xi)], 0\}$$

$$v(\{m_c,m_l\}) = \underset{\chi}{\text{Max}}\left\{\begin{array}{c}\sigma_c(p_c+\tau_c)A_c(n_{cK}^*-\chi)^{\alpha}(\Xi)^{1-\alpha} - \sigma_c r_d^c(n_{cK}^*-\chi) - \sigma_c w_d\Xi \\ -\sigma_c(p_c+\tau_c)(1-\delta)\Gamma + \sigma_l(p_l-\tau_l)A_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta} \\ -\sigma_l r_d^l(\bar{K}-n_{cK}^*+\chi) - \sigma_l w_d(H^2-\Xi)\end{array}\right\}$$

$$v(\{g,m_c\}) = \underset{\tau_1,\tau_c,n_{cK}^*,r_d^c}{\text{Max}} N^1W^1\left(\bar{V}^1\right) + N^2W^2\left(\bar{V}^2\right) + B(A_c(n_{cK}^*)^{\alpha}\Xi^{1-\alpha}) +$$

$$\rho\left\{\begin{array}{c}\dfrac{p_l-\tau_l}{p_c+\tau_c}\left[\underline{p}_{al}\left\{N^1[F(t,h^1)-c_a^1]-N^2c_a^2\right\} + \left(A_l(\bar{K}-n_{cK}^*)^{\beta}(H^2-\Xi)^{1-\beta} - N^1c_l^1 - N^2c_l^2\right)\right] \\ + A_c(n_{cK}^*)^{\alpha}(\Xi)^{1-\alpha} - (1-\delta)\Gamma\end{array}\right\}$$

$$+\sigma_c[(p_c+\tau_c)A_c(n_{cK}^*)^{\alpha}(\Xi)^{1-\alpha} - r_d^c n_{cK}^* - w_d\Xi - (p_c+\tau_c)(1-\delta)\Gamma]$$

$$v(\{g,m_l\}) = \underset{\tau_1,\tau_c,n_{cK}^*,r_d^l}{\text{Max}} N^1W^1\left(\bar{V}^1\right) + N^2W^2\left(\bar{V}^2\right) + B(A_c(n_{cK}^*)^{\alpha}\Xi^{1-\alpha}) +$$

$$\rho\left\{\begin{array}{c}\dfrac{p_l-\tau_l}{p_c+\tau_c}\left[\underline{p}_{al}\left\{N^1[F(t,h^1)-c_a^1]-N^2c_a^2\right\} + \left(A_l(\bar{K}-n_{cK}^*)^{\beta}(H^2-\Xi)^{1-\beta} - N^1c_l^1 - N^2c_l^2\right)\right] \\ + A_c(n_{cK}^*)^{\alpha}(\Xi)^{1-\alpha} - (1-\delta)\Gamma\end{array}\right\}$$

$$+\sigma_l[(p_l-\tau_l)A_l(\bar{K}-n_{cK}^*)^{\beta}(H^2-\Xi)^{1-\beta} - r_d^l(\bar{K}-n_{cK}^*) - w_d(H^2-\Xi)]$$

$$v(\{g,m_c,m_l\}) = \underset{\tau_1,\tau_c,n_{cK}^*,r_d^l,r_d^c,\chi}{\text{Max}} N^1W^1\left(\bar{V}^1\right) + N^2W^2\left(\bar{V}^2\right) + B(A_c(n_{cK}^*-\chi)^{\alpha}\Xi^{1-\alpha}) +$$

$$\rho\left\{\begin{array}{c}\dfrac{p_l-\tau_l}{p_c+\tau_c}\underline{p}_{al}\left\{N^1[F(t,h^1)-c_a^1]-N^2c_a^2\right\} + \\ \dfrac{p_l-\tau_l}{p_c+\tau_c}\left[A_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta} - N^1c_l^1 - N^2c_l^2\right] + A_c(n_{cK}^*-\chi)^{\alpha}(\Xi)^{1-\alpha} - (1-\delta)\Gamma\end{array}\right\}$$

$$+\sigma_l[(p_l-\tau_l)A_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta} - r_d^l(\bar{K}-n_{cK}^*+\chi) - w_d(H^2-\Xi)]$$

$$+\sigma_c[(p_c+\tau_c)A_c(n_{cK}^*-\chi)^{\alpha}(\Xi)^{1-\alpha} - r_d^c(n_{cK}^*-\chi) - w_d\Xi - (p_c+\tau_c)(1-\delta)\Gamma]$$

Now I can solve the sub-game perfect equilibrium by means of a backward solution as follows:

- Facing the given output prices ( $p_c+\tau_c, p_l-\tau_l$), the given factor prices ( $w_d, r_d^c, r_d^l$ ) and the resulting allocations of factors $n_{ji}^*(i=L,K)$ to firm $j$, manager $m_c$ decides $\chi$ to maximise $v(\{m_c,m_l\})$, which implies that we have

the following FOC:[74]

$$\begin{aligned} &-\sigma_c\left[(p_c+\tau_c)A_c\alpha(n_{cK}^*-\chi)^{\alpha-1}(\Xi)^{1-\alpha}-r_d^c\right] \\ &+\sigma_l\left[(p_l-\tau_l)A_l\beta(\bar{K}-n_{cK}^*+\chi)^{\beta-1}(H^2-\Xi)^{1-\beta}-r_d^l\right]=0 \end{aligned} \tag{25}$$

- The government chooses the distorted relative output prices $(p_c+\tau_c, p_l-\tau_l)$, the interest rate affecting capital-intensive and labour-intensive firms $(r_d^c, r_d^l)$, the resulting allocations of factors $n_{ji}^*(i=L,K)$ to firm $j=l,c$ to maximise $\nu(\{g,m_c,m_l\})$ subject to the treasury's budget constraint, which can be expressed by

$$\begin{aligned} &(1-\sigma_l)[(p_l-\tau_l)A_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta}-r_d^l(\bar{K}-n_{cK}^*+\chi)-w_d(H^2-\Xi)] \\ &+(1-\sigma_c)[(p_c+\tau_c)A_c(n_{cK}^*-\chi)^{\alpha}(\Xi)^{1-\alpha}-r_d^c(n_{cK}^*-\chi)-w_d\Xi-(p_c+\tau_c)(1-\delta)\Gamma] \\ &+\phi_l\tau_lA_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta}\geq\tau_cA_c(n_{cK}^*-\chi)^{\alpha}(\Xi)^{1-\alpha} \end{aligned} \tag{26}$$

It is obvious that the equilibrium interest rate $r_d^{*jm}$ under manager control in firm $j$ equals $\upsilon_j r^*$—that is, we have $r_d^{*jm}=\upsilon_j r^*$. Furthermore, the government's decision should satisfy the following first order condistions:

$$\begin{aligned} &\frac{\rho}{p_c+\tau_c}\left\{\begin{array}{c} \underline{p}_{al}\left\{N^1[F(t,h^1)-c_a^1]-N^2c_a^2\right\}+ \\ \left[A_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta}-N^1c_l^1-N^2c_l^2\right] \end{array}\right\} \\ &\quad+\sigma_lA_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta} \\ &-\vartheta^m\left\{\begin{array}{c} \phi_lA_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta}- \\ (1-\sigma_l)[-A_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta}] \end{array}\right\}=0 \end{aligned} \tag{27}$$

$$\begin{aligned} &-\rho\frac{p_l-\tau_l}{(p_c+\tau_c)^2}\left\{\begin{array}{c} \underline{p}_{al}\left\{N^1[F(t,h^1)-c_a^1]-N^2c_a^2\right\}+ \\ \left[A_l(\bar{K}-n_{cK}^*+\chi)^{\beta}(H^2-\Xi)^{1-\beta}-N^1c_l^1-N^2c_l^2\right] \end{array}\right\} \\ &\quad+\sigma_c[A_c(n_{cK}^*-\chi)^{\alpha}(\Xi)^{1-\alpha}-(1-\delta)\Gamma] \\ &\vartheta^m\left\{(1-\sigma_c)[A_c(n_{cK}^*-\chi)^{\alpha}(\Xi)^{1-\alpha}-(1-\delta)\Gamma]-A_c(n_{cK}^*-\chi)^{\alpha}(\Xi)^{1-\alpha}\right\}=0 \end{aligned} \tag{28}$$

[74] There is an implicit assumption, which is $\sigma_j\neq 0,\ \forall\ j=l,c$ in (25).

$$
\begin{aligned}
&B'(A_c(n_{cK}^{*}-\chi)^{\alpha}\Xi^{1-\alpha})A_c\alpha(n_{cK}^{*}-\chi)^{\alpha-1}\Xi^{1-\alpha}+\\
&\rho\left\{\begin{array}{c}-\dfrac{p_l-\tau_l}{p_c+\tau_c}A_l\beta(\bar{K}-n_{cK}^{*}+\chi)^{\beta-1}(H^2-\Xi)^{1-\beta}\\ +A_c\alpha(n_{cK}^{*}-\chi)^{\alpha-1}(\Xi)^{1-\alpha}\end{array}\right\}\\
&+\sigma_l[-(p_l-\tau_l)A_l\beta(\bar{K}-n_{cK}^{*}+\chi)^{\beta-1}(H^2-\Xi)^{1-\beta}+\upsilon_l r^{*}]\\
&+\sigma_c[(p_c+\tau_c)A_c\alpha(n_{cK}^{*}-\chi)^{\alpha-1}(\Xi)^{1-\alpha}-\upsilon_c r^{*}]\\
&\vartheta^{m}\left\{\begin{array}{c}-\phi_l\tau_l A_l\beta(\bar{K}-n_{cK}^{*}+\chi)^{\beta-1}(H^2-\Xi)^{1-\beta}+\\ (1-\sigma_l)[-(p_l-\tau_l)A_l\beta(\bar{K}-n_{cK}^{*}+\chi)^{\beta-1}(H^2-\Xi)^{1-\beta}+\upsilon_l r^{*}]\\ +(1-\sigma_c)[(p_c+\tau_c)A_c\alpha(n_{cK}^{*}-\chi)^{\alpha-1}(\Xi)^{1-\alpha}-\upsilon_c r^{*}]\\ -\tau_c A_c\alpha(n_{cK}^{*}-\chi)^{\alpha-1}(\Xi)^{1-\alpha}\end{array}\right\}=0
\end{aligned}
\tag{29}
$$

where $\vartheta^{m}$ is the Lagrange multiplier under manager control for the treasury's budget constraint.

In sub-game perfect equilibrium under manager control, the equilibrium amount of capital used in the capital-intensive firm, denoted by $\tilde{n}_{cK}^{*m}$, must equal the resulting allocations of capital to this firm, denoted by $n_{cK}^{*m}$—that is, $\tilde{n}_{cK}^{*m}=n_{cK}^{*m}$. Thus, in sub-game perfect equilibrium, the amount of capital diverted outside from the capital-intensive firm to the labour-intensive firm should equal zero—that is, $\chi^{*}=0$.

Plugging $\chi^{*}=0$ into equations (26), (27), (28) and (29), I can solve the equilibrium tax rate in the labour-intensive firm $\tau_l^{*m}$, the equilibrium subsidy rate in the capital-intensive firm $\tau_c^{*m}$, and the resulting allocations of capital $n_{jK}^{*m}$ in firm $j=l,c$, which are equal to the equilibrium amount of factors used in that firm $\tilde{n}_{ji}^{*m}$ under manager control.

The equilibrium tax rate in the rural sector $\tau_a^{*m}$ and the equilibrium (nominal) urban wage $w_d^{*m}$ under manager control are determined by

$$\tau_a^{*m}=p_a-\underline{p}_{al}(p_l-\tau_l^{*m})$$

$$w_d^{*m}=\underline{w}_l(p_l-\tau_l^{*m}).$$

The other equilibrium endogenous variables under manager control—for example, the equilibrium surplus of the rural good per rural worker $S^{*m}$, the equilibrium investment $I^{*m}$, the equilibrium output of capital-intensive product $q_c^{*m}$ and the equilibrium output of labour-intensive product $q_l^{*m}$ under manager control—can be determined after $\tau_a^{*m}$, $\tau_l^{*m}$, $\tau_c^{*m}$, $\tilde{n}_{ji}^{*m}$, $w_d^{*m}$ and $r_d^{*jm}$ have been solved.

Finally, based on the characteristic function for the above coalitional game, applying the Shapley value in (24), we obtain

$$\phi_g^{\text{Shapley}} = \frac{1}{3!}\left\{\begin{array}{c} 2\nu(\{g\}) + \left[\nu(\{g, m_c\}) - \nu(\{m_c\})\right] + \\ \left[\nu(\{g, m_l\}) - \nu(\{m_l\})\right] + 2\left[\nu(\{g, m_c, m_l\}) - \nu(\{m_c, m_l\})\right] \end{array}\right\}$$

$$\phi_{m_c}^{\text{Shapley}} = \frac{1}{3!}\left\{\begin{array}{c} 2\nu(\{m_c\}) + \left[\nu(\{g, m_c\}) - \nu(\{g\})\right] + \\ \left[\nu(\{m_c, m_l\}) - \nu(\{m_l\})\right] + 2\left[\nu(\{g, m_c, m_l\}) - \nu(\{g, m_l\})\right] \end{array}\right\}$$

$$\phi_{m_l}^{\text{Shapley}} = \frac{1}{3!}\left\{\begin{array}{c} 2\nu(\{m_l\}) + \left[\nu(\{g, m_l\}) - \nu(\{g\})\right] + \\ \left[\nu(\{m_c, m_l\}) - \nu(\{m_c\})\right] + 2\left[\nu(\{g, m_c, m_l\}) - \nu(\{g, m_c\})\right] \end{array}\right\}.$$

Comparing equilibrium under manager control with that under government control yields the following proposition (proof in the Appendix).

**Proposition 6:** To successfully enforce a catch-up type of CAD strategy in its country, the developing country government always prefers its control over the exact use of the resulting allocation of capital to the firm $j = l, c$, denoted by $n_{jK}^*$, rather than that of manager $m_j$—that is, the government would like to deprive the firm of autonomy.[75]

Finally, from the proof of Proposition 6 attached at the end of the appendix as a technical note, we know that, from the government's point of view, the root of equilibrium under

[75] The justification for the developing country government's deprivation of a firm's autonomy is analogous to the case in Burkart et al. (2003), which examines whether entrepreneurs want to surrender control of their firms, by comparing the potential benefits of owner control with the forgone benefits of rendering control to capable outside professional managers—although the role of capable outside professional managers is ignored in our model for tractability.

manager control is inferior to that under government control when the manager has the arbitrage opportunity of diverting capital from one firm to the other, as described in first order conditions in (25). Had arbitrage opportunities for diverting capital from one firm to the other disappeared, equilibrium under manager control would be identical to that under government control for the developing country government. These arbitrage opportunities will not exist if either $\sigma_l = 0$ or $\sigma_c = 0$—that is, either firm $c$ or firm $l$ is purely state owned and has no ownership of cash flow. Therefore, we have the following corollary.

**Corollary 1:** Equilibrium with non-clearing markets under manager control depends on the exact value of $\sigma_j$—that is, on the ownership of a firm's cash flow. Moreover, the government prefers the exact value of $\sigma_j$ to be zero under manager control—that is, the government prefers the firms to be owned completely by the state.[76]

## 4. Concluding remarks

There exist widespread distorted institutional arrangements and interventionist policies, such as price distortion, financial repression, trade restriction, rationing of capital and foreign exchange, licensing of investments, administrative monopoly and state ownership in many developing countries, whether they are socialist countries such as China, the former Soviet Union and Eastern European countries, or non-socialist countries such as India and many Latin American countries. The main purpose of this appendix is to construct a simple three-sector model to show that the fundamental logic of these distorted institutional arrangements and interventionist policies in a developing country arises from its government's attempt to develop advanced, capital-intensive industries when the characteristic of the country's endowments is relatively capital scarce due to its

[76] It is assumed in the model that there is an information asymmetry between the government and the managers. Therefore, once the firm is state owned and the cash flow is completely controlled by the government, there is no need for the government to deprive the manager's control rights over the use of capital and other resources. In reality, however, information between the government and managers is asymmetrical and the manager has some control in the use of cash flow. If the manager has the control right over the use of resources, the diversion of resources for the manager's on-the-job consumption and other moral hazard behaviour could occur. Therefore, the government would deprive the manager of autonomy, even if the firm was state owned. In effect, this is what happened in the planning system in China, Russia and other socialist countries.

political leaders' aspiration for nation building, modernization, and political independence in the country, as discussed in the Lectures.

Retrospectively, the CAD strategy seems to be extremely inappropriate and even absurd according to today's thinking, it was initiated by idealistic nationalist leaders behaving as benevolent guardians with bounded rationality. Deeply influenced by their own aspiration for nation building, the radical view of economic development, Keynesian theory at that time and the successful experience of the Soviet Union's industrialization under Stalin's leadership before World War II, most developing countries—socialist and non-socialist—adopted a catch-up type of CAD strategy to accelerate the growth of capital-intensive, advanced sectors in their countries after World War II. Many firms in the priority sectors of this strategy were non-viable in open, competitive markets because the priority sectors were not compatible with their economies' comparative advantages. The model shows that the government intervention—including distorted prices for products and essential factors of production, highly centralised, planned resource-allocation systems and a micro-management mechanism in which firms were deprived of autonomy—was endogenous to the needs of maximising resource mobilisation to build up the priority sectors and to support non-viable firms in those sectors. Thus, given the government's motivation—that is, pursuing a catch-up type of CAD strategy—these distorted economic institutions and interventionist policies in the developing countries were second-best arrangement.[77] Therefore, as Lin and Li (forthcoming) show, without addressing the firms' viability issue and giving up the catch-up type of CAD strategy, the implementation of price liberalisation, privatisation and elimination of other distortions—as advocated by the Washington Consensus—would result in poorer economic performance in developing countries than that before the reform.

[77] I share the view of Krueger (1995)—that is, many of the policies that eventually became so inimical to growth appear to have been adopted for idealistic motives, and not for the narrow self-interest of the groups in the ruling coalition.

**Technical Note**

**Proof of Proposition 6**

Proof by contradiction: it is obvious that equilibrium under manager control can be obtained by government control.[78] Thus, equilibrium under government control weakly dominates equilibrium under manager control from the viewpoint of the developing country government. If I can prove that equilibrium under manager control could not always equal equilibrium under government control, the developing country government will prefer equilibrium under government control to that under manager control, which is the result in Proposition 6—that is, DEVELOPING COUNTRY governments would like to deprive firms of autonomy.

Let us first assume that equilibrium under government control is always identical to that under manager control—that is, we have $\tau_c^{*m} = \tau_c^{*g}$, $\tau_l^{*m} = \tau_l^{*g}$ and $\tilde{n}_{ji}^{*m} = \tilde{n}_{ji}^{*g}$, etc.

From the FOC in (21), I know that equilibrium under government control should satisfy

$$\begin{aligned} &\frac{\rho}{p_c + \tau_c^{*g}} \underline{p}_{al} \left\{ N^1[F(t,h^1) - c_a^1] - N^2 c_a^2 \right\} + \\ &\frac{\rho}{p_c + \tau_c^{*g}} \left( A_l \left( \bar{K} - \tilde{n}_{cK}^{*g} \right)^{\beta} (H^2 - \Xi)^{1-\beta} - N^1 c_l^1 - N^2 c_l^2 \right) - \qquad (30). \\ \hbar^g \phi_l A_l \left( \bar{K} - \tilde{n}_{cK}^{*g} \right)^{\beta} (H^2 - \Xi)^{1-\beta} &+ \lambda_l^g \sigma_l A_l (\bar{K} - \tilde{n}_{cK}^{*g})^{\beta} (H^2 - \Xi)^{1-\beta} = 0 \end{aligned}$$

Substituting $\chi^* = 0$ into (27) implies that in SPE under manager control, we have

$$\begin{aligned} &\frac{\rho}{p_c + \tau_c^{*m}} \left\{ \begin{array}{c} \underline{p}_{al} \left\{ N^1[F(t,h^1) - c_a^1] - N^2 c_a^2 \right\} + \\ \left[ A_l (\bar{K} - \tilde{n}_{cK}^{*m})^{\beta} (H^2 - \Xi)^{1-\beta} - N^1 c_l^1 - N^2 c_l^2 \right] \end{array} \right\} \\ &\quad + \sigma_l A_l (\bar{K} - \tilde{n}_{cK}^{*m})^{\beta} (H^2 - \Xi)^{1-\beta} \qquad (31). \\ &- \vartheta^m \left\{ \begin{array}{c} \phi_l A_l (\bar{K} - \tilde{n}_{cK}^{*m})^{\beta} (H^2 - \Xi)^{1-\beta} + \\ (1 - \sigma_l)[A_l (\bar{K} - \tilde{n}_{cK}^{*m})^{\beta} (H^2 - \Xi)^{1-\beta}] \end{array} \right\} = 0 \end{aligned}$$

[78] The model set-up in this appendix could guarantee that either equilibrium under government control or equilibrium under manager control is unique.

Comparing (30) with (31), under the assumption that equilibrium under government control is identical to that under manager control, we must have $\hbar^g = \vartheta^m$ and $\lambda_l^g \sigma_l = -\vartheta^m (1-\sigma_l) + \sigma_l$.

The FOC in (22) implies that equilibrium under government control should satisfy

$$\begin{aligned} & -\rho \frac{p_l - \tau_l^{*g}}{(p_c + \tau_c^{*g})^2} \underline{p}_{al} \left\{ N^1 [F(t, h^1) - c_a^1] - N^2 c_a^2 \right\} + \\ & -\rho \frac{p_l - \tau_l^{*g}}{(p_c + \tau_c^{*g})^2} \left( A_l \left( \bar{K} - \tilde{n}_{cK}^{*g} \right)^{\beta} (H^2 - \Xi)^{1-\beta} - N^1 c_l^1 - N^2 c_l^2 \right) \\ & -\hbar^g A_c \left( \tilde{n}_{cK}^{*g} \right)^{\alpha} \Xi^{1-\alpha} + \lambda_c^g \sigma_c [A_c (\tilde{n}_{cK}^{*g})^{\alpha} (\Xi)^{1-\alpha} - (1-\delta)\Gamma] = 0 \end{aligned} \tag{32}$$

Replacing $\chi^* = 0$ in SPE under manager control with (28) yields

$$\begin{aligned} & -\rho \frac{p_l - \tau_l^{*m}}{(p_c + \tau_c^{*m})^2} \left\{ \begin{array}{c} \underline{p}_{al} \left\{ N^1 [F(t, h^1) - c_a^1] - N^2 c_a^2 \right\} + \\ \left[ A_l (\bar{K} - \tilde{n}_{cK}^{*m})^{\beta} (H^2 - \Xi)^{1-\beta} - N^1 c_l^1 - N^2 c_l^2 \right] \end{array} \right\} \\ & \qquad + \sigma_c [A_c (\tilde{n}_{cK}^{*m})^{\alpha} (\Xi)^{1-\alpha} - (1-\delta)\Gamma] \\ & \vartheta^m \left\{ (1-\sigma_c)[A_c (\tilde{n}_{cK}^{*m})^{\alpha} (\Xi)^{1-\alpha} - (1-\delta)\Gamma] - A_c (\tilde{n}_{cK}^{*m})^{\alpha} (\Xi)^{1-\alpha} \right\} = 0 \end{aligned} \tag{33}$$

Comparing (32) with (33) implies that, under the assumption that equilibrium under government control is identical to that under manager control, we must have $\hbar^g = \vartheta^m$ and $\lambda_c^g \sigma_c = \sigma_c + \vartheta^m (1-\sigma_c)$.

Replacing $r_d^{*jg}$ with $\upsilon_j r^*$ in (23) means that under government control, we have

$$\begin{aligned} & B' \left( A_c \left( \tilde{n}_{cK}^{*g} \right)^{\alpha} \Xi^{1-\alpha} \right) A_c \alpha \left( \tilde{n}_{cK}^{*g} \right)^{\alpha-1} \Xi^{1-\alpha} + \\ & -\rho \frac{p_l - \tau_l^{*g}}{p_c + \tau_c^{*g}} A_l \beta \left( \bar{K} - \tilde{n}_{cK}^{*g} \right)^{\beta-1} (H^2 - \Xi)^{1-\beta} + \rho A_c \alpha \left( \tilde{n}_{cK}^{*g} \right)^{\alpha-1} \Xi^{1-\alpha} \\ & +\hbar^g \left[ -\phi_l \tau_l^{*g} A_l \beta \left( \bar{K} - \tilde{n}_{cK}^{*g} \right)^{\beta-1} (H^2 - \Xi)^{1-\beta} - \tau_c^{*g} A_c \alpha \left( \tilde{n}_{cK}^{*g} \right)^{\alpha-1} \Xi^{1-\alpha} \right] \\ & \qquad + \lambda_c^g \sigma_c [(p_c + \tau_c^{*g}) A_c \alpha (\tilde{n}_{cK}^{*g})^{\alpha-1} (\Xi)^{1-\alpha} - \upsilon_c r^*] \\ & + \lambda_l^g \sigma_l [-(p_l - \tau_l^{*g}) A_l \beta (\bar{K} - \tilde{n}_{cK}^{*g})^{\beta-1} (H^2 - \Xi)^{1-\beta} + \upsilon_l r^*] = 0 \end{aligned} \tag{34}$$

Substituting $r_d^{*jm} = \upsilon_j r^*$ and $\chi^* = 0$ into (25) implies that the SPE under manager control should satisfy

$$\begin{aligned} &\sigma_c\left[(p_c + \tau_c^{*m})A_c\alpha(\tilde{n}_{cK}^{*m})^{\alpha-1}(\Xi)^{1-\alpha} - \upsilon_c r^*\right] = \\ &\sigma_l\left[(p_l - \tau_l^{*m})A_l\beta(\bar{K} - \tilde{n}_{cK}^{*m})^{\beta-1}(H^2 - \Xi)^{1-\beta} - \upsilon_l r^*\right] \end{aligned} \tag{35}$$

Plugging (35) and $\chi^* = 0$ into (29) delivers

$$\begin{aligned} &B'(A_c(\tilde{n}_{cK}^*)^{\alpha}\Xi^{1-\alpha})A_c\alpha(\tilde{n}_{cK}^*)^{\alpha-1}\Xi^{1-\alpha} \\ &+\rho\left\{\begin{array}{c} -\dfrac{p_l - \tau_l^{*m}}{p_c + \tau_c^{*m}}A_l\beta(\bar{K} - \tilde{n}_{cK}^*)^{\beta-1}(H^2 - \Xi)^{1-\beta} \\ +A_c\alpha(\tilde{n}_{cK}^*)^{\alpha-1}(\Xi)^{1-\alpha} \end{array}\right\} \\ &\vartheta^m\left\{\begin{array}{c} -\phi_l\tau_l^{*m}A_l\beta(\bar{K} - \tilde{n}_{cK}^*)^{\beta-1}(H^2 - \Xi)^{1-\beta} - \tau_c^{*m}A_c\alpha(\tilde{n}_{cK}^*)^{\alpha-1}(\Xi)^{1-\alpha} \\ +[-(p_l - \tau_l^{*m})A_l\beta(\bar{K} - \tilde{n}_{cK}^*)^{\beta-1}(H^2 - \Xi)^{1-\beta} + \upsilon_l r^*] \\ +[(p_c + \tau_c^{*m})A_c\alpha(\tilde{n}_{cK}^*)^{\alpha-1}(\Xi)^{1-\alpha} - \upsilon_c r^*] \end{array}\right\} = 0 \end{aligned} \tag{36}$$

Comparison of (34) with (36) implies that, under the assumption that equilibrium under government control is identical to that under manager control, we must have $\hbar^g = \vartheta^m$, $\lambda_c^g\sigma_c = \vartheta^m$ and $\lambda_l^g\sigma_l = \vartheta^m$.

Substituting $\lambda_c^g\sigma_c = \vartheta^m$ into $\lambda_c^g\sigma_c = \sigma_c + \vartheta^m(1-\sigma_c)$ gives $\vartheta^m = 1$. Combining $\lambda_l^g\sigma_l = -\vartheta^m(1-\sigma_l) + \sigma_l$ and $\lambda_l^g\sigma_l = \vartheta^m$ yields $\dfrac{\sigma_l}{(2-\sigma_l)} = \vartheta^m$, which means that $\sigma_l = 1$, owing to $\vartheta^m = 1$. Furthermore, we have $\lambda_l^g \equiv 1$, $\hbar^g \equiv 1$ and $\lambda_c^g \equiv 1/\sigma_c$ after a simple arithmetic operation.

It is well known that the Lagrange multiplier has an economic interpretation as the shadow price associated with the constraint. The necessary conditions above that guarantee that equilibrium under government control is always identical to that under manager control—that is, $\vartheta^m = 1$, $\sigma_l = 1$, $\lambda_l^g \equiv 1$, $\hbar^g \equiv 1$ and $\lambda_c^g \equiv 1/\sigma_c$ —imply that equilibrium under government control being identical to that under manager control is a

special case only.

Therefore, developing country governments prefer equilibrium under government control to that under manager control. — *QED.*

## Appendix II：Data Description

| 122 countries | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TCI (1963–99) | | Growth rate of GDP per capita (%) (1962–99) | | Black-market premium (1960–99) | | Number of procedures (1999) | | IEF (1970–2005) | | Expropriation risk (1982–97) | | Executive *de facto* independence (1945–98) | | Openness (1960~2003) | |
| Country | Mean | S.D. | Mean | S. D. | Mean | S. D. | Mean | S. D. | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Albania | 1.771 | 0.095 | 1.713 | 9.190 | 7.503 | 6.492 | | | 5.483 | 0.742 | 7.264 | | | | 48.321 | 15.940 |
| Algeria | 2.157 | 0.979 | 1.377 | 8.127 | 147.937 | 137.826 | | | 4.363 | 0.481 | 6.763 | | | | 56.805 | 15.229 |
| Argentina | 2.564 | 0.588 | 0.915 | 5.742 | 40.934 | 77.874 | 14.000 | | 5.365 | 1.172 | 6.313 | | 3.140 | | 16.423 | 6.248 |
| Australia | 1.073 | 0.162 | 2.150 | 2.036 | 0.000 | 0.000 | 2.000 | | 7.585 | 0.461 | 9.379 | | 7.000 | | 32.905 | 5.337 |
| Austria | 1.083 | 0.071 | 2.790 | 1.831 | 0.000 | 0.000 | 9.000 | | 7.149 | 0.545 | 9.743 | | 7.000 | | 69.527 | 15.824 |
| Bahamas | 1.929 | 0.845 | 1.504 | 6.985 | 12.539 | 12.764 | | | | | 7.793 | | | | 129.182 | 10.750 |
| Bangladesh | 4.302 | 0.902 | 1.192 | 4.091 | 96.876 | 66.359 | | | 4.990 | 0.969 | 5.413 | | | | 22.414 | 5.646 |
| Barbados | 1.283 | 0.521 | 2.449 | 4.566 | 7.442 | 4.861 | | | 5.615 | 0.142 | | | | | 118.786 | 14.759 |
| Belgium | 1.017 | 0.122 | 2.626 | 1.959 | 0.000 | 0.000 | 8.000 | | 7.316 | 0.179 | 9.686 | | 7.000 | | 120.602 | 25.441 |
| Belize | 1.067 | 0.072 | 3.256 | 4.168 | 26.857 | 21.769 | | | 6.235 | 0.497 | | | | | 116.954 | 9.390 |
| Benin | 13.694 | 2.026 | 0.861 | 3.185 | 3.424 | 4.533 | | | 5.212 | 0.406 | | | | | 40.868 | 12.273 |
| Bhutan | 4.514 | | 4.247 | 3.278 | 3.045 | 3.521 | | | | | | | | | 68.883 | 10.109 |
| Bolivia | 7.341 | 2.905 | 0.377 | 3.590 | 32.334 | 84.457 | 20.000 | | 5.915 | 1.095 | 5.600 | | 3.520 | | 49.479 | 4.896 |
| Botswana | 1.791 | 0.801 | 6.421 | 5.132 | 13.180 | 11.245 | | | 6.578 | 0.681 | 8.007 | | | | 103.668 | 24.533 |
| Brazil | 5.373 | 1.195 | 2.371 | 4.076 | 29.063 | 36.841 | 15.000 | | 5.207 | 0.868 | 7.881 | | 3.692 | | 17.317 | 4.359 |
| Bulgaria | 1.372 | 0.089 | 1.541 | 5.288 | 7.423 | 10.158 | 10.000 | | 5.536 | 0.889 | 9.036 | | 3.679 | | 90.813 | 16.009 |
| Cameroon | 7.018 | 1.626 | 0.977 | 5.993 | 3.431 | 4.531 | | | 5.597 | 0.144 | 6.463 | | | | 48.559 | 9.062 |
| Canada | 1.531 | 0.199 | 2.110 | 2.097 | 0.000 | 0.000 | 2.000 | | 7.858 | 0.282 | 9.721 | | 7.000 | | 55.645 | 14.057 |
| Central African Republic | 9.830 | 2.221 | -0.837 | 3.924 | 3.271 | 4.456 | | | | | | | | | 53.552 | 13.560 |
| Chile | 4.307 | 1.223 | 2.595 | 4.798 | 38.157 | 104.680 | 10.000 | | 6.554 | 1.345 | 7.800 | | 3.667 | | 46.041 | 14.844 |
| China | 4.165 | 1.327 | 6.003 | 7.381 | 71.004 | 111.533 | 12.000 | | 5.397 | 0.525 | 8.114 | | 2.321 | | 26.614 | 16.924 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Colombia | 4.466 | 0.701 | 1.780 | 2.117 | 7.993 | 7.510 | 18.000 | | 5.282 | 0.256 | 7.350 | | 5.074 | | 30.873 | 5.286 |
| Congo | 6.847 | 2.614 | 1.190 | 5.896 | 2.866 | 4.064 | | | | | 5.146 | | | | 104.950 | 19.420 |
| Costa Rica | 2.190 | 0.683 | 1.833 | 3.350 | 40.799 | 67.249 | | | 6.730 | 0.755 | 7.038 | | | | 70.816 | 13.687 |
| Cote d'Ivoir | | | | | | | | | | | | | | | | |
| Croatia | 1.581 | 0.637 | 0.884 | 8.096 | 37.525 | 25.826 | 12.000 | | 5.855 | 0.680 | | | 3.192 | | 102.438 | 19.668 |
| Cyprus | 1.308 | 0.310 | 5.357 | 4.515 | 4.671 | 4.550 | | | 6.327 | 0.680 | 8.486 | | | | 104.364 | 8.351 |
| Denmark | 1.178 | 0.079 | 2.100 | 2.230 | 0.000 | 0.000 | 3.000 | | 7.268 | 0.502 | 9.721 | | 7.000 | | 64.511 | 7.827 |
| Dominican Republic | 2.532 | 0.368 | 2.800 | 5.232 | 31.641 | 36.064 | 21.000 | | | | 6.356 | | 3.340 | | 59.607 | 20.106 |
| Ecuador | 3.878 | 1.238 | 1.263 | 3.381 | 20.225 | 24.613 | 16.000 | | 5.300 | 0.592 | 6.763 | | 4.148 | | 50.157 | 9.744 |
| Egypt | 2.012 | 0.238 | 3.013 | 2.913 | 39.256 | 45.442 | 11.000 | | | | 6.800 | | 3.519 | | 48.161 | 13.088 |
| El Salvador | 4.229 | 1.569 | 0.825 | 3.925 | 42.640 | 48.101 | | | 6.468 | 1.264 | 5.206 | | | | 56.661 | 9.927 |
| Ethiopia | 17.921 | 2.621 | 0.326 | 7.127 | 72.262 | 73.517 | | | | | 6.047 | | | | 32.004 | 10.522 |
| Fiji | 1.564 | 0.214 | 1.711 | 4.700 | 1.605 | 1.939 | | | 5.963 | 0.231 | | | | | 101.288 | 15.192 |
| Finland | 1.237 | 0.116 | 2.885 | 3.009 | 0.000 | 0.000 | 5.000 | | 7.371 | 0.462 | 9.721 | | 7.000 | | 54.250 | 10.204 |
| France | 1.106 | 0.096 | 2.519 | 1.664 | 0.000 | 0.000 | 15.000 | | 6.645 | 0.432 | 9.707 | | 5.283 | | 38.959 | 9.083 |
| Gabon | 2.119 | 0.759 | 2.538 | 10.245 | 1.740 | 4.035 | | | 4.944 | 0.470 | 7.556 | | | | 93.218 | 15.593 |
| Gambia | 5.442 | 3.157 | 0.595 | 3.398 | 6.511 | 11.907 | | | | | 8.385 | | | | 101.192 | 17.250 |
| Ghana | 5.962 | 2.075 | 0.071 | 4.253 | 248.144 | 729.713 | 10.000 | | 5.159 | 1.390 | 6.219 | | 1.943 | | 47.462 | 25.698 |
| Greece | 1.337 | 0.087 | 3.200 | 3.878 | 5.412 | 5.028 | 15.000 | | 6.394 | 0.532 | 7.481 | | 5.792 | | 40.066 | 10.166 |
| Guatemala | 3.303 | 0.279 | 1.230 | 2.500 | 12.346 | 15.467 | | | 6.321 | 0.542 | 5.156 | | | | 39.266 | 7.322 |
| Guyana | 0.733 | | 0.935 | 5.216 | 209.506 | 270.332 | | | 6.242 | 0.556 | 5.956 | | | | 151.372 | 49.475 |
| Honduras | 3.183 | 0.790 | 0.820 | 2.946 | 12.008 | 26.842 | | | 6.180 | 0.359 | 5.413 | | | | 68.718 | 16.915 |
| Hong Kong | 0.713 | 0.071 | 5.192 | 4.445 | -0.416 | 1.383 | | | | | 8.488 | | | | 209.386 | 52.589 |
| Hungary | 1.151 | 0.183 | 3.338 | 4.210 | 165.435 | 155.711 | 8.000 | | 6.489 | 1.059 | 9.079 | | 3.735 | | 86.700 | 25.216 |
| Iceland | 0.802 | 0.134 | 2.823 | 3.809 | 1.233 | 1.423 | | | 6.906 | 1.102 | 9.700 | | | | 72.982 | 6.502 |
| India | 3.635 | 0.421 | 2.573 | 3.077 | 26.530 | 24.692 | 10.000 | | 5.744 | 0.729 | 8.069 | | 6.959 | | 15.517 | 6.343 |
| Indonesia | 3.073 | 0.408 | 3.581 | 3.974 | 273.451 | 806.400 | 11.000 | | 5.863 | 0.535 | 7.475 | | 2.981 | | 44.716 | 16.991 |
| Iran | | | 0.231 | 7.115 | 464.833 | 857.111 | | | | | 4.694 | | | | 38.814 | 16.870 |
| Iraq | 1.646 | 0.577 | -2.515 | 18.460 | 851.008 | 2093.052 | | | | | 2.400 | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ireland | 1.853 | 0.507 | 4.179 | 2.806 | 0.600 | 3.795 | 3.000 | | 7.491 | 0.642 | 9.721 | | 7.000 | | 105.765 | 31.741 |
| Israel | 1.287 | 0.232 | 2.744 | 3.677 | 14.077 | 17.706 | 5.000 | | 5.686 | 1.283 | 8.513 | | 7.000 | | 79.064 | 23.283 |
| Italy | 1.292 | 0.134 | 2.794 | 2.143 | 0.000 | 0.000 | 16.000 | | 6.422 | 0.656 | 9.457 | | 7.000 | | 40.020 | 8.718 |
| Jamaica | 3.248 | 0.621 | 0.756 | 4.339 | 19.076 | 17.070 | 6.000 | | 6.200 | 1.023 | 7.044 | | 7.000 | | 87.759 | 15.792 |
| Japan | 1.680 | 0.083 | 4.056 | 3.678 | 1.750 | 3.350 | 11.000 | | 7.071 | 0.316 | 9.721 | | 7.000 | | 20.925 | 3.495 |
| Jordan | 1.936 | 0.492 | 1.980 | 7.193 | 3.399 | 2.899 | 14.000 | | 6.335 | 0.698 | 6.556 | | 2.208 | | 119.307 | 14.334 |
| Kenya | 0.335 | 0.030 | 1.241 | 4.785 | 15.722 | 14.031 | 11.000 | | 5.973 | 0.786 | 6.406 | | 3.250 | | 60.309 | 7.232 |
| Korea | 2.816 | 0.493 | 5.797 | 3.615 | 15.251 | 24.015 | 13.000 | | | | 8.569 | | 3.140 | | 53.775 | 18.238 |
| Kuwait | 1.090 | 0.477 | -3.916 | 8.708 | 0.001 | 0.399 | | | 6.609 | 0.817 | 7.056 | | | | 96.580 | 11.295 |
| Latvia | 1.638 | 0.010 | 2.893 | 7.074 | 7.233 | 6.266 | 7.000 | | 6.622 | 0.818 | | | 3.333 | | 104.600 | 20.540 |
| Lesotho | 8.719 | 2.037 | 3.935 | 6.891 | 9.133 | 8.125 | | | | | | | | | 112.698 | 33.884 |
| Libya | 0.836 | 0.176 | 3.425 | 16.053 | 82.000 | 127.559 | | | | | 5.088 | | | | 77.574 | 18.966 |
| Luxembourg | 0.914 | 0.101 | 3.163 | 3.267 | 0.375 | 0.466 | | | 7.703 | 0.105 | 10.000 | | | | 198.318 | 32.906 |
| Macao | 0.384 | 0.060 | 2.666 | 4.375 | | | | | | | | | | | 156.762 | 28.830 |
| Madagascar | 5.373 | 0.498 | -1.041 | 4.032 | 15.000 | 21.331 | 17.000 | | 5.316 | 0.599 | 4.686 | | 3.684 | | 40.325 | 9.212 |
| Malawi | 8.631 | 2.923 | 1.309 | 5.380 | 36.658 | 31.917 | 12.000 | | 5.038 | 0.397 | 6.863 | | 1.571 | | 60.909 | 8.653 |
| Malaysia | 1.854 | 0.191 | 3.926 | 3.483 | 1.172 | 1.634 | 7.000 | | 6.819 | 0.382 | 8.150 | | 5.381 | | 122.600 | 49.604 |
| Malta | 1.143 | 0.091 | 5.196 | 4.244 | 2.724 | 5.448 | | | 6.236 | 0.663 | 7.875 | | | | 162.837 | 27.787 |
| Mauritius | 1.121 | 0.447 | 4.355 | 1.678 | 4.892 | 7.090 | | | 6.669 | 0.893 | | | | | 116.900 | 13.110 |
| Mexico | 2.969 | 0.242 | 1.982 | 3.395 | 4.772 | 8.816 | 15.000 | | 6.159 | 0.591 | 7.469 | | 3.241 | | 31.384 | 16.422 |
| Moldova | 4.073 | 0.611 | -1.986 | 10.241 | 0.000 | | | | | | | | | | 122.079 | 25.610 |
| Mongolia | 3.697 | 0.860 | -0.258 | 6.501 | 0.635 | 3.085 | 5.000 | | | | 7.950 | | 3.333 | | 120.161 | 32.221 |
| Morocco | 3.201 | 0.383 | 1.926 | 4.544 | 7.673 | 6.987 | 13.000 | | 5.600 | 0.526 | 6.713 | | 1.930 | | 51.277 | 10.001 |
| Namibia | 3.711 | | -0.226 | 2.509 | 1.230 | 2.130 | | | 6.239 | 0.351 | 5.400 | | | | 114.971 | 16.921 |
| Nepal | 4.174 | 0.342 | 1.359 | 2.893 | 33.574 | 34.464 | | | 5.448 | 0.271 | | | | | 33.297 | 15.010 |
| Netherlands | 1.158 | 0.204 | 2.253 | 1.946 | 0.000 | 0.000 | 8.000 | | 7.620 | 0.305 | 9.979 | | 7.000 | | 100.484 | 12.498 |
| Netherlands Antilles | 0.767 | 0.110 | -1.846 | 1.312 | -0.333 | 2.417 | | | | | | | | | | |
| New Zealand | 1.061 | 0.188 | 1.420 | 2.906 | 0.600 | 3.795 | 3.000 | | 7.656 | 0.900 | 9.736 | | 7.000 | | 57.134 | 6.072 |
| Nigeria | 9.338 | 6.549 | 0.801 | 7.314 | 86.273 | 109.203 | 9.000 | | 4.659 | 0.915 | 5.300 | | 2.784 | | 49.170 | 24.309 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Norway | 0.914 | 0.072 | 3.090 | 1.723 | 0.000 | 0.000 | 4.000 | | 6.890 | 0.534 | 9.850 | | 7.000 | | 73.425 | 3.821 |
| Oman | 1.036 | 0.151 | 6.296 | 16.124 | 0.460 | 1.061 | | | 7.125 | 0.440 | 7.321 | | | | 93.117 | 12.928 |
| Pakistan | 6.114 | 1.221 | 2.564 | 2.397 | 38.871 | 42.583 | 8.000 | | 5.190 | 0.632 | 6.150 | | 4.083 | | 32.965 | 4.991 |
| Panama | 2.738 | 0.550 | 2.186 | 4.133 | 0.000 | 0.000 | 7.000 | | 6.811 | 0.590 | 6.063 | | 3.611 | | 154.750 | 27.245 |
| Papua New Guinea | 7.250 | 1.541 | 1.177 | 4.902 | 15.938 | 15.557 | | | | | 7.743 | | | | 82.113 | 17.158 |
| Paraguay | 2.852 | 0.450 | 1.598 | 3.634 | 25.390 | 37.524 | | | 6.041 | 0.405 | 6.900 | | | | 48.239 | 20.040 |
| Peru | 5.128 | 1.162 | 0.783 | 4.825 | 36.554 | 64.825 | 8.000 | | 5.648 | 1.496 | 6.206 | | 3.769 | | 34.543 | 5.348 |
| Philippines | 4.571 | 1.143 | 1.304 | 3.004 | 9.418 | 13.474 | 14.000 | | 6.176 | 0.725 | 5.788 | | 4.038 | | 56.720 | 24.885 |
| Poland | 1.704 | 0.327 | 3.320 | 3.604 | 351.565 | 270.847 | 11.000 | | 5.755 | 1.103 | 7.814 | | 3.538 | | 51.814 | 5.736 |
| Portugal | 1.265 | 0.257 | 3.684 | 3.804 | 4.263 | 7.944 | 12.000 | | 6.635 | 1.028 | 9.006 | | 3.538 | | 57.577 | 11.450 |
| Puerto Rico | 3.814 | 0.718 | 3.760 | 2.936 | | | | | | | | | | | 133.300 | 24.180 |
| Qatar | 1.595 | 0.387 | | | 0.203 | 0.259 | | | | | 7.857 | | | | 80.400 | 6.756 |
| Romania | 1.086 | 0.046 | 0.400 | 5.217 | 169.469 | 158.714 | 16.000 | | 5.149 | 0.711 | 7.557 | | 3.180 | | 60.521 | 11.528 |
| Russian Federation | 0.999 | 0.108 | -1.259 | 7.645 | 520.000 | 576.479 | 20.000 | | | | 8.500 | | 2.796 | | 56.640 | 19.001 |
| Saudi Arabia | 1.675 | 1.101 | | | | | | | | | | | | | | |
| Senegal | 8.914 | 2.469 | 0.003 | 4.200 | 3.431 | 4.531 | 16.000 | | 5.506 | 0.494 | 5.925 | | 3.000 | | 62.380 | 14.527 |
| Sierra Leone | | | -0.780 | 5.760 | 129.831 | 308.869 | | | 4.994 | 0.708 | 5.708 | | | | 48.373 | 11.093 |
| Singapore | 1.406 | 0.203 | 5.576 | 4.289 | 0.800 | 0.988 | 7.000 | | 8.364 | 0.365 | 9.394 | | 3.421 | | | |
| Slovak Republic | 1.176 | 0.004 | | | | | | | | | | | | | | |
| Slovenia | 1.071 | 0.112 | 2.123 | 4.236 | 10.000 | 6.880 | 9.000 | | 5.811 | 0.453 | | | 3.808 | | 118.000 | 12.035 |
| South Africa | 1.853 | 0.162 | 0.924 | 3.562 | 4.239 | 11.191 | 9.000 | | 6.364 | 0.537 | 7.350 | | 7.000 | | 50.766 | 5.868 |
| Spain | 1.267 | 0.199 | 3.332 | 2.698 | 2.344 | 2.235 | 11.000 | | 6.750 | 0.508 | 9.550 | | 3.471 | | 35.180 | 12.544 |
| Sri Lanka | 2.728 | 0.341 | 2.831 | 1.983 | 50.615 | 50.224 | 8.000 | | 5.720 | 0.407 | 6.538 | | 6.176 | | 70.775 | 10.682 |
| Sudan | 6.761 | | 1.119 | 5.531 | 87.922 | 155.904 | | | | | 4.019 | | | | 28.406 | 5.289 |
| Suriname | 2.409 | 0.532 | 0.217 | 6.114 | 14.683 | 8.356 | | | | | 5.169 | | | | 94.879 | 29.815 |
| Swaziland | 3.817 | 0.733 | 2.008 | 4.193 | 11.283 | 7.128 | | | | | | | | | 146.657 | 30.193 |
| Sweden | 1.206 | 0.124 | 2.198 | 1.993 | 0.000 | 0.000 | 6.000 | | 6.856 | 0.681 | 9.500 | | 7.000 | | 58.955 | 13.210 |
| Switzerland | 0.992 | 0.086 | 1.393 | 2.265 | 0.000 | 0.000 | 7.000 | | 8.179 | 0.168 | 9.986 | | 7.000 | | 64.777 | 8.952 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Syria | 2.058 | 0.755 | 2.559 | 8.022 | 128.798 | 211.522 | | | | | 5.413 | | | | 51.880 | 13.155 |
| Tanzania | 3.233 | 0.370 | 1.297 | 2.384 | 86.952 | 92.424 | 13.000 | | 5.213 | 1.183 | 6.888 | | 3.000 | | 48.043 | 9.123 |
| Thailand | 7.201 | 2.613 | 4.641 | 3.640 | 0.418 | 2.889 | 9.000 | | 6.514 | 0.386 | 7.644 | | 3.039 | | 60.693 | 28.782 |
| Togo | 9.660 | 2.364 | 1.270 | 6.390 | 3.431 | 4.531 | | | 4.979 | 0.326 | 6.500 | | | | 83.123 | 18.104 |
| Trinidad and Tobago | 1.475 | 0.446 | 2.043 | 4.713 | 30.029 | 20.051 | | | | | 7.294 | | | | 89.984 | 18.725 |
| Tunisia | 2.891 | 1.243 | 3.117 | 3.613 | 27.354 | 41.695 | 9.000 | | 5.613 | 0.557 | 6.506 | | 1.625 | | 69.147 | 22.894 |
| Turkey | 4.586 | 0.968 | 1.937 | 4.124 | 18.921 | 20.025 | 13.000 | | 5.181 | 0.812 | 7.288 | | 5.943 | | 30.608 | 16.899 |
| Uganda | 6.236 | 0.376 | 2.259 | 3.224 | 198.418 | 301.088 | 11.000 | | 5.332 | 1.640 | 4.800 | | 2.735 | | 35.186 | 9.543 |
| United Arab Emirates | 0.365 | 0.013 | -3.028 | 8.110 | -1.255 | 3.172 | | | | | 6.944 | | | | 110.931 | 17.137 |
| United Kingdom | 1.358 | 0.154 | 2.149 | 1.795 | 0.000 | 0.000 | 5.000 | | 7.626 | 0.766 | 9.764 | | 7.000 | | 49.873 | 6.861 |
| United States | 1.588 | 0.108 | 2.193 | 1.979 | 0.000 | 0.000 | 4.000 | | 8.135 | 0.273 | 9.979 | | 7.000 | | 17.046 | 5.272 |
| Uruguay | 2.036 | 0.430 | 0.887 | 4.408 | 11.699 | 26.516 | 10.000 | | 6.304 | 0.426 | 6.938 | | 4.712 | | 35.923 | 7.589 |
| Venezuela | 2.826 | 0.843 | | | 26.885 | 62.964 | 14.000 | | 5.254 | 0.900 | 7.106 | | 5.093 | | | |
| Zambia | 5.909 | 1.694 | -0.776 | 4.695 | 85.435 | 119.817 | 6.000 | | 5.653 | 1.336 | 6.669 | | 2.257 | | 77.325 | 13.388 |
| Zimbabwe | 5.118 | 1.358 | 0.450 | 5.847 | 52.239 | 56.792 | 5.000 | | 3.912 | 0.855 | 6.025 | | 4.643 | | 53.964 | 16.555 |

**References:**


Abramovitz, M. (1995). 'The Elements of Social Capability'. In D. Perkins and B. H. Koo (eds), *Social Capability and Long-Term Economic Growth*, New York: St Martin's Press.

Acemolgu, D. (2007a) *Introduction to Economic Growth*. Department of Economics, MIT (manuscript).

Acemoglu, D. (2007b). 'Modeling Inefficient Institutions'. In R. Blundell, W. K. Newey and T. Persson (eds), *Advances in Economics and Econometrics, Theory and Applications: Ninth World Congress of the Econometric Society*. London: Cambridge University Press.

Acemoglu, D., Aghion, P. and Zilibotti, F. (2006). 'Distance to Technology Frontier, Selection and Economic Growth'. *Journal of the European Economic Association*, 4, (1), March, 37–74.

Acemoglu, D., Antràs, P. and Helpman, E. (2007). 'Contracts and Technology Adoption'. *American Economic Review*, 97, (1), March.

Acemoglu, D., Johnson, S. and Robinson, J. A. (2001). 'The Colonial Origins of Comparative Development: An Empirical Investigation'. *American Economic Review*, 91, 1369–401.

Acemoglu, D., Johnson, S. and Robinson, J. A. (2002). 'Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution'. *Quarterly Journal of Economics*, 117, 1231–94.

Acemoglu, D., Johnson, S. and Robinson, J. A. (2003). 'An African Success Story: Botswana'. In D. Rodrik (ed.), *In Search of Prosperity: Analytic Narratives on Economic Growth*, Princeton and Oxford: Princeton University Press, 80–119.

Acemoglu, D., Johnson, S. and Robinson, J. A. (2005). 'Institutions as the Fundamental Cause of Long-Run Growth'. In P. Aghion and S. N. Durlauf (eds), *Handbook of Economic Growth. Volume 1, Part A*. Amsterdam: Elsevier Science Publishers (North-Holland), 385–472.

Akamatsu, K. (1962). 'A Historical Pattern of Economic Growth in Developing

Countries'. *The Developing Economies*, Tokyo, Preliminary Issue No.1, 3–25.

Allen, R. C. (2003). *Farm to Factory: a Reinterpretation of the Soviet Industrial Revolution*. Princeton, NJ, and Oxford, UK: Princeton University Press.

Alvarez, M., Cheibub, J. A., Limongi, F. and Przeworski, A. (2000). 'Democracy and Development: Political Institutions and Material Well-Being in the World, 1950–1990'. Cambridge: Cambridge University Press.

Amsden, A. (1989). *Asia's Next Giant*. New York and Oxford: Oxford University Press.

Aslund, A. (1991). 'Gorbachev, Perestroika, and Economic Crisis'. *Problems of Communism*, 40, (1–2), 18–41.

Bairoch, P. (1993). *Economics and World History: Myths and Paradoxes*. Chicago: Chicago University Press.

Barro, R. J. (1998). *Determinants of Economic Growth: A Cross Country Empirical Study*. Cambridge, Mass.: MIT Press.

Barro, R. J. (1999). 'Determinants of Democracy'. *Journal of Political Economy*, 107, 158–83.

Bauer, P. T. (1984). *Reality and Rhetoric: Studies in the Economics of Development*. Cambridge, Mass.: Harvard University Press.

Baumol, W. (1994). 'Multivariate Growth Patterns: Contagion and Common Forces as Possible Sources of Convergence'. In W. Baumol, R. Nelson and E. Wolf (eds), *Convergence of Productivity, Cross-National Studies and Historical Evidence*, New York: Oxford University Press.

Bénassy, J.-P. (1977). 'On Quantity Signals and the Foundations of Effective Demand Theory'. *Scandinavian Journal of Economics*, 79, (2), *Topics in Disequilibrium Economics*, 147–68.

Bénassy, J.-P. (2006). 'Non clearing markets in general equilibrium'. *PSE Working Papers*, (2006-25), September. In *New Palgrave Dictionary of Economics* (2nd edition). Macmillan.

Berkowitz, D. and Li, W. (2000). 'Tax rights in transition economies: a tragedy of the commons?'. *Journal of Public Economics*, 76, (3), June, 369–97.

Bernard, A. B, Redding, S. J. and Schott, P. K. (2007). 'Comparative Advantage and Heterogeneous Firms'. *Review of Economic Studies*, 74, (1), January, 31–66.

Bhagwati, J. (1983). 'Development Economics: What Have We Learned?'. Distinguished Speakers Lecture, October, Asian Development Bank, Manila.

Binswanger, H. P. and Ruttan, V. W. (1978). *Induced Innovation: Technology, Institutions, and Development*. Baltimore: Johns Hopkins University Press.

Blanchard, O. and Summers, L. (1987). 'Hysteresis in Unemployment'. *European Economic Review*, 31 (1/2), 288–95.

Blanchard, O., Dornbusch, R., Krugaman, P., Layard, R. and Summers, L. (1991). *Reform in Eastern Europe*. Cambridge, Mass.: MIT Press.

Bockstette, V., Chanda, A. and Putterman, L. (2002). 'States and Markets: The Advantage of an Early Start'. *Journal of Economic Growth*, 7, 347–69.

Boserup, E. (1965). *The Conditions of Agricultural Growth*. Chicago: Aldine.

Brada, J. C. (1996). 'Privatization Is Transition, Or Is It?'. *Journal of Economic Perspectives*, 10, (2), 67–86.

Braudel, F. (1984). *Civilization and Capitalism, Fifteenth–Eighteenth Century, The Perspective of the World, Volume 3*. New York: Harper and Row.

Burkart, M., Panunzi, F. and Shleifer, A. (2003). 'Family Firms'. *Journal of Finance*, 58, (5), October, 2167–202.

Chanda, A. and Putterman, L. (2007). 'Early Starts, Reversals and Catch-Up in the Process of Economic Development'. *Scandinavian Journal of Economics*, 109, (2), 387–413.

Chang, H. J. (1994). *The Political Economy of Industrial Policy*. London and New York: Macmillan Press and St Martin's Press.

Chang, H. J. and Noland, P. (1995). 'Europe versus Asia: Contrasting Path to the Reform of Centrally Planned Systems of Political Economy'. In H. J. Chang and P. Nolan (eds), *The Transformation of the Communist Economies*, London: Macmillan Press, 3–45.

Chenery, H. B. (1958). 'The Role of Industrialization in Development Programmes'. In A. N. Agarwala and S. P. Singh (eds), *The Economics of Underdevelopment*. Bombay: Oxford University Press, 450–71.

Chenery, H. B. (1960). 'Patterns of Industrial Growth'. *American Economic Review*, 50, (4), September, 624–54.

Chenery, H. B. (1961). 'Comparative Advantage and Development Policy'. *American Economic Review*, 51, (1), 18–51.

Chenery, H. B. (1975). 'The Structuralist Approach to Development Policy'. *American Economic Review*, 65, (2), *Papers and Proceedings of the Eighty-Seventh Annual Meeting of the American Economic Association*, May, 310–16.

Cipolla, C. M. (1980). *Before the Industrial Revolution: European Society and Economy, 1000–1700*, (second edition). New York and London: Norton.

Clark, G. (2007). *A Farewell to Alms: A Brief Economic History of the World*. Princeton and Oxford: Princeton University Press.

Clark, G. and Feenstra, R.C. (2001). 'Technology in the Great Divergence'. *NBER Working Paper*, (8596). Available from http://www.nber.org/papers/w8596

CPC Central Committee, Documentation and Research Office (1955). *Documents of the Second Session of the First National People's Congress of the PRC* (in Chinese). Beijing: People's Press, 160–1.

de Soto, H. (1987). *The Other Path*. New York: Harper & Row.

Deininger, K. and Squire, L. (1996). 'A New Data Set Measuring Income Inequality'. *World Bank Economic Review*, 10, 565–91.

Dewatripont, M. and Maskin, E. (1995). 'Credit and Efficiency in Centralized and Decentralized Economies'. *Review of Economic Studies*, 62, (4), 541–56.

Dhar, P. N. (2003). *Evolution of Economic Policy in India: Selected Essays.* Oxford and New York: Oxford University Press.

Diamond, J. M. (1997). *Guns, Germs, and Steel: The Fates of Human Societies*. New York: W. W. Norton.

Djankov, S., La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2002). 'Regulation of Entry'. *Quarterly Journal of Economics*, 117, (1), 1–37.

Dollar, D. (1992). 'Outward-oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 developing countries, 1976–85'. *Economic Development and Cultural Change*, 40, (3), 523–44 .

Dollar, D. and Kraay, A. (2003). 'Institutions, Trade and Growth'. *Journal of Monetary Economics*, 50, 133–62.

Dutt, A. K. (1992). **'**The Origins of Uneven Development: The Indian Subcontinent'. *The American Economic Review, Papers and Proceedings of the Hundred and Fourth Annual Meeting of the American Economic Association*, 82, (2), 146–50.

Dutt, R. and Sundharam, K. P. M. (2006). *Indian Economy*, (54th edition). New Delhi: Chand.

Easterly, W. R. (2001a). 'The Lost Decades: Explaining Developing Countries' Stagnation in Spite of Policy Reform 1980–1998'. *Journal of Economic Growth*, 6, (2), June, 135–57.

Easterly, W. R. (2001b). *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*. Cambridge, Mass.: MIT Press.

Easterly, W. R. (2006). *The White Man's Burden: Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good*. New York and Oxford: Penguin Press and Oxford University Press.

Easterly, W.R. and Levine, R. (2003). 'Tropics, Germs, and Crops: How Endowments Influence Economic Development'. *Journal of Monetary Economics*, 50, 3–39.

Easterly, W.R. and Sewadeh, M. (2002). *Global Development Network Growth Database*. World Bank.

Easterly, W.R. and Yu, H. (2000). *Global Development Network Growth Database 2000*. Available from Http://www.worldbank.org/research/growth/GDNdata.htm

Edwards, S. (1998). 'Openness, Productivity and Growth: What Do We Really Know?'. *Economic Journal*, 108, 383–98.

Elvin, M. (1973). *The Pattern of the Chinese Past.* Stanford: Stanford University Press.

Engels, F. (1877) [1962]. *Anti-Dühring*. Moscow: Foreign Languages Publishing House. Available from http://www.marxists.org/archive/marx/works/1877/anti-duhring/index.htm

Engerman, S. L. and Sokoloff, K. L. (1997). 'Factor Endowments, Institutions, and Differential Paths of Growth among New World Economies: A View from Economic Historians of the United States'. In S. Haber (ed.), *How Latin America Fell Behind*, Stanford: Stanford University Press.

Engerman, S. L. and Sokoloff, K. L. (2005). 'The Evolution of Suffrage Institutions in the New World'. *Journal of Economic History*, 65, (4), December, 891–921.

Ericson, R. E. (1991). 'The Classical Soviet-Type Economy: Nature of the System and Implications for Reform'. *Journal of Economic Perspectives*, 5, (4), Autumn, 11–27.

Esfahani, H. S. (2000). 'Institutions and government controls'. *Journal of Development Economics*, 63, (2), December, 197–229.

European Bank for Reconstruction and Development (EBRD) (2007). *Life in Transition: A Survey of People's Attitude and Experiences*. London: European Bank for Reconstruction and Development.

Fei, J. C. H., Ranis, G. and Kuo, S. W. Y. (1979). *Growth with Equity, the Taiwan Case*. With the assistance of Y.-Y. Bian and J. Chang Collins. New York: Oxford University Press.

Frankel, J. and Romer, D. (1999). 'Does Trade Cause Growth?' *American Economic Review*, 89, (3), 379-99.

Fraser Institute (2007). *Economic Freedom of the World 2007*. Vancouver: Fraser Institute.

Friedman, T. (2005). *The World Is Flat: A Brief History of the Twenty-First Century*. New York: Farrar, Straus and Giroux.

Fritz, V. and Menocal, A. R. (2007). 'Developmental States in the New Millennium: Concepts and Challenges for a New Aid Agenda'. *Development Policy Review*, 25, (5), 531–52.

Frydman, R., Gary, C. W. and Rapaczynski, A. (eds) (1996). *Corporate Governance in Central Europe and Russia, Volume 2: Insiders and the State*. Budapest: Central European University Press.

Gerschenkron, A. (1962). *Economic Backwardness in Historical Perspective, a book of essays*. Cambridge, Mass.: Belknap Press of Harvard University Press.

Glaeser, E. L., La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2004). 'Do Institutions Cause Growth?'. *Journal of Economic Growth*, 9.

*Global Development Network Growth Database.* New York University: Development Research Institute.

Gordon, R. and Li, W. (2005a). 'Tax Structure in Developing Countries: Many Puzzles and a Possible Explanation'. *NBER Working Paper*, (w11267).

Gordon, R. and Li, W. (2005b). *Financial, Taxation, and Regulatory Structures in Developing Countries*. Available from http://www.econ.ucsd.edu/seminars/0506seminars/Gordon_FA05.doc

Gregory, P. R. and Stuart, R. C. (2001). *Russian & Soviet Economic Structure and Performance*, (seventh edition). Boston and New York: Addison Wesley.

Gregory, P.R. and Harrison, M. (2005). 'Allocation under Dictatorship: Research in Stalin's Archives'. *Journal of Economic Literature*, 43, (3), 721–61.

Greif, A. (1994). 'Cultural Beliefs and the Organization of Society: Historical and Theoretical Reflections on Collectivist and Individualist Societies'. *Journal of Political Economy*, 102, (5), 912–50.

Grief, A. (2004). *Institutions: Theory and History*. Cambridge: Cambridge University Press.

Grossman, G. M. and Helpman, E. (1994). 'Protection for Sale'. *American Economic Review*, 84, (4), September, 833–50.

Grossman, G. M. and Helpman, E. (2001). *Special Interest Politics. C*ambridge and London: MIT Press.

Grossman, S. J. and Hart, O. D. (1986). 'The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration'. *Journal of Political Economy*, 94, (4), August, 691–719.

Groves, T., Hong, Y., McMillan, J. and Naughton, B. (1994). 'Autonomy and Incentives in Chinese State Enterprises'. *Quarterly Journal of Economics*, 109, (1), 183–209.

Hall, R.E. and Jones, C. (1999). 'Why Do Some Countries Produce So Much More Output Per Worker Than Others?'. *Quarterly Journal of Economics*, 114, (1), 83–116.

Hansen, G. D. and Prescott, E. C. (2002). 'Malthus to Solow'. *American Economic Review*, 92, (4), September, 1205–17.

Hart, O. and Moore, J. (1990). 'Property Rights and the Nature of the Firm'. *Journal of Political Economy*, 98, (6), December, 1119–58.

Hausmann, R., Rodrik, D. and Velasco, A. (2006). 'Getting the Diagnosis Right: A New Approach to Economic Reform'. *Finance and Development*, 43, (1).

Hayami, Y. and Godo, Y. (2005). *Development Economics: From the Poverty to the Wealth of Nations*, (third edition). Oxford and New York: Oxford University Press.

Hayami, Y. and Ruttan, V. W. (1985). *Agricultural Development: An International Perspective*, (revised and expanded). Baltimore, Md: Johns Hopkins University Press.

Heckscher, E. F and Ohlin, B. (1991). *Heckscher-Ohlin Trade Theory*. Translated, edited and introduced by H. Flam and M. J. Flanders. Cambridge, Mass.: MIT Press.

Hirschman, A. O. (1982). 'The Rise and Decline of Development Economics'. In M. Gersovitz and W. A. Lewis, *The Theory and Experience of Economic Development*. London: Allen and Unwin, 372–90.

Hirschman, A. O. (1958). *The Strategy of Economic Development.* New Haven: Yale University Press.

Howitt, P. and McAfee, R. P. (1988). 'Stability of Equilibria with Externalities'.

*Quarterly Journal of Economics*, 103, (2), 261–77.

*International Country Risk Guide*. Available from http://www.prsgroup.com/CountryData.aspx

Ishmael, O. (2007). 'Socialist Ideology Takes New Roots in South America'. Venezuelanalysis.com, 29 January 2007. http://www.venezuelanalysis.com/analysis/2198

Ito, T. (1998). 'Japanese Economic Development: Are Its Features Idiosyncratic or Universal?'. In J. Y. Lin (ed.), *Contemporary Economic Issues. Volume 1: Regional Experience and System Reform*, Proceedings of the 11th World Congress of the International Economic Association, Tunis, IEA Conference Volume No. 121, London and New York: Macmillan Press and St Martin's Press.

Jefferson, G. and Rawski, T. (1995). 'How Industrial Reform Worked in China: The Role of Innovation, Competition, and Property Rights'. *Proceedings of the World Bank Annual Conference on Development Economics 1994*, Washington, DC: World Bank, 129–56.

Jefferson, G., Rawski, T. and Zheng, Y. (1992). 'Growth, Efficiency and Convergence in China's State and Collective Industry'. *Economic Development and Cultural Change*, 40, (2), 239–66.

Jones, B. F. and Olken, B. A. (2005). 'Do Leaders Matter? National Leadership and Growth Since World War II'. *The Quarterly Journal of Economics*, 120, (3), 835–64.

Jones, E. L. (1981). *The European Miracle: Environments, Economies and Geopolitics in the History of Europe and Asia*. Cambridge: Cambridge University Press.

Kaufmann, D., Kraay, A. and Zoido-Lobatón, P. (2002). 'Governance Matters II—Updated Indicators for 2000/01'. *World Bank Policy Research Department Working Paper*, (2772), Washington, DC.

Keynes, J. M. (1926). *The End of Laissez-Faire*. London: Hogarth Press.

Keynes, J. M. (1935) [1964]. *The General Theory of Employment, Interest, and Money*,

(first Harbinger edition). New York, Chicago, Brulingame: Harcourt, Brace and World.

Kim, Y. H. (1988). *Higashi Ajia Kogyoka to Sekai Shihonshugi* (*Industrialisation of East Asia and the World Capitalism*). Tokyo: Toyo Keizai Shimpo-sha.

Kolodko, G. W. (2000). *From Shock to Therapy: The Political Economy of Post-Socialist Transformation*. Helsinki, Finland: UNU/WIDER Studies in Development Economics.

Kornai, J. (1979). 'Resource-Constrained versus Demand-Constrained Systems'. *Econometrica*, 47, (4), July, 801–20.

Kornai, J. (1986). 'The Soft Budget Constraint'. *Kyklos*, 39, (1), 3–30.

Kornai, J. (1990). *The Road to a Free Economy.* New York: Norton.

Kornai, J. (1992). *The socialist system: the political economy of communism*. Princeton, NJ: Princeton University Press.

Krueger, A. O. (1974). 'The Political Economy of Rent-seeking Society'. *American Economic Review*, 64, (3), 291–303.

Krueger, A. O. (1982). *Trade and Employment in Developing Countries. Volume 2*. Chicago: University of Chicago Press for the National Bureau of Economic Research.

Krueger, A. O. (1983). *Trade and Employment in Developing Countries. Volume 3*. Chicago: University of Chicago Press for the National Bureau of Economic Research.

Krueger, A. O. (1990). 'Government Failures in Development'. *The Journal of Economic Perspectives*, 4, (3), 9–23.

Krueger, A. O. (1992). *Economic Policy Reforms in Developing Countries*. Oxford: Basil Blackwell.

Krueger, A. O. (1993). 'Virtuous and Vicious Circles in Economic Development'. *American Economic Review*, 83, (2), *Papers and Proceedings of the Hundred and Fifth Annual Meeting of the American Economic Association*, May, 351–5.

Krueger, A. O. (1995). 'Policy Lessons from Development Experience Since the Second

World War'. In J. R. Behrman and T. N. Srinivasan (eds), *Handbook of Development Economics. Volume 3B*. Amsterdam: Elsevier Science Publishers (North-Holland), 2497–550.

Krueger, A. O. (1997). 'Trade Policy and Economic Development: How We Learn'. *American Economic Review*, 87, (1), March, 1–22.

Krueger, A. O., Lary, H. B., Monson, T. and Akrasanee, N. (1981). *Trade and Employment in Developing Countries. Volume 1*. Chicago: University of Chicago Press for the National Bureau of Economic Research.

Krugman, P. (1981). 'Trade, Accumulation and Uneven Development'. *Journal of Development Economics*, 8, (2), 149–61.

Krugman, P. (1987). 'The Narrow Moving Band, the Dutch Disease, and the Competitive Consequences of Mrs Thatcher'. *Journal of Development Economics*, 27, (1/2), 41–55.

Krugman, P. (1991). 'History versus Expectations'. *Quarterly Journal of Economics*, 106, (2), 651–67.

Krugman, P. R. and Obstfeld, M. (1997). *International Economics: Theory and Policy*, (fourth edition). New York: Addison-Wesley.

Kuczynsky, M. and Meek, R. L. (1972). *Quesnay's Tableau Économique*. London: Macmillan.

Kuznets, S. (1966). *Modern Economic Growth: Rate, Structure and Spread*. New Haven and London: Yale University Press.

Lal, D. (1983). *The Poverty of 'Development Economics'*. Cambridge, Mass.: Harvard University Press.

Lal, D. (1994). *Against* Dirigisme*: The Case for Unshackling Economic Markets*. San Francisco: International Center for Economic Growth, ICS Press.

Lal, D. (2005). *The Hindu Equilibrium: India c. 1500 B.C. – 2000 A.D.*, (abridged and revised). New York and Oxford: Oxford University Press.

Lal. D. and Myint, H. (1996). *The Political Economy of Poverty, Equity and Growth: A*

*Comparative Study*. Oxford: Clarendon Press.

Landes, D. (1998). *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor*. New York and London: Norton.

Landes, D. S. (1969). *The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present.* London: Cambridge University Press.

Lau, L. J., Qian, Y. and Roland, G. (2000). 'Reform without Losers: An Interpretation of China's Dual-Track Approach to Transition'. *Journal of Political Economy*, 108, (1), 120–43.

Lavigne, M. (1995). *The Economics of Transition: From Socialist Economy to Market Economy*. New York: St Martin's Press.

Lee, K. (2007). 'Making a Technological Catch-up: Barriers and Opportunities'. *Asian Journal of Technology Innovation*, 13, (2), 97–131.

Leibenstein, H. (1957). *Economic Backwardness and Economic Growth: Studies in the Theory of Economic Development.* New York: Wiley.

Lenin, V. I. (1893) [1972]. 'On the So-called Question of the Market'. In R. Daglish (ed.), *Lenin Collected Works*. *Volume 1*, (fourth English edition). Translated from the Russian by C. Dutt. Moscow: Progress Publishers, 75–125.

Lenin, V. I. (1918) [1972]. 'The Immediate Tasks of the Soviet Government'. In R. Daglish (ed.), *Lenin Collected Works*. *Volume 27*, (fourth English edition). Translated from the Russian by C. Dutt. Moscow: Progress Publishers, 235–77.

Lewis, A. (1955). *Theory of Economic Growth*. London: Allen and Unvwin.

Li, D. D. (1996). 'A Theory of Ambiguous Property Rights in Transition Economies: The Case of the Chinese Non-state Sector'. *Journal of Comparative Economics*, 23, (1), 1–19.

Li, H. Y., Squire L. and Zou, H. (1998). 'Explaining International and Intertemporal Variations in Income Inequality'. *Economic Journal*, 108, 26–43.

Li, W. (1997). 'The Impact of Economic Reform on the Performance of Chinese State Enterprises, 1980–89'. *Journal of Political Economy*, 105, (5), 1080–106.

Lin, J. Y. (1989). 'An Economic Theory of Institutional Change: Induced and Imposed Change'. *Cato Journal*, 9, (1), Spring/Summer, 1–33.

Lin, J. Y. (1990). 'Collectivization and China's Agricultural Crisis in 1959–1961'. *Journal of Political Economy*, 98, (6), 1228–52.

Lin, J. Y. (1992). 'Rural Reforms and Agricultural Growth in China'. *American Economic Review*, 82, (1), 34–51.

Lin, J. Y. (1995). 'The Needham Puzzle: Why the Industrial Revolution Did Not Originate in China'. *Economic Development and Cultural Change*, 41, (2), 269–92.

Lin, J. Y. (2003). 'Development Strategy, Viability and Economic Convergence'. *Economic Development and Cultural Change*, 53, (2), 277–308.

Lin, J. Y. (2003). 'Development Strategy, Viability and Economic Convergence'. *Economic Development and Cultural Change*, 53, (2), January, 277–308.

Lin, J. Y. (2005). 'Viability, Economic Transition and Reflection on Neoclassical Economics'. *Kyklos*, 8, (2), May, 239–64.

Lin, J.Y. and Chen, B.K. (2007). 'Development Strategy, Financial Repression and Inequality'. China Center for Economic Research, Peking University (manuscript).

Lin, J.Y. and Li, Z.Y. (forthcoming). 'Policy Burden, Privatisation and Soft Budget Constraint', *Journal of Comparative Economics.*

Lin, J. Y. and Liu, M. X. (2004). 'Development Strategy, Transition and Challenges of Development in Lagging Regions'. In F. Bourguignon and B. Pleskovic (eds), *Annual World Bank Conference on Development Economics 2004: Accelerating Development (Bangalore conference proceedings)*, Washington DC: World Bank.

Lin, J. Y. and Liu, P. L. (forthcoming). 'Promoting Harmonious Development by Achieving Equity and Efficiency Simultaneously in the Primary Distribution: A Brief Review of China's Thirty Years of Reform'. *Asian Development Review*.

Lin, J. Y. and Nugent, J. B. (1995). 'Institutions and economic development'. In J. R. Behrman and T. N. Srinivasan (eds), *Handbook of Development Economics. Volume 3A*. Amsterdam: Elsevier Science Publishers (North-Holland), 2301–70.

Lin, J. Y. and Ren, R. N. (2007). 'East Asian Miracle Debate Revisited'. *Jingji Yanjiu* (*Economic Research Journal*), 42, (8), 4–12.

Lin, J. Y. and Tan, G. (1999). 'Policy Burdens, Accountability, and the Soft Budget Constraint'. *American Economic Review*, 89, (2), *Papers and Proceedings of the One Hundred Eleventh Annual Meeting of the American Economic Association*, May, 426–31.

Lin, J. Y. and Xu, Z. (2007). *Endowment structure, industrialization and post-industrialization: a three-sector model of structural change*. China Center for Economic Research, Peking University (manuscript).

Lin, J. Y. and Yang, D. T. (2000). 'Food Availability, Entitlements and the Chinese Famine of 1959–61'. *Economic Journal*, 110, (460), January, 136–58.

Lin, J. Y. and Zhang, P. (2006). 'Appropriate Technology, Technology Choice and Economic Growth in Developing Countries'. *Chinese Economic Quarterly*, (in Chinese), 5, (4), July, 985–1006.

Lin, J. Y. and Zhang, P. (2007). 'Development Strategy, Optimal Industrial Structure and Economic Growth in Less Developed Countries'. *CID Graduate Student and Postdoctoral Fellow Working Paper*, (19), July. Harvard University. Available from CID Harvard University: http://www.cid.harvard.edu/cidwp/grad/019.htm

Lin, J. Y., Fang, C. and Zhou, L. (1994). *China's Miracle: Development Strategy and Economic Reform*, (Chinese edition). Shanghai: Shanghai Sanlian Press. (1999), Revised Chinese edition. (1996), Chinese University of Hong Kong Press, (English edition). (2003), Revised English edition.

Lin, J. Y., Cai, F. and Li, Z. (1996). 'The Lessons of China's Transition to a Market Economy'. *Cato Journal*, 16, (2), 201–31.

Lin, J. Y., Fang, C. and Zhou, L. (1998). 'Competition, Policy Burdens, and State-Owned Enterprise Reform'. *American Economic Review*, 88, (2), *Papers and Proceedings of the Hundred and Tenth Annual Meeting of the American Economic Association*, May, 422–7.

Lin, J. Y., Liu, M., Pan, S. and Zhang, P. (2007). 'Development Strategy, Viability, and Economic Institutions: The Case of China'. in Mavrotas, G. and Shorrocks, A. eds. *Advancing Development: Core Themes in Global Economics,* New York: Palgrave MacMillan, 518-530.

List, F. (1841) [1930]. *Das Nationale System der Politischen Ökonomie* (*The National System of Political Economy*). *Volume 6. Schriften, Reden, Briefe*. A. Sommer (ed.). Berlin: Reinmar Hobbing.

Little, I. M. D. (1982). *Economic Development*. New York: Basic Books.

Lucas, R. E., Jr (1988). 'On the Mechanism of Economic Development'. *Journal of Monetary Economics*, 22, 3–42.

Maddison, A. (1995). *Monitoring the World Economy, 1820–1992*. Paris: Organisation for Economic Cooperation and Development.

Maddison, A. (2006). *The World Economy*. Paris: Organisation for Economic Cooperation and Development.

Mao, Z. (1945) [1965]. 'On Coalition Government'. In *Selected Works of Mao Tse-Tung. Volume 3*. Peking: Foreign Languages Press, 205–70.

Mao. Z. (1944) [1966]. 'The Chinese Communist Party will exert herself to industrialize her own country anyway'. In the Party Literature Research Center of the Chinese Communist Party (CPC) Central Committee (ed.), *Collected Works of Mao Tse-Tung (Mao Zedong). Volume 3*, (in Chinese), Peking [Beijing]: People's Press (*Renmin Chubanshe*), 146–8.

Mao. Z. (1958) [1989] 'Talks at the Beudaihe Conference (Draft Transcript)'. In R. MacFarquhar, T. Cheek and E. Wu, with contributions by M. Goldman and B. I. Schwartz (eds), *The Secret Speeches of Chairman Mao: From the Hundred Flowers to the Great Leap Forward. Harvard Contemporary China Series 6*,. Cambridge, Mass.: Council on East Asian Studies/Harvard University, 397–441.

Marshall, A. (1920). *Principles of Economics*, (eighth edition). London: MacMillan.

Martin, J. O. and Rubinstein, A. (1994). *A course in game theory*. Cambridge, Mass.: MIT Press.

Marx, K. (1867–94) [1977–81]. *Capital: A Critique of Political Economy*. *Volumes I and II.* (Vintage Books edition). Introduced by E. Mandel, translated by B. Fowkes. *Volume III.* Translated by D. Fernbach. New York: Random House.

Marx, K. and Engels, F. (1848) [1969]. 'The Communist Manifesto'. *Marx/Engels Selected Works. Volume 1*. Moscow: Progress Publishers, 98–137.

Matsuyama, K. (1991). 'Increasing Returns, Industrialization and Indeterminacy of Equilibrium'. *Quarterly Journal of Economics*, 106, (2), 616–50.

Maxcy, G. (1981). *The Multinational Motor Industry*. London: Croom Helm.

McKinnon, R. I. (1973). *Money and Capital in Economic Development*. Washington, DC: Brookings Institution.

McKinnon, R. I. (1993). *The Order of Economic Liberalization: Financial Control in the Transition to a Market Economy.* Baltimore: Johns Hopkins University Press.

McKinnon, R. I. (1995). 'Taxation, Money and Credit in the Transition form Central Planning'. In P. B. Rana and N. Hamid (eds), *From Centrally Planned to Market Economies: The Asian Approach*. *Volume 1*, Hong Kong: Oxford University Press, 35–72.

Mokyr, J. (1990). *The Lever of Riches: Technological Creativity and Economic Progress*. New York and Oxford: Oxford University Press.

Moravcik, I. (1965). 'The Priority of Heavy Industry as an Objective of Soviet Economic Policy'. *Soviet Studies*, 17, (2), October, 245–51.

Morck, R. and Yeung, B. (2004). 'Family Control and the Rent-Seeking Society'. *Entrepreneurship: Theory and Practice*, 28, (4), June, 391–409.

Morck, R., Wolfenzon, D. and Yeung, B. (2005). 'Corporate Governance, Economic Entrenchment, and Growth'. *Journal of Economic Literature*, 43, (3), September, 655–720.

Muller, D. C. (ed.) (1983). *The Political Economy of Growth*. New Haven: Yale University Press.

Murphy, K. M., Shleifer, A. and Vishny, R. W. (1989). 'Industrialization and the Big

Push'. *Journal of Political Economy*, 97, (5), 1003–26.

Myrdal, G. (1968). *Asian Drama: An Inquiry into the Poverty of Nations*. New York: Twentieth Century Fund.

Naughton, B. (1995). *Growing out of Plan: Chinese Economic Reform 1978–1993*. Cambridge: Cambridge University Press.

Needham, J. (1969). *The Grand Titration: Science and Society in East and West.* Toronto: University of Toronto Press.

Nehru, J. (1946). *The Discovery of India,* (second edition). Calcutta: Signet Press.

Nelson, R. (1956). 'A Theory of Low-Level Equilibrium Trap in Underdeveloped Economics'. *American Economic Review*, 46, (5), 894–908.

Nolan, P. (1995). 'Political Economy and the Reform of Stalinism: The Chinese Puzzle'. In H. J. Chang and P. Nolan (eds), *The Transformation of the Communist Economies*, London: Macmillan.

North, D. (1981). *Structure and Change in Economic History*. New York: Norton.

North, D. (1990). *Institutions, Institutional Change and Economic Performance*. , Cambridge: Cambridge University Press.

North, D. (1994). 'Economic Performance Through Time'. *The American Economic Review*, 84, (3), 359–68.

North, D. (1996). 'Economic Performance Through Time: The Limits to Knowledge'. *EconWPA Series Economic History,* (9612004). Available from http://ideas.repec.org/p/wpa/wuwpeh/9612004.html

North, D. C. and Thomas, R. P. (1973). *The Rise of the Western World: A New Economic History*. Cambridge: Cambridge University Press.

Nurkse, R. (1953). *Problems of Capital Formation in Underdeveloped Countries.* Oxford: Oxford University Press.

Ohlin, B. (1967). *Interregional and International Trade*, (revised edition). Cambridge, Mass.: Harvard University Press.

Olson, M. (1982). *The Decline and Fall of Nations: Economic Growth, Stagflation and Social Rigidities*. New Haven: Yale University Press.

Osborne,M.J.,Rubinstein,A. (1994). *A Course in Game Theory,* Cambridge, Mass.: MIT Press.

Perkins, D. H. (1969). *Agricultural Development in China, 1368–1968*. Chicago: Aldine.

Perkins, D. H. (1998). 'Reforming China's Economic System'. *Journal of Economic Literature*, 26, (2), 601–45.

Pigou, A. (1938). *The Economics of Welfare*, (4th edition). London: Macmillan.

Pleskovic, B. (1994). 'Financial Policies in Socialist Countries in Transition'. *Policy Research Working Paper*, (1242), Washington, DC: World Bank.

Pomeranz, K. (2000). *The Great Divergence: China, Europe, and the Making of the Modern World Economy. Princeton Economic History of the Western World Series. Volume 4*. Princeton University Press.

Porter, M.E. (1990). *The Competitive Advantage of Nations*. New York: Free Press.

Prebisch, R. (1950). *The Economic Development of Latin America and Its Principal Problems*. New York: United Nations.

Putnam, R. D. (1993). *Making Democracy Work: Civic Traditions in Modern Italy.* Princeton University Press.

Qian, Y. Y. (2003). 'How Reform Worked in China'. In D. Rodrik (ed.), *In Search of Prosperity: Analytic Narratives on Economic Growth*, Princeton and Oxford: Princeton University Press, 297–333.

Rana, P. and Hamid, N. (1995). *From Centrally Planned to Market Economies: The Asian Approach. Volumes 1–3*. Hong Kong, Oxford, New York: Oxford University Press.

Ranis, G. and Mahmood, S. (1992). *The Political Economy of Development Policy Change*. Cambridge, Mass., and Oxford: Blackwell.

Rawski, T. G. (1995). 'Implications of China's Reform Experience'. *China Quarterly*, (144), 1150–73.

Redding, S. (1999). 'Dynamic Comparative Advantage and the Welfare Effects of Trade'. *Oxford Economic Papers*, 51, 15–39.

Rodríguez, F. and Rodrik, D. (2001). 'Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-national Literature'. In B. Bernanke K. S. and Rogoff (eds), *NBER Macroeconomics Annual 2000*, Cambridge, Mass.: MIT Press.

Rodrik, D. (1990). *The New Global Economy and Developing Countries: Making Openess Work*. Washington, DC: Overseas Development Council, distributed by Johns Hopkins University Press.

Rodrik, D. (2003). 'Introduction: What Do We Learn from Country Narratives?'. In D. Rodrik (ed.), *In Search of Prosperity: Analytic Narratives on Economic Growth*, Princeton and Oxford: Princeton University Press, 1–19.

Rodrik, D. (2005). 'Growth Strategies'. In P. Aghion and S. N. Durlauf (eds), *Handbook of Economic Growth. Volume 1, Part A*. Amsterdam: Elsevier Science Publishers (North-Holland), 967–1014.

Rodrik, D., Subramanian, A. and Trebbi, F. (2002). 'Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development'. *NBER Working Paper*, (9305).

Roland, G. (2007). 'Understanding Institutional Change: Fast-moving and Slow-moving Institutions'. Department of Economics, University of California, Berkeley (manuscript).

Romer, P. M. (1986). 'Increasing Returns and Long-Run Growth'. *The Journal of Political Economy*, 94, (5), 1002–37.

Rosenberg, N. and Birdzell, L. E. (1986). *How the West Grew Rich: The Economic Transformation of the Industrial World.* New York: Basic Books.

Rosenstein-Rodan, P. N. (1943). 'Problems of Industralisation of Eastern and South-Eastern Europe'. *Economic Journal*, 53, June–September, 202–11.

Rostow, W. W. (1960). *The Stages of Economic Growth*. Cambridge: Cambridge University Press.

Sachs, J. D. (1992). 'Privatization in Russia: Some Lessons from Eastern Europe'. *American Economic Review*, 82, (2), 43–8.

Sachs, J. D. (1993). *Poland's Jump to the Market Economy.* Cambridge, Mass.: MIT Press.

Sachs, J. D. and Lipton, D. (1990). 'Poland's Economic Reform'. *Foreign Affairs*, 69, (3), 47–66.

Sachs, J. D. and Warner, A. M. (1995). 'Economic Reform and the Process of Global Integration'. *Brookings Papers on Economic Activity*, (1), 1–118.

Sachs, J. D. and Warner, A. M. (1997). 'Fundamental Sources of Long-Run Growth'. *The American Economic Review, Papers and Proceedings of the Hundred and Fourth Annual Meeting of the American Economic Association*, 87, (2), 184–8.

Sachs, J. D. and Warner, A. M. (2000). 'Natural Resource Abundance and Economic Growth'. *Leading Issues in Economic Development*. Oxford: Oxford University Press.

Sachs, J.D. and Warner, A. M. (2001). 'Natural resources and economic development: the curse of natural resources'. *European Economic Review*, 45, 827–38.

Sachs, J. D. and Woo, W. T. (1994). 'Structural Factors in the Economic Reforms of China, Eastern Europe and the Former Soviet Union'. *Economic Policy*, 18, 101–45.

Sachs, J. D., Woo, W. T. and Yang, X. (2000). 'Economic Reforms and Constitutional Transition'. *Annals of Economics and Finance*, 1, 435–91.

Sah, R. K. and Stiglitz, J. E. (1984). 'The Economics of Price Scissors'. *American Economic Review*, 74, (1), March, 125–38.

Sah, R. K. and Stiglitz, J. E. (1987a). 'Price Scissors and the Structure of the Economy'. *Quarterly Journal of Economics*, 102, (1), February, 109–34.

Sah, R. K. and Stiglitz, J. E. (1987b). 'The taxation and pricing of agricultural and industrial goods in developing countries'. In D. Newbery and N. Stern (eds), *The theory of taxation for developing countries*. New York: Oxford University Press and World Bank.

Samuelson, P. A. (1978). 'International Trade and the Equalization of Factor Prices'. *Economic Journal*, 58, 163–84.

Schultz, T. W. (1964). *Transforming Traditional Agriculture*. New Haven: Yale University Press.

Schultz, T. W. (1977). *'Economics, Agriculture and The Political Economy'*. In Anderou, P. ed. *Agricultural and Economic Development of Poor Nations*. Nairobi: East Afriacan Literature Bureau, 254-65.

Sealy, T. S. (2002). *International Country Risk Guide Annual*. Business Communications Ltd.

Shapley, L. S. (1953). 'A Value for n-Person Games'. In H. W. Kuhn and A. W. Tucker (eds), *Contributions to the Theory of Games. Volume 2*. Princeton, NJ: Princeton University Press.

Shaw, E. S. (1973). *Financial Deepening in Economic Development*. New York: Oxford University Press.

Shinohara, M. (1982). *Industrial Growth, Trade and Dynamic Growth in the Japanese Economy.* Tokyo: Tokyo University Press.

Shiue, C. H. and Keller, W. (2007). 'Markets in China and Europe on the Eve of the Industrial Revolution'. *American Economic Review*, 97, (4), 1189–216.

Shleifer, A. and Vishny, R. W. (1992). 'Pervasive Shortages under Socialism'. *RAND Journal of Economics*, 23, (2), 237–46.

Shleifer, A. and Vishny, R. W. (1993). 'Corruption'. *Quarterly Journal of Economics*, 108, (3), August, 599–617.

Shleifer, A. and Vishny, R. W. (1994). 'Politicians and Firms'. *Quarterly Journal of Economics*, 109, (4), November, 995–1025.

Shleifer, A. and Vishny, R. W. (1998). *The Grabbing Hand: Government Pathologies and Their Cures*. Cambridge, Mass.: Harvard University Press.

Shubik, M. (1962). 'Incentives, Decentralized Control, the Assignment of Joint Costs and Internal Pricing'. *Management Science*, 8, (3), April, 325–43.

Singer, H. W. (1950). 'The Distribution of Gains Between Borrowing and Investing

Countries'. *American Economic Review*, 40, 473–85.

Smith, A. (1776) [1976]. *The Wealth of Nations.* Chicago: University of Chicago Press.

Sokoloff, K. L. and Engerman, S. L. (2000). 'History Lessons: Institutions, Factor Endowments, and Paths of Development in the New World'. *Journal of Economic Perspectives*, 14, (3), Summer, 217–32.

Srinivasan, T. N. (1994). 'Development Economics, Then and Now'. In Gunning, J. W., Kox, H., Tims, W., and de Wit, Y. eds, *Trade, Aid and Development: Essays in Honor of Hans Lindemann*. New York, NY: St Martin's Press.

Stark, D. (1996). 'Networks of Assets, Chains of Debt: Recombinant Property in Hungary'. In R. Frydman, C. W. Gary and A. Rapaczynski (eds), *Corporate Governance in Central Europe and Russia. Volume 2: Insiders and the State*, Budapest: Central European University Press.

Stern, J. J., Kim, J. H., Perkins, D. W. and Yoo, J. H. (1995). *Industrialization and the State: The Korean Heavy and Chemical Drive*. Cambridge, Mass.: Harvard Institute for International Development and Korea Development Institute, distributed by Harvard University Press.

Stiglitz, J. E. (1989). 'On the Economic Role of the State'. In A. Heertje (ed.), *The Economic Role of the State*, Cambridge, Mass., and Oxford: Basil Blackwell, 9–85.

Stiglitz, J. E. (1994). *Whither Socialism?* Cambridge, Mass.: MIT Press.

Stiglitz, J. E. (1998). *More Instruments and Broader Goals: Moving Toward the Post-Washington Consensus. WIDER Annual Lecture 2*. Helsinki: United States University World Institute for Development Economic Research.

Subramanian, A. and Roy, D. (2003). 'Who Can Explain the Mauritian Miracle? Meade, Romer, Sachs, or Rodrik?'. In D. Rodrik (ed.), *In Search of Prosperity: Analytic Narratives on Economic Growth*, Princeton and Oxford: Princeton University Press, 205–43.

Summers, L. (1994). 'Comment'. In O. J. Blanchard, K. A. Froot and J. Sachs (eds), *The Transition in Eastern Europe. Volume 1*. Chicago: Chicago University Press, 252–

3.

Sun, L. X. (1997). 'Emergence of Unorthodox Ownership and Governance Structure in East Asia: An Alternative Transition Path'. *Research for Action*, (38), Helsinki: UNU/WIDER.

Sun, Yat-sen (1929). *The International Development of China (Shih yeh chi hua)*, (2nd edition). New York: G. P. Putnam's Sons.

Teiwes, F. C. with Sun, W. (1999). *China's Road to Disaster: Mao, Central Politicians, and Provincial Leaders in the Unfolding of the Great Leap Forward, 1955–1959*. Armonk, NY: M. E. Sharpe.

Teranish, J. (1994). 'Japan's Way'. *Economic Policy*, 9 (19), Supplement, s137–53.

The Fraser Institute (2007). *Economic Freedom of the World 2007 Annual Report*. Available from http://www.freetheworld.com/release.html

The PRS Group. *International Country Risk Guide (ICRG)*. Available from http://www.prsgroup.com

Tsiang, S. C. (1984). 'Taiwan's Economic Miracle: Lessons in Economic Development'. In A. C. Harberger (ed.), *World Economic Growth: Case Studies of Developed and Developing Nations*, San Francisco: ICS Press, 301–25.

United Nations Industry Development Organisation (UNIDO) (2002). *The International Yearbook of Industrial Statistics 2002*. Northampton, Mass.: Edward Elgar.

Veblen, T. (1915). *Imperial Germany and the Industrial Revolution.* New York: Macmillan.

Wade, R. (1990). *Governing the Market.* Princeton: Princeton University Press.

Weber, M. (1930). *The Protestant Ethic and the Spirit of Capitalism*. London: Allen and Unwin.

Weitzman, M. L. and Xu, C. G. (1994). 'Chinese Township-Village Enterprises as Vaguely Defined Cooperatives'. *Journal of Comparative Economics*, 18, (2), 121–45.

Wiles, P. (1995). 'Capitalism in the Eastern European Transition'. In H. J. Chang and P. Nolan (eds), *The Transformation of the Communist Economies*, London:

Macmillan Press, 46–77.

Williamson, J. (1989). 'What Washington Means by Policy Reform'. In J. Williamson (ed.), *Latin American Readjustment: How Much Has Happened*, Washington, DC: Institute for International Economics.

Winter, E. (2002). 'The Shapley Value'. In R. J. Aumann and S. Hart (eds), *Handbook of Game Theory. Volume 3*. Amsterdam: Elsevier Science Publishers (North-Holland).

World Bank (1993). *The East Asian Miracle: Economic Growth and Public Policy*. Oxford: Oxford University Press.

World Bank (2002a). *Transition, the First Ten Years: Analysis and Lessons for Eastern Europe and the Former Soviet Union*. Washington, DC: World Bank.

World Bank (2002b). *World Development Indicators, 2002*. Washington, DC: World Bank.

Zhang, P. (2006). *Factor Endowments, Industrial Structure, Technology Choices and Economic Development*. Ph.D. dissertation (in Chinese). Peking University.

Zhou, E. (1953) [1984]. 'Socialist Transformation and the State Capitalism'. In Department of United Fronts of Communist Party of China and Research Office for Documents of Communist Party of China (eds), *Selected Works of Zhou Enlai on United Fronts*, Beijing: People's Press, 253–4.