

NEW STRUCTURAL ECONOMICS
*A Framework for Rethinking Development*¹

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1. INTRODUCTION

For the past two years, the world economy has suffered the most serious crisis since the Great Depression. It started with a housing crisis so severe that some of the world's largest financial institutions collapsed or were bought out by their competitors at very low prices. It also affected the corporate sector, wiping out an estimated \$14.5 trillion, or 33 percent, of the value of the world's companies and forcing the governments of the wealthiest nations in the world to resort to extensive bail-out and rescue packages to protect the remaining large banks and financial institutions.² The initial financial crisis has become a full-blown global economic crisis, which is likely to cause even more social woes and slow down progress towards the Millennium Development Goals.

Despite recent signs of the end of recession,³ the crisis may be protracted in many countries. Unemployment is still rising in most economies and capacity utilization rates are low. In most of the western world, housing prices are still on the decline as the oversupply of homes, tight credit conditions and foreclosures continue to hamper the market. While mortgage rates are low and houses are in principle more affordable than at any time since 1980, rising unemployment is pushing more and more people to default on their home loans and foreclosures will continue to rise. The risks of a double-dip recession or a "w"-shaped recovery are still present in many parts of the world, as are the risks of a sluggish, "lost decade", especially in countries where the policy responses to the recession has been timid.

Prior to the current crisis, World Bank research estimated the number of people living below the poverty line worldwide at about 1.4 billion. Taking into account lower new growth projections, preliminary calculations indicate that because of the crisis, relative to previous trends, there will be an additional 53 million people or more in absolute poverty in 2009. The number will rise further in 2010 and, even if recovery begins as predicted, it will take some years to return to the trend. From the experience of East Asia and other previous crises, the current crisis will have a serious impact on certain developmental outcomes.⁴ Some impacts may even to be more long-lasting than the crisis itself. Global evidence suggests that such losses in human capital investments could become irreversible if appropriate policy actions are not taken.

Long-term sustainable growth is the key for narrowing the gap between the developed and developing countries, an important element of world stability. Yet, with the exception of a few successful economies,⁵ there was little economic convergence

² According to Bloomberg, US taxpayers alone may spend \$9.7 trillion in bailout packages and plans.

³ In several industrial countries, consumer confidence is on the rise as stock markets appear to recover and some signs of economic stability begin to emerge. Recent data from manufacturing surveys in the United States for instance seems to indicate some improvements in new orders for manufacturing goods.

⁴ Empirical research on previous crises suggests that very young children seriously affected by poor nutrition may never catch up to their peers who were born in more fortunate times. In Indonesia, school enrollment fell after 1997 among the poorest; in rural areas the number of children 7-12 years old not enrolled in school doubled to 12 percent in a few years. The crisis also affected health outcomes; infant mortality increased by over 3 percentage points during the crisis.

⁵ For example, those 13 economies studied in the Growth Report (World Bank 2008).

between rich and poor countries before the current global crisis in spite of the many efforts that have been made by developing countries themselves and despite the assistance of many multilateral development agencies after the WWII. As DeLong (1997) noted, “we live today in the most unequal, in terms of the divergence in the life prospects of children born into different economies, world ever.” While it has provided us with some remarkable insights, development economics has so far been unable to provide a convincing intellectual agenda for generating and distributing wealth in poor countries. The global crisis is an opportunity not only to identify new areas of research on how to help the developed and developing countries cope with the challenges of the crisis and prevent similar crises in the future, but also on how to bring sustainable, inclusive growth to developing countries.

This paper focuses on the long-term development challenges and discussing the evolution of development thinking since the end of World War II, it suggests a framework to enable developing countries to achieve sustainable growth, eliminate poverty, and narrow the income gaps with the developed countries. The proposed approach, called a neoclassical approach to structures and their changes in the process of economic development, or a new structural economics, builds on some of the insights from the old structural economics by emphasizing the idea that the structural features of developing economies need to be taken into account in analyzing the process of economic development and the role of state in facilitating the change of structure in developing countries. However, the structural differences between the developed and developing countries are assumed to be endogenous to their endowment structures in the new approach instead of the distribution of powers or other exogenously assumed rigidities in the developing countries as in the old approach.

The main ideas of the new approach include:

- First, the economy’s structure of factor endowments (defined as the relative composition of natural resources, labor, human capital and physical capital) is given at each stage of development and differs from one stage to another. Therefore, the optimal industrial structure of the economy will be different at different stages of development. Different industrial structures imply, in addition to differences in capital intensity of industries, differences in optimal firm size, scale of production, market range, transaction complexity, and also different nature of risks. As a result each industrial structure requires corresponding soft and hard infrastructures⁶ to facilitate its operations and transactions.
- Second, each stage of economic development is a point in a wide spectrum from a low-income, subsistence agrarian economy to a high-income industrialized economy, not a dichotomy of two economic development stages (“poor” versus “rich” or “developing countries” versus “industrialized countries”). Due to the endogeneity of industrial structure at each stage of development, the targets of

⁶ Examples of hard infrastructure are power, transport and telecommunication systems. Soft infrastructure includes the financial system and regulation, education system, the legal framework, social networks, values and other intangible structures in an economy.

industrial upgrading and infrastructure improvement in a developing country should not necessarily refer to the industries and infrastructures that are in place in high income countries.

- Third, at each given stage of development, the market is the best mechanism for effective resource allocation. However, economic development as the dynamic process of moving from one stage to the next requires industrial upgrading and corresponding improvements in hard and soft infrastructures. The industrial upgrading is an innovation. The pioneer firms in the upgrading process generate non-rivalry, public knowledge to other firms in the economy (Jones and Romer 2009; Rodrik 2004; Harrison and Rodriguez-Clare 2009). The improvements of infrastructures have large externalities to firms' transaction costs and returns to capital investment. Thus, the government should play an active, facilitating role in the industrial upgrading and in the improvements of infrastructures.

The implications of this framework for research are challenging. We need to better understand the roles of market and government and how they interact in the process of economic development. This poses several important questions: How can a successful development approach be designed and implemented to facilitate the smooth upgrading from one industrial structure to another? Where distortions exist, due to government's excessive or insufficient interventions, how can we move from an environment characterized by distortions to a first best world? How can we ensure that transitions work?

The remainder of the paper is organized as follows: Section 2 examines the evolution of development thinking and offers a critical review of some of its main schools of thought. Section 3 outlines the basic principles and conceptual framework of the new structural economics, the function of market, the four roles of a facilitating state, and the exit strategy from distortions. Section 4 highlights similarities and differences between old and new structural economics, and between new structural economics and neoclassical economics. Section 5 discusses some preliminary insights on major policy issues based on this new approach and compared them with those based on the old structural economics and neoclassical economics. Section 6 outlines implications for World Bank research.

2. A SHORT REVIEW OF DEVELOPMENT THINKING AND EXPERIENCES

The process of sustainable per capita income increase and economic growth, characterized by continuous technological innovation and industrial upgrading, is a modern phenomenon. Before the modern era, most countries were in the development stage of a relatively backward agrarian 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 subsistence agriculture, animal husbandry, or fishery. Given the technology and industries prevalent at the time, the allocation of resources, developed through generations of practice in such economies, was close to optimal. Therefore, the gains

from improvement in the allocation of resources were small (Schultz, 1964). Further economic development was feasible only with some technological innovations, as an exogenous shock or an improvement from experiences, to the system.⁷ 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). Indeed 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).

After the Industrial Revolution began in England in the mid-eighteenth century, experiments conducted in laboratories became the major source of technological invention and innovation (Lin, 1995; Landes, 1998). 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 in the west hemisphere began to take off and the divergence between the North and the South appeared (Baumol, 1994; Braudel, 1984).

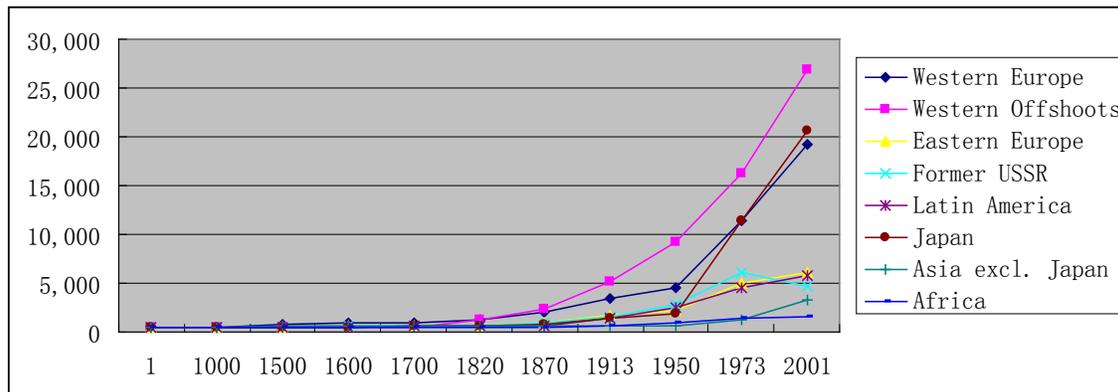
Since 1820, the total output of advanced capitalist countries has increased seventy-fold, with population rising nearly five-fold, per capita product fourteen-fold and real per capita consumption almost tenfold.⁸ Figure 1 shows the evolution of per capita income in various regions of the world from 1–2001 AD, based on the estimation of Maddison (2006, p. 642). From an insignificant difference at the beginning of the eighteenth century, per capita income in developed countries of Western Europe and its offshoots increased to more than 20 times that of the developing countries by the end of the twentieth century.⁹

⁷ A few technological innovations before the modern times, such as the introduction of corn and sweet potato from America to the rest of the world, which were the byproducts of the discovery of new continent, can be considered as exogenous technology shocks. Most other technological innovations before the modern times were the by-products from the daily practices of craftsmen or farmers.

⁸ See A. Maddison, *Phases of Capitalist Development*, Oxford, Oxford University Press, 1982.

⁹ One caveat: 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.'

Figure 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. The statistical definition can be found at http://unstats.un.org/unsd/methods/icp/ipc7_hm.htm

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

From Adam Smith to the early 20th century, most economists believed free markets and free trade were the best vehicles for achieving sustainable growth in an economy. It was assumed that in striving economies, all decisions about resource allocation are made by economic agents interacting in markets free of government intervention. The price system determines not only what is produced and how but also for whom. Households and firms pursuing their own interests would be led, “as if by an invisible hand,” to do things that are in the interests of others and of society as a whole. This thinking, made popular by Adam Smith, was based on economic experiences before the Industrial Revolution. It assumed that productivity increases in the agriculture and manufacturing sectors is due mainly to small, incremental refinement of old, traditional technologies for the purposes of exploiting widened markets and specialization and thus technologies could be assumed as given in the analysis. It basically ignored the possibility of successive introduction of big innovations that create new industries or radically alter methods of production (Rostow 1990a).

While this view was challenged by Marxist economists, the free market approach was the dominant intellectual framework for the study of growth in all countries for a long time. Despite its insights—including on the “role of the sovereign”, i.e., the state¹⁰—the free market theory of economic development had a major flaw: it missed the importance of

¹⁰ While Adam Smith is often perceived as a thinker who saw a limited role for government in economic life, the reality is that he envisioned an important economic role for the government. Just like many leading theorists of free markets economics, he believed that the government should enforce contracts and grant patents and copyrights to encourage inventions and new ideas. He also recommended that the government provide public works such as roads, bridges and defense that, he assumed, would not be worthwhile for individuals to provide. However, he wanted the users of such public works to pay in proportion to their use (see *The Wealth of Nations*, Book V). Adam Smith did not discuss the role of government in industrial upgrading and the structural changes endogenous to the upgrading probably because the impacts of industrial revolution on economy did not become observable and significant after his pass away in 1790.

continuous, fundamental technological changes and industrial upgrading, which distinguishes the modern economic growth from the pre-modern economic growth (Kuznets 1966).

Policymakers have always been obsessed with *economic development*, that is, the mechanics of organizing a country's resources and institutions to produce and distribute more goods and services, and to sustain regular social progress and rising prosperity. Yet, what has come to be known as *development economics* is a relatively new sub-discipline of economics (Bell, 1987). It took a paper by Rosenstein Rodan (1943) to bring development issues to the forefront of economics. The paper suggested that the virtuous circle of development depended essentially on the interaction between economies of scale at the level of individual firms and the size of the market. Specifically, it assumed that modern methods of production can be made more productive than traditional ones only if the market is large enough for their productivity edge to compensate for the necessity of paying higher wages. On the other hand, the size of the market itself depends on the extent to which these modern techniques are adopted. Therefore, if the modernization process can be started on a very large scale, then the process of economic development will be self-reinforcing and self-sustaining. If not, countries will be indefinitely trapped into poverty.

Rosenstein Rodan's framework sparked a wave of similar ideas (Chang, 1949; Lewis, 1954; Myrdal, 1957; Hirschman, 1958), which came to be known as the structuralist approach to economic development. Its starting point was the fight against poverty, and the recognition that, in their quest for growth, developing countries face structural challenges that are different from that of high-income countries. It emerged from a context marked by two historical events and a major intellectual force: The great depression, the successful industrialization in Soviet Union, and the rise of Keynesian economics, which stressed the importance of market failures and the need for an active government role in the economy. It was argued that, due to structural rigidities and coordination problems in developing country markets, the modern heavy industries were unable to develop spontaneously in a developing country.

The market-failure thesis became the core of 'development economics' that emerged after World War II.¹¹ Under the influence of Keynesianism and the belief in the economic success of the Soviet Union, mainstream theories in the early phase of development economics held that the market encompassed insurmountable defects and

¹¹ 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 stylized 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 stylized facts and premises, it was a straight step to believe that the process of development was industrialization, and industrialization consisted primarily of the substitution of domestic production of manufactured goods for imports (Chenery, 1958).

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 overcome market failures by playing a leading role in the industrialization push, directly allocating the resources for investment, and setting up public enterprises in the large heavy industries to control the ‘commanding heights’ (Hirschman, 1958; Nurkse, 1953; Rosenstein-Rodan, 1943).

Second, the slump of international trade in the Great Depression led to export pessimism in the Post-War period. In Latin America for instance, 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 the thesis developed by Prebisch (1950) and Singer (1950). They believed that the decline in the terms of trade against the export of primary commodities was secular, which resulted in the transfer of income from resource-intensive developing countries to capital-intensive developed countries. They argued that the way for a developing country to avoid being exploited by developed countries was to develop domestic manufacturing industries through a process known as import substitution.

Moreover, 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, high birth and death rates, low average educational attainments and very backward infrastructure. They were heavily specialized 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.

While there was broad agreement on that diagnostic within the group of structuralist economists, there was divergence as to what specific policies to implement in order to break out of the trap and start the virtuous cycle. Rosenstein Rodan seemed to indicate that a *Big Push* (large and coordinated government investment program) was the solution. Others such as Hirschman suggested instead a “balanced growth approach”, that is, the promotion of key economic sectors with strong linkages, and subsequent correction of the disequilibrium generated in other sectors by these investments.¹² Still, many developing country governments regarded economic growth as their direct and prime responsibility. Eventually, many influential multilateral institutions such as the World Bank adopted structuralist economic thinking in their approach to development.

Yet, the results were disappointing. Instead of converging to the developed countries’ income levels, the income levels in developing countries stagnated or even deteriorated and the income gap with developed countries widened. In many developing countries, well-intended government interventions failed because the state engages in activities that were far from their country’s comparative advantage. This was the case across Latin

¹² Nurkse (1953) had the same view.

American, African and South Asian countries in the 1960s and 1970s when import substitution and protection were essential features of the development strategy.

One of the main reason for the failure of many former socialist and developing countries to achieve dynamic growth in their transitional processes was the fact that they gave priority to development of capital-intensive heavy industry in the 1950s when capital in their economies were scarce. In order to implement a development strategy that defies its comparative advantage, 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 subsidies could not be sustained with their limited fiscal resources. The government had to resort to administrative measures—granting the non-viable enterprises in prioritized industries a market monopoly, suppressing interest rates, over-valuing domestic currency and controlling prices for raw materials—to reduce the costs of investment and operation of the non-viable enterprises. Such intervention caused widespread shortages in funds, foreign exchange and raw materials. The government had to allocate 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 (Lin 2009a; Lin and Li, 2009).¹³

By shielding unsustainable industries from import competition, developing countries also imposed various types of other costs on their economies. Protection typically led to: (i) an increase in the price of imports and import-substituting goods relative to the world price and distortions in incentives, pushing the economy to consume the wrong mix of goods from the point of view of economic efficiency; (ii) the fragmentation of markets, as the economy produces too many small-scale goods, which resulted again on loss of efficiency; (iii) it lessened competition from foreign firms and encouraged monopoly power of domestic firms whose owners were politically well connected; and (iv), it created opportunities for rents and corruption, which raised input and transaction costs (Krueger 1974).¹⁴

As government-led economic development strategies, based on the structuralist teachings, failed in many countries, capitalism appeared to triumph and to influence development thinking. This trend was reinforced by a new revolution in

¹³ There are alternative hypotheses for the government interventions and distortions in developing countries, especially in Latin America countries. In the models of Olson (1982), Acemoglu et al. (2001, 2002, 2005), Grossman and Helpman (1996 and 2001) and Engerman and Sokoloff (1997), they argue that government intervention and institutional distortions 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 and why most distortions to protect the industrial sectors were introduced in the 1940s and 50s when most power élites were landed class. 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..

¹⁴ See Krugman (1993) for a general exposition of these issues.

macroeconomics. The prevailing Keynesian macroeconomics was challenged by the emergence of stagflation in the 1970s, the Latin America debt crisis and the collapse of socialist planning system in the 1980s. In an attempt to reduce high inflation rates in the context of over-employment, the United States administration tightened fiscal and monetary policy in 1969—a policy move consistent with the conventional Keynesian wisdom. This led to a sharp increase in unemployment but virtually no reduction in inflation. That experience validated the rational expectations revolution in macroeconomics, proving that in market economies, sustained periods of inflation lead to the expected inflation built in to the wages and other payments fixed by contract. In the context of continuing wage increases, restrictive monetary and fiscal policy mostly affects output and unemployment and has little effect on inflation. The rational expectation theory refutes the structuralist’s theoretical foundation for the state’s role in using fiscal policy and monetary policy for economic development.

The Latin America debt crisis began in 1982 when international financial markets realized that some countries, which had unlimited access to foreign capital after the collapse of the Bretton Woods system, were not able to payback their loans. It was precipitated by a number of inter-related exogenous shocks which toppled Mexico and several other Latin American economies, already overburdened with a substantial percentage of world’s outstanding debt (Cardoso and Helwege, 1995). The crisis prompted multilateral lending institutions and bilateral lenders—especially the United States—to call for a comprehensive set of reforms of Latin American economies and to advocate a set of neoliberal policies, which follow the canons of rational expectation macroeconomics, later known as the Washington Consensus (Williamson 1990).

Finally, the collapse of socialist economies in the 1980s, which prompted Francis Fukuyama to proclaim “the end of History”, seemed to mark the complete victory of free market economics over proponents of structuralist state interventions and centrally-planned economic systems. Most mainstream economists explained at the time that Government intervention in the economy was bound to fail because of the inevitable distortion of the allocation of resources, supply and prices, and that absence of a viable incentive system for economic agents. They interpreted the economic collapse in Eastern and Central Europe and Former Soviet Union and the stagnation and frequent crises in Latin America and other developing countries as evidence that the state should never try to play a leading role in initiating industrialization. These views fueled the sense of triumph of capitalism and centered development thinking on the neoliberal, Washington Consensus policies.

Although the Washington Consensus was originally presented as “a summary of what most people in Washington believed Latin America (not all countries) ought to be undertaking as of 1989 (not at all times)”, it quickly came to be perceived as “a set of neoliberal policies that have been imposed on hapless countries by the Washington-based international financial institutions and have led them to crisis and misery” (Williamson, 2002). It promoted economic liberalization, privatization, and the implementation of rigorous stabilization programs. Unfortunately, the results of these policies were at best controversial (Easterly, Loayza and Montiel, 1996; Easterly, 2001).

Parallel to the dismissal of structuralism and the prevalence of neo-liberalism, by the end of the 1980s, the development economics research community was witnessing the end of an era dominated by Barro-type research based on cross-country regressions, which attempted to identify growth determinants. There was a general perception that policy prescriptions stemming from such regressions did not produce tangible results. That approach had been to focus on independent and marginal effects of a multitude of growth determinants. This led to the linearization of complex theoretical models. Yet, the general view is that growth determinants interact with each other. To be successful, some policy reforms must be implemented with other reforms.

An alternative perspective on non-linearities was the Growth Diagnostics or Decision Tree approach suggested by a few economists, such Hausmann, Rodrik, Valesco (2005). It recognized that the central role of structural change in economic development and argued that in each country there will be ‘binding constraints’ on growth, implying that failure in one dimension prevents growth even if the others are all satisfactory. Through time and across countries the binding constraint can vary. Identifying the binding constraints is the key to this approach in practice. It is motivated by the inability of governments to reform everything and thus the need to prioritize reforms, which is done through the information revealed by shadow prices. While it is a good systematic approach to consider the government’s policy interventions in a distorted 2nd best world, in practice, the binding constraints are related to the new industries that the country is attempting to develop and the approach argues that choices of new industries should depend on a self-discovery process by individual firms. Hence the identification of binding constraints is more an “art” than a “science”. Moreover, the proponents of the growth diagnostics oppose the use of comparative advantage as a basic reference in the identification of new industries (Rodrik 2004). The industries that the government selected through this process are likely to have the same characteristics as those targeted by the structuralist approach and are not viable in a competitive market. More distortions to the market, similar to those introduced by the import-substitution strategy, may be created as a result.

The divergence in growth performance between developed and developing countries, despite predictions of convergence from mainstream economic theory, leads to one view that the policy prescriptions and/or expectations about their effectiveness were wrong. Another view was that growth researchers had paid limited attention to heterogeneity (the specific characteristics of each country). The suggestion that cross-country distribution may be multi-modal (with the existence of “convergence clubs”) did not settle the debate about which new directions were needed for growth research. Instead, many basic questions came back on the agenda: Are development economists looking at the wrong place in their quest for the determinants of growth? Should the focus be on institutions [institutional *outcomes*], instead of or in addition to policies? And, assuming that they are not reflecting other factors, how can be good institutional outcomes generated?

These unanswered questions led many development economists starting in the 1980s to try to better understand the causality of relationships, and the various transmission

channels through which policies, institutional changes or foreign aid affect growth. It was also the rationale for an increased focus of growth research on micro behavior issues at household and firm levels, with two goals: (i) allowing for heterogeneity in the economy (across and within countries); and (ii), investigating how constraints to growth operate at the micro level.

The growth disappointment and disillusionment with aid effectiveness also led to the quest for rigorous impact evaluation of development projects and programs. This has generated a new approach to development led by economists at the MIT Poverty Lab, whose goal is “to reduce poverty by ensuring that policy is based on scientific evidence.” While its researchers claim that their work is “influencing policy and improving lives” and that their “evidence has helped improve the lives of at least 30 million people around the world through the scale-up of highly effective policies and programs” with the objective of reaching 100 million soon¹⁵, a careful analysis of its methodology shows that the task of assessing the impact of a development project (against explicit counterfactual outcomes) still raises more questions than it brings answers. This is due to what Ravallion (2009a) calls the market failures of development knowledge.¹⁶

While the randomized control trials (RCT) or social experiments popularized by the MIT Poverty Lab research are certainly a useful tool for understanding the effectiveness of some specific micro projects, they fall short of providing useful overall guidance to policymakers confronted with the design of development policies. Such work starts not from a clear strategic assessment of how this particular method would fit the knowledge gaps of highest priority. As pointed out by Ravallion, “randomization is only feasible for a nonrandom subset of policies and settings; for example, it is rarely feasible to randomize the location of infrastructure projects and related programs, which are core activities in almost any poor country’s development strategy.” (2009a: 33). A more convincing way for undertaking impact evaluation would be to start by randomizing rigorously what gets evaluated, and then select an appropriate method (RCT or others) that would be appropriate to each sampled intervention.

Another major issue is that fact that the basic approach for RCT, which is very often to randomly assign an intervention to members of one observed group, and compare the average outcomes of that of a sample of non-participants (control group), does not take into account the spillover effects. Like other evaluation techniques, RCT tend to assume that impacts for direct participants in a project do not spill over to non-participants. Yet this is a concern in evaluating large public programs for which “contamination” of the control group can be hard to avoid. It appears that RCT exercises do not adequately address this issue in inferring the counterfactual from samples of non-participants (Moffitt, 2003). A similar problem is that of heterogeneity of impacts within groups of participants, some of which might not be observable or treatable with standard methods

¹⁵ See <http://www.povertyactionlab.org/>

¹⁶ One illustration is the fact that suppliers and demanders of knowledge about development effectiveness do not typically have the same information about the quality of the evaluation. That asymmetry leads to evaluators favoring short-cut methods that promise quick results at low cost, with users not being properly informed of the inferential dangers of the exercise.

because of their “essentiality” (Heckman et al., 2006). Moreover, by their very nature, RCT tend to offer only few lessons that can be generalized. Yet, for policymakers to understand which programs work, it is important to also understand why they are successful. This issue, known as one of “external validity” often relates to the particular context of the program—an issue that RCT and other evaluation techniques often does not address.

Overall, recent micro-empirical studies have indeed shed light on some important problems such as the impact of the investment climate on firm performance (World Bank 2005) or household behavior on productivity (Rosenzweig and Wolpin, 1985). However, “there is a risk the bulk of present-day research in development economics appears to be too narrowly focused and/or of too little generalizability to help much in the fight against poverty and to facilitate structural change and sustained growth.” (Ravallion, 2009b)

While the chronicle of economic development in the past half-century has often been one of disappointments, there are also a few success stories that deserve a closer look. The contrast in economic strategies and performance among Asian countries, both during the 1950s to the 1980s and during the transition of the 1980s and 1990s has been intriguing to economists. On the one hand, countries of Latin America, Africa, Eastern Europe and Asia that followed prevailing structuralist theories in formulating their policies often failed to change their economic structures and narrow the gap between them and the industrial countries. Import substitution policies that were intended to promote industrialization by protecting domestic producers from the competition of imports became the source of high tariffs, quotas or restrictions on foreign trade, and distortions, rent-seeking and economic inefficiencies.

On the other hand, economies such as Japan and the four dragons (Korea, Singapore, Taiwan, Hong Kong), adopted export-oriented strategies, instead of an import-substitution strategy. Starting from a low agrarian foundation, they were able to climb quickly the industrial ladders and achieving convergence to the structure and income level of advanced industrialized countries by the 1980s. Likewise, from an inward-looking, state administrated economy, China, Vietnam, and Mauritius achieved rapid and sustained growth by following a gradual transition approach to a market economy in the 1990s, instead of the “shock therapy,” prescribed by the neoliberal, Washington Consensus and followed by developing countries in Eastern Europe, former Soviet Union, and other developing world. In all these successful cases, the market was the fundamental mechanism for resource allocation, as the rational expectation theories and neo-liberalism proposed. However, the government also played an active role in the development and transition process as the Keynesian theories and structuralism envisioned.

3. A NEOCLASSICAL APPROACH TO STRUCTURE AND CHANGE

The time has come to reexamine the state of development economics, to draw lessons from past experiences and previous knowledge, and to offer new thinking and framework. Drawing lessons from past experience and from economic theory, this

section presents the key principle of a new structural economics, which is a neoclassical approach to structure and changes in economic development.¹⁷

A. Key Principles and Basic Conceptual Framework

The starting point for the analysis of economic development is an economy's endowments. Endowments are given in an economy at any given time and changeable over time. Following the tradition of classical economics, economists tend to think of a given country's endowments as consisting only of its land (or natural resources), labor, and capital (both physical and human). These are in fact factor endowments, which firms in an economy can use in their productions.

Conceptually, it is useful to add infrastructure as one more component in an economy's endowments.¹⁸ Infrastructure includes hard (or tangible) infrastructure and soft (or intangible) infrastructure. Examples of hard infrastructure are highways, port facilities, airports, telecommunication systems, electricity grids and other public utilities. Soft infrastructure consists of institutions, regulations, social capital, value systems, and other social, economic arrangements. Infrastructure is critical to the viability of domestic firms: they affect individual firm's transaction costs and the marginal rate of return on investments. Most hard infrastructure and almost all soft infrastructure are exogenously provided to individual firms and cannot be internalized in their production decision. Incidentally, Adam Smith discussed both the factor endowments and infrastructure endowments (public works and institutions in Book V of his *Wealth of Nations*). But the role of infrastructure was often neglected by subsequent economists. For example, there is no discussion on infrastructure in Alfred Marshall's *Principle of Economics*.

Countries at different stages of development tend to have different economic structures due to differences in their endowments. Factor endowments for countries at the early stages of development are typically characterized by a relative scarcity in capital and relative abundance in labor or resources. Their production activities tend to be labor-intensive or resource-intensive (mostly in subsistence agriculture, animal husbandry, fishery and the mining sector) and usually rely on conventional, mature technologies, and produce "mature", well-established products. Except for mining and plantation, their productions have limited economies of scale. Their firm sizes are usually relatively small,

¹⁷ I will refer the early contributions by structuralist economists such as Raul Prebisch (1950) and Celso Furtado (1964, 1970) and recent contributions by structuralist economists, such as Lance Taylor (1983, 1991, 2004) as old structural economics. They believe that the neoclassical approach to economic analysis is not applicable to developing countries where there is structural rigidity caused by distribution of political power, or distorted price signals due to monopoly, perverse response by labor to price signals, or the immobility of factors. The new structural economics assumes differences in structure between developed and developing countries arise from differences in their endowment structures. But a developing country can change its industrial and economic structure by changing its endowment structure. See further discussions in Section 4.

¹⁸ The difference between factors of production and infrastructures is that in a market economy the former are supplied mostly by individual households, whereas the latter are supplied by the community or governments, and the latter's supplies cannot be internalized in the decisions of individual households or firms and requires collective actions.

with market transactions often limited to personalized local markets. The hard and soft infrastructure required for facilitating that type of production and market transactions are limited and relatively simple and rudimentary. In developing countries with abundant unskilled labor and resources but scarce human and physical capital, only the labor-intensive and resource-intensive industries will have comparative advantages in open, competitive markets (Heckscher and Ohlin, 1991; Lin, 2003).

At the other extreme of the development spectrum, high-income countries display a completely different endowment structure. The relatively abundant factor in their endowments is typically capital, not natural resource or labor. They tend to have comparative advantage in capital intensive industries with large scales in production. Situated on the global technology frontier these economies rely on creative destruction or the invention of new technology and products for achieving further growth (Schumpeter 1942; Aghion and Howitt 1992). This leads them to engage in risky R&D activities, often subsidized by the state through funding for basic research in universities, patent protection for new inventions, preferential taxes, and defense and other government procurements. The soft and hard infrastructures needed in these countries are therefore likely to be quite different from what are necessary in low-income countries. For example, their appropriate financial arrangements are big banks and sophisticated equity markets, which can mobilize large amount of capital and are capable of diversifying risks. The types of hard infrastructure such as roads and port facilities, and soft infrastructures such as regulatory and legal frameworks must comply with the necessities of national and global markets where business transactions are long distance, large in quantity and value, and no longer personalized or informal, but based on rigorously designed and implemented contracts.

In most countries, the structure of factor endowment (relative abundances of factors) tends to determine the relative factor prices. It determines the optimal industrial structure, which itself determines the distribution of firm size, and level and nature of risks for firms, and thus the optimal financial structure (Lin, Sun and Jiang 2009). This is due to the fact that the main force driving economic structural change in modern times is the change in endowment structure from a relatively low capital-labor ratio to relatively high capital-labor ratio (Lin 2003, 2009).¹⁹ Such change in endowment structure will increase simultaneously the economy's total budgets and relative prices, which are the two most important parameters for micro economic agents' production choices. The aggregate output in an economy is composed of different goods, each of which is produced with technologies that differ in capital intensities. For developing countries that are located within the global technology and industrial frontier, as capital becomes more abundant and hence relatively cheaper, the optimal production shifts to more capital-intensive goods. At the same time, the more labor-intensive goods are gradually displaced. This process generates an endless V-shaped industrial dynamics—the so-called “flying geese” pattern of economic development.²⁰ Also, the financial structure evolves endogenously as

¹⁹ In pre-modern times the driving force for changes in structures and institutions was the increase in labor-land ratio (North 1981).

²⁰ This pattern, which was documented in the literature by Akamatsu (1962), Chenery (1960) and Kojimas, is formalized in Ju, Lin and Wang (2009).

the demand for capital and the needs for risk reallocation in the production increase (Lin, Sun, Jiang, 2009). Similarly, other economic and social structures will change accordingly.

Production is organized and operated within a firm, which needs to hire inputs from, and sell outputs to the outside markets. The hard infrastructure, such as highways, telecommunications, port facilities, and power supplies, will determine the transaction costs of obtaining the inputs and selling the outputs, as well as the market reach, which in turn determines the extent of division of labor in production (Smith 1776). The soft infrastructure will have a similar effect. For example, financial regulation will affect the ease with which a firm can access external funding, the legal framework will determine the costs of writing and implementing a contract, the social networks will determine a firm's access to information, finance, and market. Therefore, the infrastructure endowments determine firms' transaction costs and marginal rate of return to investment at a given time. While firms generally can control some of their production costs, they have little latitude over most of the main components of their transaction costs, which are largely determined by the quality of soft and hard infrastructures provided mostly by the state.

Economic development is a process of sustained increase in per capita income, which requires a continuous upgrading of industries and technology from labor (resource)-intensive industries to more capital-intensive industries (otherwise, per capita income will stagnate, as predicted by Solow's neoclassical growth model). Because it is a gradual process from a lower end to the higher end of the spectrum, countries can move to many intermediate levels. Factor endowments, whilst changeable over time, must be taken as a given at any given time in the economy.²¹ Developing countries have the advantage of backwardness and a whole spectrum of industries with different levels of capital intensity available to them. However, for them to upgrade from low to high capital-intensity industries, they must first upgrade their factor endowments, which requires an increase in their relative share of capital (see Ju, Lin and Wang, 2009).

When a developing country moves up the industrial ladder in the process of economic development, the upgrading increases the scale in production. This is due to the indivisibility of capital. Such a process leads to the proliferation of larger firms and the need for a bigger market. Moreover, the upgrading of industries also pushes the economy closer to the global technology frontier. The upgrading of industries will require correspondent changes in infrastructures. This is due to the fact that firms operating in different industries are distinct in terms of size, risks, and financial needs. For example, the size of firms matters for their financing choice because there are economies of scale

²¹ The cross-boarder labor mobility is still very limited in the world. The financial capital is more mobile than labor. However, due to the limitation of infrastructural endowment in a developing country, the returns to a large capital inflow to the industrial sectors in the developing country will be low. The capital inflow is unlikely to be so large to change the nature of relative capital scarcity in a developing country, so as the capital outflow will not change the nature of relative capital abundance in a developed country. Therefore, in spite of the globalization of factor markets, the factor endowment in a country can be taken as a given at a given time.

in financial transactions. Small firms usually raise smaller amounts of capital than large firms and thus are at a disadvantage in terms of average transaction cost per unit of capital raised. Moreover, empirical evidence shows that economies of scale with different sources of financing are different: large companies enjoy some economies of scale when borrowing from banks but much less than in the case of public equity or bond financing. Small firms often lack the standard financial documents and longer financial history, which makes them more opaque than big companies, and more subject to severe informational asymmetry, and inhibit their ability to raise capital on financial markets.

The process of industrial upgrading also increases the level of risk faced by firms. When the firms move closer to the global technology frontier, it will become harder and harder for them to borrow matured technology from advanced countries. They need increasingly inventing new technologies and products by themselves. For risk-averse investors operating in a given macroeconomic environment, the idiosyncratic risk of a firm has three components based on risk sources: technological innovation, product innovation and entrepreneurship. In the early stage of development, firms in general use mature technologies to produce mature products for mature market. The main source of risk for fund providers is the ability of firms' owner-operators. In a high stage of development firms often use new technologies to produce new products for new markets. In addition to the entrepreneurship, such firms will face risk arising from the technology and markets. Therefore, while technological innovation, production innovation and entrepreneurship all contribute to the overall level of risk associated with firms, their relative importance varies greatly from one industry to another and from one stage of economic development to another. This has important implications for the efficiency of alternative financial institutions in reducing informational asymmetry and risk sharing (Lin, Sun, Jiang, 2009).

With the changes in the size of firms, the scope of the market, and risk nature along the upgrading of the industrial structure, the requirements for infrastructure services, both hard and soft, will also change. If the infrastructures are not improved simultaneously, the upgrading process in various industries alone may face the problem of x-inefficiency, a phenomenon discussed by Harvey Leibenstein (1966).

Because the industrial structure in an economy is endogenous to its relative abundance of labor, capital, and natural resources, the speed of industrial upgrading and development depends on the speed of its upgrading of factor endowments as well as the required corresponding improvement of infrastructures. At each particular stage of development, the production structure will be different, as well as the financial, legal, and other infrastructures. With capital accumulation or population growth, the economy's factor endowment will change, pushing its industrial structure to deviate from the optimal determined by its previous level. The change requires new types of infrastructure services to facilitate production and market transactions and allows the economy to reach its production possibility frontier. To maintain optimality, the industrial structure and the infrastructure will need to be upgraded.

When firms choose their industries and technologies according to the comparative advantages determined by the country's factor endowments, the economy is most

competitive²², the economic surplus largest, the returns to capital highest, and the upgrading of endowment structure fastest. As competitive industries and firms grow, they claim larger market share and create the greatest possible economic surplus, in the form of profits and salaries. Reinvested surpluses earn the highest return possible as well, because the industrial structure is optimal for that endowment structure. Over time, this strategy allows the economy to accumulate physical and human capital, upgrading the factor endowment structure as well as the industrial structure and making domestic firms more competitive over time in more capital- and skill-intensive products.²³

For firms to enter the profitable industries and choose the appropriate technology, the economy must exhibit relative prices that reflect the relative scarcity of factors in the country's endowment. This only happens in an economy with competitive markets (Lin 2009a and Lin and Chang, 2009). Therefore, a competitive market should be the economy's fundamental mechanism for resource allocations in each stage of its development. That kind of *comparative advantage-following* approach may appear to be slow and frustrating in countries with major poverty challenges. In fact, it can be accelerated by the availability of technology and industries already developed by and existing in more advanced countries in the process of its industrial upgrading. Firms in developing countries can at each stage in their development acquire the technologies and enter into industries appropriate for their endowment structure, rather than having to reinvent the wheel by themselves (Krugman 1979; Gerschenkron 1962). This ability to use off-the-shelf technology and to enter into existing industries is what has made possible the sustained annual GDP growth rates of 8 and even 10 percent achieved by some of the East Asian NIEs.

As a country climbs up the industrial and technological ladder, many other changes take place: technologies become more sophisticated, capital requirements increase, as well as

²² 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 industries 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 the industries are consistent with the nation's competitive advantage. Therefore, the four conditions can be reduced to two 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 (Lin 2009a).

²³ The argument that countries need to specialize in industries consistent with their comparative advantage at each stage of their development is just like the argument that countries need to have free, competitive markets. Such theoretical arguments provide a reference for the direction of organizing an efficient economy. In reality just like no country will have free, competitive market in perfect sense in the real world, no country will follow its comparative advantage perfectly, especially the comparative advantage is changing over time and industrial change is not instantaneous. We know that a too far away deviation from free market is likely to reduce the efficiency of an economy. A too far away deviation from a country's comparative advantage in the country's industrial development is also likely to lead to various distortions, reduce its growth rate, increase macro instability, and worsening income distribution. For empirical testing regarding the impacts of deviation from comparative advantages, see Lin (2009a).

the scale of production and the size of markets. Also, market exchanges increasingly take place at arm's length. A flexible and smooth industrial and technological upgrading therefore requires simultaneous improvements in education, financial, and legal institutions, and hard infrastructure. Individual firms clearly cannot internalize all these changes cost-effectively, and coordination among many firms to achieve these changes will often be impossible. Change in infrastructure requires collective action or at least coordination between the provider of infrastructure services and industrial firms. For this reason, it falls to government either to introduce such changes itself or to coordinate them.²⁴

With the upgrade in factor endowment and industrial structure, infrastructures need a corresponding improvement in order for the economy to achieve x-efficiency. Yet, the government may fail to play its role of provision, coordination, and improvement of infrastructure. In such situations, infrastructure can become a bottleneck to economic development. In fact, economic growth tends to render existing institutional arrangements obsolete, as it induces shifts in the demand for institutional services. The service provided by an institution has the nature of public good. The change in institutions requires collective actions and often fails due to free-rider's problem (Lin 1989). Therefore, the government needs to play a proactive role in the process of economic development so as to facilitate timely improvements of hard and soft infrastructure to meet the changing needs arising from industrial upgrading.

B. The Roles of a Facilitating State and Industrial Policy

When the endowment structure in an economy upgrades, the optimal industrial structure in the economy will change. The firms that are viable²⁵ in the previous endowment structure will become nonviable. To become viable again, the firms in the economy need to upgrade to new industries with higher capital intensities (Ju, Lin, Wang 2009). The upgrading is an innovation and unavoidably risky. Successful upgrading requires that the firms in the economy overcome issues of limited information regarding which industries are viable. Successful upgrading often requires related investments by other firms (Rosenstein-Rodan 1943; Murphy, Shleifer, and Vishny 1989), and required changes in soft and hard infrastructures. And, in addition, valuable information externalities arise from knowledge of pioneer firms' success and failure. Therefore, in addition to playing a

²⁴ Note that this is a different argument from the coordination role often proposed in the past for developing-country governments. That "big push" line of argument stressed that if each potential firm's viability depends on inputs from another firm that doesn't yet exist, none of the potential firms may emerge. In this case, the government can theoretically move the economy to higher-welfare equilibrium with a big push that leads to the concurrent emergence of upstream and downstream firms. (See Rosenstein-Rodan, 1961; Murphy, Shleifer, and Vishny, 1989). But changing global conditions have made the traditional big-push argument less compelling. The reduction in transportation and information costs in recent decades has led to global production networks in which many countries, including developed and developing, produce only certain parts of a final product according to each country's comparative advantage.

²⁵ A firm is viable if with a normal management it can survive in a competitive market without external subsidies. Lin (2003, 2009) shows that a firm will be viable, only if it is operated in the optimal industry determined by the economy's endowment structure.

proactive role in the improvements of soft and hard infrastructures, the government in a developing country can also adopt an industrial policy to assist firms in a market economy to overcome the above issues (Lin 2009a; Rodrik 2004; Harrison and Rodriguez-Clare 2009). As Bhagwati (2004) puts it, "... growth was not a passive, trickle-down strategy for helping the poor. It was an active, pull-up strategy instead. It required a government that would energetically take steps to accelerate growth, through a variety of policies including building infrastructure such as roads and ports and attracting foreign funds."²⁶

The functions of an effective industrial policy includes: (i) providing information about new industries that are consistent with the comparative advantage determined by change in the economy's endowment structure; (ii) coordinating investments in related industries and the required improvements in infrastructures; (iii) subsidizing activities with externalities in the industrial upgrading and structural change; and (iv) catalyzing the development of new industries by incubation or attracting foreign direct investment.

As a developing country start the process of modern economic growth, the economy will become diversified and new industries will continue to emerge.²⁷ The finding of new industries that are consistent with the economy's new comparative advantage is a process of self-discovery (Hausmann and Rodrik 2003). The State can collect the information on new industries that are consistent with comparative advantages determined by the country's endowment structure, their market sizes and sources of technology, and make the information available to assist the firms for the discovery in the framework of an industrial policy. As the endowment structure in the economy is upgraded, firms too need to upgrade their industries and technologies accordingly in order to maintain market competitiveness. During the process, firms in developing countries can exploit the industrial and technological gap with developed countries by acquiring industrial and technological innovations that are consistent with their new comparative advantage. This can be done through learning and borrowing technologies and know-how from developed countries, especially those countries at a slightly higher (but not too far away) stage of

²⁶ In an advanced developed country today, its industries are in the global frontier and what will be the next frontier industries are uncertain. Therefore, its government's policy measures to support industrial upgrading in most cases are in the forms of general supports to research in universities, which has externalities to private firms' R&D, patents, preferential taxes for capital investments, defense contracts, and government's procurements. For a developing countries in the process of catching up the advanced developed countries, such as Britain before the 18th century, the Germany, France, and the US in the 19th century, and Nordic countries, Japan, Korea, Taiwan, Singapore, Malaysia and other East Asian economies in the 20th century, the directions of their industrial upgrading were more tractable. The government could have industry-specific interventions in supporting the upgrading (Chang 2002). However, industrial policy in the developing countries, especially those low-income countries, often fails. One of the most important reasons is the attempt by the low-income countries' governments to use industrial policy to promote industries which are inconsistent with the economy's comparative advantages (Lin 2009a; Lin and Chang, 2009).

²⁷ Imbs and Wacziarg (2003)'s empirical study of a large cross-section of countries shows that as poor countries get richer, sectoral production and employment become less concentrated and more diversified until they become relative rich, roughly the level of Ireland's income, and start to become more concentrated in production. However, even after that new industries will continue to emerge and replace the old industries.

development.²⁸ Compared with innovation through independent research in developed countries, such acquisition of innovation has a lower cost and is less risky, as the market for the product had already existed and is easily known and technology production is matured, requiring only adaptation to suit local environment. The speed of technological innovation will therefore be faster in a developing country if the state knows how to facilitate its firms to exploit the advantage of backwardness in the industrial upgrading process (Krugman, 1979).²⁹

In today's world, the potential benefits of relative economic backwardness start with the possibility of exploiting information on what types of industries a country needs to develop. Even in the same industry, the degrees of technological sophistication are infinite, depending on the quantities and quality of labor and capital involved. Selecting the industries that are consistent with a country's endowment and production and social networks is not an obvious choice. Sometimes, it is path-dependent. Ethiopia, for instance, has been trying to promote labor-intensive industries: leather shoes, cut flowers and garments. While the first two have been quite successful, the third one has so far been a disappointment. The shoe industry existed traditionally in Ethiopia and some private entrepreneurs had already entered the cut flower export business before the introduction of government's industrial policies. In both industries, the government

²⁸ This is one of the most important principles for reaping the benefits of backwardness. Historically, it appears that countries that have successfully exploited the advantage of backwardness to achieve industrialization—the continental countries in Western Europe in the nineteenth century and the Asian NIEs after World War II—all borrowed technology from other countries whose per capita income was not too much greater than theirs. For each one of them, the borrowed technology was consistent with its comparative advantage and firms using the borrowed technology were viable. According to estimations by 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, the four East Asian NIEs borrowed technology from Japan in post-World War II development, instead of gaining it from North America or Western Europe. In the initial stage, the technology and industry transferred from Japan to the East Asian NIEs followed the so-called “flying-geese” pattern: their industrial development followed one step behind the Japanese industries (See Akamatsu, 1962; and Kim, 1988). In their strategy of borrowing technology, some developing countries have mistakenly turned to the most advanced countries. This has caused all kinds of difficulties, such a borrowing strategy defies their comparative advantage. This was notably the case for Hungary, Russia, then poor countries of Eastern Europe whose per capita income was about 30 per cent of that of the United Kingdom in 1870; their attempt to borrow technology and replicate the development process of Western European countries in the late nineteenth century resulted in a much higher degree of government intervention and economic stagnation after their new industries were established. See A. Gerschenkron, *op. cit.* Recently Hausmann and Klinger (2006) investigated the determinants of the evolution of the level of sophistication in a country's exports, and find that this process is easier when moving to ‘nearby’ products in the product space. This is because every industry requires highly specific inputs such as knowledge, physical assets, intermediate inputs, labor skills, infrastructure needs, property rights, regulatory requirements or other public goods. Established industries somehow have sorted out the many potential failures involved in assuring the presence of all of these inputs. The barriers preventing the emergence of new industries are less binding for nearby industries which only require slight adaptations of existing inputs.

²⁹ The above discussion does not mean that a country that relies on borrowed technology for industrial upgrading does not need to engage in innovation. To be successful, countries need to undertake a process of innovation that makes the borrowed technology suitable to local conditions. They also need to carry out product innovation in sectors in which they are already world leaders, or not too far behind the world leader. For further discussions, see Lin and Ren (2007).

adopted various measures to encourage foreign direct investment and joint ventures. But Ethiopia never had comparable levels of involvement in the garment industry. Its newly created firms did not have the rich historical background and expertise to select and implement efficient business processes and build the social networking necessary to effectively organize required inputs or to connect in real time to national and global markets. The government's industrial policy failed to attract significant foreign direct investments and joint ventures as a catalyst for the new garment industry. In such situations, the challenge for a facilitating state is to provide the private sector with the necessary information on which industries are consistent with their comparative advantages, their market potentials, the sources of required technological innovations, and the possibility to develop new industries on existing soft infrastructures.

With industrial upgrading, different production and technological structures emerge. Infrastructure needs also change. Individual firms are not capable of deploying the kind of coordination efforts that is needed to improve hard infrastructure and update soft infrastructure. Even if some large single companies were willing to finance the national road or power networks, State intervention would be needed to ensure consistency and efficiency when the national economy moves from one stage to another. Similarly, a low-income country with small scale, labor-intensive industries may only need an informal financial system, with limited regulation; but when the economy expands into modern manufacturing, firms need things such as lump-sum investments in equipment, working capital, lines of credit or export financing, which require a more sophisticated and more carefully regulated financial system. Firms that are upgrading might require support for new financial institutions, trading arrangements, marketing and distribution facilities, and intellectual property rights protection, etc. Here again, there is a bigger need for the Government to play an active, coordinating role.

The upgrading of technology and industry also often requires coordination of different enterprises and sectors in the economy. For example, the human capital or skill requirements of new industries/technologies might be different from those used with older industries/technologies. An enterprise might not be able to internalize 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 the improvement of these soft infrastructures, the industrialization is typically accompanied by the development of hard infrastructures such as power, telecommunication, and transportation systems—a process best coordinated by the state.³⁰

³⁰ The story of Peruvian asparagus is a good example for the facilitating and coordinating role of the state. The possibility of growing asparagus and exporting the product was self-discovered by Peruvian farmers in 1950s. However, the export did not take off in earnest until 1985, when the USAID provided a grant for a farmers' association to obtain advice from a specialist from University of California, Davis, who had recently created the UC-157 variety, about how to manage the crop, and from another expert to show the association's experimental station how to set up the seedbeds, packing and exporting. The state also supported cooperative institutions, such as Peruvian Asparagus Institute and Frio Aereo Asociacion Civil for engaging in research, technology transfer, market studies, export drives, and quality promotion. Furthermore, the state invested in the freezing and packing plants that handled 80% of fresh asparagus

Innovation, which underlines industrial and technological upgrading, is a very risky business by nature. Even with the information and coordination provided by a government's industry policy, a firm's attempt to upgrade its industry/technology can fail because the objectives are too ambitious, the new market too small, the coordination inadequate, and so on. Still, such failures indicate to other firms that the targets of the industrial policy are inappropriate and should be avoided. Therefore, firms that are first movers pay the cost of failure and produces valuable information for other enterprises. When they succeed, their experience also provides information externalities to other firms, prompting them to engage in similar upgrades. These subsequent upgrades eventually cancel out the possible rents that the first movers have enjoyed, creating an asymmetry between the costs of failure and the gains that pioneer firms might have. To compensate for the externality and the asymmetry between the possible costs and gains, the government can provide some form of subsidy—such as tax incentives or loan guarantees—to firms that are willing to take the primary risks of renewing the country's industries. Many studies of the success stories of the East Asian NIEs come to the conclusion that it is indeed desirable for a government to have an industrial policy to overcome the information, coordination and externality problems that are unavoidable in the process of development (Amsdem, 1989; Chang, 1994; Wade, 1990; Rodrik 2004).

The state can also play a catalytic role in the development of new industries by incubation or attracting foreign direct investment, especially for entering industries where local firms have no past experience. The experience of successful Asian countries can be of relevance here. Because policymakers there understood that it would not be realistic or easy to enter a new industry about which their local firms had no historical knowledge, they used state institutions to encourage a gradual approach and promote joint-ventures: after the transition to a market economy in the 1980s, China, for instance, initially set modest goals for its industrial development, and proactively invited direct investment from Hong Kong, Korea, Japan, and Taiwan. This promotion policy helped the local economy to get started in various industries. Bangladesh's vibrant garment industry also started with a Korean manufacturer's investment in Dhaka. After a few years, so much knowledge transfer had taken place that it became a sort of "incubation center". Not surprisingly, local garment plants mushroomed in Bangladesh, and almost each of them could be traced back to the Korean firm. Such examples have been numerous in many developing countries (Mottaleb and Sonobe 2009, Rhee 1990, Rhee and Belot 1990).

Recent economic history reveals that when a country decides to directly set up a state-owned company in a particular industry with the purpose of stimulating the industrial upgrading, it can spark similar activities by private firms. The burgeoning salmon farming in Chile benefits from a public agency, Fundacion Chile (Wurmann 2007). Even though Government-run enterprises tend to perform poorly,³¹ there are many cases of failures of state-owned companies that have generated a burgeoning private sector. This

exports. Peru now overtakes China, becoming the largest asparagus exporter in the world (O'Brien and Rodriguez 2004).

³¹ For a theoretical exposition, see Jones et al. (1990) and World Bank (1995).

was most notably the case in Japan during the Meiji Restoration³² when a vibrant textile industry emerged out of the failure of the poorly managed state-owned enterprise that was created to produce textiles. Private firms were successful because they learned the skill and management from the state-owned firm and the private firms introduced various process innovations to replace expensive equipment with inexpensive labor, which was Japan's comparative advantage at the time (Otsuka, Ranis and Saxonhouse, 1988).³³

C. Exit Strategy from Distortions

It is important to note that in developing countries even with the best intention of their political leaders, the governments—including in East Asia— may end up creating more distortions and inefficiencies with their industrial policies (Noland and Pack, 2003). In designing their economic development strategies, poor countries should learn not only how to design policies to facilitate industrial upgrading but also how to exit from various distortions due to excessive or lack of state interventions.

Governments often adopt and implement policies that reflect the dominant social thought because those are the consequences of political development, or even prevailing intellectual trends (Lin 2009a). After World War I for instance, nationalism was a popular trend around the world and advanced heavy industries were the backbone of industrialized powers at that time. China for instance had been defeated repeatedly and had become a quasi-colony, with parts of its territory surrendered to Britain, Japan and Russia. It was therefore understandable that Mao Zedong would declare in 1945 that “without the establishment of heavy industries in China, there can be no solid national defense, no well-being for the people, no prosperity and strength for the nation.”

Similar views were expressed elsewhere in the developing world after World War II. In 1946, Indian leader Jawaharlal Nehru said: “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.” In the 1950s and 1960s, economic nationalism of the same sorts sustained the quest for freedom in sub-Saharan Africa, the Middle East, and Latin America (see Frankel, 1953; Prebisch, 1959; Furtado, 1970; Monga, 2006). Compared with developed countries, these developing countries had an extremely low economic growth rate and per capita GNP, high birth and death rates, low average educational attainments and very little

³² In Japanese history, the Meiji period (1868–1912) refers to the political revolution that brought about the fall of the Tokugawa shogunate and returned control of the country to direct imperial rule under the emperor Meiji. It was the beginning of an era of major political, economic, and social change. According to conventional wisdom, that revolution brought about the modernization and Westernization of Japan. See Beasley (1972).

³³ A common reason for the failure of state-owned enterprises is the government's attempt to use them as a vehicle to develop industries or adopt technologies that are inconsistent with the country's comparative advantages (Lin and Tan 1999). Such attempt of the government becomes a policy burden to the state-owned firm and the state is obliged to provide the firm with subsidies and protections. Because information asymmetry, the government cannot know exactly how much subsidies and protections are adequate and the state-owned firm may use the policy burden as an excuse to ask for more subsidies and protections, which give rise to the problem of soft-budget constraint (Kornai 1986).

infrastructure. Moreover, they were heavily specialized in the production and export of primary commodities and imported most of their manufactured goods. Thus, it was central to their governments to develop national economies independently so as to achieve a rapid economic take-off and eliminate poverty. Economic growth through the development of capital-intensive advanced industries (the basis of military strength) was seen by many nationalist leaders as the prime responsibility of the government. In fact, political leaders in Western Europe pursued exactly the same goals in the nineteenth century when they saw the contrast between the United Kingdom's rising industrial power and the backwardness of their own predominantly agrarian economies (Gerschenkron, 1962).

Under the influence of dominant intellectual paradigms, Government can fail because they do too little in certain areas of public policy by not providing the level of support needed to sustain progress towards industrialization. This has been the case for instance in several Latin American countries, where hard infrastructures have been sub-optimal (Calderon and Serven, 2004). It is also the case when too little public funding is available to support innovation, information collection and sharing, or promotion of business ventures with foreign firms.

Governments can also fail because they are too ambitious about the industrial upgrading or/and policymakers are unable to understand what is best for the economy at a given point in time. A prominent example is the import-substitution strategy practiced by most developing countries after World War II. Such strategy at its primary stage developed labor-intensive light industries and achieved substantial success (Ranis and Mahmood 1992). However, the secondary import-substitution strategy attempts to develop industries which are against the countries' comparative advantages and as such the firms in those industries are not viable in open, competitive markets. To implement the strategy, the governments introduce various distortions in factor prices (such as the suppression of interest rates and overvaluation of domestic currencies) so as to reduce the costs of investment and imports of technology and equipment for non-viable enterprises in the targeted industries. Such distortions result, however, in excess demand for those factors whose prices are suppressed. As a consequence, these governments need to use planned, administrative measures to guarantee allocation for those factors to the non-viable enterprises. To minimize the incentives of managers in the prioritized industries to argue for more subsidies or to reallocate low-priced inputs to other sectors for arbitrage, the government often nationalizes the firms in the priority industries (Lin and Li, 2009).

Because the distortions in developing countries are often endogenous, a "shock therapy" that attempts to implement simultaneously and immediately the neo-liberalist stabilization, liberalization, and privatization policies, may not work. Exiting successfully from distortions requires a clear understanding of the first-best condition (which may be different at different stage of development) and a pragmatic approach. Developing countries must select the appropriate target. Many of them have been tempted to directly choose high-income countries as their reference. That first-best option is often not appropriate given their stage of development. Because their industrial structure is different from that of industrialized countries, their financial, legal, and other

infrastructural needs are also different.³⁴ The right target is therefore one that is realistic and consistent with their position in the global industrial spectrum. Second, developing countries usually face many kinds of compounded distortions, as one inappropriate intervention causes a second round of distortions, which itself generates a third round of distortions, and so on, which put them in the n^{th} best situation. It is not difficult to understand that a shock therapy will not work under the n^{th} best scenario. The example of the German reunification illustrates the point: in spite of the large amount of subsidies received from West Germany, shock therapy was very slow to produce good results and eventually did not work well (Hunt 2008).

However, how can the government help the economy to reform the economy and transition back to the first best situation? This is one of the least studied areas in economics. It may be desirable to adopt a pragmatic, gradual exit that provides the necessary protection to the old priority sector in order to maintain stability and liberalizes sectors consistent with the economy's comparative advantages so as to achieve dynamism, as practiced in China, Vietnam, Mauritius and other successful economies in their transition process (Lin 2009a). Yet can we generalize the experiences of gradual, pragmatic approach in the above successful transition? Further theoretical and empirical research on this issue is desirable.

Summing up, the new structural economics is built on three key propositions: first, optimal economic structures are endogenous and different at different stages of development. This applies to a country's industrial, technological, financial, legal, and other structures. Second, economic development is a continuous process, not one that can be divided into rigid or specific "stages" as suggested by Rostow (1990b), and certainly not a dichotomy between two groups ("low-income" countries versus "high-income" countries) as traditionally assumed in the economic literature. Economic development is in fact a wide spectrum, ranging from a low, local, traditional, subsistence agrarian level to a high, globalized, modern, industrial level. Third, given a stage of development, the market is the most efficient mechanism for resource allocation. However, the state needs to play a proactive, facilitating role in the move from a lower one stage to a higher stage.

4. WHAT IS "NEW" ABOUT THE NEW STRUCTURAL ECONOMICS?

The new structural economics suggested in this paper involves elements from both the old structural economics and the neoclassical economics, but it also differs markedly from them. Taken in isolation, none of its features might be completely new in the economic literature. But by offering a coherent framework, which draws from lessons of experience and economic theory, it sheds many new insights about economic development and development policies.

Similarities and Differences with Old Structural Economics

³⁴ One example is the attempt to develop modern equity market in many low-income countries, where the appropriate financial arrangement should instead be small, local banks (Lin, Sun and Jiang 2009).

In terms of similarities, both approaches take the structural differences between developed and developing countries seriously and acknowledge the active role of government in the process of economic development; facilitating the movement of the economy from a lower stage of development to a higher stage of development. While old structural economics recommends developing country governments go against its economy's comparative advantages and overcome market failures to develop advanced capital-intensive industries through direct administrative measures and price distortions; the new structural economics suggests that the market should serve as the fundamental resource allocation mechanism and the government should only play the role of a "facilitating" state to assist firms to upgrade to industries that are consistent with the economy's comparative advantages.

The differences between the two frameworks derive from their different views about the sources of structural rigidities: old structural economics assumes that the market failures in developing countries, which makes their development of advanced capital-intensive industries difficult, is exogenously determined by incorrect price signals distorted by monopoly, or by labor's perverse response to price signals, and/or the immobility of factors. By contrast, the new structural economics posits that the failure to develop advanced capital intensive industries in developing countries is endogenously determined by their endowments. The relative scarcity in their capital endowment and/or the low level of soft and hard infrastructure in developing countries make the reallocations from the existing industries to the advanced capital intensive industries unprofitable for the firms in the economy.

Moreover, old structural economics assumes a dual and restrictive view of the world, with the binary classification of only two possible categories of countries: "low-income, periphery countries" versus "high-income, core countries". As a result, it views the differences in the industrial structure between developed and developing countries as expressing a dichotomy. Contrary to that vision, new structural economics considers these differences as the reflection of a whole spectrum, which includes many different stages and levels of development.

The new structural economics challenges the dichotomy between developing and developed countries, which led old structuralist thinkers to miss the fact that economic development is a continuous process, which gives each country following its comparative advantage the opportunity to improve and adjust its optimal economic structure at each development stage so that the country can be competitive, can benefit from advantage of backwardness in technology and industrial innovations, and can upgrade its endowments and industrial structure in the fastest possible way. While the old structuralist view saw developing countries mostly as resource-dependent victims of external, dominant political and economic forces setting a secular decline in commodity prices, the new structural economics rejects conspiracy theories. In an increasingly globalized world, it sees opportunities to counter negative historical trends by diversifying its economy and developing industries that are consistent with their comparative advantage so as to accelerate the growth and achieve the goal of convergence.

Another major difference between the new structural economics and the old one is the rationale for using key instruments of economic management. Old structural economics see systematic government intervention in economic activities as the essential ingredients in the modernization objective. Among the key instruments used to move from “developing” countries to “industrialized” countries were blanket protectionism (such as government-imposed tariffs on imports to protect infant industries), rigid exchange-rate policies, the creation of state-owned enterprises in all sectors.³⁵ By contrast, the new structural economics notes that import substitution is a natural phenomenon for a developing country to climb the industrial ladder in its development process. However, the new framework rejects the idea that fiscal policy or other distortions should be used for low-income, labor or resource-abundant economies to develop high cost, advanced capital-intensive industries. It stresses a developing country’s industrial upgrading should be consistent with the change in the country’s comparative advantage as a result of accumulation of capital, both human and physical, and change in its factor endowment structure. Therefore, the firms in the new industry will be viable once it is established. The role of government’s industrial policy is limited to provision of information about the new industries, coordination of related investments across different firms in the same industries, compensation of externality for the pioneer firms, and catalyst of brand new industries through incubation and encouragement of foreign direct investment (Lin 2009a; Lin and Change 2009). In addition, the government should also take a leadership role in improving the hard and soft infrastructures to reduce the individual firms’ transaction costs and facilitate the economy’s industrial upgrading.

Similarities and Differences with the Neoclassical Economics

While the new structural economics applies the neoclassical approach to study the mechanism of economic development with focus on the structure and its change in the process of economic development, it differs from other branches of the existing neoclassical economics in several crucial ways:

First, with the exception of trade theories, the existing neoclassical economics does not pay enough attention to the structure of factor endowments. By contrast, the new structural economics takes the endowment and its structure as the starting point of its analysis. In addition, the existing neoclassical economics typically posits that economic activity takes places in an infrastructure (both hard and soft)-free environment, whereas the new framework suggests a different, larger conception of endowments, including the factors endowment and hard and soft infrastructures endowment. Both factors endowment and infrastructures endowment are given at any given time and changeable over time. Based on the factor endowment, the individual firms make their choices of industries and technologies as well as production decisions. The infrastructure endowment will affect individual firms’ transaction costs and rate of return to their investments.

³⁵ Those interventions are endogenous to the need of protecting nonviable firms in the priority industries of the government’s industrial policy due to the priority industries’ violation of the country’s comparative advantages (Lin and Li 2009).

Second, the existing neoclassical economics generally assumes in its analysis the existence of only one industry and at most three industries (agriculture, manufacture, and service) in the economy. By contrast, the new structural economics assumes that there are infinite manufacturing industries in the industrial sector. Because of its assumption, the neoclassical economics generally assumes that the developed and developing countries have the same industries in their economies. The differences between the developed and developing countries are at most in their weights and capital intensities in the same industries. As such, it will be difficult to see why the institutions and policies for a developing country need to be different from those of a developed country. The new structural economics recognizes that countries in different stages of development have different factor endowment, which determines difference in their optimal industrial structure. It highlights the fact that different factor endowments and industrial structures imply differences in the distribution of firm size, types of risks, scale of operation, market ranges, and so on. Therefore, not only the demands for the services in hard infrastructures such as transportation and telecommunication will be different in different stage of development but also will be the soft infrastructures such as financial system, regulations, and other social economic institutions.³⁶

Third, while the existing neoclassical economics generally assumes a minimalist state whose role is limited to protection of property rights, maintaining law and order and compensation for externality so as to maintaining a well-functioning market. By recognizing the structural changes in the process of economic development, the new

³⁶ The recognition that the industries optimal in developing countries are different from those in developed countries has important implications for the direction of institutional reform in developing countries. For example, the optimal industries in developing countries are labor-intensive or resource-intensive. Except for mining and plantation, the firms in agriculture, manufacture and service sectors are small scale, using matured technology and produce matured products. The suitable financial institution for serving the small-scale firms is small and local banks. However, without paying attentions to the structural differences, the multilateral development institutions based on the current financial economics often advise the developing countries to adopt the same regulation system and develop the modern big banks and equity market as those in developed countries. As a result, the firms that provide absolute majority of jobs and produce the predominant share of GDPs in developing countries are deprived of financial services (Lin, Sun, and Jiang 2009). The recognition that developed and developing countries in reality have different industries also have implications for other development policies. For example, in their models, Basu and Weil (1998) and Acemoglu and Zilibotti (2001) show that due to the differences in human capital endowment, the technology innovated in the developed countries is inappropriate for the developing countries. However, because their models assume that there is no difference in the industries and products produced between the developed and developing countries. Therefore, they recommend the developing countries to accumulate human capital so that the developing countries can adopt the developed countries' technology. This recommendation seems to me to "ask the developing countries to cut their feet to suit the shoes of developed countries." According to the new structural economics, instead of accumulating human capital to adopt technology that is appropriate for the developed country, a developing country should enter into an industry which is appropriate for its endowment and moves up the industry ladder step by step according to the accumulation of capital endowment, both human and physical. Without such a step by step upgrading of industries and providing job opportunity for labor with high human capital, the accumulation of human capital alone may result in a brain drain in developing countries or/and a large number of frustrated highly-educated youth.

structural economics offers a clear rationale for having a proactive, facilitating state in the process of economic development.³⁷

³⁷ The developmental state theory also advises the government in a developing country to play a proactive role. Proponents of that approach recommend that governments in developing countries adopt industrial policy to promote selective industries and to subsidize the targeted ones. However, their theory does not specify that the targeted industries must be consistent with the country's comparative advantages as does the facilitating -state theory. 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 chooses to build a minimalist state, it will end up doing too little. By contrast, if it follows old structural economics and attempts to develop industries that are against the country's comparative advantage, it will do too much. It will become the type of interventionist state criticized by Lal (1983, 1994). For a recent review of developmental state theory, see Fritz and Menocal (2007) and articles in *Development Policy Review*, Volume 25, No. 5 (September 2007). Policy decisions made by a facilitating state aim to overcome the market failures whereas those of a developmental state often lead to various distortions in the market (Lin and Chang 2009).

Table Elements of Old Structuralism, New Structuralism and Neo-Classical Economics

		OLD STRUCTURAL ECONOMICS	NEW STRUCTURAL ECONOMICS	NEO-CLASSICAL ECONOMICS
Central Tenets		- Economic policies and structure are determined by links between the periphery (developing countries) and the core (industrialized countries)	-Comparative advantage should drive policy. The optimal economic structure is endogenously determined by the endowment structure and differs for each country at different stages of development	- the market is the most efficient mechanism for allocating scarce resources; - price signals serve as sufficient incentives for optimal resource allocation and outcomes in an economy; neoclassical and endogenous growth models are infrastructure-free
Basic Assumptions	Endowments	Resources, labor, and capital	Resources, labor, capital, and hard and soft infrastructure	Resources, labor, and capital
	Industries	Dichotomy between high-income countries and low-income countries	Between a low-income country and a high-income country, there exists a whole spectrum of industries with different capital intensities. Countries at different stages of development will have industries locate at different segments in the spectrum.	Either assume no difference in high-income and low-income country's industries or a dichotomy between high-income and low-income countries' industries
	Reason for low-income country's failure to develop high-income country's industries	Exogenous because of market failure arising from the rigidity of factor mobility, household's perverse behavior, and firm's monopoly.	Endogenous because of the low-income country's endowments and optimal industrial structure are different from those of the high income countries	The low-income countries and high-income countries are assumed to have the same industries.
Main Obstacle to Economic development		Market failures; and the international division of labor, imposed by the core (advanced industrialized countries).	The inability of individual firms to internalize the improvement of infrastructures in industrial upgrading;	Market imperfections (eg credit market, labor market) and distortions.
The role of state		Use industrial policy to develop import-substitution industries that are similar to those in the advanced, industrialized countries	Maintain the well-function of market; and develop required infrastructures and use industrial policy to facilitate the upgrading to industries that are consistent with the country's comparative advantages	Maintain the well-function of markets

5. NEW STRUCTURAL ECONOMICS: SOME POLICY CONSIDERATIONS

The ultimate goal of development thinking is to provide policy advice that facilitates the quest for sustainable and inclusive economic and social progress in poor countries. While specific policy measures to be derived from each particular framework depends very much on country context and circumstances, it is necessary to outline, even in broad terms, how the new structural approach to economics proposed here differs from other major brands in development economics. A straightforward way to proceed might be to briefly discuss the general policy stance from each school on a few major macroeconomic questions, and highlight what is new or different with the new structural approach.

Role of Government in the Industrialization Process

Old structural economics considered industrialization—mainly understood as the steady increase in the proportion of national income derived from manufacturing activities—not only as a *sine qua non* condition for sustained growth but also as a way to free themselves from the political supremacy of Western powers. The Prebisch-Singer thesis of a secular decline in terms of trade for developing countries provided a strong rationale for such a strategy, especially in Latin America (Prebisch, 1950; Singer, 1950). By contrast, the perceived success of the Soviet experiment in the 1950s gave credence to the notion that there should be an active role for the Government in the industrialization process. Import-substitution policies to support industries that are inconsistent with comparative advantage, central planning and government intervention often orchestrated by incompetent or corrupt bureaucrats led to failures and disappointments throughout much of the developing world and former socialist countries.

Neoclassical economics focuses instead on government failures. Because it relates supply and demand to the rationality of agents and their ability to maximize utility or profit, it considers industrial policy as a form of intervention that can only produce costly distortions to the economy. As a consequence, it advocates a *laissez-faire* approach. While economic liberalization and opening up in low-income countries often benefited export activities, skilled workers and financial interests, those policies often failed to facilitate the industrial diversification and resulted in economy-wide growth rates lower than those needed to sustain growth and ensure convergence with industrialized countries.

The new structural economics suggests a facilitating role for the state in the industrial upgrading and diversification process, with the market being the mechanism for allocating resources at any given stage of development. This view is broadly consistent with that expressed by Rodrik: “the right model for industrial policy is not that of an autonomous government applying Pigovian taxes or subsidies, but of strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of intervention are most likely to remove them.” (2004: 4)

Fiscal Policy

Until Britain's very high unemployment of the 1920s and the Great Depression, economists generally held that the appropriate stance for fiscal policy was for governments to maintain balanced budget. The severity of these crises gave rise to the Keynesian idea of counter-cyclicality, which suggested that governments should use tax and expenditure policies to offset business cycles in the economy. In other words, the budget should be in deficit when the economy was in recession and in surplus in boom times. Inspired by Keynes' theory, old structural economics went even further, asserting that the pervasiveness of market failures (or the non-existence of markets in certain instances) in developing countries makes it an imperative to use fiscal policy as the main tool for managing aggregate demand.

By contrast, neoclassical theory does not presume that the mere existence of market failures warrants the need for direct, central coordination of investments. It also rejects the implicit assumption behind the Keynesian model of a multiplier greater than one,³⁸ and its corollary that governments are able to do something that the private sector has been unable to do: mobilize idle resources in the economy (unemployed labor and capital) at almost zero social cost, that is, not corresponding decline in other parts of GDP (consumption, investment, and net exports).

Instead, they warn against the possibility of the so-called Ricardian equivalence trap, and point to the fact that households tend to adjust their behavior for consumption or saving on the basis of expectations about the future. Any fiscal stimulus package is then perceived as immediate spending or tax cuts which will need to be repaid in the future. In such situation, it is conceivable that the multiplier could be less than 1, in situations where the GDP is given and an increase in government spending does not lead to an equal rise in other parts of GDP. In neoclassical theory, it is even possible to have some rare instances of negative multipliers, which points to situations where fiscal contractions become expansionary (Francesco and Pagano, 1990).

Like Keynesian theory, new structural economics emphasizes the need for countercyclical fiscal policy during recessions or to mitigate the effect of external shocks. It further argues that such a countercyclical policy is desirable. As the government needs to play a critical role in the industrial upgrading process by providing essential infrastructure, the recession is a good time to make investments in infrastructure, not only because such investments will boost short-term demand and promote long-term growth, but also because the costs for such investments will be lower during the recession than during the normal time (Lin 2009b).

Moreover, if the government in a developing country plays the role of a facilitating state, the government's fiscal position and the country's external account are likely to be strong due to the likelihood of strong growth of the economy, a good trade performance, and the lack of nonviable firms that the government is obliged to subsidize. Under this scenario,

³⁸ Barro (2009) calls active fiscal policy of Keynesian type "the extreme demand-side view" or the "new voodoo economics".

the country will face fewer homegrown economic crises. Furthermore, if the country is affected by external shocks, such as the current global crisis, the government will be in a good position to implement counter-cyclical fiscal stimulus and use the stimulus funds to invest in infrastructural and social projects, which the government, under the new structural economics framework, has a critical role to play. Such investments can enhance the economy's growth potential, reduce private sector's transaction costs, raise the returns to their investments, and generate enough tax revenues in the future to repay the investments (Lin 2009b). Yet, the new structural economics also recognizes that active fiscal policies tend to yield different outcomes depending on the structure and size of the economy, the initial fiscal balance, the exchange rate regime in place, the rational expectations of private agents and their view of intergenerational concerns, interest rate premiums, policy credibility and uncertainty.³⁹ If due to the deviation from its comparative advantage or other reasons of bad macro management, the country has a large fiscal deficit and external imbalance, its ability to apply counter cyclical fiscal policies will be limited. This will particularly be the case in situations of prolonged recessions.

Public Revenue Management Policy in Resource-Rich Countries

Under old structuralism, certain strategic sectors generating public revenues, such as the extractive industries, are reserved for government control. A number of other sectors deemed of national interest are subjected to state aid and protection. The government crowds out the private sector, often through the creation of state-owned enterprises under the justification that they represent natural monopolies, facilitate the provision of public goods or employment opportunities in depressed areas. Public revenues collected through taxes, transfers or profits are used to fund investment programs or increased social spending, including health care, subsidized food and education. International trade is taken over almost entirely by the government and private capital inflows are often nonexistent, or strictly controlled. For resource-rich countries, the typical prescription of old structuralism is to use revenue and foreign exchange reserve management to fund populist macroeconomic policies.

Neoclassical economics tends to recommend that resource-rich countries adopt macroeconomic policies aiming at avoiding internal and external balance problems. This is usually done by securing external financing, adopting demand-restraint measures, and

³⁹ Theoretical and empirical studies suggest that fiscal multipliers are often positive or even close to 1 in situations where: There is excess capacity, the economy has a fixed exchange rate, and households are liquidity constrained or have limited time horizons; (ii) Higher levels of government spending do not crowd out private spending but enhances the productivity of labor and capital; (iii) Public debt is low and the government does not face financing constraints; and (iv) Monetary policy is expansionary without generating fear of inflation. By contrast, fiscal multipliers are likely to be small or even negative when: (i) Households are Ricardian—they perceive any new spending or tax cut as future tax increase, and anticipate higher taxes by saving more, or curbing their consumption; (ii) Active fiscal policy increases uncertainty, which leads to more cautious saving and investment decisions by private agents; (iii) Debt is unsustainable and risk premiums on interest rates are large; and (iv) Government spending crowds out private sector spending either directly or as interest rates rise and a flexible exchange rate appreciates in response to fiscal expansion. See Hemming et al. (2002).

implementing structural reforms. In this regard, it is one of the main goal of fiscal policy is to save a substantial portion of public revenue (often deposited in a separate central bank account or trust fund for future generations), and only use a small fraction of resource revenue for current consumption. In the short- and medium-term, this helps smooth public expenditure in the face of commodity price fluctuations. In the long-run, it raises total government savings and ensures that the cost of financing pensions is spread over multiple generations.

Neoclassical economics also highlights the importance of sound management of foreign reserves in resource-rich countries because it ensures a country's overall resilience to shocks. Foreign exchange reserve management should support a wide range of objectives, including to: maintain confidence in monetary and exchange rate policies; mitigate the risks of external vulnerability by maintaining foreign currency liquidity to absorb shocks during times of crisis; provide confidence to markets that a country can meet its external obligations; ensure the backing of domestic currency by external assets; and provide reserves in case of national disasters or emergencies (IMF, 2001). Because sound reserve management policies and practices can support, but not substitute for, sound macroeconomic management, neoclassical economics recommends that portfolio management policies concerning the currency composition, choice of investment instruments, and acceptable duration of the reserves portfolio be consistent with a country's specific policy settings and circumstances, serve to ensure that assets are safeguarded, readily available and support market confidence. It also stresses the need for a framework of transparency that ensures accountability and clarity of reserve management activities and results, sound institutional and governance structures, and prudent management of risks. However, such a resource revenue management policy may not be sufficient to facilitate the diversification and upgrading of its industries in a resource-rich country, and enhance its growth rate (Hausmann and Klinger 2006).

New structural economics also warns against the use of revenues from natural resources by developing countries for increased general spending or reduced taxes, and supports the need to manage public revenues conservatively. However, it suggests that an appropriate share of revenues from commodities be used for investments in human, infrastructural and social capitals so as to facilitate the diversification and upgrading of industries. To accomplish this with the greatest effect, it is important that these resources finance investment opportunities that remove binding constraints to growth, especially in the sector of infrastructure and human capital. Comparative microeconomic analyses show that even when factory floor costs are comparable, infrastructural inefficiencies can render competition on international markets impossible. Freight and insurance costs in Africa are 250 percent of the global average,⁴⁰ with road freight delays 2-3 times as long as in Asia. Because of lack of resources, much needed investment and maintenance often remains unmet.⁴¹ In such contexts, instead of keeping the natural resources revenues in

⁴⁰As percent of cost (UNCTAD).

⁴¹Recent research suggests that *economic* returns on investment projects in developing countries averages at 30–40 percent for telecommunications, over 40 percent for electricity generation, and more than 200 percent for roads. In Thailand, production loss due to power outages represents more than 50 percent of the total indirect costs of doing business in 2006. Firms often rely on their own generators to supplement the

the form of sovereign fund and investing in foreign equity markets or projects, it is desirable to use a substantial portion of the revenues for financing domestic or regional projects that meet the market test—i.e. those projects with good returns and to catalyze the development of new manufacturing industries that can diversify the economy, provide jobs and have the potential of continuous upgrading.⁴²

Monetary Policy

Old Structural economics suggested that monetary policy should be under government control (not independent central banks) and directed at influencing interest rates and even sectoral credit allocation. But they also acknowledged that many other factors that influence the investment demand-schedule in developing countries are too powerful for monetary policy alone to achieve sufficient levels of investment, channel resources in strategic sectors, and combat unemployment.

Building on lessons from the rational expectations revolution, neoclassical economists rejected the idea that monetary policy could be used to support industrial policy. They suggested that its main goal should be price stability, and advocated the use of short-term interest rates by independent central banks not to stimulate economic activity and trigger inflation, but to maintain a general level of prices (or to control money supply growth). Commenting on the substantial decline in macroeconomic volatility around the world in recent decades—at least prior to the 2007 global crisis—(the so-called “Great moderation”), which he called “one of the most striking features of the economic landscape over the past twenty years” Bernanke wrote: “Few disagree that monetary policy has played a large part in stabilizing inflation, and so the fact that output volatility has declined in parallel with inflation volatility, both in the United States and abroad, suggests that monetary policy may have helped moderate the variability of output as well.” (2004)

New structural economics considers that monetary policy should be less neutral in its objectives than suggested by neoclassical economists. Instead, it should be used as a counter-cyclical tool to reduce interest rates and facilitate the industrial upgrading

unreliable public electricity supply. In Pakistan, over 60 percent of firms surveyed in 2002 owned a generator. The cost of maintaining a power generator is often high and burdensome, especially for small and medium firms, which tend to be an important source of employment, yet whilst these costs must be privately borne, their benefits are felt across the economy.

⁴² The exploitation of natural resources can generate large amount of revenues but in general the operation is very capital-intensive and provides very limited job opportunity. In a recent visit to Papua New Guinea, I observed that the Ok Tedi copper and gold mine in Tabubil, Papua New Guinea generates almost 80 percent of its export and 40 percent of government revenues but provides only 2000 jobs. A proposed liquefied natural gas project will double Papua New Guinea’s national income after its completion in 2012, but the project will only provide 8,000 jobs. The majority of Papua New Guinea’s 6.5 million populations still live on subsistence agriculture. The contrast between the living of a few elite workers in modern mining and that of subsistence farmers becomes a source of social tension. The failure to diversify the economy from the diamond mining and to generate job opportunity may explain the widening of disparity and deterioration of various human and social indicators in Botswana in spite of the diamond industry’s great success in sustaining Botswana’s growth miracle in the past 40 years.

process. It acknowledges that monetary policy in industrialized developed countries is likely to be ineffective to stimulate investment and consumption in excess capacity situations during a recession, especially when nominal interest rate hit the zero bound, which imply limited profitable investment opportunities, pessimistic expectations, low confidence about the future, and the likelihood of liquidity traps.⁴³ By contrast, developing countries are less likely to encounter the liquidity trap. Even when faced with excess capacity in existing industries, there is always scope for industrial upgrading in developing countries. As such, firms in a developing country have incentives to borrow money to make industrial upgrading investments if the interest rate is low enough during a recession.

Financial Development

All major theories of economic development consider financial systems to be not just correlated with industrialization but to actually help sustain economic growth. But they identify and emphasize very different roles in that process. Starting with the observation that one of the major constraints facing developing countries was limited capital accumulation (Rosenstein-Rodan, 1943; Hirschman, 1958), old structural economics regarded the problems of the financial sector in underdeveloped economies as resulting from widespread market failures that could not be overcome by market forces alone.⁴⁴ In their view, governments should adopt a hands-on approach to mobilize savings and allocate credits to support the development of advanced capital-intensive industries.

Analyzing the effects of such policies throughout the developing world, especially in the 1960s and 1970s, neoclassical economists observed that price inflation combined with numerous government interventions in the credit mechanism to set interest rates and direct the flow of credit (with politicians directing the flow of credit to suit their own ends), had shrunk the deposit base for domestic bank lending. This very often led to financial repression (McKinnon, 1973; Shaw, 1973). In some countries, especially in Sub-Saharan Africa, the general belief in soft-budget constraints—governments always willing to finance the deficits of state-owned financial institutions—even created a pervasive business culture of self-repression, not only for banks but also for public and private enterprises (Monga, 1997). As a consequence, neoclassical economists advocated financial liberalization. They contended that bureaucrats did not have the incentives or

⁴³ The process is as follows: when confronted with excess capacity, companies cut prices to reduce excess inventory. This aggravates the slack in labor markets, which in turn leads to decline in wage growth and prices. Even when nominal interest rates are low as it is currently the case around the world, investment opportunities are limited by the excess capacity. The ensuing fall in demand and prices is self-enforcing—the increase in unemployment and decline in wage results in further falls in demand and prices, and the increase in the real value of nominal debts can create severe problems of default, which may exacerbate credit losses of financial institutions and further result in a vicious cycle of debt deflation. In such disequilibrium situations, monetary policy lacks traction on the domestic front. It is also ineffective on the external front, as currency depreciation might not be effective either to stimulate exports (“beggar-thy-neighbor”).

⁴⁴ Gerscherkron (1962) made a similar point, arguing that the private sector alone cannot effectively address the problems of access to finance in weak institutional environments.

expertise to intervene effectively in credit allocation and pricing, and that well-defined system of property rights, good contractual institutions, and competition would create the conditions for the emergence of a sound financial system. They recommended that government exit from bank ownership and lift restrictions on the allocation of credit and the determination of interest rates (Caprio and Honohan, 2001).

While agreeing with the need to address the deleterious effects of financial repression, new structural economics rejects the assumption that poor countries suffering from economic distortions of various kinds should reform their financial sector without an appropriate sequencing of liberalizing government policies in domestic finance and foreign trade for securing open markets. New structural economics posits that the optimal financial structure of a specific stage of development is determined by the structures of industries, and sizes and risk natures of firms in the economy, which in turn are endogenous to the economy's factor endowments at that stage. Observing that national policies frequently favor big banks and equity market to the detriment of economy, it suggests low-income countries should make small, local banks the mainstay of their financial systems, instead of trying to replicate the financial structure of advanced industrialized countries so that the small scale firms in agriculture, industry and service can obtain adequate financial services. The financial structure should gradually increase the weight of big banks and equity market along the upgrading to more capital intensive industries in a country's development process (Lin, Sun and Jiang 2009).

Foreign Capital

In a world which they thought was characterized by the core-periphery relationship, old structural economics tended to view foreign capital mainly as a tool at the hand of industrialized countries and their multinational firms to maintain the dependency of developing countries. They rejected the idea that free capital movements among countries could deliver an efficient allocation of resources, and considered foreign direct investment flows to poor countries as an instrument for foreign ownership and control. They advocated tight restrictions on virtually all forms of international financial flows.

Neoclassical economic theory argues that international capital mobility allows countries with limited savings to attract financing for productive domestic investment projects, that it enables investors to diversify their portfolios, that it spreads investment risk more broadly, and that it promotes inter-temporal trade—the trading of goods today for goods in the future (Eichengreen et al, 1999). It therefore favors open, or liberalized, capital markets, with the expectation of more efficient allocation of savings, increased possibilities for diversification of investment risk, faster growth, and the dampening of business cycles.

New structural economics rejects the "efficient markets" hypothesis put forward by neoclassical economics and argues that liberalized financial markets in a developing country can be so distorted by incomplete information, large movement in and out of financial resources, and other problems that transactions often yield outcomes harmful to the general welfare in the country. It points out the fact that asymmetric information in

financial markets often gives rise to adverse selection, moral hazard, and herding. Just like domestic liberalization, international financial liberalization can improve efficiency but only when accompanied by policies such as prudential supervision and regulation, combined with careful design of a lender-of-last-resort facility that limits the scope for financial market participants to take on too much risk.

New structural economics also considers foreign direct investment to be an important tool for developing countries because the investment is usually targeted towards industries consistent with the country's comparative advantage. It is less prone to sudden reversals in a panic than bank loans, debt financing and portfolio investment, and does not generate the same acute problems of financial crises as do sharp reversals of debt and portfolio flows. In addition, the direct investment in general also brings with it technology, management, access to market, and social networking, which are often lacking in a developing country and crucial for the country's upgrading to a new industry. Thus, liberalizing inward direct investment should generally be an attractive component of a broader industrial policy. By contrast, portfolio investment tends to target speculative activities (mostly in equity markets or the housing sector), which creates bubbles and fluctuations. Because portfolio flows are volatile by nature, they often contribute to Dutch disease and currency crises. Therefore, they should be controlled or carefully regulated.

Trade Policy

While there were various old structuralist approaches to external trade, one constant feature was the belief that integration into the global economy was bound to maintain the existing world power structure, with Western countries and their multinational corporations dominating poorer countries and exploiting their economies. In order to break the dependency trap, old structuralist thinkers suggested that priority be given to import-substitution strategies, and to keep developing economies closed and protected until they can compete with advanced industrialized countries in world markets.

A different radically view was adopted by neoclassical economists in the 1980s. Observing that the macroeconomic crises in developing countries almost always have an external dimension, they considered that their immediate cause was the lack of foreign exchange to service debts and purchase imports. They recommended trade liberalization and export promotion as a solution to generate foreign exchange through export earnings. This was also consistent with the view that in the long-term, outward oriented development strategies are more effective than inward looking policies. This view was bolstered further by the argument that such a strategy would increase demand for unskilled labor and hence unskilled wages, as had happened in successful East Asian countries (Kanbur, 2009).

New structural economics rejects both strategies, considering exports and imports to be endogenous to the comparative advantages determined by a country's endowment structure. It considers that import and export substitution are both essential features of industrial upgrading according to the change of a country's comparative advantages. It

considers globalization as a way for the developing countries to exploit the advantages of backwardness and achieve a faster rate of innovation than is possible in countries on the global technology frontier. This is an essential mechanism for a developing country to converge to the developed countries. It recognizes, however, that many developing countries start climbing the industrial ladder with the legacy of distortions from old structuralist's import-substitution strategy. It therefore suggests a gradualist approach to trade liberalization. In the transition process, it proposes to give tentative protection to sectors, which are not consistent with the country's comparative advantages, and liberalize entry to sectors, which are consistent with the country's comparative advantages but are suppressed in the past.

Human Development

Old Structural economics generally said little about the role of human development in economic growth. By contrast, neoclassical economics has shown that continuing growth in per capita incomes of many countries during the nineteenth and twentieth centuries was partly due to the expansion of scientific and technical knowledge that raises the productivity of labor and other inputs in production. Economic growth is theorized as the result of synergies between new knowledge and human capital, which is why large increases in education and training have accompanied major advances in technological knowledge in all countries that have achieved significant economic growth. Education, training, and health, which are the most important investments in human capital, are considered to be the most important driving force for economic development (Becker 1975, Jones and Romer 2009) and the more are desirable.

New structural economics considers human capital to be an element in a country's endowment. Education increases the worker's ability to cope with risk and uncertainty (Schultz 1961). As the industries upgrade to new, higher capital-intensity industries and move closer to global industrial frontier in the development process, the product and technology risks will increase and, therefore, the workers and managers are required to have a higher human capital to cope with the challenges. However, the improvement in human capital needs to be commensurable with the accumulation of physical capital and the upgrading of industry in the economy. Otherwise, the human capital will either become a binding constraint of the economy's development if the human capital is under supply due to insufficient investments, or the economy will have many frustrated highly-educated workers who cannot find adequate jobs if the investments in human capital are not accompanied by an appropriate speed of industrial upgrading in the economy. Therefore, the policy on human capital is an integral part of the country's overall development policy. It goes beyond the neoclassical prescription for education and suggest that country development strategies include policy measures to invest in human capital to facilitate the upgrading of industries and to make full use of human capital resources. Otherwise, developing countries can devote large amounts of resources to educate and train workers who are then unemployed or forced to migrate.

6. IMPLICATIONS FOR WORLD BANK RESEARCH

Summing up, the new structural economics emphasizes the importance of endowments, the endogeneity of industrial and other social economic structures, and the endogeneity of various distortions stemming from past, misinformed, interventions by policy makers who are assumed to have the incentives to correct market failures, but are not sure how. Moreover, the neoliberal advice the developing countries governments receive from the development community has too often been of "one-size-fits-all", paying little attention to differences in the optimal structures at different stages of development and the endogeneity of various distortions.

The main criterion for assessing applied research in development economics is its relevance to the most pressing policy issues at hand. Many of the countries that have achieved some degree of convergence with industrialized countries in the past fifty years have not followed the often orthodox prescriptions advocated in the most influential policy circles. Development economists must learn from the experiences of these countries that have not followed conventional wisdom, yet have done better at reducing poverty than others. Moreover, the global economic crisis has challenged the economics profession to reexamine the validity of some of its existing knowledge, including on development thinking. It has also highlighted the need for updating the research agenda on key issues and questions about development strategies.

In the past decade, the World Bank has initiated a number of research projects, such as the *East Asian Miracle* (World Bank, 1993), the *Growth in the 1990's* (World Bank, 2005), and the *Growth Report* (World Bank, 2008), to draw lessons from successful economies' experiences. Those projects have produced many useful stylized facts for determining the success or failure of economic development in a developing country. The proposed new structural economics is a continuation of that effort and attempts to develop a general framework for understanding the causality behind those observed stylized facts.⁴⁵ Specifically, the new structural economics proposes (i) to develop an analytical framework taking into account both factors and infrastructures endowments, the stages of development and the corresponding industrial and social, economic structures of developing countries; (ii) to analyze the roles of the state and market at each development stage and the transition from one stage to another stage; and (iii) to focus on the causes of economic distortions and the government's exit strategies from the distortions.

⁴⁵ For example, the *Growth Report* summarize that the 13 cases of sustained and high growth in the post-war period possessed the following five stylized facts: 1. They fully exploited the world economy; 2. they maintained macroeconomic stability; 3. They mustered high rates of saving and investment; 4. they let markets allocate resources; 5. They had committed, credible, and capable governments. From the new structural economics' point of view, the first three stylized facts are the results of following comparative advantages in each stage of their development so they have an open economy, a competitive economy, high profitability, and high rate of returns to investment. The fourth one is a necessary condition for an economy to follow comparative advantage in its development. The last one is the characteristics of a facilitate state and a condition for an economy to adopt a comparative-advantage following strategy in its development process. See further discussions in Lin (2009a).

The new structural approach to economics is not an attempt to substitute another grand development theorizing to various policy frameworks (often ideologically-based) that have dominated development thinking in past decades, yet showing little connection to the empirical realities of individual countries. Rather, it is an approach based on a set of principles that have guided the success of a wide sample of developing countries. It suggests a path towards country-based research that is rigorous, innovative and relevant to policy.

This framework raises several questions for researchers in the academia and in international and national development agencies. It stresses the need to better understand the role of government in industrial upgrading and the development of soft and hard infrastructures in the process of economic development: How can a successful development strategy be designed and implemented? What advice should be given to developing countries trying to move from an environment characterized by distortions due to inappropriate government interventions to a first-best world? How to ensure that such transitions work well? New structural economics posits that because of the different structure of economies at different stages of development, the targets of reform for poor countries should not necessarily refer to the policies and institutions that prevail in high-income countries.

As one of the largest and most productive development economics research groups in the world, the World Bank Research department is a major producer of analytic tools directly applicable to operational issues, and in high demand by governments, development partners and civil society. Current World Bank research has developed a heavily sectoral approach because it responds to concrete questions and specific gaps in the understanding of the development process at the sectoral level, where many of the most pressing development problems are faced. This is also due to the fact that the World Bank today has a largely sectoral orientation in both lending and policy advice. The work is often country-specific, although efforts are also made to undertake similar research in comparator countries to enrich our understanding of what other factors affect the results and thus policy recommendations. The gaps in knowledge that are addressed emerge in large part from interactions with operations, donors and client countries.

It is necessary that its research program—which has evolved out of existing knowledge gaps across a wide range of development topics—maps into a broader perspective of the type suggested by the new structural economics framework. The implications of the proposed framework can be implemented in the various areas of World Bank research by taking countries' factor and infrastructure endowments as given, and the endogeneity of existing structures and distortions as starting point for analysis. Such research will reflect that in the first best scenario the market is the fundamental mechanism for resource allocation, but that government should also be active in facilitating structural changes, infrastructural improvements, and exit from distortions. The role of government and its involvement in different areas will not be static but will change over time. Research on these aspects can guide World Bank operations, and policymakers in the developing world who are striving to implement successful development and exit policies.

There are obvious links between the proposed new approach and ongoing work in the trade, macroeconomics and finance teams of the research group. It is expected that links will emerge with the work of other groups (poverty, human development, rural development, and environment). Such a new perspective is likely to generate exciting areas of research. On many topics, it will open up new dimensions.

The current state of development economics and the severe impact of the global crisis on the economies of developing countries have generated strong demand for a new framework for development thinking. As the most important multilateral development institution and a premier knowledge bank in the world, the World Bank must lead the global community in rethinking economic development. Hope the research agenda of new structural economics will enrich our research and enhance our understanding of the nature of economic development so as to achieve the goals of assisting the developing countries to have a dynamic, sustainable and inclusive growth and to eliminate poverty in the world.

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