

The Growth Report and New Structural Economics

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Abstract

Despite its heavy human, financial, and economic cost, the recent global recession provides a unique opportunity to reflect on the knowledge from several decades of growth research, draw policy lessons from the experience of successful countries, and explore new approaches going forward. In an increasingly globalized world where fighting poverty is not only a moral responsibility but also a strategy for confronting some of the major problems (diseases, malnutrition, insecurity and violence) that ignore boundaries and contribute to global insecurity, thinking about new ways of generating

and sustaining growth is a crucial task for economists. This paper reassesses the evolution of knowledge on growth and suggests a new structural approach to the analysis. It offers a brief, critical review of lessons learned from growth research and examines the remaining challenges—especially from the policy standpoint. It highlights how the 2008 Growth Commission Report identifies the stylized facts associated with sustained and inclusive growth. And it explains how the new structural economics provides a consistent framework for understanding the key findings of the Report.

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THE GROWTH REPORT AND NEW STRUCTURAL ECONOMICS

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1. INTRODUCTION

Economists have always been conflicted between the need to understand the dynamics of business cycles, and the study of long-term growth—both of which are important for human welfare. The world economy has just experienced a severe financial and economic crisis¹, which has justified the intellectual focus on stabilization policies, especially given the role that coordinated and decisive monetary and fiscal policies have played in preventing the global recession from becoming a worldwide depression. But the persistence of poverty in many parts of the world and the potential long-term impact of the crisis on global poverty reduction also highlight the importance of policies that are conducive to sustainable and inclusive growth.² Economic growth is indeed the main source of divergences in living standards across countries and regions of the world. As Barro and Sala-i-Martin (1995) observe, “if we can learn about government policy options that have even small effects on long-term growth rates, we can contribute much more to improvements in standards of living than has been provided by the entire history of macroeconomic analysis of countercyclical policy and fine tuning.”

In fact, economic growth may be the single most important issue confronting economists today. The differences in output per worker and national income across countries are still puzzling. According to calculations by Maddison (2001), world population rose 22-fold over the past millennium. Per capita income increased 13-fold, world GDP nearly 300-fold. This contrasts sharply with the preceding millennium, when world population grew by only a sixth, and there was no advance in per capita income. Measured in today’s living standards, all countries in the world were poor in the beginning of the 18th century. Sustained growth in income per capita only picked up after 1820: per capita income rose more than eightfold.

A well-known fact confirmed by the recent crisis is the observation that countries that have sustained high rates of growth have also performed well despite the global meltdown. Their dynamic performance has made them more resilient. With strong external balance sheets and ample room for fiscal maneuver before the crisis, they were able to implement countercyclical policies to combat external shocks. “A crisis is a terrible thing to waste,” said Paul Romer, one of the preeminent theorists of growth. Despite its heavy human, financial and economic cost, the recent recession provides a unique opportunity to reflect on the knowledge from several decades of growth research, draw policy lessons from the experience of successful countries, and explore new approaches going forward.

¹ The losses precipitated by the financial crisis have been enormous. Total capitalization of world stock markets halved in 2008 - about \$32 trillion of wealth. The losses in household wealth during 2008 were about \$11 trillion in the United States (\$8.5 trillion in financial assets and \$2.5 trillion in housing assets) and were estimated at \$1.5 trillion in the United Kingdom (\$0.6 trillion in financial assets and \$0.9 trillion in housing assets). Losses of such magnitude have significant wealth effects on consumption and savings. Industrial production fell sharply in many developed and emerging countries and for the first time since 1929, world trade contracted in 2009. Data sources: Global Stability Reports; IMF Survey Magazine, June 24, 2009.

² There were 1.4 billion people living under \$1.25 international poverty line before the global crisis. Applying the country-specific growth projections to survey-based data and aggregating, World Bank experts calculate that the crisis will add 50 million people to the 2009 count of the number of people living below \$1.25 a day and 57 million to the count of the number of people living under \$2 a day. Given current growth projections for 2010, there will be a further impact on poverty in that year, with the cumulative impacts rising to an extra 64 million people living under \$1.25 a day and 76 million more under \$2 a day by 2010.

Looking at the data, one may be surprised to note that the recession has obscured the broader economic narrative of our time, which is the remarkable economic performance of many poor countries, especially in the past ten years. Leaving aside the United States, which ranks third, the four most populous countries of the world (Brazil, China, India, Indonesia), have made great strides, averaging annual growth rates well over 6 percent a year. That is a vast improvement in the standards of living for more than 40 percent of the world's population. The same trends are in place in many other South American countries (Chile, Colombia, Peru) and in some African countries (Botswana, Mauritius, Tunisia, Ghana).

To be sure, poverty reduction is still a very challenging development issue. In an increasingly globalized world where fighting poverty is not only a moral responsibility but also a strategy for confronting some of the major problems (diseases, malnutrition, insecurity and violence) that ignore boundaries and contribute to global insecurity, thinking about new ways of generating and sustaining growth is a crucial task for economists. It is therefore essential to continue searching for new ideas on the mechanics of wealth creation. Over the last 50 years, much progress has been made, most recently with the work of the Growth Commission Report.³ But beyond a consensus on broad principles and the rejection of one-size-fits all approaches, economists still face significant challenges in identifying actionable policy levers that are directly relevant to specific countries.

This paper reassesses the evolution of knowledge on growth and suggests a new structural approach to the analysis. Section 2 offers a brief, critical review of lessons learned from growth research and examines the remaining challenges—especially from the policy standpoint. Section 3 highlights the important recent contribution of the Growth Commission Report and the identification of stylized facts associated with sustained and inclusive growth. Section 4 provides a consistent framework for understanding its key findings through the lenses of new structural economics. Section 5 offers some concluding thoughts.

2. THE QUEST FOR GROWTH: AN UNFINISHED JOURNEY

Economic historians who have examined the evolution of growth performance throughout history tend to divide it into three distinct periods: The first one, which spanned most of human history up to the middle of the 18th century, was marked by static living standards, despite population growth—the so-called Malthusian conditions. The second one, which lasted from about 1750 to the 1820s, was characterized by some improvement in living standards, and changes in demographic trends (higher fertility rates and lower mortality rates). The third epoch, observed initially in England at the end of the first quarter of the 19th century, has been that of modern economic growth (Cameron, 1993). Deciphering the mystery of modern economic growth and explaining convergence and divergence have been major topics of research, especially since the 1950s. While much progress has been achieved on theoretical and empirical grounds, much remains to be understood on the policy front.

³ The report was released in 2008 and titled *The Growth Report: Strategies for Sustained Growth and Inclusive Development*. The Commission was constituted of 20 experienced policymakers and two Nobel prize-winning economists, Michael Spence and Robert Solow. Its work has been supported by the Governments of Australia, Sweden, the Netherlands, and United Kingdom, the William and Flora Hewlett Foundation, and the World Bank Group.

Growth Analysis in Historical Perspective

The analysis of growth—and the specific factors that have sustained it and accompanied the structural changes associated with it—became a major topic of interest for thinkers in general and economists in particular in the early 18th century. David Hume, whom Rostow claims to be “the first modern economist” (1990: 18) placed economic analysis at the center of his analysis of the human condition. He also offered economic concepts that are considered to “form a reasonably coherent and consistent theory of the dynamics of growth”. Classical economists who followed in his footsteps—such as Adam Smith, Alfred Marshall, David Ricardo and Allyn Young—were also obsessed with economic growth. Perhaps because of their fascination with the idea of human progress celebrated during the Enlightenment, they explored the determinants of economic development, and the role that policymakers could play in fostering prosperity. Their pioneering work highlighted important notions such as factor accumulation, factor substitution, technical change, or specialization, which are at the core of modern growth theory.

But growth analysis slowed down after the Great Depression, as the intellectual focus shifted from long-run to short-run issues. In fact, with the notable exception of the pioneering work of Robert Solow, for much of the 20th century and certainly through the 1960s and 1970s, macroeconomists tended to study business cycles issues that characterized the post-war period. As they tried to better understand stabilization policies—monetary and fiscal measures to avoid disruptive and costly inflation—few resources were devoted to the analysis of the long-run determinants of growth.

Things changed in the 1980s when many prominent researchers focused their attention on differences in economic performance among countries. Surveys of economic growth and levels of performance in different parts of the world economy show that growth has indeed been uneven across countries and regions: between 1900 and 2001, per capita GDP in Western Europe increased by a factor of 6.65 (6.7 in Western Offshoots), compared to 5.2 in Latin America, 4.2 in Eastern Europe, and only 2.5 in Africa.⁴ The number of people living in high-growth environments or in countries with OECD per capita income levels has increased in the past 30 years by a factor of four, from 1 billion to about 4 billion (Growth Commission 2008).

Following the initial work by Harrod and Domar, the Solow-Swan model sparked the first major wave of systematic growth analysis. The objective was to understand the mechanics of growth, identify its determinants, and to develop techniques of growth accounting, which would help explain changes in the momentum and the role of economic policy. That first generation of growth researchers highlighted the centrality of capital. Their models featured neoclassical forms of production functions with specifications that relied on constant returns to scale, diminishing returns and some elasticity of substitution between inputs. In order to present a general equilibrium model of the economy, these researchers adopted a constant saving rate rule. This was a crude assumption but a major step forward in tool building, as it offered a clear demonstration that general equilibrium theory could be applied convincingly to real world issues. One important prediction from these models was the idea of conditional convergence, derived

⁴ Source: Maddison (2006). See also *The World Economy: Historical Statistics*, available at <http://www.ggdc.net/maddison/>

from the assumption of diminishing returns to capital—poor economies with lower capital per worker (relative to their long-run or steady state capital per worker) will grow faster.⁵

The major strength of that line of growth research was the explicit introduction of technology—in addition of capital and labor—in the theoretical and empirical analysis. But the limited toolkit available at the time created a major shortcoming to that approach: technology was presented as an exogenously given public good. The major prediction of the model based on the assumption of diminishing returns to capital was the idea that per capita growth will cease in the absence of continuous improvements in technology. While that assumption allowed the model to maintain its key prediction of conditional convergence, it also seemed odd: technology, the main determinant of long-run growth was kept outside of the model.⁶

A new wave of growth modeling had to come up with a convincing theory of technological change—one that frees up the neoclassical model from the exogeneity of the main determinant of long-term growth. A first step was to design a theory of continuous growth fuelled by non-diminishing returns to investment on a broad class of physical and human capital. The process could go on indefinitely if returns do not diminish as economies grow (Romer 1986). A second, more effective approach was to move away from the straightjacket of perfect competition, and incorporate imperfect competition and R&D theories in growth modeling—the rationale here being that such bold methodological moves helped explain why the economy would not run out of new ideas, and growth rates could be kept positive in the long run (Romer 1987, 1990; Aghion and Howitt, 1992).

Endogenous growth theory, as it came to be known, maintained the assumption of nonrivalry because technology is indeed a very different type of factor from capital and labor—because it can be used indefinitely by others, at zero marginal cost. But it was important to take the next logical step and to better understand the public good characterization of technology, and think of it as a partially excludable nonrival good. The new wave therefore reclassified technology not just as a public good but as a good that is subject to a certain level of private control. By making it a partially excludable nonrival good and therefore giving it some degree of excludability or appropriability, it was possible to ensure that incentives matter for its production and use. The move away from perfect competition was therefore necessary. It has yielded high methodological payoffs. While neoclassical models of growth took technology and factor accumulation as exogenous, endogenous growth models explain why technology grows over time through new ideas, and provide the microeconomic underpinnings for models of the technological frontier.

⁵ Conditional convergence is a key property in Solow-Swan models. It is conditional because in these models, the steady-state levels of capital and output per worker depend on characteristics that vary across economies: saving rate, population growth rate, and the position of the production function. Many recent empirical studies have suggested that many other sources of cross-country variations such as government policies or the initial stock of human capital should be included in the analysis.

⁶ The Cass (1965) and Koopmans (1965) versions of the neoclassical model, which built on Ramsey's analysis of consumer optimization, attempted to provide an endogenous determination of saving rates. While this extension helped preserve conditional convergence, it did not solve the problem of long-run growth being determined by exogenous technological progress.

Another important question has been to understand how technological diffusion takes place across countries and generates or sustains growth—and why it does not take root in others. Various interesting possibilities have recently been explored in an attempt to answer that critical question: one option has been to add an avenue for technology transfer as a new component to the endogenous growth model, that is, “endogenizing” the mechanism by which different countries achieve the ability to use various intermediate capital goods (Jones, 1998). Another popular route is to try to identify the fundamental determinants of growth through political economy models. Contrary to previous waves of growth modeling, this line of research focuses not on the proximate determinants of growth but on the impact on growth of such factors as institutions or the quality of governance (Acemoglu and Robinson, 2001; Glaeser and Shleifer, 2002). Several other approaches to growth research have yielded various insights to the mystery of modern economic growth (Barro and Sala-i-Martin 2003; Jones 1998).

Challenges of Explaining Convergence—and Divergence

Both on the theoretical and empirical fronts, progress has been made in our understanding of growth in recent decades. On the theoretical front, the analysis of endogenous technical innovation and increasing returns to scale has provided economists with a rich general framework for capturing the broad picture and the mechanics of economic growth. From Solow’s work, we know the importance of the role of capital accumulation (both physical and human) and technical change in the growth process. From contributions by Becker, Heckman, Lucas⁷ and many others, we also learned about the importance of human capital through diffusion of new knowledge or on-the-job learning, often stimulated by trade, and the so-called college wage premium. From work by North (1981), with supporting theoretical and empirical analyses exemplified by the works of Acemoglu et al. (2001), Greif (1993), Glaeser and Shleifer (2002), we have learned that growth is in large part driven by innovation and institutions that have evolved in countries where innovative activity is promoted and conditions are in place for change to take place. From Romer and the endogenous growth theorists, we have understood the need to change the focus of growth theory from accumulation to knowledge creation and innovation. In sum, we know quite a lot about some of the basic ingredients of growth.

On the empirical side, the availability of standardized data sets—especially the Penn World tables—has stimulated interest in cross-country work that highlights systematic differences between high-growth and low-growth countries with regard to: (i) Initial conditions (such as productivity, human capital, demographic structure, infrastructure, financial development, or inequality); (ii) Policy variables of various sorts such as trade openness, macroeconomic stability, levels and composition of public spending, taxation, or regulation; and (iii) Institutional variables such as general governance indicators, administrative capacity, rule of law, protection of property rights, or corruption.

However, growth research still faces significant methodological difficulties, and challenges in identifying actionable policy levers to sustain and accelerate growth in specific countries.⁸

⁷ See, in particular, Becker (1992); Heckman (2006); Lucas (2004).

⁸ This is the case not only in development economics but also in various sub-disciplines of macroeconomics. Following the 2008-09 global crisis, a heated debate erupted among economists over the pertinence of the dominant models and their policy prescriptions. See for instance Blanchflower (2009), Krugman (2009), or Stiglitz (2009). For

Deaton (2009) expresses the general sentiment of despair among economists when he notes that “empiricists and theorists seem further apart now than at any period in the last quarter century. Yet reintegration is hardly an option because without it there is no chance of long-term scientific progress.” Despite many decades of theoretical advances and the development of new techniques to help policymakers in developing countries identify systematically constraints to growth, the intellectual and policy agenda ahead is indeed still daunting.

Contrary to the prediction of most neoclassical models, convergence among world economies has been a limited phenomenon (Pritchett 1997). In 2008, GDP per capita in the United States (the world richest country) was three times higher than per capita income in neighboring Mexico, 16 times higher than the per capita income in India, and 145 times the per capita income of the Democratic Republic of Congo. That gap is still widening. In most of the past century, incomes in developing countries have fallen far behind those in developed countries, both proportionately and absolutely.⁹

Yet, empirical observation reveals that divergence between industrialized and developing countries is not inexorable: in the past two centuries, some countries have been able to catch up with the most advanced economies (most notably Germany, France, and the USA in the late 19th century, and the Nordic countries, Japan, and the 13 economies analyzed in the Growth Commission Report in the 20th century). 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). 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, such inventions were essential to technological advances. With investment in research and development, innovation became endogenous (Romer, 1986; Lucas, 1988). Industrial structures were upgraded continuously and productivity increased. As a result, developed countries began to take off and the divergence between the North and the South appeared (Baumol, 1994).

Historical evidence suggests that the growth process followed a similar pattern in developing economies such as the four East Asian dragons (Korea, Singapore, Taiwan, Hong Kong), which converged to the income levels of advanced western countries in the second half of the 20th century. The same process subsequently allowed countries as diverse as China, Vietnam, Botswana, or Mauritius to achieve rapid and sustained growth in the 1980s and 1990s (Lin, 2003, 2009; Rodrik, 2005). Except for that select group, most developing countries have failed to achieve their economic growth ambitions since World War II. In fact, many have encountered frequent crises despite efforts from their governments and assistance from international development agencies. Yet, their experiences highlight the need to understand how developing countries can create the conditions for facilitating the flow of technologies and unleash growth, even in the context of sub-optimal microeconomic policies, weak institutions, and the absence of full-fledged private property rights.

an assessment of controversies in development economics over methodological and policy issues, see Deaton (2009) and Ravallion (2009).

⁹ From 1870 to 1990, the ratio of per capita incomes between the richest and the poorest countries increased by roughly a factor of five. See Pritchett (1997).

The failures of growth research to predict divergence on a large scale indicates that the proposed theories did not capture the fundamental factor (s) that determines whether or not a developing country will converge. Some researchers have recently argued that the evolution of economic performance of nations is determined by conditional convergence—the idea that countries converge when all other macroeconomic variables that proxy for differences in steady-state characteristics are held constant—or to put it differently, the distribution of world income reveals the existence of convergence clubs among countries.¹⁰ But the puzzle of diverging performances may be more easily sorted out through comparative analysis based on in-depth country studies and historical experience: the key ingredients for convergence of successful economies seem to lie in their ability to change their endowment structure, increase the pace of adoption of new ideas, speed up the process of industrial upgrading, and improve institutions simultaneously. Understanding and replicating the economic strategies and policies that allowed latecomers to catch up with the most advanced economies is still a major challenge for economists and policymakers around the world.

New Directions in Applied Growth Research

The disappointments of growth research—most notably from the perspective of policymakers seeking specific action plans to generate prosperity—have led to a reassessment of the validity and usefulness of existing knowledge, and to the development of radically new approaches. An important study by the World Bank (2005) focused on lessons of the 1990s highlighted the complexity of economic growth and recognized that it is not amenable to simple formulas. The report also noted that the reforms carried out in many developing countries in the 1990s focused too narrowly on the efficient use of resources, not on the expansion of capacity and growth. While they enabled better use of existing capacity, thereby establishing the basis for sustained long-run growth, they did not provide sufficient incentives for expanding that capacity.¹¹ The report concluded that there is no unique, universal set of rules to guide policymakers. It recommended less reliance on simple formulas and the elusive search for "best practices," and greater reliance on deeper economic analysis to identify each country's one or two most binding constraints on growth.

That line of research is exemplified by the Growth Diagnostics framework, which aims at identifying the one or two most binding constraints on any developing economy, and then focus on lifting those. The main rationale is to ensure that economic reforms are contingent on the economic environment. “Presented with a laundry list of needed reforms, policymakers have either tried to fix all of the problems at once or started with reforms that were not crucial to their country's growth potential. And, more often than not, reforms have gotten in each other's way, with reform in one area creating unanticipated distortions in another area. By focusing on the one area that represents the biggest hurdle to growth, countries will be more likely to achieve success

¹⁰ That is the view expressed by Barro and Sala-i-Martin, 1992; and Baumol, 1986. Prescott (1999) is even more optimistic and expresses the view that continued divergence is not an option, and that the world distribution of income will eventually converge.

¹¹ As Zagha et al. note, “whereas reforms can help achieve efficiency gains, they will not put the economy on a sustained growth path unless they also strengthen production incentives and address market or government failures that undercut efforts to accumulate capital and boost productivity.” (2006). Pritchett (2006) suggests that economists abandon the quest for a single growth theory, and focus instead on developing a collection of growth and transition theories tailored to countries' particular circumstances.

from their reform efforts.” (Hausmann, Rodrik and Velasco, 2008) The proposed approach offers a decision tree methodology to help identify the relevant binding constraints for each country. While it does not specifically identify the political costs and benefits of various reform strategies, its focus on alternative hypotheses can help clarify the options available to policymakers for responding to political constraints. “We are concerned mainly with *short-run* constraints. In this sense, our focus is on igniting growth and identifying constraints that inevitably emerge as an economy expands, not on anticipating *tomorrow's* constraints on growth.” (Idem, 2006)

A key lesson from that approach is the notion that different countries (or even the same country at different points in time) require different policy choices to facilitate growth, and that the ‘big principles’ that growth requires—sound money, property rights, openness, free markets—can take many forms and that achieving them requires country-specific context and information. In particular, these principles need not take any one precise institutional or policy form. Each country is assumed to have some binding constraints to its growth potential and failure to identify and remove them would impede economic performance, even if every other production factors are satisfactory. The Growth Diagnostics approach is certainly an important advance in growth analysis. However, its model does not fully flesh out the notion of “binding constraint”.¹² The variable definitions are deliberately left quite imprecise, which makes it challenging to operationalize them.

Another influential new approach is the one adopted by researchers at the MIT Poverty Lab, who suggest that the quest for growth be re-centered on assessing the impact of a development project or program (against explicit counterfactual outcomes). Starting with the idea that credible impact evaluations are needed to ensure that the most effective programs are scaled up at the national or international levels, they design randomized control trials (RCTs) or social experiments that can be used to leverage the benefits of knowing which programs work which do not (Dufflo, 2004). Their approach is based on the notion that the standard aggregate growth paradigm relies, to a large extent and mistakenly, on the assumption of a rational representative agent. Stressing heterogeneity in country circumstances and among micro agents, this new wave of research attempts to explicitly account for the heterogeneity of individual households and firms in development analysis and policy.¹³ It has produced some useful tools for understanding the effectiveness of some specific micro projects. But even assuming that they can actually transfer lessons from localized development experiences to different geographic or cultural areas¹⁴, RCTs still fall short in providing useful overall guidance to policymakers confronted with the design of development strategies.

¹² The methodology proposed for the identification of the binding constraints to growth relies on shadow prices. Even in countries where data on shadow prices are widely available, it is not clear that this would accurately identify areas in which progress is most needed in each country. For example, one could imagine a simple model of growth for a low income country where technology and human capital are complementary. In such a country, the returns to education and technology adoption would both be low due to low levels of human capital and technology. An exclusive focus on shadow prices and an ignorance of cross-country comparison of levels would then suggest no need to improve education levels and encourage technology adoption.

¹³ See Banerjee and Dufflo (2005). Bourguignon (2006) offers a compelling theoretical framework for making the same case.

¹⁴ Critics of RCTs point to the fact that they often do not start from a clear strategic assessment of how a particular method would fit the knowledge gaps of highest priority. See Ravallion, (2009).

While these new approaches to growth research have shed light on important questions, they have not provided sufficient guidance on how policymakers could foster the process of industrial upgrading and structural change. It would be desirable to complement them with structural analyses of the determinants of growth—specifically the identification of factors that would allow poor economies to move from one stage of development to another.

3. THE UNIQUE CONTRIBUTION OF THE GROWTH REPORT

Despite intellectual progress, some of the key questions on the growth research agenda today remain the same that confronted previous generations of researchers: If growth is driven in large part by innovation, why are some countries successful at innovating and adapting to change, while others are not? What are the forces that drive convergence and what are the factors that stifle material progress? What are the conditions for the kind of structural change that allow low-income countries to become middle-income and then high-income economies? What are the most important determinants of growth (initial conditions, institutions, and policies)? What is the appropriate role for governments and markets in the growth dynamics?

Faced with the difficulty of providing clear answers to such pressing questions and the impossibility of deriving actionable policy recommendations from growth analyses, some growth researchers have found it useful to avoid searching for robust determinants of growth, but to look instead for the stylized facts that can guide economic policy in developing countries. This approach goes back several decades, most notably to Kaldor's six characteristics of 20th century growth, derived from United States and United Kingdom macroeconomic data: (i) sustained rate of increase in labor productivity; (ii) sustained rate of increase in capital per worker; (iii) stable real interest rate or return on capital; (iv) stable ratio of capital to output; (v) stable shares of capital and labor as fractions of national income; and (vi), a wide variation in the rate of growth of fast growing economies, of the order of 2-5 percent (1961).

More recently, Jones and Romer (2009) have identified a different set of stylized facts: (i) increases in the extent of the market—via globalization and urbanization; (ii) acceleration of the pace of growth over time, from virtually zero to relatively rapid rates; (iii) variation in the rate of growth of GDP per capita, which increases with the distance from the technology frontier; (iv) large income and total factor productivity differences; (v) increases in human capital per worker; and (vi) long-run stability of relative wages.

The Growth Report: Strategies for Sustained Growth and Inclusive Development, a landmark study issued in 2008 by the Commission on Growth and Development, followed a similar approach but took it to a new level. It built on the findings of several other empirical studies initiated by the World Bank during the past two decades to reassess the past theories of economic growth and poverty reduction, and rethink its policy advice to developing countries.¹⁵ Launched in April 2006, the Commission brought together 22 leading practitioners from government, business and the policymaking arenas, mostly from the developing world. It was chaired by Nobel Laureate Michael Spence and Danny Leipziger, a World Bank Vice-President. Over a period of two years the Commission sought to “gather the best understanding there is about the

¹⁵ These previous studies include, among others, the *East Asian Miracle* (1993), the *Growth in the 1990's* (2005), the World Development Report on *Agriculture for Development* (2008).

policies and strategies that underlie rapid and sustained economic growth and poverty reduction.”

The Commission was established to take stock of the state of theoretical and empirical knowledge on economic growth with a view to drawing implications for policy, and avoiding the trap of purely theoretical exercises. It provides the following motivation for its work: (i) the sense that poverty cannot be reduced in isolation of economic growth, and that that link has been missing in many development strategies; (ii) increasing evidence that the economic and social forces underlying rapid and sustained growth are much less well understood than generally thought - economic advice to developing countries has been given with more confidence than justified by the state of knowledge; (iii) realization that the accumulation of highly relevant (both successful and unsuccessful) growth experiences over the past 20 years provides a unique source of learning; and (iv) growing awareness that, except for China and India, and other rapidly growing economies in East Asia, developing countries need to accelerate their rates of growth significantly for their incomes to catch up with income levels in industrialized countries, and for the world to achieve a better balance in the distribution of wealth and opportunity.

The uniqueness of the Commission lays not only in its very diverse composition but also in the way it has reexamined growth analysis. Its approach has been to “try to assimilate and digest the cumulative experience of growth and development as well as careful and thoughtful policy analysis in a wide spectrum of fields. We then seek to share this understanding with political leaders and policy makers in developing countries, including the next generation of leaders; with an international community of advisors; and with investors, policy makers and leaders in advanced countries and international institutions who share the same goals.”¹⁶ (Growth Commission 2008, p. x).

The Report starts with the observation that “fast, sustained growth does not happen spontaneously. It requires long-term commitment by a country’s political leaders, a commitment pursued with patience, perseverance, and pragmatism” (idem, p. 2). It then identifies some of the distinctive characteristics of 13 high-growth economies¹⁷ that have been able to grow at more than 7 percent for periods of more than 25 years since World War II. At that pace of expansion, an economy almost doubles in size every decade.¹⁸ The report then asks how other developing countries can emulate them. Observing that each country has specific characteristics and historical experiences that must be reflected in its growth strategy, it does not attempt to provide a generic formula for policymakers to apply. However, it offers a framework that can help

¹⁶ The way the Commission organized its work was also quite unusual: first, it defined themes and issues deemed important for growth and development. Then, it invited world renowned academics, practitioners and experts to author papers exploring the state of knowledge in these themes and issues; those were reviewed and discussed at workshops. A working group which interacted with academics and commissioners, reviewed and commented on papers throughout the process. The working group also supported the Chairman in its drafting of the final report by reviewing interim drafts and providing comments.

¹⁷ The list includes: Botswana, Brazil, China, Hong Kong (China), Indonesia, Japan, Korea, Malaysia, Malta, Oman, Singapore, Taiwan (China), and Thailand.

¹⁸ Because growth rates of this magnitude for such long periods were unheard of before the latter part of the 20th century, the authors acknowledge that their work could have been called a report on “economic miracles,” except that they believe the term is a misnomer” unlike miracles, sustained high growth can be explained and repeated.

policymakers design a growth strategy. While it does not lay out a full set of answers, it suggests the right questions to be addressed.

The conclusion is an optimistic one: rapid, sustained growth is not a miracle confined to certain parts of the world. It can be achieved by all developing countries. More important than the list of “growth ingredients”, which includes a wide range of policy prescriptions whose validity depends on specific contexts and conditions, the Report lists “five striking points of resemblance” among all highly successful countries:

- *Openness to the global economy.* During their periods of fast growth, all the successful economies made the most of the global economy. They did so in at least two ways: first, they imported ideas, technology and know-how from the rest of the world—a world that has become more open and more tightly integrated since the end of World War II. Second, they exploited global demand, which provided an almost infinite market for their goods. In sum, successful economies “all imported what the rest of world knew, and exported what it wanted.” The unsuccessful countries did the opposite. The lesson here is clear: in order to achieve sustained and dynamic growth, a developing country must: (i) rely on its comparative advantage (that is, export what the rest of the world needs and upgrade its industries step by step at a pace consistent with the change in its endowment structure so as to make its economy competitive); and (ii), tap the potential of advantage of backwardness (imported ideas, technology and know-how from the rest of the world in the process of its industrial upgrading).
- *Macroeconomic stability.* The second stylized fact of high-growth countries is their maintenance of stable macroeconomic environments. During their most successful periods, all the 13 countries avoided the kind of unpredictability in fiscal and monetary policies that damage private sector investment. While growth was sometimes accompanied by moderate inflation in some of them (Korea in the 1970s, China in the mid-1990s), budget deficits or even high ratios of debt-to-GDP, the situation never got out of control.
- *High saving and investment rates.* Another characteristic of high-growth countries is their willingness to forgo current consumption in pursuit of higher levels of incomes in the future. High saving rates were matched by high investment rates. The fact that countries such as Singapore or Malaysia adopted mandatory saving schemes have led some researchers to stress the importance of deliberate saving policies as the main cause for these high saving and investment rates (Montiel and Serven 2008). In fact, the main explanation may be the ability of these countries to produce large economic surplus and to generate rates of return on investment that were high enough to provide strong incentives to save. In the 1970s, Southeast Asia and Latin America had similar savings rates. Twenty years later, the Asian rate was about 20 percentage points higher.
- *Market allocation.* The Report notes that the 20th century saw many experiments with alternatives to a market system. They all failed to help developing countries achieve sustained growth. While successful countries may differ in the intensity and strength of their property rights systems, they all adopted a well-functioning market mechanism that

provided adequate price signals, transparent decision-making and good incentives. Their governments also did not resist the market forces in the reallocation of capital and labor from sector to sector, industry to industry.

- *Leadership and governance.* Sustained growth that can help overcome poverty is typically a multi-decade process, which only takes place in a stable and functional investment environment. It requires political leadership and effective, pragmatic and sometimes activist governments.

The Growth Commission Report also identifies a series of “bad ideas” to be avoided by policymakers in their search for growth. The non-exhaustive list includes: subsidizing energy; relying on the civil service to deal with joblessness; reducing fiscal deficits by cutting expenditures on infrastructure investment; providing open-ended protection to domestic firms; imposing price controls to stem inflation; banning exports for long periods of time; resisting urbanization and measuring educational progress through infrastructure; ignoring environmental issues as an “unaffordable luxury”; adopting regulation of the banking system; or allowing the exchange rate to appreciate excessively.

Summing up, it can be said that the Report represents a major step forward as it provides a practical approach to help policymakers today understand the economic dynamics of catching up, and to identify the precise (and probably country-specific) mechanics of creating the appropriate infrastructures, incentive systems, and institutions to facilitate and sustain the evolving growth process. It also offers a new challenge to growth researchers, who must come up with a conceptual framework for making sense of its main findings.

4. A NEW STRUCTURAL ANALYSIS OF THE GROWTH REPORT

The stylized facts identified by the Growth Commission Report can be either endogenous or exogenous variables to the growth process. In order to disentangle causes and effects, and prioritize public policies, it is useful to go beyond the mere association that these stylized facts suggest, and reflect on the dynamics of possible causal relationships. As Zellner (1979) pointed out, this requires some generally acceptable economic theory. The new structural economics approach provides such a framework.

Principles of New Structural Economics

The new structural economics framework (Lin, 2010) is based on the analysis of the growth process in modern times and across continents. It starts with the observation that the main feature of modern economic development is continuous technological innovation and structural change. The optimal industrial structure in an economy, that is, the industrial structure that will make the economy most competitive domestically and internationally at any specific time, is endogenous to its comparative advantage, which in turn is determined by the given endowment structure of the economy at that time.¹⁹ Economies that try to grow simply by adding more and more

¹⁹ A country’s *competitive advantage* refers to a situation where domestic industries fulfill the following four conditions: (i) They intensively use the nation’s abundant and relatively inexpensive factors of production; (ii) Their products have large domestic markets; (iii) Each industry forms a cluster; and (iv), domestic market for each

physical capital or labor to the existing industries eventually run into diminishing returns; and economies that try to deviate from their comparative advantage are likely to perform poorly.

Because the optimal industrial structure at any given time is endogenous to the existing factor endowments, a country trying to move up the ladder of technological development must first change its endowment structure. With capital accumulation, the economy's factor endowment structure evolves, pushing its industrial structure to deviate from the optimal determined by its previous level. Firms then need to upgrade their industries and technologies accordingly in order to maintain market competitiveness.

If the economy follows its comparative advantage in the development of its industries, its industries will be most competitive in domestic and world markets. As a result, they will gain the largest possible market share and generate potentially the largest surplus. Capital investment will also have the largest possible return. Consequently, households will have the highest savings propensity, resulting in an even faster upgrade of the country's endowment structure.

A developing country that follows its comparative advantage to develop its industries can also benefit from the advantage of backwardness in the upgrading process and grow faster than advanced countries. Enterprises in developing countries can benefit from the industrial and technological gap with developed countries by acquiring industrial and technological innovations that are consistent with their new comparative advantage through learning and borrowing from developed countries.

The main question then is how to ensure that the economy grows in a manner that is consistent with its comparative advantage. The goal of most firms everywhere is profit maximization, which is, *ceteris paribus*, a function of relative prices of factor inputs. The criterion they use to select their industries and technology is typically the relative prices of capital, labor and natural resources. Therefore, the precondition for firms to follow the comparative advantage of the economy in their choice of technologies and industries is to have a relative price system which can reflect the relative scarcity of these production factors in the endowment structure. Such a relative price system exists only in a competitive market system. In developing countries where this is not usually the case, it is necessary that government action be taken to improve various market institutions so as to create and protect effective competition in the product and factor markets.

In the process of industrial upgrading, firms need to have information about production technologies and product markets. If information is not freely available, each firm will need to

industry is competitive (Porter 1990). A country's *comparative advantage* is the situation in which it produces a good or service as a lower opportunity cost than that of its competitors. Such condition is based on the country's possession of comparative advantage in that product or service determined by its endowment structure at any given time (Lin 2010). The first condition for competitive advantage listed by Porter supposes 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 the most important because if an industry corresponds to the country's comparative advantage, the industry's product will have a global market. That is why many of the richest countries of the world are very small (Lin and Ren 2007).

invest resources to search for it, collect and analyze it. For individual firms in developing countries, industrial upgrading is therefore a high-reward, high-risk process. First movers who attempt to enter new industries can either fail—because they target the wrong industries—or succeed—because the industry is consistent with the country’s new comparative advantage. In case of success, their experience offers valuable and free information to other prospective entrants. They will not have monopoly rent because of competition from new entry. Moreover, these first movers often need to devote resources to train workers on the new business processes and techniques, who may be then hired by competitors. First movers generate demand for new activities and human capital which may not have existed otherwise. Even in situations where they fail, their bad experience also provides useful knowledge to other firms. Yet, they must bear the costs of failure. In other words, the social value of the first movers’ investments is usually much larger than their private value and there is an asymmetry between the first movers’ gain from success and the cost of failure. Successful industrial upgrading in an economy also requires new types of financial, legal, and other “soft” (or intangible) and “hard” (or tangible) infrastructure to facilitate production and market transactions and allow the economy to reach its production possibility frontier. The improvement of the hard and soft infrastructure requires coordination beyond individual firms’ decisions.

Economic development is therefore a dynamic process marked with externalities and requiring coordination. While the market is a necessary basic mechanism for effective resource allocation at each given stage of development, governments must play a proactive, facilitating role for an economy to move from one stage to another. They must intervene to allow markets to function properly. They can do so by (i) providing information about new industries that are consistent with the new comparative advantage determined by change in the economy’s endowment structure; (ii) coordinating investments in related industries and the required improvements in infrastructure; (iii) subsidizing activities with externalities in the process of industrial upgrading and structural change; and (iv) catalyzing the development of new industries by incubation or by attracting foreign direct investment to overcome the deficits in social capital and other intangible constraints.

In sum, the new structural economics framework is three-pronged: it includes an understanding of a country’s comparative advantage defined as the evolving potential of its endowment structure; reliance on the market as the optimal resource allocation mechanism at any given stage of development; and the recognition of a facilitating role of the state in the process of industrial upgrading. It helps explain the economic performance of the most successful developing countries.

Key Findings of the Growth Commission: A New Structural Analysis

The new structural economics provides a framework for understanding the endogeneity and exogeneity issues surrounding the five stylized facts of the Growth Commission Report: (i) exploiting the world economy through openness; (ii) maintaining macroeconomic stability; (iii) keeping high rates of saving and investment; (iv) using markets to allocate resources; and (v), having committed, credible, and capable governments. The first three stylized facts are logical outcomes of a country following its comparative advantage determined by its factor endowments in each stage of development. The fourth stylized fact, the market mechanism, is the

precondition for a country to follow its comparative advantage. The last stylized fact, a committed, credible, and capable government, is a prediction as well as a consequence of following comparative advantage.

First, if a country follows its comparative advantage in its development strategy,²⁰ it will have an open economy, and produce whatever is consistent with its existing endowment structure and export to the international market,²¹ while importing whatever goods and services are not in its comparative advantage. Its trade dependency ratio will be endogenous to its comparative advantage and will be larger than would be the case otherwise. Its economy will become competitive and its endowment structure and industrial structure will be upgraded at the fastest pace possible. In the industrial upgrading process, the country will be able to tap into the advantage of backwardness by borrowing technologies and industries from advanced countries. The country will achieve a much faster rate of growth than the advanced countries, as its innovation cost will be smaller than that of countries already on the global technology frontier. Its economy will therefore achieve convergence with high-income countries. From that perspective, exploiting the world economy through openness (*stylized fact 1*) is a result of the growth strategy that facilitates industrial upgrading according to the comparative advantage determined by the country's endowment structure.

Macroeconomic stability (*stylized fact 2*) is also a consequence of a country following comparative advantage in its development strategy. If a country does so, its economy will be competitive. Its industries will be viable in an open, competitive market (Lin 2009). The upgrading of industries will mainly rely on its own capital accumulation process. The government will have a strong fiscal position, for several reasons: first, it will reap the benefits of dynamic growth; second, there will be no need for subsidizing non viable firms; and third, the economy will generate more job opportunities and less unemployment. The country will also be much less exposed to homegrown crises due to uncompetitive industries, currency mismatch, or fiscal crises. Because of its external competitiveness and limited reliance on capital inflows for growth, the country is also likely to have strong external accounts. Therefore, the government will be in a strong position to adopt countercyclical measures if there are shocks to the economy from global crises.

Recording high rates of saving and investment (*stylized fact 3*) is another logical result of the new structural economics approach of developing industries that are consistent with comparative advantage. Such a strategy allows a developing economy to be most competitive and produce the largest possible economic surplus (profits). This yields the highest savings for the economy. Competitive industries also imply high return on investment, which in turn provides additional incentives to save and invest. Moreover, good public investments can enhance the economy's growth potential, reduce transaction costs on the private sector, increase the rate of return on private investment, and generate enough tax revenues in the future to liquidate the initial costs.

²⁰ We define the development strategy here in the same way as Rodrik (2005), referring to policies and institutional arrangements adopted by the government in a developing country for achieving economic convergence with the living standards prevailing in advanced countries.

²¹ Exportable manufacturing goods are of particular importance, as they allow late-comers in the industrialization process to position themselves in industries where they have lower wages and other competitive advantages than more advanced economies.

Adopting a market system to allocate resources (*stylized fact 4*) is a necessary condition for an economy to follow comparative advantage in its development. Most firms are set up to pursue profits. They will follow the economy's comparative advantage in their decisions regarding the adoption of technology and entry into industries if relative prices reflect the relative scarcity of each factor in the endowment structure. This only happens in an economy with competitive markets (Lin 2009; Lin and Chang 2009). Therefore, a competitive market is the economy's optimal mechanism for resource allocation at each stage of its development.

Building committed, credible, and capable governments (*stylized fact 5*), that is, creating a facilitating state, is also a condition for an economy to adopt a comparative-advantage following strategy in its development process. For a developing economy to upgrade from one industrial structure to another, the government needs to play a facilitating role in improving soft and hard infrastructures and in overcoming the information, coordination and externality issues. Therefore, a committed, credible and capable government is a precondition for sustainable growth. But capable states can also be seen as a consequence of that strategy: if the government's goal is to facilitate a development process that is consistent with the country's comparative advantage, its intervention will be implemented more easily and more successfully, which will strengthen its credibility. So a committed, credible and capable state can also be viewed as the outcome of the country's following its comparative advantage in its development.

Beyond those stylized facts, the Growth Commission Report also identified "bad ideas" to be avoided by policymakers in developing countries. While the Report prudently offers the caveat that there are situations and circumstances that may justify limited or temporary resort to some of the policies listed under that category, it notes that "the overwhelming weight of evidence suggests that such policies involve large costs and their stated objectives—which are often admirable—are usually much better served through other means." (p. 68) These "bad ideas" include costly or unsustainable policy decisions such as subsidizing energy, relying on the civil service to deal with joblessness, providing open-ended protection, reducing fiscal deficits by cutting expenditures on infrastructure investment, or allowing the exchange rate to appreciate excessively.

Policy recommendations derived from the new structural economics approach would help developing country governments avoid such "bad ideas". Energy subsidies for instance are adopted in most countries to support nonviable firms (political economy rationale), or to help the poor (equity rationale). Large, costly and unsustainable government subsidies in developing countries arise from the fact that development strategies deviate substantially from their optimal industrial structure. If a country follows its comparative advantage in its development strategy, few of its state-owned or private enterprises will be nonviable, and there will be no need to provide subsidies to firms. Its economy will achieve dynamic growth, which would allow poverty to be reduced rapidly. There will be little need to subsidize the poor through price distortions. By growing fast, the economy will create many job opportunities. Viable private firms offer the best insurance against joblessness. So there will be no need to use public employment as a tool to deal with joblessness. Moreover, the government will not have to use open-ended protection to support or subsidize nonviable firms.

Thanks to the country's good economic performance, the government's fiscal position is likely to be strong and there will be no justification for the kind of erratic budget policies (expenditure cuts, public investment delays, payment arrears, salary freezes, etc.) that are often caused by large fiscal deficits. Likewise, a government that implements a development strategy consistent with the country's comparative advantage will not have to recourse to an overvalued exchange rate as a means for subsidizing nonviable firms that are created in the framework of comparative advantage-defying, import-substitution policies.

5. CONCLUSION

The quest for economic growth has preoccupied economists and policymakers since at least the 18th century. Much progress has been achieved over the past 50 years, most notably on theoretical and empirical grounds. On the theoretical front, the analysis of endogenous technical innovation and increasing returns to scale has provided economists with a rich general framework for capturing the broad picture and the mechanics of economic growth. On the empirical side, the availability of standardized data sets such as the Penn World Tables has stimulated interest in cross-country work that highlights systematic differences between high-growth and low-growth countries with regard to initial conditions, policy and institutional variables.

Yet, despite progress, policymakers around the world—especially in developing countries, still face difficulty in identifying actionable specific policy levers that can help ignite and sustain the type of dynamic growth rates that are necessary to reduce poverty. In recent years, growth researchers have responded to their concerns by trying to address various new challenges: the lack of convergence among countries; the identification of robust determinants of economic performance; the design of the supporting institutions for innovation and technological change, which are widely acknowledged to be the foundations for structural change and prosperity; and the identification of binding constraints to growth, the evaluation of successful development programs through randomized control trials, with the goal of scaling them up whenever possible.

By adopting a radically different approach to growth analysis, the Growth Report has made an important contribution to knowledge. It has identified five stylized facts (openness, macroeconomic stability, high rates of saving and investment, market mechanism, committed, credible and capable government) that can guide policymaking in developing countries. But in doing so, the Report has not disentangled causes and consequences.

The new structural economics framework proposed in Lin (2010) helps explain the endogeneity and exogeneity issues surrounding these five stylized facts. A central proposition that runs through this paper is that, developing countries that implement economic policies in contradiction with their comparative advantage tend to perform poorly and suffer macroeconomic instability. They do not exploit the benefits of globalization to the fullest. Typical features of such strategies are large budget deficits due to government support of non-viable firms, inflationary policies caused by excessive consumption, financial repression, and over-valued exchange rates in the context of low productivity. By contrast, countries that adopt comparative advantage-following strategies are typically in the position to achieve dynamic growth. They rely on the market as the key mechanism for allocating resources at any given

stage of development, and they have credible and capable governments. As a consequence of following their comparative advantage, they have an open economy, achieve macroeconomic stability, and record high rates of saving and investment.

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