

Introduction

Industrial policy, productive transformation and jobs: Theory, history and practice

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1. The challenges of industrial policy and the objectives of this book

No country has made the arduous journey from widespread rural poverty to post-industrial wealth without employing targeted and selective government policies to modify its economic structure and boost its economic dynamism. Moreover, it is difficult to see how countries at all levels of development can respond constructively to contemporary challenges – from job creation and poverty reduction to participating in the technological revolution and global value chains, from promoting efficient and clean energy to mitigating climate change and greening the economy – without using some kind of targeted industrial policy.

The process of structural transformation remains particularly challenging for developing and emerging economies. Their efforts to upgrade and diversify take place in an interdependent world economy where earlier industrializers have already accumulated both enabling capabilities (individual and enterprise level know-how and skills, along with collective knowledge and sources of creativity) and productive capacities (embodied in production factors and physical and technological infrastructure) that give their producers significant cost and productivity advantages and equip them to push out the technological frontier through research and innovation. These advances offer developing countries many opportunities to catch up rapidly by learning to master technologies and products already available in more developed countries. The key question is: how can such learning be accelerated? Catching up encompasses two distinct but related processes: first, the strengthening of capabilities that enable developing economies to

trigger, accelerate and manage structural and technological transformation; and, second, the accumulation of productive capacities through a sustained process of investment. In both aspects, success requires active policies that provide incentives, direction and coordination.

Many of the higher value added activities and sectors that characterize successful transformation today are likely to be more capital-intensive than their counterparts in the past, in part because of readier access to the technology and capital equipment produced in the more advanced economies, but also because of the pressures of intensified global competition, which can be met on a sustained basis only by rapid rises in productivity. Mobilizing the financial resources to undertake the investments in physical and human capital and in infrastructure required to meet these demands continues to be a major policy challenge in many countries.

Furthermore, such a transformation requires that workers, enterprises and the economy as a whole learn to adopt increasingly complex technologies, to invest in and produce new and more sophisticated goods and services, and also to govern, direct and accelerate processes of change. Learning builds up dynamic capabilities which are key drivers of catching up and economic development. These capabilities in turn shape patterns of productive transformation and job creation, as well as the speed and sustainability of the catching-up process. Therefore, a major challenge confronting any developmental state is to support and accelerate learning processes for the development of dynamic capabilities at all levels (Nelson and Winter, 1982; Lall, 1992; Greenwald and Stiglitz, 2014; Nübler, Chapter 4 in this volume).

The presence of surplus or underemployed labour in most developing economies poses the particular challenge of how to achieve productivity growth and net job creation simultaneously, in order that the chosen growth path be both inclusive and sustainable. Structural transformation and technological change affect productivity as well as the quantity and the quality of employment, and in many different ways. They generate as well as destroy jobs in enterprises, and transform the nature, quality and profile of jobs, thereby also transforming the occupational structure and employment patterns in the labour force. The policy challenge is to promote patterns of structural transformation and technological change that strike a good balance in achieving the two fundamental objectives of productivity growth and more and better jobs. One way in which late-industrializing countries have tried to achieve this balance is to produce large quantities of labour-intensive products for export. This can enable manufacturing employment to expand beyond the limits set by the domestic market. In the same vein, a mature economy, with a competitive edge in key industrial sectors

and a surplus in manufacturing trade, can normally employ more labour in those activities and thus delay de-industrialization. However, there is a growing realization that export-led growth cannot be an option for all economies, particularly for systemically large economies, and that greater attention needs to be given to expanding domestic demand – all the more so since the financial crisis of 2007–08 (UNCTAD, 2013).

History shows that in all cases of successful catching up, the State has played a proactive role, be it in building markets, in nurturing enterprises, in encouraging technological upgrading, in supporting learning processes and the accumulation of capabilities, in removing infrastructural bottlenecks to growth, in reforming agriculture and/or in providing finance. However, this is not to say that such successes all follow a uniform model; on the contrary, they encompass a variety of different institutional arrangements and policies. Indeed, it is partly because of the wide variety of patterns of state intervention used to accelerate growth and development that industrial policy has been one of the most misunderstood areas of economic and development policy, supporters and detractors alike tending to adopt entrenched and often hostile positions. However, in recent years, and particularly since the recent financial crisis, there has been a degree of rapprochement between the two perspectives, based in part on a better understanding of the record of industrial policies – both successes and failures. It is now clear, for example, that protective tariffs can be overdone, with negative consequences, and that “hard industrial policy” measures can be distorting; but it is also clear, as recent studies recognize (Pagés, 2010; Devlin and Mogueillansky, 2011), that there are many cases where industrial policies have been successful, with substantial development impact. Nor are the latter limited to the well-known East Asian examples. Ireland and Costa Rica were ambitious and successful in defining criteria for choosing sectors on which to place strategic bets and, in these particular cases, using foreign direct investment (FDI) as a tool of industrial policy; Brazil succeeded in creating competitive steel and aeronautics sectors, which are now generating significant exports – indeed, industrial policy is widely recognized across Latin America as having been of critical importance in launching new export activities in the region.¹ Robert Wade’s contribution to this book (Chapter 14) shows that particularly but not exclusively in the high-technology sector, the United States has not only applied industrial policy extensively and successfully, but has been expanding and refining its reach.

¹ The Inter-American Development Bank (IADB) research project “The emergence of new successful export activities in LAC” reviews cases of the “discovery” of new competitive activities and concludes that industrial policy was important in solving coordination problems that led to discovery. See Pagés (2010), Ch. 11.

The recent rapprochement also owes something to the breach in the ideological dominance of neoclassical thinking and the contributions of different economic traditions. Growth, structural, institutional and evolutionary economics have produced a wealth of new research on productive transformation, catching up and industrial policies using different analytical frameworks, each one highlighting different dimensions of the catching-up challenge so that together they widen the scope for industrial policies. The failure of developing countries to translate economic growth into jobs, economic development, poverty reduction and enhanced living standards has also contributed to new thinking on the relevance of policies and strategies, including industrial policies, to the proactive promotion of multiple development objectives (ILO, 2011; UNIDO, 2013; ECA, 2013; World Bank, 2013; OECD, 2013).

A first objective of this book, therefore, is to recognize the relevance of the different traditions in development economics and the contributions of their various frameworks to the analysis and design of industrial policy. Each of those frameworks highlights different objectives of industrial policies, raises different policy issues, and therefore suggests different areas and scope for industrial policies. Over the past decade, the breadth of experience of developing and emerging economies in particular, places these countries, perhaps for the first time, in the vanguard of the discussion on industrial policy. The chapters in this book tap deeply into that experience. Moreover, the application of different analytical frameworks to current practice in industrial policy can contribute to a better understanding of what is needed to create and pursue successful productive transformation policies.

A second objective is to encourage a much more integrated approach to productive transformation policies. This is crucial to getting industrial policy right. Only a coherent set of macroeconomic, trade, investment, sectoral, labour market and financial policies can adequately respond to the myriad challenges of structural transformation and decent jobs faced by countries today. Strategies to enhance capabilities for high-performing catch-up growth require education, training, investment, trade and technology policies to promote learning at different levels and in different places – in schools, in enterprises, in social and organizational networks. Focusing systematically on coherence adds another dimension to the debates on industrial policy. Hitherto, policy coherence has generally not been a sufficiently explicit goal, either in research and analysis or in actual industrialization policies.

A third objective is to explore the links between productive transformation, job creation and employment growth. The new debate on productive transformation is weak in this area, and yet it is important to make these links explicit, especially in

view of the rapid growth of labour supply in most emerging economies and developing countries. Industrial policies need to be designed with a view to fostering structural transformation patterns that have the potential to accelerate the generation of not just more jobs, but also more productive and better jobs. Productive jobs lead to higher levels of income, reduced poverty, an improved standard of living and stronger domestic demand, by providing decent wages, good working conditions, training, social protection and respect for workers' rights. Better jobs, in the sense of those of greater developmental and dynamic catching-up value, include those with high technology and skills content; these offer workers opportunities to acquire new knowledge and technological competences, thereby in turn enhancing the complexity and diversity of the knowledge base of the labour force, an essential ingredient for accelerating the catching-up process.

The next section presents a brief history of industrial policy. Section 3 moves on to discuss the various economic models and frameworks for productive transformation policies (based on Chapters 1–5). Section 4 distils lessons and principles from the various case studies presented in this volume (Chapters 6–14), focusing on practical issues, from design to implementation. Section 5 concludes.

2. The rise, fall and rise again of industrial policy

Economics, including development economics, is subject to fads and fashions. So, is the present renewed attention to industrial policy just a passing fashion, likely to fade away some time soon? Such is indeed the conclusion of a recent article in *The Economist* bemoaning the return to a misguided ideology of “picking winners”.² In fact, a brief review of the history of industrial policy shows that it has never gone away, albeit persisting under different names and guises, and that it has been applied in both developed and developing countries, even when strong ideological currents appeared to be flowing in a contrary direction.

There is little doubt that the period after the Second World War was a “golden age” of industrial policy, in large part because governments in developed countries were in broad agreement that balanced and coordinated expansion, increased provision of public goods and services, accelerated technological progress and appropriately designed multilateral arrangements in trade and finance offered

² *The Economist* (2010). This article sees the renewed attention as a politically expedient response to short-term problems and warns: “The present round of industrial policy will no doubt produce some modest successes – and a crop of whopping failures.”

the best way to secure rising living standards and prevent a return to the waste and destruction of the inter-war years. The overall consensus embraced a range of policy instruments to achieve these goals, so that active demand management coexisted with industrial policies and indicative planning, and steady multilateral trade liberalization with relatively strict capital controls. The outcome was a period of unprecedented growth in developed countries, driven by high rates of investment and rapid technological progress, often linked to strong export demand, and underpinned by full employment and rising wages.

This broad policy consensus also cultivated a favourable environment for growth and development in poorer countries, allowing them ample policy space, within the context of the multilateral trading system, to pursue “big push” strategies combining high rates of capital formation, strong industrial development and a shift of economic momentum from the rural to the urban economy. Together, these elements helped to accelerate growth across the developing world. Dedicated support measures were often employed to bolster agricultural output (and keep food prices in check), to advance technological capabilities and to strengthen financing arrangements, including through the creation of national development banks. In some cases (notably the East Asian “tiger” economies), these strategies had a strong export orientation, while in others (such as Latin America and South Asia) priority was given to growth in domestic or regionally integrated markets.

Across these experiences, the evidence shows that sustained periods of high growth rates derived from deliberate support for learning and the accumulation of collective capabilities as part of industrial development strategies. This was particularly marked in those East Asian countries that applied education and training policies to prepare the labour force for entry into targeted industries (see Chapter 7 by Cheon in this volume) and promoted technological capabilities in firms to enable them to diversify into dynamic sectors and to keep driving the process of “creative” imitation (Kim, 1997). Industrial, technology and trade policies were formulated as part of economic development strategies that provided a combination of incentives and compulsion (“reciprocal control mechanisms”) to enable and accelerate learning by domestic enterprises and the translation of rents into productivity growth (Amsden, 2001). Examining the long history of uneven industrial development over the last 50 years, one can conclude that despite flaws and limitations, the achievements associated with these early strategies were significant.³ As table 1 shows, the period from 1950 to 1973, which is usually identified as one dominated

³ According to Ocampo and Parra (2006), in the 1960s and 1970s as many as 50 out of 106 developing countries experienced sustained expansion, defined as four consecutive five-year moving average periods with income per capita growth exceeding 2 per cent. See also Maddison (2001) for a useful comparative assessment of how the different developing regions performed during this “golden age”.

Table 1. Average per capita manufacturing growth rates, 1870–2007

	1870–90	1890–1913	1920–38	1950–73	1973–90	1990–2007
Leaders ¹	3.1	3.4	1.9	7.9	2.4	2.2
Asia ²	1.5	4.2	4.2	8.3	5.9	4.3
Latin America	6.4	4.4	2.8	5.7	2.7	2.2
Middle East and North Africa	1.7	1.7	4.9	6.2	6.1	4.5
Sub-Saharan Africa	n.a.	n.a.	4.6	5.5	3.5	3.9

¹ Germany, United Kingdom and United States for the period up to 1938; includes Japan from 1950.

² Includes Japan before 1950 only.

Source: Bénétrix, O'Rourke and Williamson (2012).

by import-substituting industrialization (ISI), saw the fastest industrial growth rates in the developing world of any period since the late nineteenth century, and by some margin. However, this was not, strictly speaking, a period of catching up, as the leading advanced economies also posted historically unprecedented rates of industrial growth during these years; the dramatic slowdown in the latter countries following the oil shocks of the early 1970s meant that the period 1973–90 actually witnessed more pronounced convergence in industrial performance.

In a sobering assessment of post-war experience in Latin America, a region at the centre of much early debate on industrialization and development, Albert Hirschman (1995) complained that too much development thinking (by both dependency theorists and market fundamentalists) seriously misjudged the progress made in the three decades following the end of the Second World War and that the economic “growing pains” that became apparent at the end of the 1970s (whether in the form of rising inequality, balance of payments problems or rent-seeking behaviour) did not merit the wholesale policy changes that came to characterize much of the region following the debt crisis of the early 1980s.

Successful growth performance notwithstanding, from the early 1980s industrial policy was not only unceremoniously dropped from policy discussions but denigrated as a major source of economic distortions in rich and poor countries alike. Two compounding factors led to this abrupt fall from grace.

The first was the broad-ranging political and ideological assault on state intervention, beginning in the mid-1970s in the advanced economies, but accelerated by Margaret Thatcher in Britain and Ronald Reagan in the United States at the end of the decade, and spreading to developing countries during the debt crisis of the early 1980s. This attack was associated with specific evidence of excesses and abuses of industrial policy documented in influential research in developing

countries (Little, Scitovsky and Scott, 1970; Bhagwati, 1978; Krueger, 1978). The result was a generalized consensus around the promotion of market-based strategies (liberalization, privatization, deregulation) in pursuit of more efficient (“get prices right”) outcomes (Williamson, 1993; World Bank, 1987). In this intellectual environment, which came to be labelled the “Washington Consensus”, industrial policy was criticized and shunned.

The second factor was the increase in capital mobility which began in the 1970s following the collapse of the Bretton Woods system, but picked up pace significantly only from the early 1980s, following the extensive deregulation of the financial sector in the advanced countries, and the dismantling of controls on cross-border financial activities. The ensuing surge in capital flows marked a radical break with the post-war international policy framework. While the theoreticians of efficient financial markets promised large-scale gains, particularly for capital-scarce countries in the South, the 1980s and 1990s were marked in most regions by a series of boom-and-bust cycles that did little to bolster productive capacity or generate broad-based growth, particularly in the developing world (UNCTAD, 2011). The exceptions to this pattern were in East Asia, where strong developmental states that had emerged in the 1960s and 1970s initially resisted financialization pressures and continued to use a range of policies to manage catch-up growth. Beginning in the early 1980s, China began to replicate this model of development, albeit with some unique characteristics specific to the history of that country (see Chapter 11 by Lo and Wu in this volume).

From the turn of the millennium, however, the external environment shifted in favour of developing countries. Not only did the volume of capital inflows increase, their cost fall, and trade conditions improve, but commodity prices began to rise sharply, while some countries also saw remittances increase. As a result, growth picked up across all developing regions; a number of countries saw a marked rise in their trade surpluses, while the debt profile of many others improved significantly.

Paradoxically, this shift opened up the space for developing countries to explore a much wider set of policies than that endorsed by the Washington Consensus to shape their growth and development prospects and to build closer economic and political ties with each other through renewed South–South cooperation. As the first decade of the new century unfolded, while advanced economies became more and more complacent about their apparently stable macroeconomic conditions and increasingly infatuated with the efficiency of financial markets and their product innovations, developing countries, particularly in Asia, were revisiting the potential of industrial policy as part of a renewed development discourse of “the rising South”, and in Latin America left-leaning governments maintained conventional macroeconomic frameworks but enriched them with countercyclical

policies and explored better ways to marry the goals of productive transformation and social inclusion (Devlin and Mogueillansky, 2011; Ocampo and Ros, 2011).

In Africa, several countries experienced a welcome surge in growth in the years immediately after 2000. However, much of this growth was associated with a commodity boom and with extractive industries, and in consequence had little impact on labour markets and poverty reduction. Indeed, some countries underwent structural change that saw productivity fall, with some productive sectors shrinking and excess labour moving from higher to lower productivity sectors and to informality (McMillan and Rodrik, 2011). In fact, most sub-Saharan African countries have been experiencing premature de-industrialization: manufacturing value added as a percentage of GDP declined from 15 per cent in 1990 to 10 per cent in 2008 (ILO, 2011; UNIDO, 2011; UNCTAD, 2011). This is partly attributable to the pace and depth of trade liberalization, exacerbated by a neglect of investment in agriculture and especially in supporting small farmers. These policy mistakes have been widely recognized in the last few years and, as Altenburg and Melia argue in Chapter 13, there has been a renewed appreciation of the importance of industrial policy to achieving more economically sustainable and inclusive growth paths. This commitment to industrial policy has been particularly strong in countries such as Rwanda, Ethiopia and South Africa, the last of which is the subject of Nimrod Zalk's analysis in Chapter 12.

The resurgence of interest in industrial policy was strongly inspired by the better understanding, based on overwhelming evidence and increasingly accepted by the mainstream economic profession, that the developmental states of East Asia had successfully used industrial policies to help them rapidly absorb know-how, technology and knowledge from the rest of the world, to assimilate them at a tremendous pace and to diversify into new and more sophisticated products (Harrison and Rodriguez-Clare, 2009; Lin, 2009; Rodrik, 2007). The work of the World Bank's Commission on Growth and Development,⁴ launched in 2006, was an important step towards a fresh appraisal of industrial policies. Its report concluded that economists lack understanding of the growth process, in particular of the link between education, training and technologies, on the one hand, and growth, on the other. The authors expressed the explicit concern that growth economists "may have the wrong model" and recognized that countries differ in respect of both institutions and capabilities, so that one policy will not necessarily fit all countries. Accordingly, countries should be allowed to experiment and make mistakes in order that, in a world of increasing returns, comparative advantage may be created. The report

⁴ The Commission was composed of high-level growth economists from a range of institutions and policy-makers from developed and developing countries.

identified “the role of industrial policy and export promotion” as one important, albeit controversial,⁵ ingredient in such a country-specific approach.⁶ Subsequently, the World Bank’s *World Development Report 2013: Jobs*, discussing what it calls a “targeted investment climate”, has also provided a rationale for moving towards some selectivity in productive transformation strategies (World Bank, 2012).

More impetus to rejuvenate industrial policy came from the growing realization that the shift towards a more liberal policy regime had done little to bring about the diversification and upgrading of economic activity that the concept of “structural adjustment” had promised. Interest was further fuelled by the debate on the risk of a “middle-income trap”, arising from the concern that some emerging economies, even after enjoying a period of strong growth, had failed to undertake the required changes in their productive structures needed to sustain future growth and job creation (Eichengreen, Park and Shin, 2011).

But perhaps the strongest boost to the reassertion of industrial policy came with the onset of the financial crisis in 2007–08. The crisis served as a reminder that unregulated markets and weak States provide a poor institutional environment for managing economies and societies. Just as importantly, it opened up an interest in more sustainable and more inclusive strategies in advanced countries, including a possible role for industrial policy, not only in areas such as infrastructure development and the green economy, but also in addressing what some saw as the undue hollowing out of the manufacturing and skill base.

In conclusion, while industrial policy fell into disrepute in the mainstream economic discourse in the 1980s and 1990s, many countries continued to make intensive use of it in practice under various names, even though some parts of the economics profession were in denial of this reality. Looking back at those decades now, it becomes apparent that the best economic performance was obtained by those countries that defied the conventional wisdom and put heterodox policy packages in place, while those that fully embraced the standard policy package experienced de-industrialization and macroeconomic volatility. On the basis of this and other related evidence, discussion among economists and policy-makers is now increasingly shifting away from whether or not to have industrial policy and towards a focus on the objectives and scope of industrial policies and “how to

⁵ The other three controversial ingredients are: deliberate undervaluation of the exchange rate; the extent and timing of opening the economy to capital flows; and the difficulties inherent in developing the financial sector. For an assessment of the report’s contribution, see Salazar-Xirinachs (2008).

⁶ To the sceptics who worry about the lack of government capabilities or capture by interest groups and prefer to do nothing, the Commission’s report pointed out that inaction carries its own risks. It argued that, if an economy is failing to diversify its exports or generate productive jobs in new industries, it is the government’s responsibility to jump-start the process.

do it” in a way appropriate to each country’s conditions. The next section accordingly reviews the various frameworks adopted in addressing issues of productive transformation, with the aim of informing the practical challenges of designing good policy and avoiding the mistakes of the past.

3. Economic models and frameworks for productive transformation policies

A number of different economic traditions have fed into the recent renewal and reshaping of discussions on productive transformation and industrial policy. This book recognizes the contributions from the most innovative approaches in development economics. Part I presents some of the most interesting conceptual approaches and frameworks developed recently, drawing on the neoclassical, structural, evolutionary and institutional traditions. Each one of them highlights different perspectives and objectives, and suggests different dimensions of structural transformation policies and strategies. Each one provides important insights and distinct policy principles that help to guide policy-makers in designing industrial policies.

While the distinct frameworks and perspectives presented in Part I differ in their analysis, including on the rationale and scope of industrial policies, they reflect convergence around the idea that governments should play a proactive role in facilitating as well as in shaping and orienting the development process, and that policies to promote structural and technological transformation and the catching-up process are relevant to the challenges facing contemporary economies.

These various frameworks can be seen as complementary tools and approaches in the design of country-specific productive transformation and catching-up strategies. Viewed together, they contribute to a deeper understanding of the dynamics of catching up, and of productive transformation policies, and thus can contribute to better policy formulation in developing (and developed) countries.

3.1 Managing productive transformation: A structuralist macroeconomic policy framework

Structuralist economics views changes in the composition of economic activity as among the prime movers of growth and employment, and the literature in this tradition therefore focuses on exploring that relationship, taking a holistic approach that considers the role of macroeconomic, trade, technology and sectoral policies.

The structuralist approach accords a central role in promoting growth, employment and poverty reduction to policies aimed at facilitating a dynamic restructuring of production and trade, arguing that “growth can only address poverty concerns if it generates new jobs to keep pace with a rising labour force” (Ocampo, Rada and Taylor, 2009, p. 1). From this perspective, diversification within and across sectors, rather than specialization, is a key driver of income growth in low-income countries (Imbs and Wacziarg, 2003; UNCTAD, 1964). A recent strand of literature provides evidence of the link between diversification patterns and growth rates (see especially Hausmann, Hwang and Rodrik, 2007; Ocampo, Rada and Taylor, 2009; Lederman and Maloney, 2012).

José Antonio Ocampo’s contribution to this volume (Chapter 1) reviews the structuralist thinking developed in the tradition of the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and its current relevance. He provides a brief overview of evidence on the link between patterns of production structures and growth rates. Within this context Ocampo suggests an updated structuralist framework for industrialization policies and presents an analysis of the relationship between economic growth and the production structure. The chapter argues that countries need to develop production development strategies and innovative activities with strong linkages to other economic activities.

Ocampo further argues that the strategy of industrialization and export promotion advocated by ECLAC “was also tied in with short-term macroeconomic policy because of the institution’s obsession with maintaining competitive exchange rates, which were viewed as an essential ingredient of proactive policies to foster production sector diversification”. He shows that ECLAC’s “obsession” with maintaining competitive exchange rates has been vindicated by recent research showing that the real exchange rate is one of the determinants of economic growth. The experience of the Southern Cone countries in the 1970s showed that, if moves to liberalize trade are coupled with the opening of the capital account, not only might the expected real depreciation not occur, but the combination may have the exact opposite effect: a real appreciation, which acts as a disincentive for exports and industrialization. Wise management of the exchange rate throughout the business cycle is essential for productive transformation policies. On the basis of this analysis, Ocampo recommends a strategy of growth and development that combines countercyclical macroeconomic policies with a proactive strategy for diversification of the production structure, giving particular prominence to industrialization.

3.2 Following (latent) comparative advantages: A new growth-facilitating approach

Neoclassical economic models are limited in what they can say about growth and development and policies to help manage these processes (Commission on Growth and Development, 2008). Traditional growth and trade models developed in the neoclassical framework explain growth in terms of the accumulation of production factors, in particular physical and human capital, and technology (Solow, 1957; Lucas, 1988). These models suggest specialization in products in which a country has comparative advantages, and a significant part of the policy discussion centres on the large “residual” that derives from the accounting exercises generated by this approach (Aghion and Durlauf, 2007; Kenny and Williams, 2001). While, in principle, market failures provide a strong rationale for state intervention, the conventional wisdom in neoclassical economics has been to document cases of government failure and to argue that, because of factors such as myopic or incompetent bureaucracies, corruption and capture by the private sector, the likelihood of government failure is greater than that of market failure (Krueger, 1990; Schleifer, 1998). This approach is based on a stylized “perfectly competitive norm”, and the resulting policy debate opposing “market failure” to “government failure” has been unnecessarily polarized, doing a great disservice to development policy by precluding sufficiently rich analysis of how a variety of institutions and learning processes can promote or stall structural transformation under a particular set of initial conditions and historical circumstances. In place of such nuanced enquiry, the mainstream policy view within this tradition has promoted unduly simplistic universal policy rules such as “get prices right”, or “get the government out of the way”.

New approaches in the neoclassical tradition recognize the role of institutions and governance. However, these variables are not yet well integrated into models and frameworks, which therefore have limited power in providing policy recommendations on strengthening the link between these variables and growth. Justin Lin and Volker Treichel (Chapter 2) propose to address this shortcoming through a “Growth Identification and Facilitation” (GIF) approach, suggesting a six-step methodology to identify and target sectors for investment and government support in a country-specific context. This approach recognizes a proactive role for the State in overcoming information, coordination and externality issues inherent in the development of new activities and sectors, but argues that past industrial policy efforts (the “old structuralist” paradigm) failed because they were based on a strategy that defied the concept of comparative advantage. It recommends instead that while industrial policies should indeed target economic activities and

industries, they should follow a rule: namely, to focus on goods and services that have been growing dynamically for about 20 years in fast-growing countries with similar endowment structures that have a GDP per capita about twice as high (comparator countries), and among these give priority to those that some domestic private firms have already entered spontaneously. Attempts to reshape the production structure beyond the boundaries set by these “latent” comparative advantages are likely to fail and hamper economic performance.

This approach has clarity and is oriented to practical application. One can agree with Chang’s assessment that this approach is right in arguing that the further you deviate from your comparative advantage, the riskier your industrial policy becomes. But the approach fails to recognize that many countries have in fact taken these risks, and their industrial policies have been much less “comparative advantage conforming” than this approach recognizes: “many success stories were based on moves that were far more daring than what their rule would suggest” (Chang, 2013, p. 41). This may be in part because by focusing on comparative advantage, this approach does not give due consideration to the dynamics of technological upgrading, learning and capabilities. For more thorough attention to these aspects, one needs to turn to evolutionary economics.

3.3 Technology, learning and innovation

Several strands of the literature deal with important questions around how to develop and accelerate learning and innovation, and the role of capabilities in shaping structural transformation. Evolutionary economics focuses on the dynamics of economic development, and analyses learning, technological change and the accumulation of domestic capabilities as central drivers of productive transformation, which is seen as a complex, incremental and non-linear process. Economists in this tradition argue that comparative advantages are not “given”, but rather are made, and that it is the role of developmental states to design policies and institutions that support learning processes.⁷ They emphasize that high-performing economies are those that have found ways to deliberately move their productive structures away from “low-quality activities”, characterized by diminishing returns, flat learning, low productivity and low wages, and into “high-quality activities”, characterized by economies of scale, steep learning curves, high growth of output, rapid technological progress, high productivity growth and

⁷ For examples of work along these lines, see e.g. Reinert (2008) and Cimoli, Dosi and Stiglitz (2009). For a review of the latter, see Salazar-Xirinachs and Nübler (2010).

high wages (Cimoli, Dosi and Stiglitz, 2009). In this framework the role of the State is to create conditions conducive to learning.

Greenwald and Stiglitz (2013 and 2014) expand “infant industry” arguments to the case of an infant economy, discussing how well-designed government policies on trade, industry and intellectual property can help create a learning society, and arguing that “creating a learning society is more likely to increase standards of living than the small, one-time improvements in economic efficiency or those that derive from sacrifices of consumption today to deepen capital” (Greenwald and Stiglitz, 2013, p. 45). Their approach to knowledge, technology upgrading and learning is strongly rooted in the neoclassical tradition and builds on the analysis of failures in the markets for information and for the production and dissemination of knowledge, and of financial market failures to finance knowledge and innovation. They consider it of critical importance to understand the structure of learning within an economy, including how it spreads across sectors. When such understanding is achieved, important policy conclusions can be reached regarding how best to encourage manufacturing, exports, and other channels for fast learning and accelerated productivity growth.

A contrasting and powerful fresh look at the role of the State in promoting the development of technological capabilities for “innovation-led growth” in developed and middle-income countries has been recently presented by Mazzucato (2013). She provides evidence that the principal entrepreneurial drive, and corresponding risk-taking, behind the development of several important modern technologies (including solar and wind energy, the Internet, GPS, touch-screen displays and voice-recognition software) has been provided less than has been suggested by the private sector and the much-hyped venture capital, and more than has been acknowledged by the State. She shows that public policy in the United States and other countries played an active role in developing these innovations and the related capabilities during the period of highest risk.

In Chapter 3 of this volume, Astorga, Cimoli and Porcile use a growth model of structuralist–evolutionary inspiration to discuss technological upgrading, structural change, productivity and employment growth in four transitional economies – Argentina, Brazil, Chile and Mexico – over the period 1970–2008, benchmarked against the Republic of Korea. They argue that, when the real exchange rate appreciates and industrial and technological policies (ITPs) are weak or absent, productivity growth is driven by rationalization and defensive responses not related to the expansion of effective demand. In these conditions, sectors that are more technology-intensive lose competitiveness, and employment tends to concentrate in lower-productivity activities. Conversely, when the exchange rate is competitive and active ITPs favouring the diversification of production are

introduced, there is a rise in employment and growth in productivity. The authors analyse structural change in manufacturing industry by means of a shift–share decomposition of the sources of aggregate productivity growth in the economy. They point to the importance of policy continuity, as opposed to abrupt changes of policy regime, in supporting an appropriate learning environment.

3.4 A theory of capabilities and learning strategies

The common thread running through much of the recent growth, development and technological change literature is the role of capabilities in shaping structural transformation. Authors of a more structuralist persuasion (Hausmann et al., 2011) focus on how capabilities influence the products and technologies that firms and economies can develop, and how a certain product and technology structure or portfolio is associated with certain capabilities for further diversification. Authors taking an evolutionary process perspective (among others, Nelson and Winter, 1982; Dosi, Winter and Nelson, 2000; Chang, 2010) emphasize how capabilities influence processes of learning and catching up. But no integrated theory of capabilities has yet been formulated to explain where capabilities reside, how they evolve, and how policies can support them and link them with the dynamics of learning and catching up.

Irmgard Nübler sets out to develop such a theory in Chapter 4 of this volume. The author presents a framework for catching up where capabilities are a key determinant of diversification of production structures and technological change. This framework introduces a distinction between *productive capacities*, which reside in the endowment of material production factors (physical and human capital and infrastructure), and *productive capabilities*, which exist in the immaterial knowledge sphere of the economy. Hence, countries with similar factor endowment structures and comparative advantages may differ substantially in their capabilities. The framework also integrates the *structural change* and *process* dimensions of productive transformation. Drawing from various disciplines that have developed explicit theories of knowledge and learning, Nübler develops a knowledge-based concept of capabilities, arguing that capabilities are embodied not only in individuals but also at various collective levels in enterprises, organizations, the labour force, value chains and entire societies. This conceptualization helps to shed light on where capabilities reside and how they are translated into productive transformation and growth. Finally, she elaborates a concept of collective learning to explain how capabilities evolve in distinct learning processes at different levels and places (formal education system, production system,

social and organizational networks). On this basis Nübler provides recommendations for learning strategies aimed at creating capabilities for high-performing patterns and processes of productive transformation. The concept of a learning strategy is an integrated one and embraces education, training, technology, trade and investment policies as well as institutions promoting learning processes at all levels. From this perspective, industrial policies are also seen as the set of policies that promote such learning strategies to accelerate and sustain productive transformation.

3.5 Industrialization through global value chains

Parts of the global economy are increasingly structured around global value chains (GVCs), which account for an increasing share of international trade, output and employment.⁸ The emergence of these chains has been facilitated by the “fragmentability” of production as a consequence of advances in technology, and by the liberalization of trade and investment in recent decades (Lall, Weiss and Oikawa, 2005). It has also been fostered by competitive strategies adopted by multinational enterprises, which have sought to locate labour-intensive and low value added tasks in low-wage countries while retaining high value added activities in high-wage countries. GVCs are seen as providing a stepping stone for firms and workers in developing countries, offering opportunities to integrate into the global economy and initiate the process of catching up.

From the perspective of productive transformation and industrial policy, value chains have the potential to become important learning networks and catalysts for the generation of capabilities, productive capacities and productive employment. Learning improves performance and productivity within the value chain, which promotes productive transformation, the generation of jobs and a dynamic catching-up process in the economy through spillover effects.

Despite the importance of GVCs for global production and trade, understanding of the link between increasing fragmentation of production and trade in tasks, on the one hand, and industrialization, structural transformation and catching up, on the other hand, is still limited. Even larger gaps exist in knowledge of how integration into GVCs and economic upgrading interacts with the generation of better and more jobs, learning opportunities and the development of capabilities. UNCTAD undertook early work on this issue, warning of the danger of countries “trading more but earning less” in the context of GVCs (UNCTAD, 2002).

⁸ See Park, Nayyar and Low (2013); Elms and Low (2013).

In Chapter 5, William Milberg, Xiao Jiang and Gary Gereffi suggest a framework of vertical specialization and upgrading in value chains, and discuss industrial policies in the context of value chains. They argue that since the early 1990s the expansion of GVCs has played an important role in shifting the pattern of international trade and has significantly affected the processes of industrialization and de-industrialization. Trade in intermediates rather than in final goods and services has grown rapidly and, as a consequence, the import content of exports has risen. They argue that economic development within the context of GVCs takes the form of “vertically specialized industrialization”, that is, a process of upgrading into higher value added tasks and functions, either within a given chain or in new chains that generate more value added as a whole. However, they recognize that this is not an automatic process and that, even when it is deliberately and successfully pursued, the economic gains may not be matched by wider social gains.

The authors stress that industrial policy viewed through the lens of GVCs has different elements from traditional industrial policy. The GVC approach puts emphasis on firms rather than markets and States, with business strategies acting as the key drivers of upgrading for both foreign lead firms and domestic supplier firms. This requires the State to play a different role, promoting the capacity and activity of domestic firms and industrial upgrading, and capturing more value added in the value chain. Policies need to take into account the interests and power of lead firms in GVCs and influence the relationship between foreign lead firms and domestic low-value-adding firms in the light of international and regional networks of competing and cooperating suppliers.

3.6 Alternative economic frameworks and the scope of industrial policy

To conclude, the various economic models and frameworks discussed above have different implications for industrial policy in terms of objectives, dimensions, scope and instruments. For example, the GIF approach defines industrial policies in a narrow sense, with a limited role for the State, mainly identifying new economic activities and facilitating changes in factor endowment structures, without going beyond the boundaries of comparative advantage. In contrast, the capabilities approach defines a wide scope for industrial policy, tasking it with promoting productive capabilities and learning processes as well as enhancing productive capacities, and shaping patterns and processes of productive transformation aimed at higher productivity growth as well as enhancing the quantity and quality of jobs.

In their different ways, all these frameworks provide strong rationales and justifications for a proactive government role in accelerating the transformation of the economy's production structure and upgrading technologies. The focus on learning, capabilities and innovation means that industrial policy is not just about manufacturing, but also about agriculture and services, including infrastructure, health, education and skills, information technology and finance. In other words, modern industrial policy is about productive development policies more generally.

Within this perspective, the analysis and discussion of national and regional experiences, and of the types of interventions and institutional arrangements that can promote structural transformation, are essential elements of the policy economist's toolkit. Particular attention needs to be given to the practical problems posed by the implementation of industrial policies, and the institutional and incentive design issues required to solve them. There is now a wealth of experience on which to draw in addressing these questions. Parts II and III of the book contain chapters on these experiences in nine different contexts.

The next section turns to some of the key policy challenges involved in addressing these institutional and practical design problems, and to the key lessons offered by experience.

4. Making industrial policy work: Some lessons and principles

The broadening consensus about the role of government policy in influencing structural transformation provides a firmer intellectual foundation on which to design industrial policies for promoting learning, strengthening capabilities and achieving successful catch-up growth. This section discusses some practical lessons and principles for developing effective industrial policy that can be distilled from the country studies presented in Parts II and III of this volume, as well as the wider literature, grouped under five themes: targeting, macroeconomics, trade, learning and capabilities, and institutional and policy design.

4.1 Targeting

Whether to target policy measures on favoured firms or industries has been one of the most contested questions in discussions of industrial policy. However, as Chang (2010), Stiglitz, Lin and Monga (2013) and others have noted, the distinction between “horizontal” measures (presumed to be neutral across sectors)

and “vertical” measures (supporting specific industries) is something of a false choice, as even the most “general” policy measures favour some sectors over others. Perhaps the closest to neutral interventions are certain business climate measures. But beyond that there is little that is genuinely neutral. There is nothing neutral about basic infrastructure, for instance. A road favours certain regions and not others, a bridge favours certain communities and not others, a port can be equipped with container facilities or specialized grain conveyor belts. Decisions about infrastructure always involve some choice of priorities, and have differential impacts on different sectors and communities. Education and training are also often presented as neutral, yet this is far from the case. Training programmes are normally targeted at solving specific skills bottlenecks or skills mismatches in particular sectors. The choices between investment in primary, secondary and tertiary education have major implications for the capabilities profile of the labour force and the nature and range of options available for structural transformation, as Nübler argues in Chapter 4 of this volume. And even a particular exchange rate policy favours some sectors, industries, social groups or regions more than others, depending on how much that policy benefits or penalizes exporters, for instance. So, as Hausmann and Rodrik (2006) have argued, governments – even those that believe they are advocating “neutral” policies – are “doomed to choose”.

In addition, outside the stylized world of rapidly clearing competitive markets, rents are a normal feature of a dynamic economic landscape. In a purely static framework, rents signal a move away from competitive market efficiency as a result of some kind of restriction on entry or exit that prevents the emergence of market-clearing prices and imposes large welfare losses. But rents associated with entrepreneurial innovation have always played a dynamic role in a capitalist economy. Schumpeter famously linked these to the process of “creative destruction”. More generally, Ocampo and Taylor (1998, p. 1531) have argued that when the assumptions of perfect competition fail to hold, and in the absence of uniform enterprise responses and fully utilized resources, rents can accelerate capital accumulation, raise productivity and contribute to a more dynamic economic climate. Scholars of the East Asian experience have also insisted that the management of rents helped to boost capital formation and to direct it towards more dynamic sectors (UNCTAD, 1996). A similar lesson emerges from other experiences of successful development (Rodrik, 2003).

There have, however, been changes in the approach to targeting. The use of top-down planning mechanisms and selective tariff measures in support of infant firms has, over the years, given way to a more decentralized approach, using an expanded range of support measures and instruments which aim to build clusters and linkages. In this context, the management of rents has become more nuanced

and developmental. The focus now is on targeted interventions to provide public inputs via budgetary allocations, or market interventions that relax sectoral constraints; promoting learning and skill development; addressing coordination problems in sectors to stimulate more effective collective action among private and public actors; and creating incentives for the exploration of new possibilities to expand the sector or cluster, including through exporting (Fernández-Arias, Agosin and Sabel, 2010).

The case studies presented in this volume show that selective interventions of these types have indeed been commonly used in the recent revival of industrial policy. The right question to pose when drawing lessons from these experiences is not so much whether to target, but how to achieve the most effective targeting in the light of the specific goals adopted by policy-makers and government officials. In the case of China, for instance, Dic Lo and Mei Wu show (Chapter 11) that the State has played a prominent role both in creating an enabling environment through more general measures and in a wide variety of direct interventions, including selective and targeted ones. The balance of these measures appears to have shifted over time, with the latter taking on increasing importance as China shifted towards its more export-oriented growth strategy in the early 1990s, targeting favoured sectors such as automobiles, semiconductors, and high-speed railways.

In Chapter 12, drawing on the South African experience, Nimrod Zalk shows how a more general policy approach adopted soon after the first democratic elections in the early 1990s, and strongly influenced by the Washington Consensus, coexisted with ad hoc support measures for specific sectors and entrepreneurs but, in the absence of clear priorities, failed to transform a lopsided industrial structure inherited from the apartheid era. Only since the adoption of the National Industrial Policy Framework in 2007 and discussion of industrial policy at Cabinet level in government has there been a more concerted effort to target both transversal and sector-specific constraints in key industries or groups of sectors, and to develop and implement detailed sectoral strategies.

A similar conclusion can be drawn for Brazil. In Chapter 10, João Carlos Ferraz, David Kupfer and Felipe Silveira Marques describe how that country, having switched in recent years between general and targeted industrial policy measures, has since 2004, with the strong backing of a powerful development bank (BNDES), begun to establish a more coherent policy foundation for targeted measures.

For many countries in sub-Saharan Africa (discussed by Tilman Altenburg and Elvis Melia in Chapter 13), proactive and targeted industrial policies need to be substantially different from standard industrial policy packages, given these

countries' predominantly rural structure, poorly functioning markets and weak public institutions. Moreover, the bulk of non-farm employment is generated in small or micro enterprises; inter-firm specialization and collaboration are still weak; economic transactions are strongly influenced by informal institutions that are not necessarily well aligned with the prevailing governance principles of market economies; and social norms and values in some countries are not conducive to developing entrepreneurship. To overcome these constraints and nurture competitive industry and agriculture, the State needs to take a particularly active role to simultaneously raise productivity in the rural economy and kick-start industrial transformation. At the same time, industrial policy needs to safeguard the poor, whose livelihoods would be jeopardized by unfettered competition. The policy mix and the sequence of reforms need to be carefully tailored to country conditions. Also, intraregional differences in terms of resource endowments, geography and level of development need to be considered.

4.2 Macroeconomics and industrial policies

Traditionally, with a few notable exceptions, macroeconomic analysis and industrial economics have remained separate. This separation has often translated into a disconnect at the level of policy discussions and implementation, with macroeconomics being a matter for ministries of finance and central banks while industrial policy is left to the "production ministries". An early notable exception to this was the Latin American structuralist thinking reviewed by Ocampo in Chapter 1 below. As Ocampo explains, ECLAC's structuralism was closely concerned with the nexus between productive transformation and macroeconomic policies, and even had an "obsession" with the importance of maintaining competitive exchange rates as an essential ingredient of productive transformation, growth and export diversification. It also emphasized the importance of high levels of aggregate demand and appropriate levels of interest rates to underpin industrial development strategies and promote investment. This structuralist tradition also insists on the importance of using macroeconomic policies to manage business cycles and economic shocks with countercyclical policies, and on the wisdom of keeping well-calibrated capital controls in the toolbox of instruments to manage volatile capital flows.

These policy stances were vindicated before the recent financial crisis by research and experience showing, for example, that the real exchange rate is indeed one of the key determinants of economic growth (Rodrik, 2008). They were also supported with particular force after the crisis by the superior performance and

faster recoveries in countries that used countercyclical macroeconomic policies. Indeed, since the crisis a major reappraisal of macroeconomic policy and its links with growth, recovery and productive transformation has been under way. Some of it has been led by IMF staff, revisiting the conventional wisdom on one-size-fits-all thresholds for inflation targeting, debt-to-GDP ratios and fiscal deficits, and redefining the parameters of what a pro-growth and pro-employment macroeconomic framework should look like in countries at different levels of development (Blanchard, Dell’Ariccia and Mauro, 2010; Blanchard et al., 2012; Blanchard and Leigh, 2013). In November 2013 the Federal Reserve Bank of the United States surprised the economic world with the announcement that unemployment would have to drop to 6.5 per cent before it would begin to raise interest rates, thereby forging a close link between monetary policy and an employment target (English, Lopez-Salido and Tetlow, 2013).

ILO work on pro-employment macroeconomic frameworks has explored ways in which macroeconomic policies can be more closely connected to the agenda of structural transformation and inclusive development. This work argues that macroeconomic policies should go beyond traditional stability objectives to also support structural transformation as well as employment objectives. This would require, among other elements, more flexible debt-to-GDP and fiscal deficit thresholds (Islam and Kucera, 2014). In the context of the jobs challenge faced in recovery from the crisis, the ILO has also pointed out that the slow pace of job creation, coupled with falling real wages in some countries and a lag between productivity growth and wage growth in leading economies, has depressed consumption and exacerbated the global weakness in demand. The specific lesson here is that a stronger policy package for jobs recovery requires a well-calibrated mix of both demand-side and supply-side policies in order to avoid a slow growth trap (ILO, 2013 and 2014). The general point is that high and sustained levels of demand (both consumption and investment) are of critical importance to underpin growth and jobs, as well as productive transformation, in both the short and the longer term (UNCTAD, 2013).

Several of the chapters in this volume refer to the links between macroeconomic policies and productive transformation. Astorga, Cimoli and Porcile show in Chapter 3 how the wrong combination of macroeconomic and industrial policies can put an economy on a development path which imposes a socially unhealthy choice between rising employment and rising wages, and runs the persistent danger of falling into a vicious circle of weak demand, sluggish productivity growth and stalled structural change.

Lo and Wu in Chapter 11 explicitly connect the evolution of productive transformation policies in China with fiscal and social policies. They show that

in the second half of the reform era, from the early 1990s onwards, public finance predominated in massive investment in infrastructure and industrial upgrading. This gave rise to the path of capital-deepening, investment-led industrialization, carried out mainly by state-owned enterprises in a number of basic industries and by transnational corporations in higher-technology industries. Combined with a ready supply of cheap labour, these investments propelled a strong export drive. Around 1998–2002 China’s state leadership adopted a policy shift under the new policy line known as “constructing a harmonious society”, which widened the previous narrow focus on market reform and growth to pay more attention to social and environmental outcomes, in particular growing inequality and worsening social polarization. This new policy line emphasized a better alignment of labour compensation with productivity growth, rather than pursuing growth based on “cheap labour”. Specific policies adopted within this new perspective include measures to strengthen labour rights (including the promotion of trade unions), the enforcement of proper employment contracts and the implementation of minimum-wage legislation. These policies also fit the more recent drive to rebalance growth in China by paying more attention to the role of the domestic market, and not just the export sector, as a driver of growth.

4.3 Trade and industrial policies

One of the most difficult policy areas in economic debate on effective and balanced productive transformation is international trade. The literature on the links between trade openness, structural transformation and economic growth is vast. Very broadly, the evidence shows that most successful economies have used smart combinations of trade opening, export promotion, and support and protection for infant industries as part of a wider set of policies to stimulate structural transformation. Consequently, trade reforms should not be pursued as stand-alone goals and need to be accompanied by other policies: infrastructure, education and training, enterprise development, entrepreneurship, innovation, finance and indeed social policies (Jansen, Peters and Salazar-Xirinachs, 2011).

In a world where trading advantages are created rather than given, and both economies of scale and learning are key to sustained growth and structural transformation, gaining market entry is a challenging exercise that depends not only, or even principally, on flows of FDI but mostly on local firms emerging successfully from an expanding domestic market and connecting with regional and global value chains. Historical legacies (and accidents) can have long-run economic consequences, and “market forces do not select a single, predetermined outcome,

instead they tend to preserve the established pattern, whatever that pattern may be” (Gomory and Baumol, 2000, p. 7). This would suggest that a “win–win” outcome is just one among a range of possibilities in a more open trading system and that international market forces, in conjunction with varying national capabilities, can produce results that are beneficial for some but detrimental to others. Certainly, posing the policy issue as a contest between import substitution and export-led industrialization models is misleading.

The disparate experiences described in this book reinforce the need for a strategic approach to trade policy and a close link between trade and competitiveness policies. In a number of the cases discussed, countries have followed the kind of shock therapy that was part of the Washington Consensus without concomitant attention to their dynamic competitiveness and have, as a result, discovered that the combination of rapid trade liberalization with limited public investment leads to serious bottlenecks in infrastructure and human capital and a deficient investment climate, and that, even when this policy approach generates static gains, it can also destroy existing industrial capacity and undermine prospects for future industrial development. The lesson seems to be that policy-makers need to develop balanced packages of trade and competitiveness measures, and that sequencing and timing issues are fundamental to successful outcomes, as are relationships with complementary structural policies, the development of education and skills, and the maintenance of competitive exchange rates. The individual chapters in this book provide plenty of food for thought about appropriate trade policy mixes to accompany processes of structural transformation and catching up.

Successful exporting is itself contingent on a favourable investment dynamic. As incomes increase, rising labour costs and the entry of lower-cost producers can rapidly erode the competitiveness of labour-intensive manufactures, creating a need for new investments to maintain productivity growth and to enable upgrading to higher value added activities. These familiar challenges have taken on a new guise with the growing prominence of GVCs and production networks. According to some (see Baldwin, 2012), the spread of GVCs heralds a “great economic transformation” from a world in which trade took the form, primarily, of finished goods moving between countries, to a new “21st century world” involving continuous “two-way flows of things, people, training, investment, and information” within GVCs organized by transnational corporations. With the Doha Round of international trade talks in limbo, this agenda has been promoted as a way to breathe new life into trade liberalization at the multilateral level (Lamy, 2012). The GVC approach could also, however, help in a different direction by generating new insights into what kinds of public policies can strengthen local industrialization efforts, build productive capacities and create jobs.

Milberg, Jiang and Gereffi (Chapter 5) are optimistic about the opportunities that GVCs offer, but, as also recognized by Ocampo in Chapter 1, the economic fragmentation that accompanies participation in these chains may also pose new obstacles to diversification and technological upgrading, especially in middle-income countries. In particular, the link between the technological content of export products and production activities may be broken. Thus, the specific task that is undertaken in a given place may be characterized by low technological content even if the final output of the value chain is a high-technology good. Alternatively, the task (e.g. garment design) may have high technological or human capital content even if the output (in this case, apparel) is classified as a low-technology good. The authors, accordingly, see the “upgrading” challenge within value chains as a multifaceted one for policy-makers in developing countries, requiring a policy approach that will not only better accommodate the demands and strategies of “lead” firms but also promote innovative economic and social measures locally, such as those to support domestic enterprises in linking up with lead firms in the value chain. They suggest that the regional setting could be the right level for expanding industrial policy options in an era of vertical specialization.

4.4 *Learning and capabilities*

High-performance growth and productive transformation relate to two distinct, yet closely interrelated, processes: building *capabilities* through learning; and accumulating productive *capacities* by investing in physical and human capital. Countries can only catch up when they acquire the capabilities required to adopt advanced technologies and shift into new industries. A critical question for policy-makers is therefore how to build up collective capabilities that allow countries to trigger a process of structural change, and then how to continuously enhance such capabilities to sustain productive transformation.

In Chapter 4 below, Nübler develops a concept of collective learning as one component of her theory of capabilities with a discussion around the question of how to design and implement learning strategies, and provides a framework within which such learning strategies can be explored. She argues that learning to create capabilities for productive transformation is a complex process and needs to occur at different levels and in multiple places: enterprises, education and training systems; social networks such as professional communities; organizational networks such as public–private partnerships and value chains; and public policy institutions. Key points for learning strategies include the following:

(1) formal educational attainment structures are important determinants of the feasible options for productive transformation; (2) manufacturing is a type of economic activity with a particularly large potential for technological learning, and industrial policies that promote manufacturing are accordingly a key element of national learning strategies; (3) belief systems play an important role in technological and economic development as they determine choices and behaviour; (4) exporting and value chains can become major channels and networks for learning; and (5) learning to learn, through the evolution of high-performing learning procedures and institutions, is essential to accelerate and sustain learning processes at the levels of individuals, organizations and societies. Governments can play a role in catalysing or accelerating learning processes through policy formulation and supporting the development of an institutional environment which provides incentives and pressures to firms and societies to learn, as well as by providing direct support for learning along these different channels. The concept leads to the argument that governments need to promote high-performing collective learning processes as an integral part of industrial and economic development strategies.

The chapters by Paus, Cheon, and Vijayabaskar and Babu respectively analyse the strengths and weaknesses of specific strategies and institutions designed to promote learning for rapid catching up in three different countries. In Chapter 6, Eva Paus analyses the case of capability building in Costa Rica during the period of ISI (from the early 1960s to the early 1980s) and during the transition towards the new economic model (NEM). She concludes that substantial social capabilities were developed under ISI, but that this ceased under the NEM, while under both models the development of local firm capabilities has been limited. She argues that Costa Rica's export success does not translate into unequivocal development success, because the country's export growth and transformation have been driven by foreign producers, while the domestic production sector has become increasingly dualized, with a limited number of companies becoming internationally competitive and a huge number of small and medium-sized enterprises (SMEs) producing for the domestic market with low productivity. This is the result of a stark contrast between the government's consistently proactive policies to attract foreign investment and a lack of coherent and equally proactive policies in support of the development of local firm capabilities, combined with underinvestment in education, infrastructure and R&D under the NEM. The country's institutions have been much less "smart" in creating and sustaining high-performing learning processes at the domestic enterprise level than in attracting FDI in medium- and high-technology activities. Paus concludes that Costa Rica needs to address three major challenges: (1) tackling the

dual nature of the production sector by improving the capabilities of SMEs and supporting a more aggressive national innovation strategy; (2) improving policy coordination and articulation to redress the marked fragmentation of efforts and competences in the public sector relating to productive transformation and competitiveness policies; and (3) mobilizing taxation to finance the required level of capability accumulation, as the tax ratio is below that of countries with similar income per capita, and there is underinvestment in infrastructure, innovation and capabilities.

In Chapter 7, Byung You Cheon examines the successful catching up of the Republic of Korea from the mid-1960s through to the 1990s, with particular emphasis on how education and training policies and institutions were coordinated with industrial policies and adapted over time to new conditions. The author argues that the economic “miracle” was accompanied by an education “miracle” in the sense that the education and training system was organized specifically to serve the need of the economy for a highly skilled workforce. Thus the knowledge structure in the labour force, characterized by a “strong middle educational attainment structure” (Nübler, forthcoming), was of critical importance to enlarging the options for industrialization and avoiding skills mismatches in the targeted industries despite their unprecedented growth. Furthermore, education and training policies, combined with social policies and increasing wage levels, created a more equal income distribution, which in turn provided strong incentives for further investment in skills development. Education and training policies were successful in developing the skills required for rapid catching up as well as in matching the demand for and supply of skills necessary for industrial upgrading. The chapter also analyses the country’s policies towards R&D and innovation. Investment in these collective capabilities ensured a rapid and sustained process of industrial and technological development, the generation of jobs, and the transformation of the employment and occupational structure. Finally, the author argues that the country’s education and skills development system faces serious challenges in developing the new capabilities required for shifting into the knowledge economy and developing advanced technologies. Cheon identifies in particular the need to develop institutions that can effectively align industrial development with education, training and R&D policies, to design sophisticated incentive systems and to emphasize private sector participation and social partnership between stakeholders.

Chapter 8, by Vijayabaskar and Babu, explores the process of capability formation behind the success story of the Indian software industry. It analyses how various institutional mechanisms and policies fostered the necessary accumulation of capabilities to grow and upgrade the industry at the national, value chain

and firm levels. A key element was the development of a labour force endowed with a specific mix of knowledge, skills and competences. This particular knowledge structure enabled India to take advantage of the window of opportunity opened up by the high demand for software services arising from the Year 2000 problem. The study shows that a large part of learning, in particular the acquisition of tacit knowledge and the development of enterprise routines, took place in organizational networks such as joint ventures and value chains, as well as in social networks embracing the information technology diaspora, in particular in Silicon Valley in the United States. National, sectoral and international institutions are shown to have played a key role in promoting rapid learning by setting and enforcing standards. The authors also stress the important role of standard setting in providing incentives to individuals, firms and organizations to learn and to develop the capabilities that have continuously opened up options and competences to diversify and to upgrade technologies within the software industry.

In Chapter 9, Fortunato and Razo also highlight the importance of capabilities development in industrial development strategies. They undertake regression studies to analyse the potential of developing countries to make the transition to middle- and high-income levels. Starting from the finding that a country's relative level of export sophistication has significant consequences for subsequent growth, the authors undertake a regression study of dynamic variations in export structures and the likelihood of a country remaining trapped at intermediate levels of income.

Fortunato and Razo group countries on the basis of their export sophistication and calculate the transition probability of each country, that is, the probability that it will move up into a group with greater export sophistication; they then estimate how the probabilities of transition between different groups change through time. Their results reveal several significant trends. One is that a substantial number of countries will rise from the lowest to the middle export sophistication groups, while only a few will make it into the highest sophistication group. This implies that many developing countries are at risk of falling into the middle-income trap and being unable to shift their production to highly sophisticated products over the next 30 years.

The authors apply the framework of capabilities provided by Nübler in Chapter 4 in this volume to interpret these findings. They conclude that continuous investment in new activities is crucial to climbing the ladder of sophistication and to fostering development, and that this requires the continuous transformation and building of collective capabilities. Capabilities, however, are not created automatically; deliberate policies and learning strategies are required to continuously generate capabilities as part of an industrial development strategy.

4.5 Institutional and policy design

Structural transformation advances by means of both creative and destructive forces that inevitably produce surprises, create tensions, trigger conflicts and generate trade-offs, all of which pose challenges for policy-makers. Managing this process effectively requires countries to engage in a certain amount of experimentation in seeking the configuration of institutions and policies that will work best in their national conditions and accommodate the necessary transitions and adaptations. A readiness to embark on such experimentation and flexibility are essential to successful operation in an uncertain and rapidly changing world. Equally essential, to maximize the chances of success, are strong social dialogue institutions to discuss and manage difficult transitions.

This experimental and adaptive approach is often associated with the developmental states of East Asia. But even in Latin America, where a narrower ISI-based approach predominated, industrial policies were modified over time to correct excesses and to take advantage of new export opportunities. As Ocampo points out in Chapter 1, from the 1960s onwards thinking in ECLAC began to evolve away from ISI, becoming critical of the excesses associated with those strategies, towards a “mixed” model that combined import substitution with export diversification and regional integration. This eventually led to the region’s widespread adoption of export promotion policies.

Like all policy-making, industrial policy has both a technocratic and a political economy dimension. *Technocratic knowledge* of the issues at hand, and the corresponding capabilities, are certainly needed and should be institutionally embedded to ensure effectiveness and the requisite degree of continuity beyond immediate political expediencies and cycles. Building a qualified and dedicated bureaucracy with sound knowledge of the portfolio of policy instruments at its disposal, including carrots and sticks, is part and parcel of the structural transformation challenge. The *political economy dimension* stems from the fact that specific governments, agencies and bureaucrats are embedded in evolving economic, political and social arrangements; as a result, what works in one period may fail in another. Successful economies are those that have or develop the capacity to adapt their institutions and behavioural conventions to changing economic circumstances and evolving political and social preferences (North, 1993). This means that, beyond a few core elements, there is no single homogeneous model of State–market relations that underpins the “right” industrial policy approach in any particular context.

Selective industrial policies require strong counterparties, including private sector organizations able to articulate and prioritize needs at the sector/cluster level and, on the public side, strong coordinating agencies, as well as knowledge

and service agencies to support the policies with the right thematic expertise. Public institutions have the advantage of being less subject to short-term market pressures or the demands of shareholders than private sector bodies, and thus better able to take a more expansive view, in terms of both a longer time horizon and a wider public interest perspective. However, these institutions face their own problems, not least the dispersal of responsibilities among several agencies and ministries, when coherence across the system is essential to ensure effective policy-making. They are also vulnerable to capture by the very agents (whether firms or industries) they are trying to encourage and support.

Avoiding or at least minimizing these risks requires effective mechanisms of voice and collaboration, both across the relevant public institutions and between these institutions and the private sector. Such mechanisms are key to creating an entrepreneurial ecosystem in which familiarity and trust encourage investment in the capabilities needed to generate new competitive activities, while dialogue and feedback help to correct mistakes and minimize their costs, reducing the likelihood of abuse and capture. Much has already been learned about how to design incentives and institutions to avoid abuse and capture (Rodrik, 2007). If these lessons are to be put into practice, industrial policy has to be coupled with a good deal of discipline and accountability, applied to both private actors and the State. Amsden (2001) has referred to the need for “reciprocal control mechanisms”, a set of institutions that discipline economic behaviour on the basis of feedback information that has been collected and assessed. The most successful industrializers were able to abandon projects that were not performing adequately, whereas in less effective systems failing projects persisted because bureaucrats had been hijacked by business interests that became dependent on the state. Desirable features of good incentive programmes include standard setting, automatic sunset clauses, built-in programme reviews, monitoring, the establishment of clear benchmarks for success or failure, and periodic evaluation exercises. These and other instruments can be used to limit the likelihood of abuse in implementing proactive policies based on strong public–private cooperation. Their application, of course, requires competent public agencies and effective coordination. Here the technocratic and political economy dimensions interact closely.

Much of recent industrial policy has been concerned with mobilizing the participation of a wider set of relevant actors beyond business leaders and national policy-makers, to include academics, trade unions and civil society groups, not only at national but also at regional and even municipal level. In the case of China, for example, the importance of local and regional decision-making is emphasized by Lo and Wu (Chapter 11). What is needed is a level of agency that can adopt a public policy, systemic and long-term point of view, rather than just

a firm-level, sectoral or short-term perspective. All these actors have a legitimate role to play in policy-making for productive transformation, and the consistent exercise of this role requires effective coordination mechanisms, such as national competitiveness councils, sectoral councils or committees, informal networks of communities of practice, and public–private partnerships. Disciplines and rules to govern the interaction between the different players are also essential. Recent experience in Latin America, as documented by Devlin and Moguillansky (2011), further suggests that efforts to move in the direction of stronger public–private partnerships mark an important step forward in industrial policy design in the region.

The importance of strong coordinating institutions is clearly demonstrated in Robert Wade’s discussion of the hidden developmental state in the United States (Chapter 14). Wade argues that industrial policy should not be taken to mean only the formulation by centralized coordination agencies of national “visions” and national programmes to develop specified industries (though at times the US development model has followed such lines), and that the absence of these features does not necessarily mean that there is no industrial policy. As an alternative, he refers to the role of “network-building” industrial policy, whereby state and city governments as well as federal institutions have, in collaboration with scientific, financial and business interests, forged a more effective platform for developing and commercializing new products and processes. Wade calls this “the developmental state in disguise” and argues that, by hiding its support programmes, it has paradoxically helped to perpetuate the myth that the United States has no industrial policy. Wade gives several examples of US-style industrial policy in action, including high-tech public venture capital funds linked to military use, and discusses the causes and effects of these programmes. He backs the claim that US governments – including state and city governments as well as the federal government – have undertaken much more industrial policy than the standard narrative concedes, with generally net positive effects according to a national interest test.

Any policy regime requires some metric of performance. This is particularly true in the case of industrial policy. Critics have argued that even a strong and capable State will have difficulty imposing discipline on the beneficiaries of state support because measuring performance, in order to reward good performance and punish bad, is complex and difficult. But while it may be difficult, it is not impossible. Countries that want to engage in ambitious industrial policy programmes should create a culture of systematic and rigorous evaluation of impacts. In fact, a structured system for monitoring and assessing programmes is a key ingredient for good policy in general, not just for industrial policy.

Structural transformation is a demanding and difficult process that requires a degree of social consensus and popular assent. Institutions for consultation, discussion, participation and social dialogue at all levels should be engaged in the process of structural change.

5. Final remarks

This volume seeks to restate the case for industrial policy by: (1) presenting the relevance of different economic traditions, all of which can contribute to the analysis and design of industrial policy, and recognizing that in recent years there has been some degree of rapprochement between them, based partly on a better understanding of the record of success and failure of industrial policy; (2) making the case for the importance of a number of key lessons and principles that have proved valuable in promoting productive transformation (the need for coherent, integrated, multisectoral frameworks, setting about targeting in the right way, pursuing a better marriage between trade, macroeconomic and industrial policies, and promoting learning and productive transformation as interrelated processes); and (3) exploring the link between productive transformation, job creation and employment growth, a link which tends to be weak in the current literature.

In addition to providing an overview of the main frameworks and issues that arise from the case studies presented in the book, this introductory chapter has made an effort to distil some general lessons and principles on *how to get the policy process right*. We have argued that this requires taking institutional design seriously; measuring performance in order to learn from experience and ensure discipline; being pragmatic and flexible over time; and taking voice seriously by promoting consultation, participation and social dialogue at all levels, as well as keeping industrial policy honest. But then, these are good principles in all policy areas, not just for industrial policy.

As Rodrik (2007), Chang (2003), Bairoch (1972) and others have argued, if countries that have been successful in catching up had actually applied the prevailing market orthodoxy, they would not be success stories today. They were successful because their governments were both unorthodox and pragmatic in their approaches. They experimented with different forms of sectoral, trade, education, technology and macroeconomic policies that allowed them to launch and manage a sustained process of structural transformation and capability building, and they learned from their mistakes and adapted policies accordingly. They applied the principle that “the market is a good servant but a bad master” and, to paraphrase

Robert Wade (1990), they adopted institutional mechanisms and policies to “govern the market” in transforming their economies without losing sight of the wider policy challenges that contribute to building prosperous, stable and inclusive societies.

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