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Overview

New challenges and emerging paradigms have turned industrialization and industrial policy into one of the most hotly debated and interesting issues of the early twenty-first century. Both the role of manufacturing in economic development and the contributions of industrial policy are contested. In this Policy Brief we argue that the economic development of emerging economies still requires a type of industrialization that can deliver high-quality employment, that is aligned with the international division of labour, and that would not lead to autarky, or a reversal of global gains in establishing openness in trade. Industrial policy can make valuable contributions in this regard if the lessons of the past and the challenges of the future are sufficiently taken into consideration.

Written by Wim Naudé and Adam Szirmai

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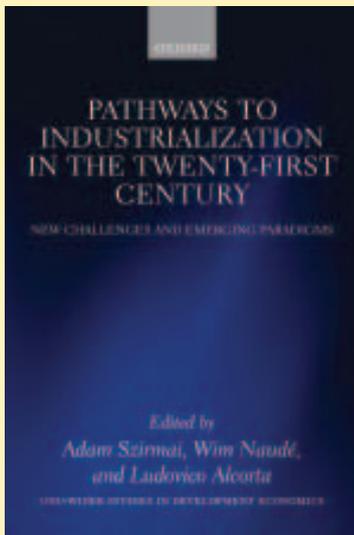
Industrial Policy for Development

NEW CHALLENGES AND EMERGING PARADIGMS HAVE turned industrialization and industrial policy into one of the most hotly debated and interesting issues of the early twenty-first century. In the UNU-WIDER book *Pathways to Industrialization in the Twenty-First Century*, published by Oxford University Press (see Box), we address a number of policy-relevant issues in this regard. These include (i) the need for industrialization in general, and the *specific role of the manufacturing sector*; (ii) the *comparative experiences of countries across time and space*; and (iii) *new policy challenges* such as the emergence of global value chains, climate change and entrepreneurship.

The Need for Industrialization and Industrial Policy

Manufacturing has historically been the driver of economic growth, structural change and catch-up. In recent decades, from 1950 to 2005, the pattern of industrialization has closely reflected changes in global patterns of development. Over this period the share of manufacturing in gross domestic product (GDP) in the rising economies of Asia has doubled, while the share has been stagnant in Latin America and sub-Saharan Africa (SSA). These global patterns of change suggest that manufacturing continues to be a potential engine for growth and catch-up. Manufacturing brings with it special opportunities for reaping economies of scale, engaging in technological progress and learning, profiting from spillovers to other sectors and providing job opportunities for variously skilled levels of labour. Though market services have undoubtedly become more important in economic development, neglect of manufacturing in theory and policy would be a serious error.

Unfortunately, premature deindustrialization is a potential threat to development, especially in Latin America and Africa. Between 1985 and 2005 several developing countries experienced premature deindustrialization. In Africa especially deindustrialization has been one of the disappointing features of the post-1990 period. The problem – missing out on the benefits of a dynamic manufacturing sector – is compounded by the fact that reindustrialization may be more difficult to achieve than starting industrialization in the first place. Hence there is a need for carefully considered industrial policies to promote manufacturing in industrially lagging countries.



“No country has been able to move successfully from a low-income agrarian economy to a high-income service-oriented economy without its government’s proactive use of industrial policy to facilitate the economic transformation. However, industrial policies failed in most countries in the past. The book makes an invaluable contribution to the emerging literature on rethinking industrial policy. It assembles a group of experts to review the reasons for industrial policies’ past successes and failures, and to draw useful lessons for making industrial policy successful in the twenty-first century’s multi-polar growth world. I highly recommend any student and practitioner interested in poverty reduction and sustained growth in developing countries to read this book.”

Justin Yifu Lin, Former Chief Economist, The World Bank, and Professor, Peking University

However one should beware of industrial bias and a disregard of the role of other sectors in economic development. Biases against agriculture have been a prominent feature of post-war industrial policies, with very negative consequences. In recent decades there are indications that the service sector may be becoming more important as a driver of growth in developing countries. The share of the service sectors is increasing and some countries, such as India, owe a part of their recent growth accelerations to dynamic service sectors such as software and business services. Also the boundaries between manufacturing and services are becoming more and more fluid, and the impact of the internet in enabling networked manufacturing and niche production, are characterising what has been called a “new industrial revolution”. This strengthens the case for industrial policies that are broader in scope than manufacturing alone, and requires more research to deepen our understanding of the intersectoral relationships between manufacturing, technology and services in the structural transformation process of industrially lagging countries.

Learning from the Comparative Experiences of Countries

The book *Pathways to Industrialization in the Twenty-First Century* dissects a variety of comparative experiences from which policy makers can learn. What these experiences suggest is that (i) industrialization is not an automatic process – history, policies and luck matter; and (ii) that very different types of industrial policies are necessary in different contexts and different times. Drawing simple “lessons” from past country experiences may therefore be difficult, as a number of contributors to the volume have made clear.

Indeed, a number of aspects of “received wisdom” of industrialization can be challenged. For instance, Asian development took off in the 1950s and 1960s “largely in the dark through trial and error learning” and not through careful and artful prospective central planning. China’s famous rise as a manufacturing giant involved a key role for the state, which long predates the communist period, and its post-war development has involved the high costs of various “disastrous policy mistakes”. In Indonesia, seen by many as a miracle economy that confounded expectations in the 1960s when it was considered an “economic basket case”, industrial success was less due to selective and sectoral policies than a “broad set of orthodox policies”. In Latin America industrial policy has been making a comeback despite the apparent shortcomings of import substitution industrialization (ISI) policies in the 1960s and 1970s and the general rejection of industrial policy during the 1980s and 1990s.

In the current debates about industrial policy one can distinguish two polar positions. The first position is the neo-liberal position, which continues to focus on the shortcomings and inefficiencies of the inward-looking orthodox industrial policies in the developing world in the period 1950 to 1980. This approach is generally critical of any kind of selective industrial policy. At the other extreme stand the neo-structuralists who argue for a revival of industrial policies, including the option of protection for infant industries in industrially lagging countries. The neo-structuralists point to the pervasiveness of selective industrial policies and government interventions in the successful Asian development experiences. They emphasize the disappointing experiences of Latin America and

Africa in the period of structural adjustment, liberalization and deregulation.

We believe that both of these positions are wrong, and that the most appropriate policy with respect to industrial policy today is somewhere between these two polar opposites. A more pragmatic, middle-ground position towards industrial policy requires that we should take into account the lessons to be learned from recent experiences since the market reforms of the 1980s, but without forgetting the critical lessons of policy failures in the post-war period of 1950 to 1980. There can be no return to policies of the past. Rather, policy design should focus on the new challenges and new circumstances.

Breaking into Global Value Chains

Furthermore, despite the globalization of trade, the difficulties of breaking into global value chains remain daunting, but global value chains offer new opportunities for industrial policy. In particular, the rise of global production sharing and networked production has radically changed the industrial policy instruments open to affect industrial development. This is because successful industrial development will require countries to be competitive not in the complete production of some good, but in the production only of a component (“trade in tasks”). Integrating a country’s producers into global value chains may imply that the traditional focus of industrial policy on “lumpy, complex industry” is no longer appropriate.

“Do not forget the critical lessons of policy failures of the post-war period”

New Challenges

Industrially lagging countries face a number of new challenges. These include the need for global financial reform, the competition that new entrants to labour-intensive manufacturing production and exports face from China and India, the competition that middle-income countries face from reshoring driven by accelerating technological change and automation, and the general need to avoid jobless growth. The lack of sufficient employment creation in manufacturing in countries with a youth bulge remains a serious challenge for researchers and policy makers.

This is seen by some as positive since it may open up a wide range of opportunities for poorer countries, which may be more able to find a niche in which to specialize rather than to be competitive along the entire production chain. In other words, finding a comparative advantage in a “slice” of the production chain may perhaps be easier than finding a comparative advantage in the entire production chain and can be shaped by industrial policies.

Resource-Based Industrialization and Climate Change

One of the exciting new debates in industrial policy is that concerning

About the Authors

Wim Naudé is Professorial Fellow at UNU-MERIT and at the Maastricht Graduate School of Governance, University of Maastricht. He is also Dean of the Maastricht School of Management.

Adam Szirmai is Professorial Fellow at UNU-MERIT and Professor of Development Economics at the Maastricht Graduate School of Governance, University of Maastricht.

resource-based industrialization. In the past, there was a general pessimism about the ability of resource-rich countries to industrialize and achieve structural transformation in light of the comparative advantages in primary exports and the problems of “Dutch Disease”. But nowadays resource-based manufacturing is shown to be a viable and technologically dynamic and transformative option.

of more sustainable energy sources) – and second on utilizing the opportunities for different patterns of industrialization inherent in “green” or “low-carbon” industrialization. This will require much more research than what is available at present to identify opportunities and risks for green industrialization; how to generate the entrepreneurial innovations – both radical and incremental – that may be required to utilize or

“An important challenge is posed by climate change”

Another important new challenge – new in the sense of not being an issue when the existing industrial countries first engaged in industrialization – is posed by climate change. Both mitigation of and adaptation to climate change will require greater global coordination of industrial policies as well as more emphasis on innovation within the content of industrial policies. The global asymmetries between advanced and developing countries make global policy coordination essential. Pollution reduction should start in developing countries where environmental efficiency is low and the greatest gains could be realized at the lowest cost. At least part of the funding for such efforts should be provided by the advanced economies which have contributed so much more to the global pollution stocks in the past.

Both of these required shifts in industrial policies will have to aim first at reducing waste – both on the output side (through greater recycling) and on the input side (through greater energy efficiency and the development and use

minimize these; and to understand the when and how of regulation of industry and technology better. Achieving these difficult objectives may perhaps more importantly require a different approach to industrial policy than in the past, requiring such policies to be more entrepreneur-focused, rather than state-focused.

Entrepreneurial Industrialization

Unfortunately, the design of entrepreneur-focused industrial policies is an underresearched and complex challenge. It is, however, a challenge that is possibly central to the way in which successful industrial policy will be conducted in future. Entrepreneurial innovation is important for the reallocation of resources from the traditional (agricultural) sector to the modern manufacturing and service sectors and the development of new activities within these sectors. Recovery after the 2008 global financial and economic crises and the challenge of climate change will require more, not less, entrepreneurial innovation. This implies indus-



trial policies where the relationship between government and entrepreneurs (the private sector) is important.

As Ricardo Hausmann and Dani Rodrik have pointed out, entrepreneurial entry in developing countries generates information on the possible latent comparative advantage of a country. Thus industrial policy becomes a process of “self-discovery” of what the economy might be good at producing. Because leading/early entrants absorb the costs (but not necessarily the benefits) of early entry, entry itself may be suboptimal. Policies to promote such self-discovery could be support for innovation, including the establishment and promotion of national innovation systems; support for new firm start-ups (e.g. by reducing regulations and requirements and/or providing subsidized credit); and support for the integration of domestic small firms into global value chains. More research is needed in these regards – for instance on establishing national innovation systems given the nature of firms’ positions in global value chains and linking national innovation systems with multinational firms and their outsourcing to indigenous firms.

These considerations imply that one should be careful in arguing for industrial policy to be merely focused on an industrially lagging country’s specialization based on its comparative advantage. They also imply that unlike in the past where industrial policies were either focused on creation and growth of state-owned firms or alternatively consisted merely of broadly functional policies without consideration for firm or entrepreneurial specifics, the requirement now is for industrial policy to be a nuanced partnership between entrepreneurs and the state. The difficulty is that such industrial policies will require heterogeneity on the country, firm and regional level to

be incorporated into policy. It implies that one-size-fits-all policies for industrial development are unlikely to work, and they require more research on development and the use of better tools for measuring and studying entrepreneurship across various levels of development.

The focus on entrepreneurship draws our attention to important new elements in the industrial policy debate, namely the orientation towards learning, experimentation and self-discovery. In the past, industrial policy was often heavily state-oriented and based on top–down planning. Today industrial policy needs to be interactive and experimental. Entrepreneurial effort, innovation and the knowledge sector fulfil pivotal roles. Hence policy should seek to create a learning environment in which capabilities are upgraded and complemented. Policies also need to be more experimental, willing to quickly phase out activities that turn out not to be promising, while expanding support to activities that turn out to be successful. China provides some encouraging examples in this respect.

Technological Innovation

Authors such as Peter Marsh and Chris Anderson have recently argued that the world is at the start of a “New Industrial Revolution” wherein the interaction of the Internet, social media and new production technologies such as 3-D printing is making scale economies less important for production and the tailoring of niche-market products to consumer tastes and preferences more important. For instance, architects in the Netherlands are planning to “print” a designer house by 2014 using a 3-D printer that can manufacture 6 × 9 meter panels. Astronauts expect in the future to “print” food from a diverse menu when on space

Pathways to Industrialization in the Twenty-First Century: New Challenges and Emerging Paradigms
Edited by Adam Szirmai, Wim Naudé and Ludovico Alcorta

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- Timely contribution on manufacturing and industrialization, in light of the financial crisis and the re-emergence of industrial policies and concerns about manufacturing
- Accessible and clear structure, highlighting common themes and helping the reader to interpret, compare and critically analyse the issues facing industrial policy today
- Contributions and insights from leading scholars in the field
- Result of a joint project between the United Nations University and UNIDO with a global reach that reflects global concerns
- Unique focus on trends and paradigms that are neglected elsewhere, as well as on climate change and industrial policy, and on entrepreneurship and industrial policy

http://www.wider.unu.edu/publications/books-and-journals/2013/en_GB/Pathways-Industrialization/

This Policy Brief is based on *Pathways to Industrialization in the Twenty-First Century: New Challenges and Emerging Paradigms* edited by Adam Szirmai, Wim Naudé and Ludovico Alcorta (Oxford University Press, 2013). It is a result of the UNU-WIDER project “Promoting Entrepreneurial Capacity” directed by Wim Naudé and the outcome of a joint UNU-MERIT, UNU-WIDER and UNIDO workshop held in Maastricht in 2009.

missions. In New York, MakerBot has been building 3-D printers at ever decreasing costs. This “New Industrial Revolution” will make technological innovation and human skills even more important in industrialization and re-industrialization.

In the most successful industrializing country of the past century, China, there has indeed been in recent years an increased emphasis on the role of industrial policy to foster indigenous absorption capacity and technological innovation for the development of manufacturing, and to underpin this by robust investment in supportive business infrastructure. Since 1998 there has been a veritable explosion in international patent registrations from Chinese companies: between 2004 and 2008 more than 7,000 patents were registered by Chinese companies at the United States Patent and Trademark Office; R&D expenditure as a share of GDP increased in China from 0.6 per cent in 1998 to over 1.4 per cent by 2008. This technological prowess has given Chinese firms a lead in the production of wind turbines: four of the top ten producers of wind turbines today are Chinese firms – Goldwind, Sinovel, United Power and Mingyang.

Such advances in research in China have been accompanied by greater investments in human capital: China rose to be amongst the top five countries in the world in terms of university enrolment in 2007. In the past the adoption of policies to attract return migration of skilled workers, to transfer surplus labour from rural to urban areas, and the policy of requiring joint ventures with foreign firms have played a highly significant role in making technology transfers from multinational enterprises more effective. Moreover, despite the huge role of foreign direct investment (FDI) by multinational

enterprises in China, a remarkable feature over the past decade has been the relative decline of Greenfield FDI in total gross fixed capital formation – a sign of the importance of domestic investment. The lessons are that technology is vital for industrialization, that industrial policy should aim to obtain technology both from abroad as well as from domestic sources, and that focusing on the complementarities between foreign and domestic innovation is likely to be most productive.

Loss of Policy Space

Finally, in all of the above, a central new challenge in industrial policy formation for developing countries is the loss of policy space due to globalization and the current architecture of international institutions. We have learned from past experiences that there are few examples of successful industrialization that did not involve a phase of protection of new industrial activities. Whatever the inefficiencies of ISI policies, especially when continued for too long, it seems on balance that they have indeed contributed to capability building in economies such as the Republic of Korea, Taiwan, India, Indonesia and China, which enabled (existing or new) firms to compete in later more liberal policy environments when policy turned outwards. One response to current policy constraints is to engage in more regional and decentralized policy initiatives. Another possible response is to revisit the notion of non-reciprocity, which under the *General Agreement on Tariffs and Trade* allowed poor countries latitude for protection, while reducing barriers to trade in the global economy. This might be relevant for the poorest developing countries embarking on structural change in the face of Chinese and advanced economy competition. The notion of non-reciprocity

emphasizes the important point that we want to avoid creating obstacles to the growth of world trade – one of the obvious dangers of resurgent protectionism – while creating opportunities for poor developing countries to embark on structural change and entry into global trade.

and on the amassed literature on the topic. The debate should focus less on whether or not there should be any industrial policy and more on making existing policy instruments more effective and crafting new policy instruments that take into account entrepreneurship, level of development

“Development prospects in the early 21st century depend on job-creating industrialization”

Concluding Remarks

The development prospects of developing countries in the early twenty-first century depend on a type of industrialization that can deliver high quality employment, which is aligned with the international division of labour, and which would not take place in autarky. We believe that industrial policy can make valuable contributions to structural change and industrialization, if the lessons of the past and the challenges of the future are sufficiently taken into consideration.

Developing countries can benefit from the debates on industrial policy

of a country or region and the changing relationship between state and private sector. Policy makers and academics need to be aware of the recent trends, challenges and emerging paradigms in the world economy and to understand how these shape the crafting of new industrial policy instruments and the effective application of existing instruments. While industrial policy is perhaps even more urgent than ever, it may also be more difficult to practically implement than before. These aspects should not be overlooked in the policy dialogue and should increasingly form part of the scholarly agenda.



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UNU World Institute for Development Economics Research (UNU-WIDER) is a research and training centre of the United Nations University. UNU-WIDER was established by the United Nations University (UNU) as its first research and training centre and started work in Helsinki, Finland, in 1985. The Institute undertakes applied research and policy analysis on structural changes affecting the developing and transitional economies, provides a forum for the advocacy of policies leading to robust, equitable and environmentally sustainable growth, and promotes capacity strengthening and training in the field of economic and social policy-making. Work is carried out by staff researchers and visiting scholars in Helsinki and through networks of collaborating scholars and institutions around the world.

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Industrial policy can make valuable contributions to structural change and industrialization, if the lessons of the past and the challenges of the future are sufficiently taken into consideration. While industrial policy is perhaps even more urgent than ever, it may also be more difficult to practically implement than before.

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Karajankalliokatu 6 B FIN-00160

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