NEW STRUCTURAL ECONOMICS
FOR LESS ADVANCED COUNTRIES

NOWA EKONOMIA STRUKTURALNA
WOBEC KRAJÓW MNIEJ ZAAWANSOWANYCH

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Edited by:
Justin Yifu Lin and Alojzy Z. Nowak

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Lectures in Poland and abroad. Specialises in global and Asian issues (China, Burma-Myanmar, Thailand, and the Philippines), although his scope of interest also includes issues concerning the Diplomatic Protocol and cultural differences (naturally stemming from many years of his diplomatic experience and long periods spent abroad).

Marian Górski – Professor of economics; head of the Faculty of Financial Systems and of the Academic Unit for Banking and Financial Markets in the Faculty of Management, University of Warsaw. Specialised in finance, banking, macroeconomics, monetary policy. Author and co-author of many monographs and scholar articles. His academic manual entitled *System Finansowy Gospodarki* (*Financial System in the Economy*) has had three editions so far (2007; 2009; 2013). In the years 1990–1996 the Dean of the Faculty of Management, University of

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He has been, both in the past and at present, involved in the economic practice. In the years 1991–2005 member and president of the supervisory board of one of Poland's larger banks – BZWBK S.A. As a partner in the consulting company Premium-econ in the years 1991–2003 he advised the Minister of the State Treasury and the Minister of Economy, among others. At present member of the Council for WIBID and WIBOR reference rates which supervises the market of inter-bank deposits in Poland.

Grzegorz Jędrzejczak – doctor with a post-doctoral degree, Professor at the University of Warsaw. In the years 1989–1991 Undersecretary of State in the Ministry of Ownership Transformations responsible for the creation of the Polish capital market. In the years 1993–2013 employed in the World Bank in Washington, DC, in the Department of Private Sector Development and the Financial System of Europe and Central Asia and a representative of the World Bank in Ukraine and Azerbaijan. Member of the Supervisory Board of Polish Foundation for Management Research and IBD Business School.
Since the 1980s successfully combines scholar interests with practical activities. Areas of his interests include privatisation, the creation of regulated capital markets, the emergence of corporate culture in Poland and other countries under transformation from centrally-planned to a market economy. Important fields of his practical and analytical activities include development programmes in developing countries and the potential for support from international organisations, with particular emphasis upon the World Bank. At present specialised in issues concerning conditions for the economic policy which promotes innovativeness in middle-income countries and analyses of long-term opportunities and threats to Polish economy.

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Author of many scholar publications in the fields of company law, securities law, issues of ownership transformations, privatisation of enterprises, and insurance law, e.g. *Reprezentacja spółki kapitałowej w organizacji* (*Representation of Corporations in an Organisation*), Warsaw 2015; *Komentarz do Ustawy o działalności ubezpieczeniowej i reasekuracyjnej* (*Commentary to the Insurance and Reinsurance Activities Act*) (co-author), Warsaw 2017; *Nowe regulacje zasad zarządzania mieniem państwowym w zakresie powoływania i odwoływania członków organów nadzorczego i zarządzającego*

w spółkach z udziałem Skarbu Państwa (*New Regulations Concerning the Principles of Management of the State Property in the Area of Appointment and Dismissal of Members of Supervisory and Managing Bodies in Companies with the State Treasury Shareholding*), PUG 2/2017; *Wyzwania globalizacji dla rynku ubezpieczeń* (*Challenges of Globalisation to the Insurance Market*) (co-author), Warsaw 2016; *Postępowanie administracyjne w sprawie zezwolenia na wykonywanie działalności ubezpieczeniowej i reasekuracyjnej – wybrane aspekty* (*Administrative Proceeding on the Approval for Performance of Insurance and Reinsurance Activities – Selected Aspects*) (co-author), Wiadomości Ubezpieczeniowe 2/2016; *Jurydyczna koncepcja podmiotowości spółki partnerskiej a status prawny jej zarządu* (*Juridical Concept of Legal Personality of a Partnership and the Legal Status of its Management*), Forum Prawnicze 2/2015; *Zdolność prawna handlowych spółek osobowych na przykładzie spółki partnerskiej* (*Legal capability of private companies based on a partner company*) Forum Prawnicze 3/2015; *Nieformalny zarząd spółki partnerskiej* (*Informal Board of Management in a Partnership*), PUG 5/2015; *Tryb wyłaniania zarządu w spółkach zależnych od spółek Skarbu Państwa* (*The Procedure of Appointing the Board of Management in Companies Subsidiary to Companies of the State Treasury*), Wrocław 2015; *Pełnomocnik w obrocie wekslowym – uwagi na tle art. 8 Prawa wekslowego* (*A Proxy in Bills of Exchange Trade*), PUG 9/2015; *Status prawny zawieszonego członka zarządu spółki akcyjnej oraz wpływ zawieszenia na strukturę organizacyjną zarządu* (*Legal Status of a Suspended Member of the Board of Management of a Joint-Stock Company and the Impact of Suspension Upon Changes in the Board of Management Organisational Structure*), PPH 5/2015.

Michał Kurtyka – graduate of prestigious *Ecole Polytechnique* in Paris where he obtained the degree of engineer in 1996. Scholar in the field of quantum optics in the National Institute of Standards and Technologies near Washington (DC) where he worked under tutorship of the Nobel Prize winner in physics, William D. Phillips (who was also the promoter of Kurtyka's dissertation concerning the conditions for the formation of Bose-Einstein condensate). During his studies he was also specialised in economy, with particular emphasis upon market organisation – studies under tutorship of Professor Jean Tirole, Nobel Prize winner in economy (2014). In the area of international economy he studied in Louvain La Neuve University and obtained the master degree in Warsaw School of Economics.
Employed in the Office of the Committee for European Integration where he headed an analytical team supporting the process of negotiation on the accession to the European Union in the team of the Chief Negotiator Jan Kułakowski; directly involved in the area of transport and energy. As an advisor he co-managed projects of modernisation of Poland's largest companies and supported their adaptation to challenges of the European market. Promoter of European cooperation in the area of industrial transformation and adaptation of European industry to challenges of

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He made his doctoral defence at the University of Warsaw. Lecturer in the management of change, economy, market organisation and industrial strategy in the University of Warsaw, Collegium Civitas, Oxford Programme On Modern Poland. Co-author of the concept or implementing effective changes in an enterprise, described in the book *Zarządzanie zmianą. Od strategii do działania* (*Managing the Change: From Strategy to Action*); author of the book *Od restrukturyzacji do modernizacji. Opóźniona transformacja polskiego sektora elektroenergetycznego w latach 1990–2009* (*From Restructuring to Modernisation. Delayed Transformation of Polish Electric Power Sector in the Years 1990–2009*).
Author of the governmental programme for development of electromobility in Poland, described for the first time as concept in the book he co-wrote with Professor Leszek Jesień, *New Electricity and New Cars* (2013/2015), and then in the form of a document adopted by the Council of Ministers in March 2017 and entitled *Plan Rozwoju Elektromobilności* (*Electromobility Development Plan*).

Justin Yifu Lin – Professor, director of Center for New Structural Economics and honourable Dean of National School of Development at Peking University. In 1986 obtained Ph.D. in economics at the University of Chicago and in 1987 returned to China. For fifteen years performed the function of director-founder of the China Centre for Economic Research at Peking University where also worked as Professor. In the years 2008–2012 he held the office of the chief economist and Senior Vice-President of the World Bank being the first economist from any developing country to hold this office.
Corresponding fellow of the British Academy, fellow of the Academy of Sciences for the Developing World; doctor *honoris causa* of the Université d'Auvergne, Fordham University, Nottingham University, City University of Hong Kong, London School of Economics, Hong Kong University of Science and Technology, University of British Colombia, Katholieke Universiteit Leuven, Open University of Hong Kong and Macao University of Science and Technology.
Author of twenty five books, including *Economic Development and Transition: Thought, Strategy and Viability* (2009); *Demystifying the Chinese Economy* (2011); *New Structural Economics: A Framework for Rethinking Development and Policy* (2012); *The Quest for Prosperity: How Developing Countries Can Take Off* (2012); *Against the Consensus. Reflections on the Great Recession* (2013); *Going Beyond Aids: Development Cooperation for Structural Transformation* (2017); *Beating the Odds: Jumpstarting Developing Countries* (2017).
His stimulating works inspire scholars, students, decision-makers and anybody interested in the global economy.

Mateusz Morawiecki – On November 16, 2015, Mateusz Morawiecki was appointed to the position of the Deputy Prime Minister and the Minister of Development, and on September 28, 2016, to that of the Deputy Prime Minister, Minister of Development and Minister of Finance.
In 1998 M. Morawiecki performed the function of Deputy Director of the Department of Negotiation on the Accession in the Committee for European Integration. He was a member of the team involved in the negotiation of conditions for Poland's accession to the European Union, in the area of finance among others. Later he worked for the Bank Zachodni Group WBK (earlier with the Bank Zachodni). Since May 2007 he was the President of the Board of Management in that institution.
Mateusz Morawiecki graduated from the Faculty of History at the University of Wrocław, also completing the studies in Business Administration at Wrocław University of Science and Technology and at the Central Connecticut State University. He obtained the MBA title at Wrocław University of Economics. He is also a graduate of the University in Hamburg, University in Basel and Kellog School of Management of the Northwestern University in Evanston, USA.
His works include co-authorship of a manual in the field of the Community law and the economics of economic integration. In the years 1998–2001 he was a member of supervisory boards in the Industrial Development Agency and in Wałbrzych Energy Company. He also had a seat in Dolnośląski regional parliament during its 1st term of office. Between 2008 and the moment of assuming the position of the Deputy Prime Minister and the Minister of Development, Morawiecki was an honorary consul of the Republic of Ireland in Poland. In 2013, he was awarded the Cross of Freedom and Solidarity and in 2015 with the Knight's Cross of the Order of Polonia Restituta.
Morawiecki speaks English and German fluently. He also communicates in Russian.

Alojzy Zbigniew Nowak – Professor of economics; graduate of SGPiS (at present, Warsaw School of Economics); in the field of economics – University of Illinois at Urbana–Champaign in the United States and Freie Universität Berlin as well as International Economics at RUCA in Antwerp; in the field of banking, finance and capital markets – Exeter University in the United Kingdom. In 1991 awarded the Rector Prize for his doctoral dissertation; in 1996 awarded the Prize of the Minister of National Education for his book entitled *Banki a gospodarstwa domowe – dynamika rozwoju* (*Banks and Households – Dynamics of Growth*).
Since 1985 employed in the Faculty of Management, University of Warsaw, where he served as the Vice-Dean for international relations and, for two terms of office, as the Dean of the Faculty. In the years 2012–2016 Vice-Rector for Research and International Relations at the University of Warsaw. At present the Dean of the Faculty of Management, University of Warsaw.

Author of many scholar publications in Polish, English, German and Russian; laureate of many awards and prizes, member of scientific and scholar organisations and of programme councils of many magazines.
Visiting Professor in University of Cambridge; Postgraduate Business School, Grenoble, France; University of North Florida USA; Rostov University; University of North Colorado; The Catholic University of America; Freie Universität Berlin.

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Vice-Dean and Dean in the Faculty of Management, University of Warsaw for many terms of office. At present lectures in macroeconomics, macroeconomic and sector-specific policy, and social policy. Tutors the procedures for doctoral degrees, involves in scholar research in two areas: macroeconomics and health care sector. Author of many publications in the field of changing consumption structure dynamics, industrial policy and problems of macroeconomic policy under conditions of supra-national integration and globalisation.

Andrzej Sopoćko – Professor since 1994 (the title awarded by the President of the Republic of Poland); employed in the Faculty of Management, University of Warsaw and in the Polish Academy of Science. One of the authors of Polish systemic transformation of the early 1990s; crucial in the process of preparation of the Anti-monopoly Act and the establishment of the Office for Competition and Consumer Protection. President of the OCCP in the years 1995–1997. Played an important role in the creation of the Warsaw Stock Exchange (initially as Member of Board, then, in the years 2003–2006, as Vice-President). Main economic advisor to the Prime Minister, Vice-Minister of Finance (in the years 2001–2003).
Author of many publications (*c*. 150, including 8 books). Many foreign stays and placements – three times in West Germany, three times in the USA, in Switzerland, in Russia. Awarded many awards and prizes: three times awarded by the Polish Academy of Science for the best book of the year in the field of social sciences and four times – by the Minister of Science. Raised two children and three dogs.

Henryk Sterniczuk – Professor of management and international business at the University of New Brunswick in Canada. For many years the Director of MBA at the University of New Brunswick and Professor of the Faculty of Business at the

Pennsylvania State University in the USA. In 1990s counsellor to the Minister of Ownership Transformations and founder of the Centre for Privatisation in Poland, of the Institute for Privatisation and Management in Russia and of the International Business Institute in Ukraine, Belarus, and Kazakhstan. The President of the Supervisory Board of Polish Management Research Foundation and the President of the Scientific Council of IBD Business School.
His scholar interests also include, among other things, the social and cultural background of the process of generating innovation in post-industrial innovative societies.
Author and editor of an extensive monograph entitled *Nadzór korporacyjny* (*Corporate Supervision*) which comprehensively presents the most important issues concerning the formation, in Poland, of the principles of corporate order and best practices in companies.

Grzegorz Tchorek – doctor; associate professor in the Faculty of Management, University of Warsaw; advisor in the National Bank of Poland.
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The chief performer and co-performer of several grants implemented in the National Science Centre and in the National Bank of Poland. Author of publications in the areas of monetary integration, foreign trade, currencies exchange rates and innovativeness of enterprises.
Co-author and editor of team research projects, including the report concerning the balance of benefits and costs of the adoption of euro in Poland, prepared by the National Bank of Poland in 2009, entitled: *Report on full membership of the Republic of Poland in the third stage of the Economic and Monetary Union;* report concerning the assessment of competitiveness of Polish economy, prepared in 2014 (Editor-in-Chief Professor Jerzy Hausner), entitled C*ompetitive Poland. How to Advance in Global Economic League? Recommendations* and a report on the issues of innovativeness in Poland (Editors-in-Chief Professor Andrzej Sławiński and Professor Jakub Growiec) published in 2016, entitled *The innovative potential of the economy: condition prospects*, and of the project, implemented in the years 2012–2016, entitled *The Euro introduction and competitiveness of Polish enterprises*.
His fields of interests include problems of European and monetary integration, international currency system, international economic relations and regional policy, and, more recently: microeconomic and sector-specific problems in the context of internationalisation of enterprises, export and direct foreign investments, competitiveness of economies and enterprise, and their innovativeness.

Preface

After 28 years since the beginning of the systemic and economic transformation, and well over 10 years following its accession to the European Union, Poland has faced a complex challenge of having to develop consistent and comprehensive economic policy. On the one hand, such policy has to ensure the continuation of the achievements witnessed so far and enable taking advantage of them in the broadest sense. On the other hand, it has to adapt the process of the country's development to external challenges and to expectations of Polish society.

The most recent economic data indicate economic growth on a scale unprecedented in the country's history. At the end of May 2017, the rate of unemployment accounted for 7.4%, *i.e.* the lowest in the post-1989 period. Then, a recent survey carried out by CBOS poll centre reveals that 42% of Polish people evaluate the country's current economic situation as good, this being the all-time best score. Only since the beginning of 2017, this percentage has increased by 11%. Just as important is the fact that the index of financial inequalities within Polish society has finally decreased. The improvement is significant: compared to September 2015, by April 2017 the difference between the wealthiest 25% and the least well-off 25% people in Poland fell from a level of 5.9 to 4.4!

Over the first quarter century of independence, Poland actually had no consistent economic policy. During the period before the accession to the EU, the principal purpose behind the activities undertaken was to adapt Poland's legislation and budgetary policy to requirements defined by the European Union. Then, after 2004, the country's development was largely based upon utilisation of the Community funds. Unfortunately, despite considerable efficiency with which resources earmarked to Poland were acquired (Poland managed to exploit the EU budget for the years 2007–2013 in 95%, as shown by data made available by the European Union), these funds failed to sum up to one previously defined, overriding objective, intended to become the real vehicle driving the country's economy.

Finally, a sort of binary approach to economic theories, with total antagonism between centrally-planned and neoliberal economies, resulted in uncritical adoption, in Poland, of a development model which originated in Western European countries, with no account taken of historical and social specificity of Central and

Eastern Europe. The fundament upon which we used to develop Polish capitalism and welfare until recently consisted of a set of rules known as the Washington Consensus. The weakness of this model was that it seriously underrated the nature – and burden, for that matter – of the post-communist reality. The classic neoliberal theory failed to really work in countries of our region, but still, it was perceived, for many years, as an inviolable axiom. In consequence, it was impossible to adapt actual needs of the country development to the policy applied.

The economic crisis of 2009 became an occasion to revise all commonly recognised economic theories. Views of such authors as Justin Yifu Lin began to gradually attract more and more attention. The effect of this shift was that any theories suggesting alleviating the edge of neoliberalism, to add elements of solidarity to it, and ideas appreciating the potential and space for a more active role of the state in the economy began to be regarded with less suspicion and more interest. Admittedly, New Structural Economics is more than just pure theory. In propagating it, Yifu Lin founds his approach upon empirical experience, also studying differences and experiences of countries which have achieved economic success without following the classic route of neoliberalism.

New Structural Economics may be described as a new economic doctrine which points out the traps faced by developing countries as they gradually approach the status of developed countries. Even more importantly, NSE indicates solutions and methods enabling middle-income countries to overcome the difficulties inherent in this specific stage of growth and to really catch up with the wealthiest countries. Polish response to that doctrine is found in the form of the Strategy for Responsible Development (SRD). This is the first document which properly considers social expectations, as well as the need to launch a new development-fostering impulse. I believe the 21st Century Poland should rely its existence upon a solid and sustainable economic growth achieved through re-industrialisation of the economy and healthy development of innovative small and middle-sized enterprises, accompanied by socially-sensitive and territorially balanced development, as well as upon efficient state and its institutions. All these things and intents assume an active role played by the state administration – in far-reaching opposition to laissez-faire concepts. Time has come to really appreciate the observation, presented by Professor Góralczyk, that the dogma, well-rooted in the West, about the lack of any "third way", *i.e.* no alternative existing for either classic capitalism or real socialism, should be overthrown as soon as possible. Yes, there is a third way. This was proven by the success of Asian tigers. Nowadays more and more Western countries attempt to benefit from that. Poland intends to become the pioneer in the field of such solutions in our region of the world. However – and just as importantly – it is not our intention to thoughtlessly emulate somebody else's solutions. Our Strategy takes complete account of Polish specific conditions and circumstances and is adapted to our needs and expectations.

One of the most serious weaknesses of political economy in Poland after the transformation was the lack of synchronisation between the growth of GDP and the growth of wealth of all social groups in the country. The economic growth, high as it was, was not adequately experienced by families and households, thus resulting in the sense of disappointment, frustration and hostile attitudes toward political élites. It was a mistake to believe, following the statements of the Washington Consensus, that neoliberal economy would lead to alleviation of differences in the level of development. Accordingly, one should agree with the statements, put forth by Yifu Lin, where he relates *per capita* incomes with a stable and balanced growth. According to that theory, it is impossible for catching-up countries to really succeed, unless the entire society experiences some growth of wealth. This is why, after 25 years during which only a part of the society felt the effects of the GDP growth, the government formed by the Law and Justice party reached for social transfers unprecedented and unseen ever before. For us, it is especially important that these changes constitute no threat to the stability of public finance. What we seek to achieve, instead, is a budget which is more redistributive, but completely responsible at the same time. This way, Polish economic success is going to be truly enjoyed by the entire society.

However, the principal objective behind SRD is to reduce the differences in development through investment activity, rather than just redistribution. Small and medium-sized enterprises have the largest potential for growth. The role of the state is to provide them with the best conditions possible, to enable their healthy operation. Such an attitude may be defined as methods of state intervention which supplement the free market. In line with Professor Góralczyk's thought, we should ask ourselves a question concerning the dividing line between the state and market: how much of this and of that do we seek, and in which proportions? Of course, the state should be responsible for the careful planning of its own modernisation and for supporting a gradual, but also observable, shift toward modern technologies. Furthermore, the state should create legal provisions regulating the country's financial system and then supervise their enforcement. Justin Yifu Lin is right as he writes that large-scale infrastructural projects exceed the potential of individual companies. In this area, some form of collaboration between the state and business is necessary, with mutual autonomy being entirely retained. However, it would certainly be wrong to allow for a neoliberal vision of the state competing with the second sector. I believe there is an area for cooperation within public and private relations – a sphere in which both parties supplement each other. I would like to emphasise that as I recognise an active role of the state in the economy, at the same time I am not attributing any primary or prevalent role to it. The relationship in question is simply essential and it also benefits both sides. That's why SRD encourages to reject the stereotype of bipolarity and instead it proposes cooperation relied upon mutual trust and support.

What should have been done while starting the pursuit aiming at catching up with developed countries was to pay attention to a serious level of social inequalities. It is never possible to build a state which is both strong and economically fair (as a deficit of either of these factors automatically undermines another and makes it wane in the long run) unless: (1) proper middle class is developed as the real fundament upon which the country and its activity relies, (2) viable and extensive home market is built, instead of increasingly expansive export, and (3) real efforts are undertaken to achieve balanced growth (both in regional and in social terms). The 500+ programme is not only about stimulation of favourable demographic trends. It is also about eliminating extensive social stratification and real poverty in Polish families. It wouldn't be reasonable for us to expect SRD to be successful unless we first do our best to eradicate the phenomenon of the impoverishment of large social groups. And the thing which is especially significant to me: this is a programme funded thanks to the country's good economic condition – something to which labour of all Poles had contributed in the first place. From this point of view, it was even more important to implement social transfers in effect of which, for the first time since the beginning of the transformation, economic success becomes shared by the vast majority of Polish people rather than by only the wealthiest. We are all satisfied to see the success of this idea, but this very success makes the need to implement SRD even more urgent. This strategy has to become reality soon and efforts have to focus on the area which constitutes the core of any economic success – *i.e.* the increase of the scale of investments and development of small and medium-sized enterprises sector. At present, we reckon that the 500+ programme ensures an adequate level of social transfers. The economy calls for even more active and greater entrepreneurship and the state is obliged to provide appropriate conditions for this to happen.

Despite the most recent economic crisis and acceptance of applying deviations from the Washington Consensus, our programme never ceases to raise much concern among neoliberals. Threats usually mentioned in this context include the intention – allegedly presented in SRD – of unreflective emulation of patterns proposed in the New Structural Economics and applied in Far Eastern countries. Let us explain, therefore, that the Strategy for Responsible Development is an original project conceived by the Government of the Republic of Poland which actually takes advantage of some advice and indications given by Justin Yifu Lin, but still adapts this author's concepts to circumstances prevailing in Central and Eastern Europe. What we reckon most valuable part in the New Structural Economics concept is its innovative approach to the state industrial policy. Creative idea of the so-called efficient quadrangle, consisting of the governing élite, state administration, society, and business, should be seen as a very precious fundament of SRD. However, its detailed contents and solutions suggested in our version include a comprehensive analysis of Polish difficulties and Polish ways to overcome the same. Without diverging much from the key assumption behind the New

Structural Economics – that about the need for an extensive role played by the state sector and state intervention applied by experienced and well-educated personnel – we have developed a project tailor-made to Polish capabilities and expectations. Another great strength of Justin Yifu Lin's work is how he breaks through the so-called "undisputed truths" and indicates new possibilities and solutions instead. However, to translate them into practical guidelines rests already within the scope of any individual country interested. Therefore, despite the common root, it would be wrong to compare economic policy run in Asian countries with that in European ones – and, crucially – we should observe these differences between them, rather than from any theoretical dispute, really originate from geopolitical differences, regarded as something natural.

It is particularly important to ensure a smooth transition from the process of providing fair participation of the entire society in national income, towards the stage of providing incentives and support for attitudes focused on investment and growth. It isn't possible for a country to achieve sustainable economic growth unless its society is well-balanced in terms of financial wealth. The growth, no matter how strong, if only relied upon simple investment processes and not conductive to the formation of middle class, is prone to decelerate rather soon and hardly allows for a country's advance to the élite of developed countries. On the other hand, the state alone is not capable of leading to the formation of middle class strong and extensive enough. What the state can do is provide favourable conditions for the middle class to emerge. The first such condition, already in place in Poland, is to fill the gap formed by the most acute social disparities in terms of wealth. Thanks to the 500+ programme, it became possible to eliminate the most blatant cases of impoverishment and poverty. At present, we should focus on the project which is the most difficult but also most important – upon full exploitation of Poland's and Poles' potential of the investment. It is the small and medium-sized enterprises sector that may enable the creation of strong and socially stable welfare. This is also about growth-fostering foreign investments in which Poland is regarded something more than just an assembly plant. Then, this is about increasing savings of Polish people, deposited in collective investment programmes intended to provide the real financial drive for the country's growth. It is the role of the state in the implementation of these ideas to eliminate barriers to investment, hitherto existing in the area of law. Indeed, the Ministry of Development has prepared a comprehensive reform of the economic law. Draft acts have been grouped in two packages: of "Business Constitution" and of "100 changes for companies". The latter one provides for the introduction of such solutions as shortened period of obligatory archiving of employment-related documents and their computerisation, succession for sole proprietorship companies, introduction of Simple Joint Stock Company to the law or a reform of activities of the Central Office for Measures which will become a significant partner for industrial enterprises in development of innovative solutions. The reforms planned are mainly intended to support Polish micro, small and medium-sized enterprises – actually, their scope will cover over 90% of all businesses actively operating in Poland. We also attach particular importance to "Business Constitution". It is going to introduce a catalogue of fundamental principles for running business activity, as well as rules that regulate relationships between an entrepreneur and bodies of the state. The next step will be to introduce an effective but simple and transparent tax system. The existing, leaking tax system resulted in annual losses in the state budget estimated at dozens of billions PLN. Efforts undertaken by the Ministry of Finance are intended both to better sealing of the tax system and to restore fair competition, without the VAT mafia or grey zone. Along with this, we have also introduced reforms postulated by the business environment for years, including reduction of CIT to 15% for small enterprises, the introduction of investment and innovation-related relief and a reform of state treasury administration. We would like the fiscal system to be perceived as efficient and friendly but also strong and effective in enforcement from those who evade taxes, thus undermining fair competition.

An entity which plays a particularly important role in implementation of SRD is the Polish Development Fund (PFR) which integrated such bodies as the Industrial Development Agency (ARP), Bank Gospodarstwa Krajowego (BGK), Export Credit Insurance Corporation (KUKE), Polish Investment and Trade Agency (PAIH) and the Polish Agency for Enterprise Development (PARP). The priorities of the PFR group include infrastructural investments, innovations, development of entrepreneurship, export and foreign expansion of Polish business as well as handling foreign investments. Another important task of PFR is its active involvement in processes of re-polonisation of strategic sectors of the Polish economy. PFR has already invested nearly PLN 10 billion in Polish economy – without any increase of deficit or public debt. The state has a particularly important role to play in supporting Polish export. At present, foreign expansion of Polish companies reveals considerable dynamics. We have the policy of diversification of export directions in place and the total value of Polish export at the end of 2017 – according to market forecasts – may well increase twofold. The amount of PLN 60 billion is the summed value of modern, flexible instruments for financing Polish export, made available to domestic business by the Polish Development Fund (PFR) Group. This package includes, among other things, financial guarantees, insurances, export credits and the foreign expansion fund. One of the crucial changes made by the government in Poland's export policy is the creation of a new system of incentives for Polish companies which desire to become active players in the international market of mergers and takeovers. Finally, the Ministry of Development also initiated a programme of support for small and medium-sized towns. The value of that programme exceeds PLN 2.5 billion. Besides, some investments supported by the government are located outside agglomerations – actually, 23 out of 27 (85%) strategic investments were made in Poland's small and medium-sized towns. Under the Fund, it is possible to obtain support for investments entirely financed from domestic resources or to acquire capital for own contribution to projects financed from the Community resources.

One final and important element of SRD which should be emphasised in this publication are its flagship programmes, such as Electromobility, Polish Industry Platform 4.0 or the Capital Building Platform. The already notorious concept of Electromobility certainly deserves some mention here. Firstly and most importantly, it is very wrong to regard this project as solely reduced to manufacturing of some specific number of electric passenger cars or buses. Instead, this is a programme of the future, intended to prepare Poland for the forthcoming and unavoidable great transformation in the area of transport. It includes appropriate changes to be made in Polish legislation, the creation of grant programmes, and, most of all, changes to be achieved in mentality and attitudes of Polish people towards innovations in this area. The project for the future, then – one that will certainly give rise to a lot of challenges and difficulties, but from which there is really no escape nowadays. Until recently Poland passively witnessed such initiatives, perhaps expecting ready solutions to come from other countries. This results in our country's technological backwardness compared to well-developed countries which have always paced the way well ahead of us. Today we want to make the pioneering steps, to be the first ones to face the challenges and to benefit from the cutting-edge solutions.

Poland stands in the face of new challenges. New Structural Economics and the Strategy for Responsible Development are the response. I believe the implementation of the latter policy will contribute to the achievement of solid, sustainable, socially and territorially balanced economic growth which will lead to increased welfare enjoyed by Polish families. To deliver Poland from the development standstill it not only takes the thoughtful and effective operation of public administration but – more than anything else – further development of the spirit of entrepreneurship and creativity among Polish citizens. Of course, we are witnessing a new wave approaching in the global economy. I don't really care that much about how this new wave will be called. What is much more important is that we are able to translate it into successes and wins achieved by Polish economy. I am deeply convinced we are well on our way to attaining it.

Mateusz Morawiecki
Deputy Prime Minister, Minister of Development
and Minister of Finance

JUSTIN YIFU LIN

New Structural Economics and industrial policies for catching-up economies[1]

Economic development is a process of structural transformation with continuous technological innovation and industrial upgrading, which increase labor productivity and accompanied improvements in infrastructure and institution, which reduce transaction costs. Industrial policy is essential for the government to prioritize the use of its limited resources to facilitate technological innovation and industrial upgrading by overcoming inherent externality and coordination issues in structural transformation. The industries in a middle-income country may be classified into five different types, depending on their distance to the global technology frontier: catching-up industries, leading-edge industries, comparative advantage-losing industries, short innovation cycle industries, comparative-advantage-defying strategic industries. Industrial policy should be designed accordingly.

Keywords: *New Structural Economics, economic development, industrial policy.*

Introduction

Academic highlights:

- The nature of economic development is a process of continuous structural change with technological innovation and industrial upgrading raising labor productivity, and with improvements in hard and soft infrastructure reducing transaction costs.
- New Structural Economics, which applies the neoclassical approach to study the determinants of economic structure and its evolution, postulates that the industrial structure in an economy is endogenous to its endowment structure.
- New Structural Economics argues that the key for development success is to have an enabling state using industrial policy to facilitate firms' entry to latent comparative-advantage industries in a competitive market by overcoming the first-mover's externality issue and coordinating the required improvements in hard and soft infrastructure to turn the latent comparative advantage industries to the nation's competitive advantages.

[1] I would like to thank Slavo Radosevic for helpful comments.

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Policy highlights:

- For a middle-income country in the catching-up process, its industrial policies may be classified into five different categories based on the industry's distance to the global technological frontier, and the state may play a facilitating role accordingly:
  - Industrial policy for catching up higher-income countries' industries
  - Industrial policy for maintaining a leading-edge industry's technology leadership globally
  - Industrial policy for leapfrogging high-income countries in short innovation-cycle industries
  - Industrial policy for helping firms exit from comparative advantage-losing industries
  - Industrial policy for developing comparative advantage-defying, national defense-related industries.

Rapid, sustained economic growth is a modern phenomenon, emerging only in the 18th century. Before then, the average annual growth of *per capita* Gross Domestic Product (GDP) in Western Europe was just 0.05%. At that rate, it would take an economy 1,400 years to double its *per capita* GDP (Maddison, 2006). From the 18th century to the mid-19th century, the annual growth of *per capita* GDP in Western European countries accelerated to 1%, enabling it to double in just 70 years. From the mid-19th century to the present, the *per capita* GDP growth rate accelerated to 2% a year, shrinking the doubling time to 35 years. The impetus for accelerating growth was the Industrial Revolution of the mid-18th century: continuous technological innovations and industrial upgrading made the acceleration of labor productivity and income growth possible, which boosted *per capita* GDP.[2]

In other words, modern economic growth is a process of continuous technological innovation, which raises labor productivity in the existing industries, and industrial upgrading, which moves an economy from low value-added industries to higher value-added ones and thus raises labor productivity as well. However, taking advantage of the potential of technologies and new industries requires well-functioning hard infrastructure to get products into large domestic and foreign markets. As the scale of trade increases, market exchanges are at arm's length, thus requiring contracts and contract-enforcing legal systems. Moreover, as the scale and risk of investment increase with the upgrading of technology and industries, the financial structure has to adapt as well. Improvements in hard and soft infrastructure reduce transaction costs for investment and trade (Kuznets, 1966; Lin and Nugent, 1995; Harrison and Rodríguez-Clare, 2010). While modern economic growth appears to be a process

[2] The Industrial Revolution was still in its infancy when Adam Smith was writing *An Inquiry into the Nature and Causes of the Wealth of Nations.* Consequently, Smith paid little attention to technology innovation and industrial upgrading; rather, he focused on trade and specialization within given technologies and industries.

of rising labor productivity, it is actually a process of continuous structural change in technologies, industries, and hard and soft infrastructure.

A developed country's high-income and labor productivity indicate that its technology and industry are on the global frontier. As such, it requires the indigenous invention of new technology and industry to achieve technological innovation and industrial upgrading. Inventions of new technology and industry are costly and risky. A developing country's technological innovation and industrial upgrading occur mostly behind the global technological and industrial frontier. Most of its innovation and upgrading can rely on the adoption of technology and industry that are new to the country but mature elsewhere in the world, and thus have a lower cost and risk compared with an advanced country. In other words, a developing country enjoys the latecomer advantage in technological innovation and industrial upgrading. Potentially, a developing country can grow faster than an advanced country and catch up with it.

After World War II (WWII), most countries in the developing world shattered the shackles of colonialism or semi-colonialism, starting their independent pursuit of modern economic growth. Up to 2008, only two of them moved up from low to middle income and finally to high income, and only 13 of such countries moved up from middle to high income (Agenor *et al.*, 2012). This means that, among around 200 developing economies, most have remained trapped in a low- or middle-income status since WWII, despite the latecomer advantage. As Keynes said, 'it is ideas, not vested interests, which are dangerous for good or evil.' These countries' poor development performance reflected the failures of development ideas. In this chapter, I review the ideas embodied in two previous waves of development thinking, introduce New Structural Economics as the third wave, and propose a practical guide for formatting industrial policies in developing countries to accelerate technological innovation and industrial upgrading.

1. Why we need to rethink development economics

Economic theories help us understand the underlying causalities of observed economic phenomena. More than logic exercises, theories have practical relevance: economic agents – governments, firms, households, and individuals – use them to guide their actions to achieve the desired results. If existing theories fail to help us understand the underlying causalities of the observed phenomena or if decisions based on these theories fail to achieve their intended goals, we have to rethink them. Development economics needs rethinking.

Development economics is a young field in modern economics. It emerged after the Second World War to guide the reconstruction of war-ravaged countries and the nation building of newly independent former colonies.

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The first wave of development thinking was structuralism. It posited that, if a developing country wanted to catch up with developed countries in income, it needs to have the same labor productivity as developed countries. In turn, this requires developing countries to build up modern capital- and technology-intensive industries similar to those in developed countries. Yet those industries never emerged in developing countries. Why not? Economists blamed market failures arising from structural rigidities for the failure of such industries to develop spontaneously (Arndt, 1985). Structuralism recommended that governments adopt import-substitution strategies to overcome market failures through mobilizing and allocating resources to directly build those industries (Rosenstein-Rodan 1943; Prebisch, 1950).

Capitalist as well as socialist countries pursued, after WWII, the strategies advocated by structuralism (Chenery, 1961). However, countries that adopted import-substitution strategies typically experienced a pattern of rapid growth driven by large-scale investments, followed by economic crises and long periods of stagnation (Krueger and Tuncer, 1982; Lal, 1994; Pack and Saggi, 2006).

In the 1980s, the failure of structuralism as a catching-up guide for developing countries led to the emergence of the second wave of thinking, neoliberalism. At that time, government intervention was pervasive in developing countries, leading to rent-seeking, bribery, and embezzlement, as well as to multiple economic distortions and inefficient resource allocation. To improve economic performance and close the gap to developed countries, developing countries were advised to build a well-functioning market economy by implementing the measures referred to collectively as the 'Washington Consensus': privatization, marketization, and liberalization (Williamson, 1990). Governments were advised not to pick winners to support technological innovations and industrial upgrading.

Again, the logic seemed sound. Yet countries that applied this shock therapy often experienced economic collapse, stagnation, and frequent crises, and the gap between developing and developed countries widened further (Cardoso and Helwege, 1995). Growth rates were lower and economic crises more frequent under Washington Consensus policies in the 1980s and 1990s than under the structuralist policies of the 1960s and 1970s. Some economists referred to this period as the 'lost decades' for developing countries (Easterly *et al.*, 1997; Easterly, 2001).

During this time, some economies in Asia were pursuing an entirely different development approach. From the 1950s to 1970s, Japan and the four Asian tigers – Korea, Taiwan, Singapore, and Hong Kong – grew rapidly by adopting an export-oriented development strategy, by developing initially labor-intensive, small-scale industries, and by gradually climbing the industrial ladder to larger, more capital-intensive industries with proactive government support (Amsden, 1989; Chang, 2003; Wade, 1990).

In the 1980s and 1990s, under the sway of the Washington Consensus, economists branded planned economies as less efficient than market economies and called for transforming them into market economies through shock therapy: removing all economic distortions by ending government interventions and by leaping in a single bound from a planned to a market economy. However, China adopted a dual-track transition, continuing to protect and subsidize nonviable state-owned firms in the old prioritized capital-intensive industries, while liberalizing the market entry for the previously repressed labor-intensive industries. Many economists predicted such an approach would lead to rampant rent-seeking and to deteriorating resource allocation. In reality, however, economies that experienced stability and rapid growth, like Cambodia, China, and Vietnam, all followed the dual-track transition approach.

Policies based on structuralism and neoliberalism failed to achieve their goals. Nor did structuralism and neoliberalism explain the rare economic development and transition successes that did occur. A third wave of development thinking is in order.

2. What is New Structural Economics?

New Structural Economics, as a third wave of development thinking uses a neoclassical approach to study the determinants of economic structure and its evolution in a country's economic development, which is the nature of modern economic growth (Lin, 2011).[3]

What is the core hypothesis of New Structural Economics?

In brief, a country's economic structure at any given time is endogenous to its factor endowments – the amounts of capital, labor, and natural resources at that time. Countries at different development stages vary in their relative abundance of factor endowments. In developing countries, capital is generally relatively scarce, while labor and often natural resources are comparatively abundant. In developed countries, capital is relatively abundant, while labor is comparatively scarce. Although an economy's factor endowments are given at any particular period, they can change over time. New Structural Economics posits an economy's factor endowments as the starting point for development analysis because they determine an economy's total budget and relative factor prices at that time, which are two of the most important parameters in economic analysis.

Relative factor prices determine a country's comparative advantage. For example, countries with both relatively abundant labor and scarce capital would

3 By convention, the name for such studies should be 'structural economics.' The 'new' is added to distinguish it from structuralism. This practice has precedents in modern economics. For example, Douglass North, who used the neoclassical approach to study institutions in the 1960s, referred to it as 'new institutional economics' to distinguish it from the 'institutional school', which flourished in the United States in the early 20th century.

have a comparative advantage in labor-intensive industries because production costs will be lower than in countries with relatively scarce and more expensive labor. A prerequisite to achieving a competitive advantage is for a country to develop its industries according to its comparative advantages determined by factor endowments (Porter, 1990).

In developed countries, income and labor productivity are high because the countries' relative capital abundance means that their industries and technologies are capital intensive. If a developing country wants to catch up to the income and industrial structure of developed countries, it first needs to increase the relative abundance of capital in its factor endowment structure to the level in advanced countries. The ultimate goal of economic development is to raise a country's income, the intermediate goal is to develop capital-intensive industries, and the immediate goal should be to accumulate capital quickly so that the country's comparative advantages change to more capital-intensive industries. In other words, boosting a country's income requires industrial upgrading, which in turn requires changing a country's endowment structure (Ju *et al.*, 2015).

How can a country accumulate capital quickly? Capital comes from saving economic surpluses. If a country's industries are all consistent with its comparative advantages, as determined by its endowment structure, the country will be competitive in both domestic and international markets and generate the largest possible surplus. If all investments are made in industries that are consistent with the comparative advantages determined by a country's endowment structure, the returns to investment will be maximized and the propensity to save will be at its highest. With the largest possible surplus and the highest incentives to save, capital will be accumulated in the fastest way possible. The changes in endowment structure and comparative advantages pave the way for changes in industrial structure and the accompanying hard and soft industrial infrastructure.

Yet comparative advantage is an economic concept. How it translates into the choices of technologies and industries made by entrepreneurs? Entrepreneurs care about profits. They will invest in industries in which a country has a comparative advantage if relative factor prices reflect the relative scarcities of factors in the country's endowments (Lin, 2009; Lin and Chang, 2009). If capital is relatively scarce, the price of capital will be relatively high; if labor is relatively scarce, the price of labor (wages) will be relatively high. If the price system reflects the relative factor scarcity, profit-maximizing entrepreneurs will use a relatively inexpensive factor to substitute for a relatively expensive factor in their choice of production technologies, investing in industries that require more of a relatively inexpensive factor and less of a relatively expensive factor. A price system with these characteristics can arise only in a competitive market. Therefore, a well-functioning market is essential for the success of economic development.

Economic development is a process of structural change with continuous technological innovations, industrial upgrading, and improvement in infrastructure and institutions. When the factor endowment structure changes, it requires first movers to enter new industries that are consistent with changing comparative advantages. The risks for first movers are high. If they fail, they bear all the losses, and if they succeed, other firms will follow them into the industry. The resulting competition will eliminate any monopoly profit (Aghion, 2009; Romer, 1990). There is an asymmetry between the losses of failures and the gains of successes for the first movers (Hausmann and Rodrik, 2003).

No matter whether the first movers succeed or fail, they provide society with useful information. The government should encourage first movers and compensate them for the information externality they generate. Otherwise, there will be little incentive for firms to be first movers in technological innovation and industrial upgrading (Rodrik, 2004; Lin, 2009; Lin and Monga, 2011; Harrison and Rodriguez-Clare, 2010). In addition, the success or failure of first movers also depends on whether improved hard and soft infrastructure match the needs of the new industries. Improving infrastructure and institutions is beyond the capacities of individual firms. The government needs to either coordinate firms' efforts to improve infrastructure and institutions or to provide those improvements itself. Therefore, a facilitating state is also essential for economic development to happen dynamically.

New Structural Economics helps to understand why structuralism failed. The import-substitution strategy advocated by structuralism advised governments to give priority to capital- and technology-intensive industries in capital-scarce developing countries, thus defying developing countries' comparative advantages. Firms in those industries were not viable in open and competitive markets. Without government protection and subsidies, entrepreneurs would not voluntarily invest in those industries. After their establishment, the nonviable firms had to rely on the government's subsidies and protection to survive as well.

New Structural Economics also helps to understand why neoliberalism failed. In developing countries, market distortions were endogenous to the government's need to protect and subsidize nonviable firms that had been promoted by the government's previous import-substitution strategies. Eliminating protections and subsidies would doom nonviable firms, resulting in large-scale unemployment, and social and political unrest. To avoid those consequences and to continue to prop up nonviable capital-intensive industries that were still considered the cornerstone of modernization, governments had no choice but to continue its protection and subsidies. Even if the firms were privatized, soft budget constraint problems would continue. The subsidies to the nonviable firms could even increase due to the private owners having greater incentives to lobby for subsidies and protection (Lin and Li, 2008). The new protections and subsidies were usually less efficient than the old ones, especially in the transition economies of the former Soviet Union and Eastern Europe (World Bank, 2002). In addition, neoliberalism threw the baby out with the bath water, vehemently opposing any role for governments in facilitating structural change. Chile was a typical example. A model student of Washington Consensus

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reform, Chile diligently implemented the Washington Consensus reforms in the 1980s and then removed all government protections and subsidies. Chile ranks high among developing countries on the World Bank's Doing Business Index, based on indicators of the ease of doing business and investing. However, Chile has not seen dynamic structural change for more than 30 years, and as a result, unemployment is high, income gaps have widened, and Chile remains mired in 'the middle-income trap'. New Structural Economics also justifies the gradual, dual-track approach to reform that conventional economic thought labeled the wrong approach to transition. Dual-track reform maintains stability by providing transitory protections to nonviable firms in the old priority sectors and achieves dynamic growth by removing restrictions to entry and facilitating the development of previously repressed industries that are consistent with the country's comparative advantages. The dynamic growth of sectors consistent with comparative advantages helps the economy rapidly accumulate capital and changes the factor endowment structure. That makes some formerly nonviable firms in capital-intensive industries viable. Once firms in the new sectors are viable, the transitory protection and subsidies can be eliminated, bringing the transition to a market economy to a smooth end (Naughton, 1995; Lau *et al.*, 2000; Subramanian and Roy, 2003; Lin, 2009; 2012 and 2013).

3. New Structural Economics and smart industrial policy for developing countries

Economic theories are intended not only to help people understand but also to change the world. How can the government in a developing country apply New Structural Economics to achieve dynamic structural change and catch up with high-income countries? To leverage the government's limited resources for the largest possible impact on structural change and economic growth, the government needs to know which new industries are consistent with the country's latent comparative advantages. In other words, the government should know in which industries it has low factor costs of production based on the country's endowment structure but lacks global competitiveness due to high transaction costs. Moreover, the government should know which infrastructures and institutions require improvements to reduce transaction costs to enable those new industries to thrive.

By way of explanation, New Structural Economics suggests that government should identify industries of latent comparative advantages and then provide incentives for the first movers to overcome coordinating failures in improving infrastructure and institutions to turn them into the nation's competitive advantages. Theoretically, industrial policy should be a useful instrument for the government to achieve its facilitating role. In practice, industrial policies have largely failed in developing countries, tainting their reputation in mainstream economics. But if the government does not facilitate the development of industries in line with the country's comparative advantage, old industries may die due to loss of comparative advantages, while new industries are unlikely to emerge spontaneously due to the lack of first movers and appropriate hard and soft infrastructure. One result would be deindustrialization. Without new industries, countries cannot achieve robust economic growth, solve the job-generation challenge, and escape the low-income or middle-income trap.

To reject the concept of industrial policy because of past failures is to miss the opportunity to understand why most industrial policies failed and to improve them in the future. They failed because in many cases the government in a developing country, with the best intentions and unaware of the endogeneity of industrial structure, tried too ambitiously to support advanced industries before the economy had the right endowment structure to make these industries into the country's comparative advantages. The firms in targeted industries were not viable in open and competitive markets, so governments had to protect and subsidize them, granting them monopoly rights, providing low-price capital, raw material, and land, or giving preferential taxes. Such distortive interventions created economic rents that stimulated rent-seeking, embezzlement, and corruption (Krueger, 1974; Krugman, 1993).

A desirable industrial policy should aim instead to facilitate the growth of industries with a latent comparative advantage, enabling them to become the country's competitive advantage in the market quickly. The latent comparative advantage refers to an industry with low factor costs of production relative to the rest of the world. This is determined by the economy's endowment structure and too high transaction costs (due to poor hard and soft infrastructure) to be competitive in domestic and international markets. Firms will be viable and the sectors competitive once the government helps the firms reduce transaction costs by overcoming coordination and externality issues to improve hard and soft infrastructure.

In addition to facilitating the growth of industries with latent comparative advantage, an industrial policy may also help firms exit from industries in which the country loses comparative advantages, or relocate to other countries with lower income and wages.

The industries in a middle-income country may be classified into five different types, depending on their distance to the global technology frontier: 1) catching-up industries, which have lower technology and value-added than similar industries in higher-income countries; 2) leading-edge industries, which are global technology frontier industries; 3) comparative advantage losing industries, which the country is about to exit due to changes in endowment structure and comparative advantages; 4) 'corner-overtaking' industries, which have short innovation cycles, allowing a middle-income country to compete directly with high-income countries; and 5) strategic industries, which go against the country's comparative advantages

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but are developed due to the need for national security. I will discuss how the government may play a facilitating role in each of the above five types of industrial policy.

3.1. Type I: Catching up industries

How can governments identify industries with latent comparative advantages in the process of catching up with industries in higher income countries? History offers many lessons of what to do and what to avoid.

Since the 16th and 17th centuries, successful economies have shared a common feature: industrial policies in these countries aimed to help firms enter industries that had flourished in dynamically growing and slightly more developed countries. They were able to exploit the latecomer's advantage. For example, the Netherlands was the most developed country in the world in the 16th and 17th centuries, with a highly developed wool textile industry. Britain's wool textile industry was immature by comparison. The British government implemented policies to encourage the imports of machinery and skilled workers from the Netherlands. Those policies worked. At the time, *per capita* income in Great Britain was 70% of the Dutch level. That meant that their endowments and comparative advantages were quite similar.

Following the Industrial Revolution, Great Britain became the most advanced economy in the world. In the late 19th century, France, Germany, and the United States used similar policies to catch up with Great Britain. Their *per capita* incomes at that time were already about 60–75% of Britain's (Gerschenkron, 1962). In the 1950s and 1960s, Japan imitated industries in the United States at a time when its *per capita* income exceeded 40% of that of the US. Later, the four Asian tigers (Korea, Taiwan, Singapore, and Hong Kong) succeeded by imitating Japan's industries. Their *per capita* incomes were about 30–40% of Japan's at the time (Akamatsu, 1962; Chang, 2003; Ito, 1980; Kim, 1988).

Other countries also targeted and tried to imitate industries in the United States after the Second World War but failed. One reason was that their income levels were less than 20% of those of the US. For example, in the 1950s China targeted and tried to imitate U.S. industries even though its *per capita* income was just 5% of the U.S. level. With the government's efforts to build up advanced industries, China was able to test atomic and hydrogen bombs in the 1960s and launch satellites in the 1970s. These achievements came at a very high price to the economy. In 1979, when China began its transition to a market economy, its *per capita* income was less than one-third the average of Sub-Saharan African countries.

Drawing on the experience of successful economies and the theory of comparative advantage, I propose a new growth identification and facilitation framework for the catching-up type of industrial policy. This framework has two tracks and six steps (Lin and Monga, 2011).

Step 1. Identifying tradable goods industries

When the government of a developing country seeks to facilitate industrial upgrading in non-resource manufacturing, it should identify the tradable goods industries in countries that have been growing dynamically for the previous 20–30 years and whose *per capita* income is about 100–200% higher than its own. Although experience suggests that 100% has been a successful reference point, a larger leap could be justified because technology and industrial upgrading happen much faster today.

The tradable goods and services produced in the target countries have a good chance of being those in which the pursuing country has a latent comparative advantage. If a country has grown rapidly in the last 20–30 years, the industries in its tradable sectors must be consistent with its comparative advantage. Yet, because of rapid capital accumulation and wage increases, the industries that were consistent with the comparative advantages of the targeted country's previous factor endowment structure will soon lose their comparative advantage. The sunset industries that are about to lose their comparative advantage in the targeted country will become the sunrise industries because of latent comparative advantage in the catching-up country which has a similar endowment structure and a somewhat lower *per capita* GDP.

Step 2. Identifying obstacles

Among the industries identified in step 1, the government may give priority to those which some domestic firms have already entered spontaneously, and identify the obstacles impeding these firms from upgrading the quality of their products and the barriers limiting entry by other private firms. The usual barriers are related to high transaction costs. Is the primary impediment deficient infrastructure, poor logistics, inadequate financial support, or a limited pool of skilled workers? Obstacles can be identified using value-chain analysis or the growth diagnostic framework suggested by Hausmann, Rodrik, and Velasco (2008). The government can then take steps to ease those binding constraints, using randomized controlled experiments to test the effectiveness of these measures before scaling up policies at the national level (Duflo, 2004).

Step 3. Encouraging firms in other, more advanced economies to relocate to the country trying to catch-up

Some of the industries identified in Step 1 may be new to the country. The government could adopt measures to encourage firms in the targeted higher income countries to relocate to its country to take advantage of lower wages.

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The government could also establish incubation programs to catalyze the entry of domestic private firms into these industries.

Step 4. Paying attention to successful businesses in new industries

Technology changes fast, which means that there are industries today that did not exist 20 years ago. Some domestic entrepreneurs may discover new profitable opportunities that were not identified in step 1. Consider information services in India in the 1980s. In the beginning, Indian firms outsourcing to US companies used satellite communication, which was extremely expensive. The Indian government built fiber-optic systems that greatly reduced communication costs, helping Indian information service companies gain a competitive advantage over other companies in the world. When new technology brings new opportunities and domestic private firms have already discovered them, the governments should pay close attention to their success and provide support to scale up those industries. Each country may also have some unique endowments. If entrepreneurs in the country discover opportunities to use such endowments profitably, the government may also provide support to scale up those opportunities to become competitive industries.

Step 5. Using special economic zones to attract domestic and foreign companies

In developing countries with poor infrastructure and an unfriendly business environment, budget and capacity constraints prevent governments from making necessary improvements to benefit every industry in all locations of the country within a reasonable timeframe. Instead, the government can use industrial parks, export processing zones, or special economic zones to attract private domestic and foreign firms to invest in the targeted industries. Improvements in infrastructure and the business environment within these special areas can reduce transaction costs and facilitate the development of industries with latent comparative advantage. The special economic areas also have the advantage of encouraging industrial clustering, which can lower logistical costs.

Step 6. Compensating pioneering firms for the externalities they generate

The government may provide limited incentives to pioneering domestic or foreign firms that invest in industries identified in steps 1 and 4 to compensate them for the public knowledge created by their investments. The incentives should be limited in time and budget allocations because the targeted industries should have a latent comparative advantage that will enable them to become competitive in domestic and foreign markets once transaction costs fall. The incentives may be in the form of a corporate income tax holiday for a limited number of years, priority access to credit (in countries with financial repression), or priority access to foreign reserves for importing key equipment (in countries with capital controls). To minimize the risk of rent-seeking and political capture, the incentives should not be in the form of monopoly rent, high tariffs, or other distortions. The government may reward the firms that discovered successful new industries by themselves (see step 4 above) with a prize or other form of special recognition for their contributions to economic development.

This kind of compensation for externalities differs from the protections and subsidies of the old import-substitution strategy that aimed to help nonviable firms in priority industries stay in business. Under this new framework, the firms encouraged have low factor costs of production and are viable in the market, so their profitability can be ensured by improving their management once soft and hard infrastructure are enhanced and transaction costs lowered.

3.2. Type II: Leading Edge Industries

When a country reaches the middle-income stage, some of its industries may enter areas which high-income countries have exited due to limited value-added (from these high-income countries' viewpoint). In such cases, the former country becomes the highest income country in the industry worldwide and it possesses leading edge technology. One example are household appliances – such as color TVs, refrigerators, microwave ovens, and other electronic white goods – in China. For the country to maintain leadership and competitiveness in these industries, it is necessary that the firms in these industries engage in indigenous R&D for new technologies and products.

Two different kinds of activities are involved in indigenous R&D: the development of new products and new technologies, and delivering the breakthroughs in the basic science needed for the new technologies and products. A firm can be rewarded by a patent if its efforts to develop a new product or technology are successful. Therefore, the development of new products and technology should be the firm's responsibility. However, research in basic science requires large capital inputs and is very risky, while its outputs are typically in the form of academic papers, which are public goods. Individual firms may be reluctant to do basic research.

In advanced countries such as the US, most of the industries are leading-edge industries worldwide. The basic research related to those industries is mainly carried out by either universities or research institutions, funded by the National Science Foundation, the National Institutes of Health, the Defense Department, and other government sources (Mazzucato, 2013). Similarly, basic research in other advanced economies like Japan and some European countries is also carried out by government-funded institutions. All these facts suggest that to maintain global competitiveness and leadership in its leading-edge industries, a middle-income country should adopt a similar approach to support the basic research required to

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catalyze the innovation of new technologies and products. The government should also strengthen the protection of intellectual property rights.

To be more specific, governments of middle-income countries can promote the development of new products and technologies by using fiscal allocations to set up research funds to support research institutions in related fields or to encourage cooperation between research institutions and firms in the industries. The governments can also financially support firms in the industry to set up joint research platforms, which can be used to tackle common technical bottlenecks. Firms may develop new products or technology separately, based on the breakthrough in the common technology. Lastly, the government can use procurement to help firms rapidly scale up production to reduce unit costs and increase international competitiveness.

To expand the market globally, it is essential for firms in the relevant industries to establish worldwide networks for sales, processing of products, and after-sale services. The government may help firms in this type of industries go abroad by providing personnel training, legal service, and consular protection.

3.3. Type III: Comparative advantage-losing industries

For labor-intensive industries, the wage is one of the most important components of the cost of production. In a rapidly growing developing country, such as China, wages will rise very quickly. Labor-intensive industries will turn from the country's comparative advantages to its sunset industries. In the face of such change, some of the firms in the labor-intensive export processing industries may upgrade to the two ends of a 'smile curve' where the added-value is higher, such as branding, R&D, quality control, marketing, sales, *etc.* However, for most firms, the way out is to relocate their production to countries with lower wages, as the textile, garments, and electronic firms in Japan did in the 1960s and firms in similar industries in the Four Asian Tigers did in the 1980s. Relocating allows the firms to put their tacit knowledge in technology, management, and marketing to continual use and it also changes these firms' production from the country's GDP to the country's gross national product (GNP). Moreover, the overseas success of these firms can speed up the industrial upgrading in their home country by releasing resources for new industries and generating demand for intermediate parts or machineries used in the labor-intensive industries, which are in general more capital/technology intensive and of higher added value.

Most of the labor-intensive export processing firms are clustered. The government may use two types of policies to help these firms. The first one is to provide training on design, R&D, and marketing, which can help some firms move up to the two ends of a 'smile curve'. The second policy is to facilitate processing firms' transfer abroad. Specific measures include offering information on host countries and training personnel needed for overseas operations, or establishing export processing zones together with the host governments to provide adequate infrastructure and business environments for the firms. Examples of export processing zones include Singapore's Industrial Park in Suzhou, China.

3.4. Type IV: 'Corner overtaking' industries

The coming of the information age creates opportunities for a developing country to compete directly with developed countries in certain industries, such as software and mobile devices, where innovations rely mainly on human capital and where the innovation cycle is relatively short (Lee, 2013). The development of a new medicine may take decades and will require billions of dollars, whereas the design of a piece of software or a mobile phone may take only a few months and be accomplished by a small team of engineers. Since the required capital input to support the innovation is relatively small, the disadvantage of a relatively capital-scarce developing country in the innovation of such types of products is, compared to a relatively capital-abundant developed country, not insurmountable. Such industries provide a developing country with the opportunity to overtake developed countries on a corner. The government in a developing country can facilitate the development of such industries by investing in the education of related human capital, setting up incubators, reinforcing the protection of property rights, encouraging venture capital, providing preferential taxes, facilitating start-ups run by creative talents at home and abroad, and using government procurement to support the production of new products.

3.5. Type V: Strategic industries

Every country needs national defense. National defense industries are usually characterized by high capital-intensity, long R&D cycles, and large-scale economies. In general, such industries are not compatible with a country's comparative advantages, and especially so in the case of developing countries. However, some of those industries may be essential for national defense and the country needs to own them domestically. Firms in such industries will not be viable in an open, competitive market. Subsidies and protections from government are indispensable. The structuralist perspective discussed in section 1 of this chapter proposed the use of distortions in factor prices and of market monopolies as a means of subsidies/protection for comparative advantage-defying advanced industries. A better approach is to subsidize these firms directly by R&D grants or indirectly through procurement of products. This is similar to the practices in the US and other advanced countries. In a developing country, the government's fiscal capacity to subsidize strategic industries is limited. Therefore, the choice of strategic industries should be very selective and their number should remain small. In effect, only those industries essential for national defense and having a large externality to civil industries should be chosen.

Dalsza część książki dostępna w wersji pełnej.