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Structural Transformation, Old and New Industrial Policies, and Implications for Development

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27.1 Introduction

This chapter discusses changes in economic thinking, particularly since the 1970s, with a focus on the role of structural transformation and industrial policy. The chapter argues that structural transformation is the essence of economic and industrial development, but with markets not providing enough incentives to encourage structural transformation (due to the existence of market failures), industrial policy is necessary to induce changes in a country's economic structure. Changes in economic thinking have led to different perspectives on industrial policy, as have developments such as the arrival of the World Trade Organization (WTO), which forced developing countries to rethink industrial policy (as a result of banning certain subsidies aimed at protecting the domestic market).

To appreciate changes in thinking about industrial policy and industrial policy tools, it is important to place the argument in historical perspective. After World War II (WWII), development economics emerged as a new field with newly independent governments of emerging countries seeking advice on how to accelerate development. Four interrelated themes shaped development thinking at the time.

First, development economists after WWII viewed development as a process of structural transformation, i.e., of reallocating factors of production towards sectors of higher productivity—typically from agriculture to industry—with concerns at the time focusing on how to raise the national rate of saving above the threshold of 12–15 per cent that Lewis (1955) saw as necessary, and how to avoid being stuck in a *non-industrialization trap*. Their models had policy implications that involved strong state action, largely because during the 1950s and 1960s, there was a perceived mistrust of markets among many developing countries.¹

Second, early models of development focused on physical capital accumulation, thought to be the key scarce factor of production. The intellectual roots of development models during these years were the writings of pre-Marshallian classical economists.²

¹ See Rosenstein-Rodan (1943), Nurkse (1953), Hirschman (1958).

² See Rostow's (1959) 'stages of growth'; Nurkse's (1953) 'balanced growth'; Rosenstein-Rodan's (1943) external economies and 'big push'; Lewis' (1955) 'unlimited supply of labor and dual-sector model'; Prebisch (1950), Singer (1950), and Myrdal's (1957) hypotheses about cumulative causation and divergence; Leibenstein's (1957) 'low-level equilibrium trap' and 'critical minimum effort' theses; Hirschman's (1958) 'unbalanced growth'; and Chenery & Strout's (1966) 'two-gap model'. All these economists viewed development as a process of structural transformation.

Third, during the 1950s and 1960s, the mistrust of markets among many developing countries (many still in the decolonization process) was largely influenced by the experience of the Great Depression. As a result, many countries were engaged in implementing import substitution and industrial policies. There was confidence in the ability of governments to take an effective and productive role in directing investment. State action was also predicated on the belief that developing countries suffered from market failures. This required the central coordination of the allocation of resources and is how the idea of the ‘developmental state’ was conceived (Johnson 1982). The developmental state would provide infrastructure and basic services along with promoting capital accumulation, using reserves of surplus labour, promoting industrialization through inward-looking policies, relaxing the foreign exchange constraint through import substitution (in the initial phases of development), and coordinating the allocation of resources through programming and planning.

Fourth, the dominant thinking encouraged the use of monetary and fiscal stabilization policies—associated with Keynesian macroeconomics—by the economic authorities to improve economic performance.

All this thinking came to a halt in the 1970s. The period between the 1970s and the 1990s (and beyond) witnessed deep changes in economic thinking. Keynesian economics suffered a serious blow and with it the idea that governments could lead development. Many examples across the world showed that developing countries were plagued with government failures, price distortions, and rent-seeking. A new school of thought advocated a much lesser role for governments. With it, the emphasis on structural transformation declined and the use of industrial policies was severely questioned.

The remainder of this chapter discusses developments in economic thinking, including in the most recent period, and how these developments impacted upon the notion and implementation of industrial policy. The rest of the chapter is structured as follows: Section 27.2 discusses the major changes in economic thinking that separate the period between the end of WWII and the mid-1970s (and the decades beyond); Section 27.3 is devoted to how the notion of industrial policy changed during the 1980s and 1990s and to the changes in the policy environment induced by the WTO; Section 27.4 discusses the implementation of industrial policies in East Asia, India, and Latin America; Section 27.5 provides an analysis of industrial policy in the recent decades and summarizes how it is implemented in the United States and in the European Union; Section 27.6 briefly concludes.

27.2 Changes in Economic Thinking and in Development Views Since the 1970s

By the late 1960s and throughout the 1970s, the models that had come to dominate development economics came under criticism. The focus on physical capital accumulation gave way to the idea of investment in human capital, with education and health increasingly recognized as being crucial for development.

Adverse effects of government intervention (including industrial policy) from previous decades also started to be felt. The record showed that few of the poor countries that embarked on a ‘big push’ had registered high growth. This led to disillusionment with the state as an economic agent. The rationale for government intervention, namely to remedy market failures, had turned into government failure, exemplified in significant price distortions in wages, interest rates, and exchange rates, with rent-seeking also highlighted as a malaise.

A series of developments within economic theory also led to a reorientation of development economics (and economics in general) from the *dirigisme* of previous decades. The associated intellectual debates had a significant influence across the developing world. Two alternative views became prominent. One was the public choice revolution, which questioned the motivation of economic policymakers (Buchanan & Wagner 1977), with the other being the rational expectations revolution (Lucas 1976; Lucas & Sargent 1978).

These changes gave rise to a resurgence of pre-Keynesian thinking in development during the late 1970s, 1980s, and 1990s, based on the idea of ‘getting prices right’ and a move towards reducing government intervention, to liberalizing, deregulating, and privatizing (Meier 2001). Some of these ideas crystallized in the early 1990s in the so-called Washington Consensus.³ This does not mean that neoclassical economists rejected any role for the state, with the state guaranteeing property rights and enforcing appropriate rules. Beyond these, however, it was argued that governments do more damage than good, implying no role for industrial policy.⁴

The new ideas led to substantial shifts in development thinking during the period from the 1970s until the 1990s. Particularly important was the change in emphasis from ‘market failures’ to ‘government failures’. The idea that governments are not necessarily well informed about the nature of a given problem and the consequences that their actions could have taken hold. Likewise, the implementation of national plans was difficult as a result of accountability and control of bureaucracies, corruption, nepotism, and other malpractices. With this, the emphasis on structural transformation declined and the use of industrial policy became a contentious issue.

Consequently, there was an additional shift in development thinking, namely, that differences in performance across countries were now attributed to policies: a country was not poor because of lack of capital or because of inappropriate external conditions, but because of its policies. Markets, prices, and incentives came to the fore and interest shifted from the old problem of lack of physical capital accumulation to how capital was allocated.

27.3 Old and New Industrial Policy: Changes in Concept and in the Policy Environment

Until the 1980s, the term industrial policy was used to refer to direct intervention of the state in the economy, direct control by the government of large parts of the production system, and a series of public actions aimed at limiting the extent of the market. Its objective was to change the structure of the economy by supporting sectors thought necessary for the development of the nation. These are sectors that the country’s firms would not get into on their own due to market failures. These market failures refer to the existence of externalities, long time horizons, systemic effects, fundamental innovations, static versus dynamic efficiency, and increasing returns. All these justify some kind of public intervention to guide the economy towards the production of complex activities.

³ The original paper is Williamson (1990). Afterwards, Williamson (2004) argued that the ideas in his paper had been completely distorted.

⁴ Neoclassical economists also accepted state intervention in the following circumstances: (i) to reduce monopoly power; (ii) to exploit externalities and spillover effects because the market does not produce a social optimum, or when the positive externalities of intervention exceed the negative ones; and (iii) when consumers and firms cannot obtain adequate information about goods and services (e.g., lack of knowledge about foreign markets).

Industrial policies often materialized in direct interventions by the central state in the form of picking winners and supporting the development of particular sectors through policies aimed at both production and exports. The reason for focusing on particular activities/sectors is that these were thought to be beneficial for the economy in the sense that they lead to high growth. The idea is that these complex activities are characterized by having a high income elasticity of demand, they compete on quality not on price, allow improvements along a quality ladder, absorb investment, and they are produced by workers who experience human capital accumulation.

Concomitantly with the changes in economic thinking discussed above, the notion of industrial policy also changed, both in advanced and developing countries. The remainder of this section reviews the conceptual changes and the new policy environment since the establishment of the WTO in 1995.

27.3.1 A New View of Industrial Policy

The last few decades have witnessed significant changes in productive structures and international competition triggered by: (i) the entry of new competitors, from Japan in the 1980s, to China and India in the 1990s; (ii) technological changes such as the diffusion of information and communications technologies (the so-called new economy), scientific breakthroughs, and falling transport and communication costs; (iii) the spread of global production networks; and (iv) social and demographic changes such as an ageing population in developed and some developing countries. As a result, many countries, both developed and developing, have recognized the need to use industrial policy. In the case of developed countries, this can be seen as a response to deindustrialization, and in the case of developing countries as a result of their slow industrialization, with structural transformation materializing in a shift of workers out of agriculture towards low-productivity services. All these changes required a redefinition of the term. The result, in any case, is that industrial policy is back, though with significant differences.

Today, the term industrial policy is better understood, especially in developed countries, as a variety of public actions aimed at guiding and controlling the structural transformation process of an economy in the direction of increasing its complexity. The implicit assumption is that the industrialization process is essential for the transformation of the economy as a whole and that it is possible to guide the structural change process, with the result being that new industrial policies are mainly *industrial development policies*. Public actions are multiple, varying from those relating to rules of competition to those aimed at favouring the participation and performance of particular individuals and firms.

Developments in productive structures in the twenty-first century imply that specialization patterns are determined by learning and education—or capabilities more broadly—meaning that developing countries do not need to rely on natural resources for their industrial development. This further implies that countries may develop broader specializations rather than the limited range around available natural resources, with the development of such specializations reliant on non-price competitiveness (i.e., quality and sophistication) rather than price competitiveness, a change that may be more demanding for developing countries.⁵

⁵ Weiss (2013) argues that the challenges ahead that industrial policy can help address are: (i) financial sector reform; (ii) breaking into global production networks; (iii) facing competition from the re-emerging giants; (iv) addressing climate change; and (v) avoiding jobless growth.

It is worth noting that industry is still thought of in many quarters as the *engine of growth* and the main determinant of the wealth of nations (Felipe 2018a, 2018b). The reason for this, it is argued, is that this sector has a higher capacity for learning, organizing production, and mobilizing both tangible and intangible assets—in the sense of redeploying the existing assets and creating new ones—than agriculture and traditional services. There are nevertheless two differences between how the role of industry was understood decades ago and today. Today, industry is more broadly defined so that it can encompass modern (in general, high productivity) agricultural and service activities (see Lavopa & Szirmai, Chapter 11, in this volume). Industrial policies, therefore, concern all productive activities, and thus originate from the need to organize production in the direction of modern and complex activities rather than from the natural availability of scarce resources. The other difference is the role of global value chains (GVCs) as a mechanism to industrialize.

Particularly important in this context are the concerns of developing countries with the phenomenon of premature deindustrialization (Felipe & Mehta 2016; Felipe et al. 2019) and with the fact that non-tradable sectors are becoming the largest employers, with manufacturing becoming a secondary employer (Chen et al. 2018).

Apart from the changes in productive structure and international competition, the conceptual evolution of industrial policy has also resulted from a shift in emphasis of governments providing subsidies towards providing the conditions for business to prosper. The new conditions do not exclude actions aimed at promoting structural change. In fact, although most governments throughout the world adopt measures to define and guarantee the rules of the competitive game, they also take measures to promote structural change.

The changes of the last two decades have raised new issues for industrial development and hence for industrial policy. While advanced industrial economies are active in mounting competitiveness strategies, the concern is greatest in the developing world. Indeed, many developing countries have problems competing internationally and as a result, suffer relatively low growth rates of manufacturing as they liberalize. Moreover, as their manufacturing employment shares remain relatively small (Felipe et al. 2019), employment is concentrated in the services sector, with an important share in activities that do not offer possibilities for upgrading (e.g., sales). Some developing countries have succeeded quite dramatically however (see the East Asian experience in Section 27.4.1). This means that the often-heard claim that globalization, technical change, and liberalization are harmful, *per se*, is not entirely true, or at least has to be qualified. Although the external environment also exerts pressures that constrain the ability of countries to become more competitive, the issue is how countries cope with these forces.

Today, views on what determines whether and how countries become internationally competitive remain varied. The view that dominates mainstream policy thinking is that the best strategy for developing countries is to remove government interventions in markets, provide a stable macroeconomic setting and clear rules, and invest in infrastructure and generic human capital.

The heterodox view puts less faith in the market as the driver of dynamic competitiveness and structural transformation and more in the ability of governments to intervene efficiently. The heterodox view argues that greater reliance on market forces requires a pro-active government because markets are inefficient and the institutions required to make them efficient are often weak or absent in many developing countries. Consequently, healthy and sustained industrial development cannot proceed without

interventions to improve markets and build institutions. Section 27.5 elaborates further on these issues.

27.3.2 The New Industrial Policy Space: The World Trade Organization

In addition to a new view of industrial policy, the industrial policy toolbox of the developmental state has also changed. Industrial policy was traditionally understood as a series of selective interventions or government policies to alter the structure of production towards sectors expected to offer better prospects for economic growth—a view that changed significantly during the 1990s.

The arguments against industrial policy made the case for policy reform easier. Three other factors forced governments to reduce their use of industrial policies. One was the debt crisis of the 1980s. A second was the proliferation of multilateral, regional, and bilateral trade agreements that limited the scope for government intervention. Multilateral agreements obliged countries to reduce tariff and non-tariff barriers to trade. The third was WTO rules, which restricted the use of selective subsidies. Developing countries had traditionally used a mix of import protection, export promotion, foreign investment restrictions and performance requirements, tax incentives, and other measures to promote industrialization. Since the late 1970s, they have been forced to rely on different instruments, due to increased restrictions on the use of the traditional tools resulting from multilateral and regional agreements, and domestic regulatory reforms initiated as a result of structural adjustment loans or domestic efforts to restructure their economies, e.g., the General Agreement on Tariffs and Trade (GATT) Code on Subsidies and Countervailing Duties restricted the use of export subsidies as far back as 1979 (Bora et al. 2000).

The GATT was replaced in 1995 by the WTO. Under the WTO, there has been a decline in the use of tariff and non-tariff measures, with the consequence that the present WTO rules restrict the industrial policy instruments available to WTO members. WTO prohibits: (i) the use of selective subsidies, with the scope for import protection clearly diminished. This refers to the use of tariffs, local content protection, rules of origin, and contingent protection. The scope for import protection simply depends on the ability of developing countries to negotiate a provision that will allow for greater discretion for protection; (ii) export promotion: direct intervention by governments to boost exports, which leaves developing countries little room to manoeuvre in the area of export subsidies for industrial products; (iii) subsidies for the use of domestic (rather than imported) inputs—export subsidies are still allowed to be used by low-income countries; (iv) local content requirements and quantitative restrictions on imports; and (v) voluntary export restraints.

The above indicates that the added discipline imposed by WTO rules has reduced the flexibility of governments in the choice of instruments used to pursue industrial policy objectives.

The question arises as to what developing countries can currently do to induce structural transformation and diversification. Developing countries have fewer degrees of freedom than in the past, but a number of provisions in the WTO rules deal with various measures that can be used to protect domestic suppliers and promote exports and technology transfer. Specifically, WTO rules still allow the use of trade policy interventions in the form of selective subsidies to promote domestic R&D, science and technology, regional

development, and environmentally friendly activities. The WTO also enables members to use safeguard measures (limited to a maximum of eight years) to provide protection in two cases: (i) when imports can destabilize their balance of payments (article XVIII); and (ii) when foreign competition threatens a specific industry due to an import surge (article XIX) or an unfair trade practice (article VI).

WTO rules also allow countries to promote industries, including the manufacturing sector, under the umbrella of advancing science and technology (e.g., by setting up technology parks). The WTO allows export credit and insurance schemes below market rates, concessional tax and duty provisions, and export processing zones. Subsidies in exchange for examinable, results-oriented performance standards are acceptable, while countries can target, for example, national champions.

The above means that the WTO still allows developing countries to promote certain sectors. Developing countries are most likely to face three types of hurdles in their industrial policy efforts. First, informal political pressures by developed countries in favour of opening markets. Second, countries that make use of WTO rules to promote their industries are forced to apply 'reciprocal control mechanisms'. Finally, many developing countries lack the vision and creativity to design comprehensive industrial policies that go beyond the use of subsidies and which include the use of incentives to address market failures and cooperation with the private sector. This issue will be revisited in Section 27.5, which documents how the United States and the European Union conduct industrial policy.

27.4 Successful and Unsuccessful Examples of Industrial Policy

This section summarizes the different experiences in conducting industrial policy by the successful Asian economies, as well as Latin American economies and India, with an emphasis on the tools used, and how these evolved over time and in particular prior to the WTO.

27.4.1 Industrial Policy in Asia

A few Asian nations performed much better than nations in any other developing region, they were the most export oriented of the entire developing world, and their export growth matched production growth. These economies are geographically concentrated in East Asia, and they invested in human capital, fostered R&D, and built strong institutions. This group of economies also made extensive use of infant industry protection, export subsidies and targets, credit allocation, and local content rules to develop their industrial capabilities base. In the following three subsections, the examples of Singapore, the Republic of Korea, and Taiwan POC are briefly reviewed as three different examples of industrial policy implementation, each with their own tools and idiosyncrasies. All had the same objective of inducing and facilitating the transformation of the economy. Many of the policies and tools they used would fall today under the export promotion tools and import restrictions that the WTO does not allow, while others would violate agreements reached under the Uruguay Round of negotiations, including those related to TRIMs, subsidies, and TRIPS. Only instruments such as government provision of information to exporters would still be

allowed under current WTO rules. Export promotion agencies are allowed, for example, as long as their job is only to provide information and not export guarantees or insurance elements.

27.4.1.1 Singapore's Industrial and Trade Policies: Driven by Vision and Internationalization

Singapore's economic policy between 1959 and 1965 was based on import substitution.⁶ The government passed laws in 1959 to promote import substitution, formulated a national economic development plan (1961–1964), and created the Economic Development Board (EDB) in 1961. In 1965, however,—at the time that Singapore separated from Malaysia—it adopted an export orientation, with bureaucrats from the EDB developing master plans.

From 1966 until the early 1970s, Singapore's economic strategy involved: (i) an export-oriented strategy based upon attracting foreign direct investment (FDI); (ii) offering preferential tax treatment to key industries; (iii) simplifying labour conditions and allowing labour unions bargaining rights; and (iv) introducing a centralized wage system, with the aim of repressing wage increases to enhance the competitiveness of labour-intensive industries. During these years, Singapore also created four organizations to stimulate exports: (i) the Jurong Town Corporation to manage the Jurong Industrial Park; (ii) the Development Bank of Singapore to finance development; (iii) the International Trading Company to promote exports and imports; and (iv) several state-owned enterprises in shipbuilding, basic metals, chemicals, textiles, food, and other industries. Many of these companies became local partners in joint ventures with foreign investors.

An important element of Singapore's strategy was its pro-FDI stance, allowing wholly foreign-owned companies to operate in export-oriented manufacturing sectors with minimal restriction, while offering attractive tax exemptions to foreign firms. The essence of the model was to achieve industrialization by attracting foreign investment and partnering with multinational companies (MNCs). Policymakers realized that they had to attract foreign companies to set up plants, and while this would bring in second or third generation technologies, it was not considered a problem given Singapore's technology gap. Singapore's economic team targeted certain types of MNCs that could create the largest number of jobs, import new technologies, train Singaporeans in advanced technical and managerial skills, and generate exports.

While MNCs were welcomed, Singapore did not initially focus on nurturing Singaporean firms run by local entrepreneurs. Instead, Singapore used state-owned enterprises intensively with the government having the advantage that public ownership began afresh rather than through the nationalization of already loss-making enterprises. The state also stepped into the industrialization effort, building a steel mill, investing in shipbuilding and shipping lines, and founding an airline and a state development bank. Singapore did, however, create a series of favoured firms in the form of government-linked corporations (GLCs) and statutory boards (SBs) that benefitted from favourable access to capital and land, preferential tax treatments, and earned large profits. Singapore's government also enacted a series of labour reforms to deal with labour

⁶ This subsection is based on Tan (1994), Lall (2006), Kuchiki (2007), and Chang et al. (2013).

disputes, for example, by giving power to companies to hire and fire and by imposing restrictions on unions and strikes.

Between the 1970s and the mid-1980s, as Singapore's manufacturing grew and became more export oriented, the sector underwent upgrading from labour-intensive (food and beverages, textiles, and wood products) to capital- and skill-intensive industries (chemicals, fabricated metals, electrical and electronic products and components, and machinery and precision equipment). Services expanded significantly during this period (aided by Singapore's earlier role in entrepôt trade) and several measures were introduced to promote Singapore as a financial centre, e.g., liberalization of foreign exchange controls, admission of foreign banks, generous fiscal incentives, and manpower training.

Policy interventions were not always beneficial, however. In 1979, the government used the National Wage Council (NWC) wage guidelines to raise capital intensity, reduce reliance on low-wage unskilled foreign labour, and increase labour productivity. For this purpose, the NWC recommended substantial nominal wage increases. During 1985–1986, the Singaporean economy went into recession largely because real wage growth had outstripped labour productivity growth in earlier years (along with a strong prevailing exchange rate). Acknowledging the government's interventionist role in setting wages and in spearheading industrial restructuring during 1979–1981, real wages were cut by 12 per cent. This restored international competitiveness and profitability, increased the inflow of FDI, and led to a strong recovery of real exports.

Targeting remained widespread in the 1980s. A predicted global boom in petrochemicals led Singapore to upgrade its petroleum-refining industry, with an integrated 'chemicals island' being developed to deal with the problem of land shortages. Singapore also identified the information technology (IT) sector as a key industry and decided to pursue the creation of competitive advantage in information and telecommunications on the grounds that there was a new order of the international division of labour evolving. This was devised as a mechanism to continue catering to MNCs.

By the early 1990s, Singapore had become a major regional business and financial hub. It had managed to leverage the advantage of its strategic location by establishing world-class transportation systems and materials handling facilities, a sophisticated communication and information technology infrastructure, and had expanded into financial and other business service activities.

In 1991, Singapore set up the National Science and Technology Board (NSTB) with the mission to develop Singapore into a centre of excellence in selected fields of science and technology—IT, microelectronics, electronics systems, manufacturing technology, materials technology, energy, water, environment and resources, biotechnology, food and agro-technology, and medical services. This was developed in the National Technology Plan of 1991, which recognized the symbiotic roles of the private and public sectors undertaking R&D, given the market failures inherent in R&D generation. These efforts appear to have been successful as private companies began to expand core industrial capabilities in key technologies, bolstered by the availability of a large number of educated female workers who played an important role in the development of the electronics industry.

In the 2000s, Singapore set up the biomedical manufacturing cluster with the aim of attracting fifteen world-class biomedical science companies by 2010—a goal which was easily met, with over thirty companies present in Singapore by 2012. A high-level committee recommended in 2010 the retention of a globally competitive manufacturing sector of between 20 and 25 per cent of gross domestic product (GDP). In 2013, the government announced ambitious plans to build manufacturing capabilities in satellites to serve the space industry.

27.4.1.2 The Republic of Korea's Industrial and Trade Policies Since the 1960s: The Role of Big Firms and the Drive to Catch Up

Until 1961, the Republic of Korea's industrial policy involved import substitution, mostly for consumer goods, with priority industries being sugar, fertilizer, spun yarn, cement, and glass.⁷ Following a change of regime in 1961, an export-oriented strategy was implemented through the following five-year plans: (i) 1962–1966, focusing on manmade fibre yarn, fertilizer, cement, and refined oil products; (ii) 1967–1971, focusing on consumer goods, but also on replacing intermediate-goods imports with domestic products, with an emphasis on petrochemicals, medicines, and machinery. The Massan export processing zone was established in 1971; (iii) 1972–1976, focusing on industrialization of heavy and chemical industries (through the heavy and chemical industry [HCI] Programme); and (iv) 1977–1981, with the promotion of industrial machinery, steel, and electric equipment parts. After 1981 there was no coherent economic plan, but a series of sectoral targets.

When the new regime came to power in 1961, it did not have a coherent economic plan, but a series of sectoral targets. Moreover, US aid efforts were deemed to have been poorly organized and ineffective, inflation was high, and the government had approved projects that required significant amounts of foreign exchange. The US administration decided to use aid to induce policy changes and reforms. It was in this context that the Republic of Korea approved its first Five-Year Economic Development Plan (1962–1966) as well as its 1963 stabilization programme (with US assistance), both in the hands of the Economic Planning Board's (EPB) technocrats. From here on, the foreign exchange (tightly controlled) implications of projects and of technology transfers became crucial. The government likewise imposed import controls for domestic use, while inputs for exports were permitted.

The Republic of Korea switched to an export-oriented development strategy in 1962. This was prompted by the realization that the Republic of Korea had a small domestic market and that it still had a large pool of low-wage labour. Likewise, macro problems persisted (i.e., inflation and balance-of-payments deficits) and the United States started phasing out aid. Some of the key reforms implemented that would contribute to the launching of the export-oriented strategy were the devaluation of the currency, the implementation of a floating unitary exchange rate, tight monetary policy, an increase in import duties on non-essential items, and limits on international borrowing. The switch to export promotion also involved the relaxation of import restrictions. Through this latter policy, the government reduced the possibility of making large profits in the domestic market, which further encouraged firms to engage in export activity as well as created pressure for improved competitiveness. The banking sector was also nationalized in 1961, and while nationalization ended in 1983, heavy banking regulation continued until the early 1990s.

The extent of the Republic of Korea's government involvement in the move towards an export-oriented economy was very important. While the government offered various incentives for exporting firms, it also acted to compel firms to export and limited support to the most successful exporting firms. A great deal of pressure was put on firms to shift into exporting activities, with the government essentially forcing the initial export expansion of the economy. Export targets were agreed upon between the government and individual firms, with monthly export expansion meetings chaired by President Park. These targets

⁷ This subsection is based on Jung (1994), Tan (1999), Lall (2006), Kuchiki (2007), Lim (2012), and Chang et al. (2013).

were considered as demands, with support for firms contingent upon having met their export targets. The approach thus provided a strong incentive for firms to increase production and export capacity as strongly as possible and ensured that only the most successful and efficient firms were supported. One important role of exports was to force firms to be competitive in international markets and to encourage the inflow of technology. Technology transfer was further encouraged through external borrowing, the importation of capital goods, and technology licensing through original equipment manufacturing (OEM). Different from other industrializing economies, FDI played only a minor role in technology transfer in the Republic of Korea.

Other measures taken by the government included: (i) the setting of yearly targets, formulating financial, technical, manpower, and infrastructure plans, and devising incentives for firms; (ii) offering incentives to firms that engaged in exporting, including direct subsidies and subsidized credit to exporting firms, privileges with regard to importing raw materials, as well as additional tax benefits and permission to seek financing from abroad. The currency was devalued twice—in 1961 and 1964—to stimulate exports, while restrictions on imported raw materials were gradually eased, particularly those necessary to produce goods for export; and (iii) developing an institutional context that supported the export effort. Indeed, the government created a whole set of institutions that dealt with coordination issues (the Export Promotion Sub-Committee) and identifying markets (the Korea Trade Promotion Corporation). The emphasis on exports was so important that President Park himself chaired the National Export Promotion meeting of Ministers.

The government also engaged in extensive rationing of credit and of foreign exchange. Infant industries were also heavily protected from imports (average manufacturing tariff rates were 30–40 per cent until the 1970s) and there were import quotas (until the late 1980s).

Different to the case of Singapore, the Republic of Korea sought to develop local producers with world-class productive capabilities by: (i) protecting domestic producers in strategic sectors from competition from MNCs producing in the Republic of Korea; (ii) imposing strict regulations on FDI; and (iii) adopting regulations on technology licensing (with respect to both the quality and price of imported technologies).

The initial focus of the export-oriented strategy was the development of light industry. During the 1960s, firms concentrated mainly on basic assembly, beginning with the manufacture of standard, simple goods often supplying foreign MNCs from Japan and the United States through OEM. Starting in 1973, the Republic of Korea moved into the second phase of its export-oriented programme. It made concerted efforts to move into higher value-added areas through complementary investments in human capital and infrastructure. The policymakers of the Republic of Korea felt that the country should develop the HCI, i.e., more skill and capital-intensive manufactures such as ships, machinery, steel, automobiles, and computer electronics, as was done in Japan after WWII. There were many reasons for this approach, including efforts to become a self-reliant economy and to reach self-imposed export and income per capita targets, although there was scepticism from international organizations over whether the Republic of Korea had the capabilities to implement the programme.

The industries selected were (with specific subsectors within each): iron and steel; non-ferrous metals; shipbuilding; machinery; electronics; and chemicals. Sectors that had already developed considerably were excluded, while activities that were within the realm of the private sector as well as sectors deemed impossible to develop at the time were also excluded. Planners consciously chose to develop these sectors not just for the domestic

market, but also for export. This was done by relying on a group of state-owned enterprises together with private companies—the *chaebols*—such as Hyundai, Samsung, and LG. The programme relied on four key pillars: finance; land and infrastructure; human resources; and R&D. The policies adopted also helped engender a dramatic change in industrial structure throughout the 1970s. While HCI industries contributed around 12 per cent to GDP in 1970, the figure had increased to more than 25 per cent by 1980 and to more than 30 per cent by 1988. The success of this programme can be further seen in the shift in the composition of exports, with HCI increasing their share in total exports from around 13 per cent in 1970 to more than 50 per cent by 1988. The Republic of Korea continued growing very rapidly, with an average growth rate of 9.11 per cent per annum during 1971–1990.

The promotion of strategic industries that dominated policy during the 1970s came to an end at the start of the 1980s when a process of trade liberalization, including an opening up of domestic markets and a reduction in export subsidies, was adopted. One result of this change in policy was a relatively rapid increase in inward FDI flows. During the 1980s, there was also increased pressure to upgrade and restructure industry, in particular to see a movement from labour- and capital-intensive production towards more technology-intensive production.

The 1990s saw significant lobbying by the *chaebols* to break away from state control. As a result, in 1993 the government of the Republic of Korea began to scale down industrial policy. After the Asian Financial Crisis, the government launched a national campaign to make the transition into an advanced, knowledge-based economy and during the 1990s the idea of a ‘new industrial policy’ took shape. In this new setting, the old model of the earlier high-growth era became obsolete and part of the new approach involved regulating the *chaebols*, particularly in the areas of ownership structure and diversification strategy. One important change was in the role of the banking system to support companies, which turned to use *indirect industrial policy tools*, as in other advanced economies, i.e., involving private banks and using market mechanisms allocating credit.

27.4.1.3 Taiwan POC’s Industrial and Trade Policies: State-Planned Economy and Transformation Driven by Small Firms

Taiwan POC’s Kuomintang and its bureaucrats created a developmental state, but very much along the lines of a state-planned economy.⁸ Chiang Kai Shek held a very anti-capitalist business attitude. Under his mandate, and since the 1950s, the state has encouraged industrialization and exports and has provided tax incentives and selective assistance for exporters, though it was less inclined to intervene firms’ decisions and did not use administrative discretion to favour individual private firms. Ultimately, the Kuomintang’s policies led to a three-sector firm structure that characterizes Taiwan POC—state and party enterprises, large businesses, and small and medium enterprises (SMEs)—with the government of Taiwan POC relying on its public enterprises to push its development programmes.

From 1949, the Kuomintang started using import-substitution policies, adopted primarily to meet domestic economic needs and to build local industrial capabilities. As in the Republic of Korea, import substitution was a consequence of the economic situation after independence, especially the acute shortage of foreign exchange. Import substitution was based on high import tariffs and trade regulation. The main targets of protection were

⁸ This subsection is based on Hsiao (1994), Tan (1999), Lall (2006), Kuchiki (2007), and Studwell (2013).

state-owned industries (notably cement, tea, and pulp and paper companies) and spinning. The government enacted a law to promote the spinning industry in 1949, with preferential treatment of the sector, including rationing of raw materials for spun cotton, advantageous exchange rates, an outsourcing system, and assistance with the procurement of operating funds and foreign exchange. Between 1949 and 1952, ten companies fled Shanghai and set up operations in Taiwan POC.

Between 1958 and 1962, the government implemented a series of measures to liberalize the trade regime and shift to an export-oriented regime. The shift to export orientation was induced by domestic market constraints, external pressure from the United States to increase competition, a low value of manufactured exports, high import dependence, an overvalued exchange rate, and balance-of-payments deficits. As the United States started phasing out its assistance, earning foreign exchange became an imperative. Taiwan POC needed an alternative and the United States forced a series of policy reforms that encouraged the switch to export orientation.

The reform package was based on a nineteen-point agenda developed between 1960 and 1963 that included tariff reduction and the discontinuation of the allocation of foreign exchange based on quotas according to import categories; a discontinuation of the multiple exchange rate system; the use of tax and import duty rebates, as well as concessional credit to encourage industrial exports; fiscal incentives for both local and foreign investors, including a five-year tax holiday for investments in government-designated priority sectors; the possibility for wholly owned foreign firms; a 100 per cent profit remittance; and repatriation of initial capital at the rate of 15 per cent a year starting two years after completion of the project.

Taiwan POC's export drive was initially built upon the agricultural sector and food processing, with a shift from rice and sugar to the production of mushrooms and asparagus, products in which labour-saving technological progress was possible. By the early 1960s, there had already been a shift towards industry—also in rural areas—and a gradual shift within industry from food processing towards the export of labour-intensive manufactures, notably textiles and electronics assembly. The focus of these early efforts was on light industries.

US foreign aid to Taiwan POC was discontinued in 1965, leading to a great need to promote exports and balance the economy's external current account. To achieve these goals, Taiwan POC established export-processing zones (EPZs) in 1965. The foreign investors—mainly Japanese and US—present in EPZs manufactured mainly electronic equipment, primary metals, and chemical products. These firms were exempted from tariffs and other charges on the condition that they would export their products, were allowed to possess foreign currency in proportion to the value of their exports, and to import capital and intermediate goods to manufacture products for export.

A key result of these reforms and of government guidance was the emergence of a dynamic export manufacturing sector, led by the economy's SMEs. Taiwan POC's SMEs (effectively over 95 per cent of all Taiwan POC's firms and 99 per cent of all enterprises in the manufacturing sector) turned out to be the pillar of the island's dynamic export economy and accounted for over 60 per cent of its total exports and 65 per cent of all manufacturing exports in the 1980s.

SMEs received significant state assistance through various measures that facilitated export activities, with the reform package of the early 1960s reforming the exchange rate system and creating exceptions or expedencies for export activities. The unification of the dual exchange rate and the elimination of exchange quotas significantly increased exporters' earnings in local currency. The tariff rebate programme, bonded factory warehouses, and

exemption from various other levies allowed exporters to face international market prices when purchasing equipment and other inputs from abroad, thus eliminating one major competitive handicap in global competition. The export loan programme at low interest rates also made export financing readily available to SMEs.

Subsidies to exporters in the 1960s were tied to export performance and firms were penalized for not achieving export targets. This created an export culture in Taiwan POC that had externalities on the public enterprises that were indirectly exposed to international competition through their dealings with the highly exposed downstream sectors, mostly SMEs. The construction of EPZs and bonded factories also encouraged increased export orientation, as did the establishment of export cartels. Likewise, although SMEs were extremely successful in absorbing commercial ideas from developed countries such as Japan and the United States, the government also played a role through agencies like the China External Trade Development Council (CETDC), which sought out ideas on how firms in Taiwan POC could upgrade their technology to enter developed-country markets.

It should not be inferred from this discussion that during the 1960s and early 1970s the state did not play an important role in the economy. Progress during those years was not simply the result of comparative advantage. Although in the initial phase of export-led growth Taiwan POC relied on exports of labour-intensive goods, the government was preparing the ground for upgrading the economy's industrial structure and for the development—from the mid-1970s onward—of the heavy and chemical industry cluster. This was clearly reflected in the economic plans, which already in the early 1960s highlighted the need to develop heavy industries and capital goods and products with a high income elasticity of demand. There was awareness that a development strategy based on low wages would not take Taiwan POC far.

As a result of the oil shocks, Taiwan POC saw the need to reconsider its economic strategy during the 1970s. The government decided that the economy should enter a phase of *export-oriented import substitution* to remodel its domestic industrial structure by developing energy-intensive and capital-intensive industries and large-scale infrastructure projects. The government introduced a six-year plan to put the economy back on track. The plan introduced heavy industrialization as an import substitution policy in 1976, with the government: (i) reducing the preferential measures for excessive labour-intensive industries; and (ii) emphasizing the heavy and chemical sectors, including basic industries that required large amounts of capital, industries that required high technology, and industries that were able to boost exports or develop new domestic markets.

After success in light industry, Taiwan POC looked to develop heavy industries, such as petrochemicals, iron and steel, and electronics assembly, through the establishment of the Industrial Technology Research Institute (ITRI) in 1973 and the Electronic Research and Service Organization (ERSO) in 1974. These entities were used to license foreign technology, undertake publicly funded R&D, and select public and private firms to utilize the research and make new products. The role of state enterprises increased, leading domestic investment, while big businesses were further helped by the state, effectively becoming conglomerates.

Despite market reforms, Taiwan POC remained a state-planned economy. Even into the 1980s, imports and exports had to be covered by a license, with many imports being controlled, for example, through origin restrictions and through comparisons with locally produced products.

During this decade, Taiwan POC's political and economic structure of state-private capital relations deepened, although it also underwent transformation. One such aspect

was an increased focus on science-and-technology-based industrialization. Government policy, especially that related to government credit policy, was used to encourage further changes in the economy's industrial structure. Preferential treatment was provided to high-technology industries, while labour-intensive projects were discouraged and penalized financially. This led to what has been called the science-and technology-oriented development phase, with electronics, information science, and technology-intensive exports accounting for the vast majority of total exports, with traditional exports such as textiles, garments, electronic assembly, and other light industries being relocated overseas, most notably to mainland China.

SMEs had to adapt during the 1980s to a new economic situation, characterized by labour shortages, rising labour costs, escalating land prices, competition from the Southeast Asian economies, and currency appreciation. This led to significant industrial restructuring, from labour-intensive to capital-intensive and high-tech industries. To meet these challenges, labour-intensive industries were transferred to Southeast Asia and China.

A further aspect was a gradual move towards a more liberalized trade regime as the economy sought membership of the WTO. By encouraging export activities and allowing local firms to demonstrate their competitiveness in foreign markets, the government was increasingly comfortable in allowing foreign firms greater access to domestic markets.

While Taiwan POC received significant amounts of FDI, it represented a small share of the economy's gross domestic capital formation (less than 5 per cent in the 1960s and a smaller share later). This capital has served to complement local capital and to transfer technology. Foreign capital has dominated sectors aimed at exporting, including the electronics sector, chemicals, and textiles. In the case of MNCs operating outside processing zones, the government applied pressure to encourage the establishment of links with local companies, for example, by forcing relatively high domestic content requirements of up to 50 per cent. MNCs were also subjected to export targets.

27.4.1.4 Industrial Policy in India

India's industrial policy, embodied in its five-year plans (the first one was 1951-1956), has been the subject of intense debate and criticism, with India's progress not matching that of the three East Asian economies discussed above. India's industrial policy can be divided into three clearly distinctive phases: (i) 1950-1980; (ii) the 1980s; and (iii) after 1991. A brief review of the three follows:

*The Nehru-Mahalanobis Industrial Policy Model, 1950-1980*⁹

The five-year plans of these decades pursued multiple objectives of industrialization and were designed to bring about economic and social development within a 'socialist' framework. They were state-planned industrialization programmes. Key elements of the economic strategies of these decades included: (i) the public sector was assigned a leading role in the structural transformation of the economy; (ii) the capital goods sector (heavy industry) was to develop quickly; (iii) private investments were to be guided by the requirements of the overall national plan and not necessarily by the need to be profitable; and (iv) the plans emphasized technological self-reliance and had an inward orientation, i.e., whatever could be produced in India should not be imported, regardless of the cost.

⁹ The synthesis of the period 1950-1980 follows Singh (2008).

These ideas followed the Mahalanobis (1963) model, where the capital goods industry was the main constraint to economic growth. Its drawback was that it conflicted with the employment objectives of the five-year plans. This was solved by protecting small-scale and cottage enterprises, for which the capital-labour ratio was low, from both external and domestic competition. To implement these plans and ensure that the private sector conformed to them, the government used the following measures: (i) industrial licensing—any firm that wanted to make a new product or that needed to expand its existing capacity had to obtain a license; (ii) import controls; (iii) subsidization of exports through special measures; (v) administered prices; and (vi) investments by multinationals were subject to strict controls.

India's industrial policy system has been the subject of intense criticism (Felipe et al. 2013a). It was argued that it strangled the economy and did not allow for the development of the industrial sector. For example, the barriers to entry into individual industries reduced the possibility of domestic competition, and the programmes offered indiscriminate and indefinite protection to domestic industries from foreign competition. Barriers to exit did not allow firms to close down, even when they were non-viable, which prevented resources moving to alternative growing industries. These barriers also embodied incentives for rent-seeking activities that resulted in diminishing entrepreneurship, and in few or no incentives to upgrade technologies. Finally, the nationalized banking system led to adverse effects of universal credit rationing.

The 1980s

India implemented a slightly more liberal economic regime in the early 1980s, with the new government of Rajiv Gandhi that entered power in 1985 further hastening the pace of trade reforms, through a shift from quantitative import controls to a protective system based on tariffs, for example. Restrictions on the import of capital goods were further eased to encourage technological modernization. Beginning in the mid-1980s, there was also renewed emphasis on export promotion. The number and value of incentives offered to exporters were increased and their administration streamlined. The duty exemption scheme for imported inputs was also extended to cover all imported inputs for both direct and indirect exporters.

The government of Rajiv Gandhi took particular interest in modern sectors, such as IT and engineering, and tried to bring in new economic elites from these emerging sectors into the relationship that the political elite had with the business sector. In addition, with the rise of non-traditional business groups in southern and western India, there was a growing diversification of business ownership, leading to a broadening of the political connectivity of the business elite. Therefore, by the late 1980s, with the shift in state–business relations from being collusive to being more collaborative, the Indian state clearly signalled to domestic capitalists its intention to credibly commit to an environment where private enterprise would be supported and growth-enhancing policies followed. The shift in state–business relations from one characterized by mistrust and collusion between the state and the business sector to a more collaborative one was the crucial enabling factor behind the increase in private investment in equipment in the same period, and the subsequent recovery in economic growth.

India's New Industrial Policy after 1991

In 1991, India had a balance-of-payments crisis which proved to be the forerunner of a significant structural adjustment-cum-liberalization reform implemented under the

supervision of the International Monetary Fund (IMF). The crisis led to a temporary decline in GDP growth in 1991 and 1992. Narasimha Rao was elected prime minister in 1991 and responded to this crisis by embarking on an extensive programme of liberalization. India was forced to accept globalization as the price for economic survival. The New Policy of 1991 brought comprehensive changes in the economic regulation of the country along three dimensions: liberalization, privatization, and globalization. Key measures introduced were: (i) a redefinition of the role of the public sector, including a disinvestment programme, with reforms in the public sector being aimed at enhancing efficiency and competitiveness; (ii) an opening of major industries that were previously reserved for the public sector—an example being the capital goods sector—to the private sector, with only a few sectors (e.g., atomic energy) continuing to be reserved for the public sector; (iii) the welcoming of foreign investment, a policy that enhanced industrial competition and improved the business environment of the country; (iv) an end to the practice of industrial licensing; and (v) the abolition of the Monopolies and Restrictive Trade Practices Act. In 2010, India set up a Competition Commission to monitor competitive practices.

27.4.2 Industrial Policy in Latin America

Government interventions in this region produced important results until the late 1970s. The region's underperformance came as a result of the fact that it relied much more than East Asian economies on import substitution to shelter enterprises from international competition, but unlike the East Asian economies, failed to offset this with the incentives and pressure to export. Latin American governments did not do much to attract export-oriented FDI in EPZs. As a consequence, the region missed the surge in global production systems in electronics (which went to East and Southeast Asia). Likewise, governments did not make efforts to deepen local technological activities by encouraging R&D and did not make the same efforts as their Asian counterparts to develop the skills needed for emerging new technologies. As a result, the region failed to develop a broad range of industrial capabilities that would have driven competitiveness as it liberalized. There were exceptions to this general failure, such as the automobile industry in large countries, or natural resource-based activities. Many such activities, however, did not experience high growth in world trade and Latin America failed to increase its export market shares rapidly (with the exception of Mexico, due to the North American Free Trade Agreement (NAFTA) rather than a well-designed strategy).

During the second liberalization phase in the 1990s, policy reform in Latin America was rapid and sweeping. It focused more on macroeconomic issues, with no strategy to foster competitive capabilities and to upgrade to more complex activities and products. Again, the automotive industry was an exception. This was restructured with complementation programmes (now banned under the WTO).¹⁰ Chilean agro-industry was also an exception, as well as national export champions like Brazil's Embraer.

¹⁰ Complementation programmes were packages of organized complementary trade exchanges of specified processed or manufactured products as agreed among a group of countries (the participating country in the package), guided by the principle of cooperation for mutual and equitable benefits. An industrial complementation (IC) product was an industrial product manufactured or to be manufactured in a member country and allocated to that particular country as its participation in the IC package. The product thus produced was entitled to enjoy the privileges provided for products in an IC package.

27.5 The Return of Industrial Policies

The localized crises of the 1990s in specific regions of the world revealed the excesses of the approach of the 1970s, 1980s, and 1990s, and set the stage for a new approach. A return to old-type industrial policies was impossible due to the competitive framework shaped by laws and regulations which do not allow for the implementation of such policies. Also, the international rules of the WTO generally forbid a government to subsidize its domestic firms at the expense of foreign ones. The new competitive context, represented by the diffusion of the knowledge-based economy, coupled with the growing importance of competitors such as China and India, implied the need to redefine industrial policy (see Section 27.3). The irruption of these two large economies implied that competition had increased for all types of products, so that developed countries were forced to broaden their relative comparative advantages in high-quality market segments and in high-tech sectors. Both China and India still had comparative advantage in lower market segments and lower technology content. However, both have developed competitive advantages in complex products sectors (Felipe et al. 2013a, 2013b). As a result, an approach seems to have emerged whereby all actions are considered beyond ideology, provided they can be efficient and effective.¹¹

27.5.1 Modern Industrial Policy

Under WTO influence, industrial policy has, since the 1990s, effectively shifted towards competition policy, regulation, and technological and innovation policy, especially in developed countries. While these countries have been able to design comprehensive industrial policy programmes in these areas, many developing countries are finding it more challenging as this requires a level of sophistication in designing and formulating economic policies that many do not have. They are simply not at the level of the advanced economies (Felipe 2015, Felipe & Rhee 2015).

Policymaking, especially in advanced countries, has evolved from being an action decided by the central government to limit or subsidize individual behaviour to a programme that involves all the institutions of a territory aimed at consolidating an environment able to increase the collective competitiveness and therefore to stimulate the latent innovative capacity. Its objective is to address the dynamics of the economy by aiming at favouring the development of industry and its structural adjustment when needed. Therefore, the correct model of industrial policy today is not one of an autonomous government applying Pigouvian taxes or subsidies (currently mostly forbidden). Rather, it is one of strategic collaboration between the private sector and government with the aim of discovering where the most significant obstacles to restructuring lie and the interventions that will most likely result in their removal.

In this new context, the issue at stake remains the same as in the past: that is, both developed and developing country governments see the need to implement measures to support the development of high-tech sectors that are considered as strategic in terms of growth potential and spillovers to other industries (e.g., R&D programmes with subsidies,

¹¹ In a recent paper, IMF researchers Cherif & Hasanov (2019) acknowledge the return of industrial policy, and that still one can learn from the Asian miracles.

creation of research institutions, science parks, training of scientists and engineers). Likewise, both developed and developing countries also support weaker actors, SMEs in particular, or specific backward areas, as well as sectors in crisis. State aid, mainly in the form of subsidies, although inefficient from an economic point of view—and illegal in most countries—are still widely used. The question is how this can be done today.

New industrial policy has two characteristics. First is the acknowledgement that market forces and private initiative are the driving force of diversification, upgrading, and more generally, industrial development. Second, governments have a strategic and coordinating role to play in organizing production beyond simply ensuring property rights, contract enforcement, and macroeconomic stability. Therefore, new industrial development policies consist of a variety of measures that aim at favouring firms' structural change and helping the development of new sectors. The role of government is fundamental as a catalyst and provider of necessary public inputs to the private sector. These public inputs are product specific (i.e., those required by the furniture sector are very different from those required by the food sector) and governments can only provide them efficiently if they coordinate with the private sector.

Rodrik (2004) and Hausmann & Rodrik (2003) argue that the theory of comparative advantage, as a basis for understanding international trade and specialization is indeterminate, in the sense that countries have so many options that it is extremely difficult to predict the products(s) a country will specialize in. Consequently, a country has to single out its own specialization through a process of 'self-discovery'. This means that the country has to determine its profitable industries or opportunities by experimenting with different potential fields through entrepreneurial search, which may be undersupplied. A key element of an industrial policy for the twenty-first century is, therefore, to support entrepreneurship in the search for successful specializations. Once specializations are detected, society will invest more resources in them. At this point, the need for industrial policy interventions ceases as private incentives to invest will be adequately high and most likely not lower than those of the society as a whole.

Section 27.3 argued that the WTO is sufficiently permissive in allowing countries to use industrial policy. For developing countries, the problem is the lack of vision in designing comprehensive industrial policy packages. Government has a very important role to play under the new view of industrial policy. In a series of papers, Rodrik (2004, 2007) has argued in favour of a new type of industrial policy that is consistent with the WTO, that acknowledges that a significant portion of international trade and production occurs through GVCs, and that developing countries are concerned with the phenomenon of premature deindustrialization.

Rodrik acknowledges the existence of generic market failures but argues 'that the location and magnitude of these market failures is highly uncertain' (Rodrik 2004, p. 3). He argues that *information* and *coordination* externalities are more important than technological externalities. The reason is that the former limit the entrepreneurial drive to restructure and diversify in low-income economies. He argues that industrial policy is not about addressing distortions in the traditional way (i.e., by enumerating technological and other externalities and then targeting policy interventions on these market failures through subsidies), but about eliciting information from the private sector on significant externalities and about the constraints to structural transformation (hence industrial policy also encompasses activities in agriculture and services) and the opportunities available. This requires 'strategic collaboration' between the public and private sectors to determine the areas in which a country has comparative advantage. Entrepreneurs may lack this

information and governments may not even know what they do not know. Further, many governments do not have adequate knowledge to pick winners. Uncertainty arising from lack of communication—that is, from one decision-maker having no way of finding out the concurrent decisions and plans made by others—may, if sufficiently great, inhibit investment decisions and impede faster growth. In these circumstances, markets alone are likely to undersupply the incentives and demand for the new activities necessary to transform the economy. Such market failures are more prevalent in developing economies. As Rodrik (2004, p. 12) notes: ‘The trick for the government is not to pick winners, but to know when it has a loser’, which requires the development of the appropriate institutional arrangements for industrial policy.

Using the above criteria as reference, it seems obvious why the East Asian countries did better than those of Latin America as far as the use and implementation of industrial policies is concerned. The East Asian economies had clearer strategies for deepening the industrial structure, gaining local content, getting the best out of FDI (or keeping it out), raising technological effort, and promoting large local enterprises. In summary, East Asian economies: (i) picked a few activities at a time instead of promoting a large number of them; (ii) picked activities that offered significant technological benefits and linkages; (iii) forced companies to enter earlier into world markets and used exports to discipline and monitor both bureaucrats and enterprises; (iv) gave the lead role in productive activity to private enterprises but used public enterprises as needed to fill gaps and enter risky activities; (v) invested in skill creation, infrastructure, and support institutions, all carefully coordinated with interventions in product markets; (vi) used FDI selectively by either restricting or imposing conditions on it; (vii) centralized strategic decision-making in competent authorities; (viii) collected huge amounts of relevant information and learnt lessons from the technological leaders; (ix) corrected mistakes quickly; and (x) involved the private sector in strategy formulation and implementation.

Industrial policy should be conceived as a joint effort of the state and the private sector to diagnose and propose solutions to relax the obstacles to new economic activities. Industrial and technological upgrading requires purposeful effort in the form of industrial policy, in particular, effective government action and public–private collaboration. This requires a government which is neutral with regard to the activities to be promoted or the instruments to be deployed. It only requires the government to build the private–public institutional setting from which information on profitable activities and the useful instruments of intervention can be obtained. The key issue is not whether to protect but how to protect and promote industry in order to ensure technical progress leading to higher labour productivity.

In this way, industrial policy is a powerful tool for successful industrialization and structural change. While a market-driven development model could not, by itself, have accelerated transitions between different patterns of specialization and delivered the high growth rates that some Asian countries experienced, it was not because market-based successes were absent, but because theory suggests exactly the opposite—that market forces are unlikely to address efficiently the coordination problems that arise in the transition across production and trade patterns. Coordination failures are likely to arise in the transition from old to new patterns of production and trade specialization, a situation characteristic of semi-industrialized countries, in which old comparative advantages in labour-intensive industries are being eroded and new ones in capital- and technology-intensive activities emerge only slowly.

This chapter closes with a discussion of how industrial policy is conducted today in the United States and in the European Union—two examples of high-level and complex coordination between public and private sectors. As mentioned in Section 27.3, the new provisions of the WTO require vision and creativity in designing and implementing industrial policies, with the two examples below describing how this can be done.

27.5.2 Industrial Policy in the United States

The United States has put in place a massive and coherent framework of modern industrial policy (Bianchi & Labory 2010; Keller & Block 2015). At some level, the United States represents the standard of market liberalism. However, government agencies and policies play a critical role in fostering innovation and competitiveness in the United States. The model of government action does not conform to the centralized models of industrial policy that dominated academic and policy debates in the 1980s and 1990s. Rather, the US developmental approach is sharply decentralized, with a great number of loosely coordinated and occasionally overlapping agencies and policies supporting economic dynamism (Keller & Block 2015). The term ‘industrial policy’ is perceived with suspicion and even the relatively more progressive Obama administration shied away from the term, as reflected in policy documents that made a sharp distinction between ‘innovation’ and ‘industrial’ policy, insisting that the former is necessary, while the latter should be avoided. This is to a large extent misleading and obscures the tremendous impact of the government in fostering innovation and competitiveness in the United States. US government strategies put R&D and human capital as the main drivers of the competitiveness of US businesses, especially in the development of new sectors, as a source of new jobs, in providing opportunities for the restructuring of old businesses, and in providing economic leadership in key sectors. The United States has in place a series of well-defined industrial policy instruments that include (Keller & Block 2015, Table 9A.1) fiscal incentives, investment attraction programmes, training policies, infrastructure support, trade measures, public procurement, financial mechanisms such as loans, and industrial restructuring schemes. In terms of amount, the scale of government spending dwarfs that of most developed nations and certainly developing ones.¹² Overall, the US government plays a critical role in both creating and supporting these innovative and industrial networks in regions like Silicon Valley and Boston’s Route 128.

The US legislative framework is supportive of the coherence of industrial policy between the State and Federal levels. As an example, the Federal Technology Transfer Act of 1986 assists in transferring technology developed by federal programmes into States’ activities. The Act requires researchers receiving federal funding to transfer their innovative technologies to industries, universities, and State and local governments. The US industrial policy system shows that government programmes and funding have been critical for small- and medium-sized firms, as well as for university laboratories that have been central to drug discovery and development processes. Even large firms have reinforced or

¹² In the 2010 fiscal year, the ‘base’ budget for the Department of Defense alone was about \$530 billion and the National Institutes of Health—the civilian agency with the largest research and development budget—had expenditures of \$31 billion. Even the modestly funded (by US standards) Small Business Innovation Research (SBIR) programme, which strongly contributes to enhancing entrepreneurial dynamism, dispenses some \$2 billion annually (Keller & Block 2015, p. 221).

entrenched their positions through interactions with the state. These firms are not entirely subject to—nor did they arise from—free-market competition.

The evidence indicates that the government plays a substantial role in spurring innovative dynamism across a variety of industrial sectors and its role in these networks is not limited to funding. The US government has been able to effectively address collaborative efforts through a series of policy and programmatic innovations that have shifted its role in the US innovation system. During WWII, the government took a very strong role in supporting military R&D and later in funding basic research for scientific discovery. Some of those initial policy pillars remained in place, but the system evolved in ways that pushed federal agencies towards increasing support for a range of innovation and industrial activity that go far beyond basic research. Four primary policy innovations helped shift the direction of the US innovation system: (i) the Defense Advanced Research Projects Agency (DARPA) model; (ii) national research laboratories; (iii) public–private partnerships; and (iv) demand-side measures. These are diverse and decentralized but connected by their evolving roles as organizational adaptations that foster technological dynamism, and, when effective, correct both market and network failures.

Finally, the United States has in place a series of instruments that ensure the coherence between competition and trade policy with a strong support of domestic industry. The three main instruments are specific provisions in trade policy, government procurement, and the legal framework for intellectual property rights (Bianchi & Labory 2010).

27.5.3 Industrial Policy in the European Union

The development of industrial policy in the European Union (EU) has been a long process beginning with its formation in the 1950s (Farla et al. 2015). The idea of a common market, set for completion in 1992, appealed to the idea of creating a framework with conditions that ensured universal access to markets. This was embodied in efforts to level the playing field—the notion that firms from all countries should have an equal opportunity to enter the national markets of member states. This involved the removal of both formal barriers to trade between nations and national policies to protect or favour domestic firms. The completion of the common market had therefore, to cope with a large variety of national policies, often related to industry. The attitude towards industrial policy changed gradually in most member states. Still today, a complex set of interactions between the EU and its member states dominates the industrial policy mix. The European Commission (EC) has also outlined several reasons for a more active industrial policy.

The context in which the term structural change is used in EU policy documents includes broad trends with deindustrialization in some countries and industrialization in others, as well as the rise of particular sectors, mostly associated with high-technology activities. The term competitiveness refers to the idea that enterprises in the EU cannot always draw upon high-quality resources or that these resources are more expensive than in other parts of the world. At the level of the EC, these justifications for industrial policy (i.e., the need to restructure the economy and the desire to have a level playing field) have led to a complicated policy mix and types of tools which can be classified into three broad categories. The first are framework aspects that affect the general environment in which firms operate, including policies aimed at the general working of markets, which have been very important in EU history and competition policy. The second are horizontal industrial policy measures that take a more active stance towards firms, with examples being subsidies and

tax incentives aimed at nurturing investment—either in general or in specific activities related to technology such as R&D—and providing risk-capital and other measures to stimulate entrepreneurship. The third category is vertical industrial policy targeted at specific sectors and therefore most directly associated with the process of structural change. It includes technology policies aimed at facilitating the regional clustering of firms. Although the EU uses mostly horizontal tools, vertical tools are also widely used as a defensive strategy to protect declining industries. Moreover, the emphasis on innovation and knowledge also implied a move away from pure horizontal measures in industrial policy, both at the level of the EU and member states, into what has been called a ‘matrix organization’ of industrial policy. Like the United States, the EU has in place a myriad of industrial policy tools, some of them at the EU level and some at the national level (Farla et al. 2015), with the following being most prominent: (i) trade policy; (ii) investment policy; (iii) regional policy; (iv) science, technology, and innovation policies; (v) higher education and training policies; (vi) public–private partnerships; and (vii) promotion of SMEs.

Another major factor in EU industrial policy is the notion of social cohesion. This is mostly used in a geographical dimension and refers to the idea that differences, mostly in living standards and employment rates, should not be too large across the EU’s regions. To reduce disparities, the EU set up the Structural Funds in 1975. As the EU has expanded eastward, the number of regions qualifying for Structural Funds has greatly increased and funds are now a major input into industrial policies in Central and Eastern Europe.

In summary, industrial policy in the EU can be best described as a mix of horizontal and vertical measures. The latter are reminiscent of policies often applied in a development context. Their justification in the EU comes from an emphasis on structural change as a driving force in the global economy and the need conceived by policymakers for firms to adapt to this. The vertical dimension of EU industrial policy is strongly associated with the emphasis on knowledge and innovation and on regional cohesion.

In 2000, the EU launched the Lisbon strategy, a complex programme for industrial development with the objective of revitalizing the European economy in the context of the monetary union and the enlargement to Central and Eastern European countries. The Lisbon Strategy was also formulated to fight unemployment and low growth rates and to exploit the potential of globalization and the knowledge-based economy. The way to achieve the latter was by integrating R&D under a common European Research Area, stimulating research in firms and universities, and by creating a conducive environment for innovative start-ups. When it became clear that the 2010 target would not be reached, the Lisbon Strategy was replaced with ‘Europe 2020: a strategy for smart, sustainable and inclusive growth’, launched in April 2010. The plan renewed the Lisbon agenda but proposed new ways for its achievement.

A key objective of Europe 2020 is to increase the EU’s average employment rate from 69 per cent to 75 per cent, to invest 3 per cent of the EU’s GDP in R&D, and to reduce greenhouse gas emissions by 20 per cent by 2020. As it does not target specific sectors or activities, Europe 2020 complements horizontal interventions with vertical ones and thereby follows the EU’s tradition of industrial policy.¹³

The main objectives of the horizontal element of Europe 2020’s policies are: (i) improving the conditions for industry by ‘smart regulation’ and better access to finance; (ii) strengthening the single market through increased legal harmonization, standardization, improved infrastructure, better management of intellectual property rights, and an active

¹³ These objectives will likely have to be revised in the light of the COVID-19 pandemic.

competition policy; (iii) promoting excellence in education and research; and (iv) encouraging industrial modernization through resource-efficient production, sustainable practices and environmental technologies, and restructuring companies hit by an economic crisis.

‘Smart specialization’ is particularly prominent among the new policy ideas that Europe 2020 promotes. This concept starts from the notion of local clusters of firms and other organizations—especially knowledge-based firms and organizations—working together in regional clusters to improve industrial competitiveness. By bringing together resources and expertise, and by fostering cooperation among businesses, public authorities, and universities, the approach allows policymakers to better understand both the needs of industry and new ways to provide specialized industrial support.

27.6 Conclusion

This chapter has traced changes in economic thinking since WWII, with special reference to structural transformation and industrial policy. Development economists of the post-WWII generation believed in the idea that structural change, in particular the need to industrialize, was the essence of economic development. They also thought that the state had to play a key role guiding the industrialization process (for example, through a ‘big push’ plan) because the private sector was weak and because there were market failures. These ideas were widely extended among many developing countries (with nuances and degrees). Many implemented sector strategies that came to be known as ‘industrial policies’. These involved selecting specific sectors, and nurturing them with subsidies and other types of assistance, against foreign competition. The rules of the game at the time allowed these practices.

By the 1960s, and especially the 1970s, it became clear that this path to development was problematic. Many examples across the world showed that developing countries were plagued with government failures, price distortions in wages, interest rates, and exchanges rates, as well as with rent-seeking. Likewise, the implementation of national plans was difficult as a result of accountability problems and control of bureaucracies, corruption, nepotism, and other malpractices. The record showed that few of the poor countries that embarked on a ‘big push’ had actually registered high growth. This led to a disillusionment with the state as an economic agent.

During the 1970s and 1980s, a new school of thought advocated a much lesser role for governments. With it, the emphasis on structural transformation declined, and the use of industrial policies was severely questioned. As a result, during the 1970s, 1980s, and 1990s, there was a change in emphasis from ‘market failures’ to ‘government failures’. The idea that governments are not necessarily well informed about the nature of a given problem and, especially, about the consequences that its actions could have, became widespread.

Perhaps nobody noted at the time that a small group of economies in East Asia (all of them very poor after WWII) had started growing very fast by industrializing and exporting, and with the state playing a very important role. The economies were Japan, Singapore, the Republic of Korea, and Taiwan POC. Although mistakes were made, there is no doubt that, overall, state intervention, planning, and guidance was key to their fast industrialization and consequently, to the transformation of their economies. The chapter has reviewed the experiences of Singapore, the Republic of Korea, and Taiwan POC, and argued that these economies used widely and wisely the tools of industrial policy to solve the market failures that make industrialization a slow process. These economies started their industrialization under import-substitution regimes but by the mid-1960s switched to export-oriented regimes. Governments provided companies with incentives, but these had to be used to upgrade and

compete internationally. Their focus on learning and on accumulating capabilities was key to diversifying and upgrading the economy. The experience of most Latin American countries, and of India, also reviewed in the chapter, points to a very different experience.

Concomitantly with changes in economic thinking since the 1970s, the creation of the WTO in 1995 brought important changes to the policy environment. WTO restricts the use of selective subsidies. For this reason, many (in developing countries in particular) criticize this institution, as its rules seem to prevent developing countries from implementing industrial policies.

The reality is somewhat different. Indeed, a number of provisions in the WTO rules deal with the various measures that member states can use to protect domestic suppliers and promote exports and technology transfer. WTO rules also allow countries to promote their industries, including the manufacturing sector, in particular under the umbrella of advancing science and technology (e.g., by setting up technology parks). All this means that the WTO is sufficiently permissive with developing countries.

It is in this context that advanced economies operate today. The chapter has reviewed the experiences of the United States and of the EU, and shown how both make extensive use of industrial policy in very complex ways, within the wide boundaries that WTO permit.

Industrialization, and the transformation of the economic structure (i.e., workers migrating out of agriculture; diversification and upgrading), are still today as important for development as they were after WWII. Certainly, the context has changed, e.g., the entry of China and India since the 1990s, technological changes, or the spread of global production networks, and consequently the definition of industrialization should perhaps be broadened. The point, nevertheless, is that, as a result of this new environment, many developing countries around the world see the need to use industrial policy to industrialize, change the structure of their economies, and achieve rapid growth.

Today, the term industrial policy is better understood as a variety of public actions aimed at guiding and controlling the structural transformation process of an economy in the direction of increasing its complexity. Public actions are multiple. They vary from those regarding the rules of competition to those aimed at favouring the participation and performance of particular individuals and firms.

The problem many developing countries face today is their poor understanding of these changes and the lack of a vision and creativity to design comprehensive industrial policies within the WTO parameters that go beyond the use of subsidies. The challenge for many developing countries in the coming decades will be to formulate such a vision, which should include a modern system of incentives to address market failures, cooperation between public and private sectors, and a focus on learning. This is what we refer to as *modern industrial policy*. This will be the only way to diversify, upgrade, and compete in today's world.

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