

Towards a New Industrial Policy for Structural Transformation

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15.1 Introduction

The case of South Africa demonstrates why structural transformation is so important and yet so difficult to achieve. Moving to higher value-adding and more sophisticated, diversified economic activities is at the heart of a resilient and healthy economy which enables its citizens to realize their full potential. It involves investment in a wide range of productive capabilities for these economic activities to develop. The economic and social implications of the Covid-19 pandemic, which are still unfolding at the time of writing, make the building of a stronger, more diversified economic base even more imperative. It should also be self-evident that the structure and nature of production need to be environmentally sustainable and not exacerbate climate change.

Structural change (or the lack of it) is determined by the presence (or absence) of complex and interdependent processes of learning and investment in industrial ecosystems, specifically the development and accumulation of productive capabilities across sectors, organizations, and institutions. These processes require making the appropriate linkages among productive activities to effectively engage with technological change, notably digitalization, in order to integrate into global value chains (GVCs) in ways that support local capabilities development. In turn, the healthy development of the industrial ecosystems requires appropriate institutions and sound industrial policies as part of the country's political settlement. The political settlement is understood as the compromises reached between powerful groups in society which set the context for institutional arrangements and other policies, as well as their effectiveness and enforceability.

South Africa is an important case study of the challenges faced by middle-income countries in pursuing structural transformation. By the 1990s, it had developed strong productive capabilities in some industries, largely as a result of the support for industries deemed strategic under apartheid. The economy was rapidly opened up in the 1990s, with deep trade liberalization (Roberts, 2000;

Erten et al., 2019). However, despite industrial policies that have sought to promote manufacturing, the deindustrialization process that began in the early 1980s has not been reversed, but has actually continued, as discussed in Chapter 11. And, within industry there has been a persistent bias towards heavy industry and an overall failure to diversify (Chapter 2).

The contributions to this book explore the changes over three decades in key industry groupings, locating the South African industry experience in an international context. Collectively, the chapters analyse the linkages and interdependencies across activities, and point to the need to transcend the traditional 'manufacturing' and 'services' divide to understand the development of productive capabilities in industrial ecosystems. Issues of technological change, productive capabilities, and the digitalization of production are considered in cross-cutting chapters, along with the record on black economic empowerment, inclusion, inequality, and sustainability.

South Africa has largely missed out on the gains from international integration in the form of 'learning through exporting' in diversified manufacturing industries. Instead, there are 'islands' of export capabilities, such as in mining machinery, which have not been built upon as catalysts of wider structural transformation. For instance, while the auto sub-sector—which has been highly incentivized under successive industrial policies—stands out in terms of the value of exports, these have been limited to fully assembled vehicles and a narrow range of components (Chapter 5). Minerals, along with basic metals and basic chemicals, remained almost as important in the country's goods exports in 2019 as they did twenty-five years earlier. There are, however, a few counter-examples, led by high-value fruit exports and niches within machinery and equipment, which demonstrate a possible alternative path (see Chapters 3 and 6).

In services too, there has not been a sustained trend towards upgrading and towards stronger integration with other sectors. There has been growth in lower-value, lower-productivity services overall, including those statistically classified as 'other business services' (which include activities such as security and cleaning services, see Tregenna (2010)) and retail. While financial services and communication services have also grown in value added, they have only recorded modest increases in employment, and have not played a sufficiently developmental role in supporting the growth of productive industries (Chapters 1, 2, and 10).

South Africa's poor performance must be understood in the context of the evolving political settlement. The compromises reached in 1994 reflected, in part, the strength of established business groups. While policies such as tariff liberalization (leading to increased market competition from imports) and competition law enforcement might have constrained market power to an extent, there has been a subsequent failure to enforce industrial policy levers to ensure that rents have been productively reinvested in expansion and upgrading.

As with many other middle-income countries, in South Africa macroeconomic policy has emphasized 'stability' as part of the conditions for business confidence,

which was supposed to underpin investment in the model promoted by the ‘Washington Consensus’ International Financial Institutions (Padayachee and Van Niekerk, 2019; Michie, 2020). Achieving this stability meant cutting the fiscal deficit and reducing inflation through higher interest rates under inflation targeting. In the first decade of the 2000s, high real interest rates coupled with natural resource earnings led to a strong, overvalued currency and hence a growing trade deficit exacerbated by burgeoning credit-fuelled consumer spending. The unsustainability of this path became glaringly obvious with the 2008 global financial crisis and the end of the commodities boom shortly thereafter.

As could be expected, the lack of fundamental distributional change—and the limited nature of trickle-down benefits—meant growing pressure to accumulate wealth by leveraging state influence. The vertical fragmentation of control within the ruling coalition of interests resulted in competition for extractive rents from local to national levels of government and in state-owned corporations (Makhaya and Roberts, 2013; Borat et al., 2017). In addition, a horizontal fracturing also occurred within both the labour and business constituencies. The fragmentation of government has made the development of a coherent strategy to reverse the trend, including an effective industrial policy, very difficult (see Chapter 2, and Borat et al., 2014 on policy coordination in South Africa).

This concluding chapter looks at the issues that have emerged in the book that can inform a necessary change in direction for middle-income countries such as South Africa. The chapter starts with a discussion of the foundations for structural transformation illuminated by the industrial ecosystems framework and the in-depth industry analyses. The key ‘gaps and traps’ which need to be confronted are then identified. This is followed by a focus on the key considerations for industrial policy for South Africa and other middle-income countries facing similar challenges. The chapter concludes with a call for the need to confront the implications of climate change and Covid-19 as an essential part of achieving sustainable transformation.

15.2 Key Foundations for Structural Transformation to Build Industrial Capabilities: Understanding Industrial Ecosystems and Value Chains

15.2.1 An Industrial Ecosystems Approach

An industrial strategy that seeks to influence value creation and capture dynamics to achieve structural transformation must locate firms and their performance in terms of industrial ecosystems to allow for the consideration of all the relevant factors. The industrial ecosystems perspective allows for building an inductive and context-specific understanding of the structure of ‘the product space’

emerging from the intersection of key sectoral value chains and different capabilities (Andreoni, 2018).

An approach to shape industrial ecosystems starts from the main units of analysis being the production capabilities, key enabling technologies, and the value chains, while taking into account the distribution of power. Within each industrial ecosystem, there are a number of value chains around which the productive activities (including manufacturing and services) are structured. Each of these value chains involves several productive organizations whose activities are made possible by their capabilities across different technology platforms.

The technology platforms integrate different types of technologies and technology systems. The increasing digitalization of the economy has dramatically reshaped these technology domains and the capabilities required by productive organizations to be competitive in the market. This means that some of these technology platforms underpin production processes of closely related industrial sub-sectors as well as different product-value segments within the same industrial sub-sector. Technologies are thus linked by a set of dynamic interlocking relationships spanning across sub-sectors and value-product segments.

Learning and capabilities development is the result of purposeful processes of trial and error, with investments in knowledge acquisition, reverse engineering, technology absorption and adaptation, and the scaling-up of production. Opportunities are not simply discovered but need to be created through interdependent relationships between firms and with public institutions in a dynamic ecosystem (see Chapter 1). The core underpinnings for these processes of learning and capabilities development require a coalition of interests which value the necessary longer-term investment in shared facilities, rather than short-term rent seeking (Khan and Blankenburg, 2009; Chang and Andreoni, 2020; and Chapters 1, 14).

15.2.2 Insights from Manufacturing Industries in South Africa

The studies of key industry groupings presented in the book reveal the importance of understanding capabilities and interdependencies on the ground, as well as how these interact with the dominant interests. They reflect an interesting mix of continuities and change.

The metals, machinery, and plastics industries exemplify the lack of structural transformation at the heart of the South African economy, as well as pointing to areas of potential. Over three decades, there have been major changes within industries. These have seen the internationalization of the industries in terms of ownership, technologies, and trade. However, the capital-intensive upstream basic industries were even slightly more—rather than less—important in

manufacturing value added in 2019 than in 1994.¹ This reflects the weak performance of diversified manufacturing industries and contrasts with the more successful middle-income countries where manufacturing has continued to lead in building industrial capabilities, such that countries have escaped the ‘middle-income technology trap’ (Andreoni and Tregenna, 2020; and Chapter 11).

The dominant basic steel company in South Africa, now part of the largest global steel producer ArcelorMittal, has continued to receive support, including in the form of tariff protection. The upstream basic steel sub-sector, in which it is the leading producer, has continued to record a large trade surplus. By comparison, the downstream fabricated metal products and machinery manufacturers have recorded growing trade deficits and only islands of competitive capabilities, in a similar continuity (Chapter 3). The main basic chemicals company, Sasol, has performed well in South Africa while continuing to benefit from a favourable regulatory dispensation in liquid fuels and natural gas, and has used the profits to invest in less successful offshore ventures (Mondliwa and Roberts, 2019; and Chapter 4). The downstream and diversified plastic products sub-sector has performed very poorly, with growing trade deficits (Chapter 4). Growth in downstream activities creates employment and has strong linkages to advanced capabilities such as in design and engineering services. Yet, there have not been effective industrial policies to leverage off the existing strong capabilities in segments of machinery production, led by that for the mining industry. This contrasts with a number of other countries where initiatives have successfully built industrial clusters in machinery and equipment (Chapter 3).

Along with machinery, plastic products are a critical industry for adopting and adapting to digitalization. The sub-sector brings together advances in materials science, design, additive manufacturing (3D printing), and integration across firms and along value chains to manufacture diverse components and final products. The plastic products sub-sector in South Africa has performed poorly, similar to the average for all diversified light manufacturing in the country (Chapter 4). In other words, there has been a regression, rather than progression, in terms of structural transformation. The reasons for this are a combination of a failure to focus on the clusters of capabilities and domestic linkages which the industry requires to meet the challenges of international competitiveness, coupled with a need to address issues of direct cost competitiveness. In other middle-income countries with dynamic industries, strong linkages with multinational corporations have been leveraged to support capabilities development (Chapter 4).

¹ The share of basic metals industries (ferrous and non-ferrous) in manufacturing value added increased from 7.0 per cent in 1994 to 7.4 per cent in 2019 and the combined share of refineries and basic chemicals sub-sectors increased from 7.9 per cent to 13.9 per cent.

In terms of structure, the auto sub-sector in South Africa presents a contrast with the metals and plastics sub-sectors: there is a well-established downstream assembly of motor vehicles but very weak backward linkages into components production, where diversified industrial capabilities are developed (Chapter 5). Sharp reductions in protection to induce the original equipment manufacturers to focus on fewer models and increase scale did bring restructuring. A targeted strategy, the Motor Industry Development Programme (MIDP), incentivized the scaling-up and export of components. This had a measure of success in a few components, notably exports of catalytic converters. However, the overall picture after twenty-five years of industrial policies (including the Automotive Production and Development Programme (APDP)) has revealed a relatively large assembly industry with weak linkages into components (Chapter 5). The policies remained oriented in favour of the original equipment manufacturers (OEMs) and did not meet the challenges South Africa faces of being a small market in a global industry. This compares unfavourably with some middle-income countries such as Thailand. There, the balance has been in the other direction, with much strong clusters of components manufacturers and fewer models being assembled, but in much larger volumes than in South Africa (Barnes et al., 2017).

The South African fruit industry offers an interesting and important comparison (Chapter 6). In the absence of government targeting, key industry actors have coordinated effectively along the value chain to build the industrial capabilities required to deliver high-value fruit to export markets. This is particularly evident in citrus fruits, where industry bodies are relatively well organized and have brought in more participants, including smaller producers, while adopting improved technologies for higher-value niche products. When the apartheid-era agricultural boards were abolished in 1997, citrus growers formed the South African Citrus Growers Association (CGA) to continue to promote market access, research and technical development, and knowledge transfer. This included what became known as the Citrus Academy, which focused on developing a quality learning system for the industry and on improving access to skills development for all participants. The CGA was funded by voluntary levies paid by the growers, which later became a statutory levy to fund research and market access (Chapter 6). On the back of these investments, South Africa became the second-largest exporter of citrus in the world. In contrast, in other fruits such as avocados and berries, South Africa has not performed as well as there has been less success in broader industry accumulation of cross-cutting capabilities, such as in research and technical development to meet phytosanitary requirements for export market access. A range of other countries demonstrate the potential for stronger growth that can be achieved through realizing the 'industrialization of freshness' (Cramer and Sender, 2019; Cramer and Tregenna, 2020).

Overall, there has been limited collaboration for ‘learning’ and building capabilities in South Africa, due in part to the entrenched power of existing industry interests, and the consumption orientation of urban middle- and upper-income earners. As a result, there has not been the investment and effort required for processes of adopting and adapting technology for capability-building across related activities in industrial ecosystems. While successful industrializers have managed processes of international integration to build domestic linkages in local clusters of deepening capabilities (Lee, 2019), this has not been the case in South Africa. Notwithstanding small islands of excellence, overall, South Africa has been stuck in a middle-income technology trap with premature deindustrialization (Andreoni and Tregenna, 2020; and Chapter 11). Far-reaching liberalization has meant the economy is highly internationalized in terms of trade, ownership of businesses, and portfolio capital flows. This has translated not into substantial sustained growth in foreign direct investment and exports, but rather a volatile currency with periods of overvaluation in resource booms. Power has remained concentrated in core businesses which are now internationalized. The country has not been able to drive an agenda for structural transformation supported by a broad coalition of interests.

The vicious circles at work in South Africa point to the possible ‘traps and gaps’ facing middle-income countries, which must be confronted for sustainable structural transformation.

15.3 Obstacles to Acquiring Advanced Industrial Capabilities: Traps and Gaps

The challenges facing the ongoing acquisition of advanced industrial capabilities have changed with the internationalization of business, growth of GVCs, and increased trade in intermediate goods. Intermediate goods accounted for almost half of total world merchandise trade in 2018 (UNCTAD, 2020: 12). There is a number of vicious circles in which middle-income countries can get trapped. There are also gaps in the support required for businesses which need to be filled by targeted policies and institutions for industrial development (such as supporting skills and technology).

15.3.1 The Complexities of Building Local Capabilities and Linking into GVCs for Healthy Industrial Ecosystems

Building the linkages required to keep pace with technological change has become harder for middle-income countries in the context of increased global

concentration and changing patterns of the internationalization of business. When domestic industries do not move beyond producing at the relatively less technologically sophisticated levels of GVCs with low, and declining, shares of the overall value added, the economies get stuck in what Andreoni and Tregenna have called the ‘middle-income technology trap’ (Andreoni and Tregenna, 2020; and Chapter 11).

Countering this dynamic requires coordinated measures to shape the nature of articulation into the global economy—to deliberately build local linkages and thus achieve a measure of independence from the lead firms through stronger local ecosystems. This is at the heart of the challenges of structural transformation (Chapter 1). Participation in GVCs does not lead to upgrading and inclusive development outcomes ‘unless increasing shares of value added are created and captured domestically and are fairly distributed among different social groups’ (Ponte et al., 2019: 2). The initial integration into GVCs (the initial ‘in’ phase in Lee et al., 2018) has enabled international markets to be accessed by local producers, as the large firms governing the GVCs have relocated production to lower-cost sites around the world. While this has held the potential for learning-by-doing and upgrading of capabilities through GVC participation, the upgrading has largely not been realized in middle-income countries. There has also been ongoing dependence on the international lead firms. Instead, it has become evident that a partial de-coupling from the GVCs (an ‘out’ phase) is necessary if domestic production networks are to be built up; this enables the possibility of a subsequent re-integration into the GVCs, on different terms (Lee, 2019; and Chapter 13).

Examples of South Korea, Taiwan, and China demonstrate the value of the ‘out’ phase of local linkages for the outcomes of international integration in the 1990s and 2000s. Producers in these East Asian economies developed their own design and own brands—requiring local design, R&D, and marketing capabilities. Sadly, in these periods, South Africa, along with many countries in Latin America, failed to diversify and build capabilities. What happened instead was further international integration in the 2000s leading to a hollowing-out of industrial capabilities. This is reflected in the higher foreign value added in gross exports in South Africa and Latin American countries, compared with these East Asian countries (Chapter 13).

The exceptions in specific industries in South Africa and other middle-income countries reinforce these overall insights. For example, in mining machinery and equipment, countries such as Australia and Chile have built local production systems (Chapter 3). In agriculture, South African fresh fruit producers illustrate what can be achieved (Chapter 6). In the automotive industry, Thailand provides an example of strong backward linkages to components producers being built (Chapter 5). These are examples in which linking back from GVCs has seen the

substitution of some imports of sophisticated intermediate goods with local production, thus reducing the foreign value added in gross exports.

15.3.2 Technology Traps, Digitalization, and Skills

A set of alternative measures and institutions is required to avoid a trap in which industrial capabilities are persistently undermined. And, the coalitions of interest to support them need to be built and sustained. Sophisticated and diversified industrial ecosystems involve strong horizontal technology linkages fostered by robust support for institutions for R&D, design, testing, and prototyping. Skills development alongside organizational capabilities are also priorities, which have become even more important given the technological changes under way with wide-scale digitalization (Chapter 12).

There has been a lack of coherence between technology and industrial policies in South Africa, as in many other middle-income and developing countries. In South Africa there is also a gap in effective institutions of industrial policy and skills development. The opportunities and challenges of digitalization and other dimensions of the fourth industrial revolution make bridging this gap and the capability shortfalls even more essential. Otherwise, instead of achieving the necessary catching-up, South Africa and other middle-income countries risk being left even further behind.

Digitalization involves both incremental and disruptive changes with transversal technological developments which cut across industries. There are three particular aspects of this that have already impacted on structural transformation in middle-income countries such as South Africa. The first aspect is the deployment of digital technologies to integrate production within and across firms along supply chains, involving a stepwise change in coordination efficiency. Together with the extensive adoption of sensors, this allows for real-time monitoring of product flow and quality. Second, the combination of design software, additive manufacturing, and material science dramatically reduces the time to develop new designs and to customize these to requirements. Third, advanced manufacturing, automation, and robotics are changing production and patterns of comparative advantage.

These links to root capabilities in engineering, electronics, design, and data analysis mean that investment in the appropriate skills and organizational capabilities is essential for countries and firms to benefit from the digital dividend. The cross-cutting nature of these technologies means that it is imperative to have functional institutions that support domestic horizontal linkages. These institutions can intermediate and fill gaps along the entire innovation and production value chains.

Some of this potential has been realized in South Africa, evident in a few islands of success (Chapters 3 and 12). However, the overall lack of coherence, particularly between skills development policy and industrial policy, means that firms have often ‘privatized’ the necessary training, which implies a bias against smaller firms as well as a reduced portability of skills between firms. There needs to be a national system for adult education and training. The industry studies and firm-level evidence point to a major gap here, notably regarding the performance of the Sector Education and Training Authorities (SETAs). Similarly, rather than contributing to shared facilities and a local ecosystem for product development and testing, successful firms have established their own in-house capabilities or drawn on the remote facilities of foreign parents. Overall, the government’s technology and industrial policies have been fragmented and ineffective in ensuring a collective approach to structural transformation. The counter-examples, such as citrus (Chapter 6), reinforce the general picture.

Extensive company and industry-level evidence shows that achieving competitiveness is about understanding value chains and building clusters to address collective challenges in productive capabilities at different levels of the chain. In South Africa there have been very few cluster initiatives in the areas where structural transformation is strongly required. For instance, strategies to build downstream capabilities in the metals, machinery, and equipment industries, where South Africa already has a significant industrial base, have not been effective (Chapter 3). This is because of industrial policies being undermined by the influence of upstream firms (Chapters 8 and 14), the lack of coordination of policy levers across departments, and the inconsistency with macroeconomic policy. Furthermore, coordination with other areas, notably public procurement, has been lacking in design and especially in implementation.

The traps and gaps that have been identified here compound each other, and have transversal effects across firms. Individual decisions taken by a single actor—whether a firm or an institution of the state—can have implications for the competitiveness of entire production systems. As such, it is important that firms are not viewed in isolation, but rather as part of an industrial ecosystem of interdependent activities involving multiple heterogeneous actors which cooperate, compete, and co-evolve to create a web of complementary capabilities that supports innovation and continuous industrial renewal (Moore, 1993; Andreoni 2018).

15.3.3 The Political Economy of Structural Transformation

The ways in which industrial policy interfaces with powerful incumbents and, in turn, the way in which powerful organizations lobby different parts of the state

can result in an insidious vicious circle (Amsden, 1989; Andreoni and Chang, 2019). In South Africa, the extreme levels of concentration have been a key challenge for the enforcement of industrial policy as weak reciprocal conditionalities and the lack of policy alignment have resulted in the undermining of policy tools. The consolidation of unproductive rents and powerful positions have then further undermined industrial policy effectiveness (Chapter 14). This includes changes in procurement policies in South Africa in the late 1990s that prioritized narrowly defined value for money, essentially ruling out developmental impacts (Hirsch, 2005). The corporatization of network industries further encouraged under-investment in electricity transmission and the rail network for diversified exports as these all reduced short-term profit margins even while being critical for medium-term structural transformation (Das Nair and Roberts, 2017). At the same time, preferential terms for heavy industry users of energy, rail, and ports had been locked in, reinforcing the existing industrial structure.

Another compounding factor in South Africa has been the process of the fragmentation of the state, notably under the President Zuma administrations in 2009–18, where a proliferation of different departments and agencies following a raft of different policies resulted in overall policy incoherence. This made ‘state capture’ for rent-seeking easier and undermined the National Industrial Policy Framework (Bhorat et al., 2017; Zalk, 2017). Reversing this fragmentation and breaking the vicious circle to enable a coordinated industrial strategy is one of the key challenges which has faced President Ramaphosa since 2018. It means confronting the power of incumbents as well as rebuilding the state.

The structural transformation required to build diversified capabilities will self-evidently only be promoted and sustained if it is backed by a sufficiently strong group of constituencies. As, by its nature, this transformation will broaden the returns over time, this raises the question about the mobilization of support for the medium-term investments to support such transformation. This support is critical given the concentrations of incumbent power which may see their positions as being under threat.

Transformations are intrinsically related to inequality and power. Countries where strong local linkages have been built and the capabilities challenges have been overcome to support more diverse and sophisticated industrial activities also tend to have relatively more equal income distributions (Palma, 2019a). Conversely, those experiencing premature deindustrialization have had increasing levels of inequality (Baymul and Sen, 2019; Palma, 2019b). However, the extreme inequality of outcomes are themselves unsustainable, as seen in South Africa with the pursuit of rent capture through the state. This grew dramatically as high levels of inequality persisted in the 2000s, along with mass unemployment, even while aggregate levels of growth increased. The economy experienced deindustrialization

and a hollowing-out of capabilities with employment growth in low productivity services (Chapters 2 and 11).

The entrenched interests which are inimical to processes of structural transformation can be due to firms occupying quasi-monopoly positions where they are able to continue to extract profits from an inherited market structure with persisting barriers to the entry and growth of smaller rivals (Chapter 8). South Africa is an extreme case—with its high levels of concentration, the role of apartheid in supporting strategic firms and industries, and the legacy of this support (Buthelezi et al., 2019; Vilakazi et al., 2020; and Chapters 3, 4, 8, and 14). These businesses will naturally lobby vigorously to protect their narrow positions, even while some of the costs of a faltering development path will also fall on them. It has become evident that, in the early 1990s, some of the companies at the commanding heights of the South African economy had expected to make far-reaching concessions to support economic transformation. For example, the diversified mining conglomerate Anglo American was independently working out mechanisms for a redistributive tax, while Sasol was implementing a pricing structure designed to support downstream industries (Mondliwa and Roberts, 2019; Michie, 2020). These were not pursued when it became evident that companies would not be held to such measures.

Competition can discipline incumbents, with rivalry between firms further promoting productivity improvements as firms invest in upgrading and improving production capabilities in order to win market share. Competitive rivalry also relates to how easily new market participants can bring products and services to market including, in the South African context, the extent of meaningful participation by challenger black entrepreneurs. Conversely, the exertion of market power can contribute to inequality by facilitating a transfer from the poor to the wealthy in the form of management compensation, profits, and shareholder dividends emanating from anticompetitive conduct (Ennis et al., 2019). The South African experience demonstrates the problems of concentration and barriers to the entry and growth of smaller rivals and the over-reliance on competition law enforcement for making markets work and engaging with entrenched corporate power (Chapters 8, 9, 10, and 14). It should in fact be just one component that is integrated with other policy domains. Competition law enforcement cannot create competition in the face of barriers to entry and, working through legal mechanisms, it tends to be very slow (Roberts, 2020).

Industrial capability-building within and across firms requires a medium- to long-term financial commitment to investments. This is undermined where shareholders are focused on short-term returns and predatory value extraction practices (see Lazonick and Shin, 2020; and Chapter 10). The dramatic growth of financial services in South Africa has not been accompanied by higher levels of productive investment and instead reflects a balance of influence in favour of

short-term returns (Chapter 10). This is particularly evident in the reliance on foreign portfolio and direct investment flows in the 2000s, which in turn pushed macroeconomic policy in the direction of high interest rates to continue attracting these footloose inflows. The policy stance was linked to a focus on macroeconomic ‘stability’ (narrowly understood as low inflation), as the central criterion for securing putative business confidence. The stance amplified the effect of the commodities boom in the 2000s as inflows strengthened the currency, making imports cheap, and fuelling consumption. Following the 2008 global financial crisis, the narrow inflation focus of monetary policy, with higher interest rates as a key tool—and even while the drivers of higher prices were decisions over administered prices—simply led to prolonged austerity and entrenched deindustrialization. A different settlement requires policies that are oriented to investment by, and in, smaller producers, entrepreneurs, and workers. It also needs to promote a variety of corporate forms of ownership, including employee-owned businesses, and mutuals (Michie, 2017).

Although not yet fully evident at the time of writing, the impact of the Covid-19 pandemic has further pointed to the need for a long-term perspective on building local capabilities; this is discussed further at the end of the chapter.

15.4 Towards a New Industrial Strategy

Five important lessons have been identified in the book from the South African experience. While there are aspects that are specific to South Africa, these have broader relevance for middle-income countries.

First, premature deindustrialization needs to be arrested and reversed, including the growth and upgrading of the manufacturing sector.

Second, the technological changes under way with the digitalization of economic activities mean that developing an industrial ecosystem of firms with effective links to public institutions is critical for increasing domestic value addition and strategic integration in international value chains.

Third, inclusive industrialization depends on achieving structural change, dismantling barriers to entry to allow a new system of accumulation to emerge. This is particularly important in South Africa, with its extraordinarily high levels of inequality, but also for middle-income countries more generally.

Fourth, structural transformation depends on a country’s political settlement, specifically whether coalitions of interests that support the organization of industries for long-term investment in capabilities hold sway.

Fifth, purposive and coordinated industrial policies, as well as coordination between industrial policy and other relevant policy domains, are central to achieving these goals.

Along with other middle-income countries, South Africa needs an economy that is more dynamic, competitive, and sustainable, where innovation and productivity lead to better jobs with high wages, and where entry is supported as part of ensuring wider participation. For this to happen, there needs to be a new vision for reindustrialization under a political settlement that prioritizes long-term investment in productive capacity and rewards effort and creativity rather than incumbency. Rather than settling for piecemeal initiatives, placing re-industrialization and industrial policies at the centre of the country's development strategy requires a broad rethink.

Key considerations for an industrial strategy approach that is in support of inclusive (re)industrialization and structural transformation are set out below.

15.4.1 Inclusive Industrialization and Confronting Concentration

Manufacturing-driven structural transformation decreases inequality through learning, the creation of higher-earning jobs, and sharing in productivity improvements and linkages across the economy (Baymul and Sen, 2019). Along with high-productivity services in areas such as design and engineering, this is an important component of healthy industrial ecosystems. These should be accompanied by stronger worker protections, a system of lifelong learning and adult education, and equitable earnings in terms of race and gender, reflecting skills and employment opportunities. Such a trajectory is consistent with a diverse range of enterprises, with profits being earned from effort and creativity, and lower levels of concentration of ownership and control.

The negative implications of economic concentration, of which South Africa is an extreme case, are now well recognized (Buthelezi et al., 2019). While competition law enforcement can address the conduct of existing large firms and evaluate mergers between them, it does not create more competition and wider participation in the face of barriers to entry (Vilakazi et al., 2020). A broader competition policy that forms part of industrial policy is required (Mondliwa et al., 2021). In South Africa, the reductions in barriers to the entry and expansion of challenger businesses, especially black entrepreneurs, is a critical consideration. Industrial policy interventions can address vertical integration and be coupled with development finance to enable the investment in capabilities and learning necessary to grow efficient businesses (Chapter 9). Effective regulation for wider participation is an important aspect, especially in sectors where there are strong network effects, such as telecommunications. The analysis of barriers to entry has further highlighted the importance of access to markets for rivals. One example is a possible 'supermarkets code', where retailers commit to open up shelf space to smaller businesses, and engage in supplier development initiatives (Chisoro-Dube and Das Nair, 2020).

Black economic empowerment (BEE) is another important factor in inclusive industrialization in South Africa. BEE was adopted through a combination of policies, regulations, codes, and charters to aim for wide-scale economic inclusion of the historically disadvantaged population in ownership, management, and through skills development initiatives (Hirsch 2005; Bhorat et al., 2014; and Chapter 9). The model did not, however, fundamentally transform the concentration of ownership and control at the core of the economy (Ponte et al., 2007; Mondliwa and Roberts, 2020). Instead, through incentivizing large incumbents to bring influential black shareholders on board it has reinforced the political influence of the large companies and the financial sector (Chapters 9 and 14). While it has brought some racial diversification of the middle class and of management and ownership, and some growth of black-owned supplier firms, it has not fundamentally opened up the economy to wider participation, more effective competition, and investment by a more diverse set of businesses.

A focus on empowering participation will combine breaking down barriers to entry and opening up routes to market, together with more effective land reform, access to finance for wealth creation, and skills development (Vilakazi et al., 2020; and Chapter 9). This would also enable enterprises with diverse ownership models, such as mutuals and employee partnerships, to compete effectively and generate returns for a wider group of stakeholders (Michie, 2017; Michie and Padayachee, 2020). Only by bringing the core components of value creation together to reward effort, investment, and innovation can the economy be opened up, leading to higher levels of overall growth and development, and greater inclusion.

15.4.2 Building a Broad Coalition for Reindustrialization

South Africa's course for reindustrialization and inclusive growth needs to be based on a broad coalition which has an interest in, and which focuses on, productive investment and widening economic participation. The narrow coalition of elites which has largely determined the economic policy agenda has undermined investment and reinforced, rather than changed, the existing structure of economic power. Reindustrialization requires, among other measures, large-scale public investment to provide effective public transport and education for economic activity, alongside long-term private investment and entrepreneurship.

Current levels of poverty and inequality are unsustainable, and the youth are bearing the brunt of the alarmingly high unemployment rates. The creation of jobs and livelihoods is a priority for avoiding further unravelling of the social fabric and needs to be placed at the centre of a new social compact (Chapters 8 and 14). Though the current political settlement in South Africa has

accommodated the small black middle class to an extent, the burden of what has been referred to colloquially as the ‘black tax’ (in which black professionals provide significant financial support to extended family) is just one reminder that things need to change more broadly. Higher earnings for a small minority of the black population is not a sustainable solution.

So what is the new political settlement that can inform the new deal to ensure that it delivers real economic transformation? A new political settlement for industrialization must speak to and mobilize previously excluded key constituencies (Chapter 14). In South Africa these include the industrial working class (represented in industrial trade unions) through effective skills upgrading and investment, productive black entrepreneurs through opening up economic opportunity (Chapter 9), and producers of high-value agricultural crops, as the experience with citrus shows is possible (Chapter 6).

Naturally, no such coalition is fixed over time and the managing of conflicting claims is a central dimension of industrial policy. There would also be points of contestation within such a coalition, such as conflict between industrial workers and capitalists over wages and other issues. Nonetheless, a coalescence of interests and, crucially, interventions, is needed to drive an agenda of reindustrialization and structural change. The settlement must speak to the aspirations of key constituencies, especially in urban areas, where the majority now live and where industrial agglomerations are built.

15.4.3 Incentivizing and Investing in Capabilities Development

The fourth industrial revolution is bringing the role of technology in moving countries forward into sharp focus. The unprecedented pace of the development and adoption of new technologies, and the systemic impact of these technologies, poses both challenges and opportunities for middle-income countries (Andreoni and Roberts, 2020; Andreoni and Tregenna, 2020; Sturgeon, 2021; and Chapters 11 and 12).

Digital technologies, in particular, tend to have a transformative impact on the existing technology platforms. Digitalization can widen the technology gap, or it can provide a bridge for countries to catch up. It means that industrial policy, combined with effective economic regulation, is more important than ever. Industrial economies have historically targeted and shaped the development of new industrial ecosystems by prioritizing certain technologies, as well as emerging sectors and related markets, in an entrepreneurial role for the state (Mazzucato, 2013; and Chapter 12).

While the apartheid government heavily supported innovation and industrial development in organizations related to its own objectives (such as military

technologies), post-apartheid governments have had more broad-based innovation strategies. Technology is, however, embodied in investment, and the low level of investment in the economy means poor progress in technological upgrading. A strategy for building capabilities must bring together technology policy, investment, and industry incentives to present a coherent path for firms. It also requires rethinking the skills and training system to provide for lifelong skills development that is appropriate to the challenges of digitalization.

Incentives, technological change, skills development, and development finance therefore all need to work together, along with cluster initiatives at the local level. Cluster initiatives have a key role to play in linking skills development and shared facilities for technological capabilities such as design, testing, and prototyping. They can also support firms to pool resources, creating economies of scale and developing supply markets. Understanding how collective action can be supported for private investment in capabilities by groups of firms is central to building dynamic industrial clusters, together with effective institutions of industrial policy. In the few cases where clusters have been successful, local and provincial governments have played a leading role, given the geographical embeddedness of cluster initiatives—and they can continue to do so.

In order for government incentives and other support measures to have a wider impact on the economy, it is necessary that incentive packages are designed with robust and enforceable conditionalities so that deeper local capabilities are developed. The conditionalities need to ensure that the industrial policies do induce decisions that are consistent with the productive changes required for real transformation and are not another form of extractive rents (Chapter 14). On the contrary, conditionalities should ensure that rents are ploughed back into productive investment in support of expanded production and upgrading.

15.4.4 Understanding and Pursuing Regional Opportunities

The industrial ecosystems perspective proposes that geographical boundaries of ecosystems be defined by the value creation process and the structure and evolution of interdependencies, rather than national borders (Andreoni, 2018). The real boundaries of an ecosystem can therefore be identified by tracking the network of value-creation linkages involving organizations around and beyond national borders. In South Africa's case, this means that some of the ecosystems may span a number of countries in the Southern Africa Development Community (SADC). Industrial strategies of SADC countries would thus be more effective if they considered the interdependencies of organizations operating across borders. For example, regional value chains have been an integral component of Asia's rapid industrialization (Scholvin et al., 2019).

The SADC region has been less successful in developing regional value chains even while an industrialization strategy does exist. Partly this reflects the lack of commitment to a shared regional vision for industrial development across Southern Africa, even with the wider Southern African region being the most important market for many of South Africa's diversified products and services (Arndt and Roberts, 2018; Nkhonjera and Roberts, 2020). However, companies are integrating across the region, such as in the case of supermarkets, agroprocessing, and mining equipment supplies (Das Nair et al., 2018; Fessehaie and Rustomjee, 2018; Bosiu and Vilkaži, 2020). Yet, the regulatory and policy framework remains uncoordinated in practice. Moreover, regional value chains are crucial for resilience and building capabilities, especially in the context of climate change (Ncube, 2018; Paremoer, 2018; Bell et al., 2020).

15.4.5 The Climate Crisis and Environmentally Sustainable Industrialization

The climate crisis has urgent implications for what is manufactured as well as how it is produced. Whereas advanced economies were able to industrialize with little regard to the effects of industrialization on climate change (and should now bear the burden of responsibility), this is now an urgent problem facing all countries and economies. Developing countries need to demonstrate leadership in charting a path for structural transformation and industrialization that is consistent with a green new deal (Pollin, 2020). Given the climate change imperative, structural transformation is even more important for ensuring shifts to more sophisticated activities with scope for cumulative productivity increases at lower levels of CO₂ emissions. The alternative is competition in industries such as basic metals and basic chemicals on the basis of cheap energy and old dirty technologies. South Africa's dependence on these has led to it being one of the highest emitters of CO₂ per capita among middle-income and developing countries, although still behind oil producers and many industrialized nations.² More technologically advanced production can increase value added in middle-income countries, at lower levels of emissions (Avenyo and Tregenna, 2021).

South Africa has developed policies on labour standards and environmental sustainability. These have been in line with international moves to incorporate sustainability and labour protections into the various international trade rules and codes adopted by lead firms in GVCs. However, the changes driven by international lead firms have typically related to placing greater requirements on suppliers to meet standards. They have in fact reinforced the governance of value

² See <https://www.wri.org/blog/2020/02/greenhouse-gas-emissions-by-country-sector>, accessed 23 October 2020.

chains by lead firms in industrialized markets, placing even greater cost burdens on suppliers in developing countries like South Africa (Ponte, 2019; and Chapter 7). The centrality of industrial policy in the 'green transition' needs to tackle the power dynamic in GVCs, as advocated in this book.

South Africa and other middle-income countries therefore need to urgently shift to an industrialization path that is aligned with a green transition (Altenburg and Rodrik, 2017; Ashman et al., 2020; Montmasson-Claire, 2020; Pollin, 2020). This requires the identification of emerging opportunities, and the building or adapting of firm-level capabilities to take up those opportunities. A just green transition implies taking account of the emissions in consumption, whether locally produced or imported. Including the climate impacts into assessment of production means that re-industrializing countries can more effectively target being competitive exporters of those products where demand will increase, given the urgent changes required around the globe.

15.5 Conclusion: Policy Coordination for Reindustrialization in a Post-Covid World

At the time of writing, South Africa and the rest of the world are in the throes of the Covid-19 pandemic. Even after the medical emergency has passed, the economic consequences of the pandemic and of associated control measures are likely to endure for a long time. Like other countries, South Africa has seen widespread closures or downscaling of firms, and layoffs. The greater underlying economic fragility and the pre-existing crisis of unemployment in the country mean that the economic effects are likely to be especially dire. Part of the temporary rise in unemployment is likely to translate into an upward shift in South Africa's structural unemployment. The recovery initiative would need to address all the structural issues identified, to transform the economy.

The economic impacts of the Covid-19 pandemic have brought widespread recognition once more of the short-termism of markets and a growing consensus on the need for state leadership in the medium- to long-term vision for a more resilient economy and society. Countries with stronger and more diversified local production capacity and technological capabilities have been better placed to confront the challenges posed by Covid-19. Effective government leadership which can respond and mobilize the private sector has also clearly mattered, along with the importance of international collaboration and multilateralism (Jenny, 2020).

National leadership must now mobilize for structural transformation while international cooperation is essential in tackling the implications of climate change. As such, 'building back better' in the wake of Covid-19 will include a shift to a 'green new deal', and realize a more inclusive and equitable development path.

Post-Covid global economic restructuring also has potential opportunities for manufacturers in South Africa and other middle-income and developing countries. The shortening, and reconfiguration, of GVCs provides possible openings for import substitution, as well as the potential for repositioning countries and their businesses in GVCs with a focus on strengthening linkages in regional value chains.

The overarching analysis in this book demonstrates the importance of a holistic approach to structural transformation. It is one that embraces the challenges of building productive capabilities in the time of digitalization and that recognizes value-chain linkages and power relations in industrial ecosystems. In this framework, industrialization is integrated into overall economic planning and is based on an understanding of sectoral dynamics and opportunities, while taking the essential resources of land, water, and energy into account. It must reach and sustain a shared and binding commitment which, through shared growth and investment, will lead to a reversal of the growing inequality in wealth. Experience from other countries shows that successful industrial policy needs to be led politically from the apex of government and that lessons learnt along the way need to be incorporated in an iterative process of continuous improvement of policy design and implementation.

One aspect of this is the need for a planning function, driven from the top of the state, that can marshal institutions and policies in support of priority goals. In South Africa, this sort of planning would go well beyond the role of existing institutions such as the National Planning Commission (NPC) or the Department of Planning, Monitoring, and Evaluation (DPME). In particular, coordination between macroeconomic policy and industrial policy is critical for structural transformation. This includes managing the exchange rate to ensure exports are competitive, as has been a key pillar of the industrial policy of industrializing countries. It means a fiscal policy oriented to funding infrastructure investment and skills.

The vision of an integrated policy agenda towards structural transformation implies a re-shaping of policy functions, and the experimentation of new institutional forms. This may include repurposing government departments, agencies, and other public institutions, as well as development finance, regulatory, and competition institutions. Better coordination and integration of roles is needed around policies that relate to innovation, technology, industry, trade, development finance, and regulating markets—providing for clear leadership and coordination in areas such as skills development and in key sectors such as energy, minerals, and agriculture. This needs to be accompanied by improved institutional capacity and accountability of public institutions. Changes in policies and institutions must drive and be supported by the emergence of a new social contract that places sustainable and inclusive structural transformation at its very core.

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