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From manufacturing-led export growth to a twenty-first-century inclusive growth strategy

Explaining the demise of a successful growth model and what to
do about it

Joseph E. Stiglitz*

December 2018

Abstract: Success in development over the past half-century was based on manufacturing-led export growth. Because the share of global employment in manufacturing will decline, manufacturing won't play the same role in the coming decades. An increase in manufacturing employment won't suffice to meet the need for new jobs, especially in Africa with its burgeoning population. There has to be another strategy. I deconstruct what enabled manufacturing to generate growth and structural transformation. It simultaneously provided needed foreign exchange, promoted learning, and provided employment. The new strategy I propose is more multi-pronged, addressing separately, in different sectors, the challenges of learning, foreign exchange, and employment. A carefully designed, co-ordinated multi-sector strategy, with sectoral policies in agriculture, natural resources, manufacturing, and especially services, has the prospect of attaining the same success as the old manufacturing export-led strategy. The development state will continue to be central, but has to be redefined. The new development strategies will require greater balance between the market, the state, and the community, a perspective articulated in the Stockholm Statement.

Keywords: economic development, Stockholm Statement, industrial policy, dynamic comparative advantage, global reserve system

JEL classification: O14, O24, O55, O57

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1 Introduction

Export-led growth was the model behind the twentieth-century growth miracles. There was unprecedented growth in East Asia, closing the gap in income per capita and standards of living with the advanced countries.¹ That model won't be working in the future in the way, or at least to the extent, that it did in the past. This paper explains why that is the case (Section 2) and what developing countries and the global community that supports development can do about it. It sets this new development strategy within the context of the broadening of the development agenda. With the widespread recognition of the failures of the Washington Consensus policies, there was a need for a new 'consensus' concerning the objectives of development and how they might be achieved, recently articulated in the Stockholm Statement (Section 3).

To formulate a new development strategy, we begin by deconstructing manufacturing export-led growth, and asking why it was so successful (Section 4). To replace that strategy, we argue in Section 5 that a multi-pronged strategy, entailing a combination of manufacturing, agriculture, services, and natural resources, is needed. To implement that strategy, countries will require active industrial policies (Section 6) based on a new understanding of dynamic comparative advantage (Section 7). Section 8 describes how developed countries can assist developing countries as they embark on these new strategies, and, in particular, explains how the creation of a global reserve system can help provide the finance that will be especially important if developing countries are to succeed in this twenty-first-century inclusive growth strategy.

2 Explaining the end of manufacturing-led growth

Manufacturing is a victim of its own success: the rate of growth of productivity (output per worker) exceeds that of demand. The result is that the share of manufacturing in GDP is declining everywhere, as Table 1 shows, and that in turn implies that the share of manufacturing in employment is declining even more rapidly, as we illustrate later in this paper.²

Moreover, what happened to agriculture in the advanced countries is now happening globally. Productivity increases in agriculture meant that a smaller and smaller fraction of the labour force was required to produce the food that people needed and wanted; the advanced countries went from a situation in which some 70 per cent of the population was engaged in agriculture and related services to one in which a very small fraction of the workforce (in the US, less than 3 per cent) can produce more than even an obese society can consume.³ This means that if current trends continue unabated, a very large fraction of the labour force will have to be deployed elsewhere.

¹ See the World Bank's report *The East Asian Miracle*, of which I was a co-author (Birdsall 1993), and Stiglitz (1996) and the references cited there for an account of the East Asian miracle.

² Some vertical disintegration of service components of manufacturing has given the appearance of more rapid disappearance of jobs and output than is in fact the case. Still, vertical disintegration can have real consequences (e.g. for wages and flows of knowledge).

³ See Roser (2018) for historical employment in agriculture; current US data are available at the United States Department of Agriculture's website, www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/. The economic implications of this transformation are explored in Delli Gatti et al. (2012a, b).

In the advanced countries, in the latter half of the nineteenth century and first half of the twentieth, these workers were largely absorbed by manufacturing. But now, with the decline globally in manufacturing employment, this will be problematic.

Even with emerging markets taking a larger share of global manufacturing jobs, and with a shift of jobs from China to Africa, new manufacturing jobs will absorb only a fraction of new entrants into the labour force in Africa.⁴

Manufacturing can, of course, still have impacts that are disproportionate to its size. And some countries may have a natural comparative advantage in some niches (or in some cases, they may even be able to create a comparative advantage). But it is unlikely that manufacturing export-led growth will have the impact that it had in China and East Asia. It cannot be the sole development strategy, or even at the heart of a country's strategy.

This is especially so because the advantages of cheap labour will diminish as labour becomes of lesser importance in manufacturing itself, e.g. as robots replace humans. The developing countries' advantage in low labour costs will, at least in many cases, be outweighed by locational disadvantages: an increasing fraction of production will be located near points of consumption. These are major changes that will affect development strategies going forward.

Table 1: Manufacturing share of GDP (%)

	2000	2005
World	19	15
E. Asia and Pacific	25	23
Europe and Central Asia	19	16
Latin American and the Caribbean	17	14
North America	16	12
South Asia	15	16
Sub-Saharan Africa	11	11
Low income	10	8
Lower middle income	17	16
Upper middle income	24	21
High income	18	15

Source: Author's construction based on World Bank Group (2018).

2.1 New thinking about development

As we think of a new strategy to replace manufacturing export-led growth, we need to incorporate the insights from earlier developmental experiences, including the global failures of the Washington Consensus policies and the successes in East Asia, and from advances in economic understandings. There are five key insights in particular that have led to a rethinking of development policies.

- What separates developing countries from developed is not just a disparity in resources, but a disparity in knowledge and institutions; see, for instance, the 1998 *World Development Report* (Dahlman et al. 1998).
- Development entails a structural transformation (Stiglitz 1998b).

⁴ At most, some 85 million jobs could be freed up (Lin 2011), but the working-age population of Africa is expected to grow by 450 million people, or by 70 per cent, from 2015 to 2035 (World Economic Forum 2017).

- There can be growth without structural transformation—especially common in resource-dependent countries—but such growth will be neither sustainable nor equitable. All countries are, of course, in need of structural transformation—in advanced countries, in response to technology and globalization from manufacturing to service sector; in China, from export-led growth to domestic demand-driven growth and from quantity to quality growth; in natural-resource economies, to diversify away from dependence on natural resources; and in all countries in response to the need to address problems of climate change (both mitigation and adaptation) and changing demographics. But the need for structural transformation is at the heart of development.
- Markets on their own don't manage these transformations well. There are critical impediments imposed by capital market imperfections, and important externalities and co-ordination failures. Government needs to assume an important role. How best to do this is one of the central themes of this paper.
- Successful development and structural transformation entails a change in norms and mindsets, including the mindset that change is possible—a movement away from traditional society towards modernization. In the West, these changes are especially associated with the Enlightenment (Stiglitz and Greenwald 2014, 2015). For our purposes, the two critical ideas are (a) the mechanisms by which a society/economy learns (closing the knowledge gap to which we referred earlier); and (b) the insights about social, political, and economic organization, including the rule of law, systems of checks and balances, and the balance between the market, the state, and civil society (the subject of a 2015 WIDER Lecture, on the occasion of its 30th anniversary).⁵

These new understandings have led to a movement from a focus on developmental projects to policies and then to institutions, corresponding to the realization of the importance of not just physical capital, but human capital, social capital, and knowledge capital.

3 The Stockholm Statement

In an attempt to capture in a brief form these and other new understandings about development, a group of 13 economists, including four former chief economists of the World Bank, put forward the Stockholm Statement of development principles in 2016 (Alkire et al. 2016; Stiglitz 2016a), with eight key notions:

1. GDP growth is not an end in itself.
2. Development has to be inclusive.
3. Environmental sustainability is a requirement, not an option.
4. There is a need to balance market, state, and community.
5. Successful development requires providing macroeconomic stability, but this does not just mean balancing budgets or focusing exclusively on inflation.
6. One has to attend to the impact of global technology and inequality. It will be especially important to assess impacts on labour, in both developed and developing countries. Successful responses require investment in human capital, rewriting the rules of the

⁵ See Stiglitz (2016b). The original talk was given in September 2015.

economy to achieve a more equalitarian distribution of market income,⁶ and creating new instruments of redistribution within and between countries.

7. Social norms and mindsets matter. One especially needs to bring the insights of modern behavioural economics to bear in development policies. These may provide effective ways of altering behaviour (savings, fertility, etc.), and often at very low cost (Hoff and Stiglitz 2016; World Bank Group 2015).
8. Global policies have significant effects on developing countries. The international community, and especially the advanced countries, have a responsibility to ensure that global policies and international agreements are equitable pro-development policies.⁷ The Stockholm Statement recognized the interdependence of countries, and that the policies of the large, rich countries have large externalities on the rest of the world, which they often don't take into account (including their monetary, regulatory, trade, and migration policies). Tax havens, which the regulatory policies of the advanced countries tolerate, affect all countries, not just the developing countries. Still, the flow of money out of Africa has particularly adverse effects on Africa's growth (African Development Bank and Global Financial Integrity 2013). International agreements cover only parts of these arenas where there are global externalities, and where there are agreements (such as on climate) they often do not go far enough. And, of course, developed countries have not lived up to their commitments of 0.7 per cent of GDP in aid.

3.1 Key differences with the Washington Consensus

The eight principles of the Stockholm Statement represent a marked change from the Washington Consensus, with its primary emphasis on markets, with its inadequate attention to market failures, with its narrow view of macro-stability, and with its narrow conception of the goals and instruments of development.⁸

Broader goals to reflect challenges of the twenty-first century

The Washington Consensus focused on increasing GDP. But GDP is not a good measure of wellbeing, as the International Commission on the Measurement of Economic Performance and Social Progress has pointed out (Stiglitz et al. 2009). It takes, for instance, inadequate or no note of sustainability, whether environmental, social, political, or even economic. With climate change presenting an existential challenge to the planet, no responsible developmental strategy should ignore its impact on the environment. GDP also says nothing about how the fruits of the economy are being shared: GDP could go up even though most citizens are worse off. So another objective of a well-designed development strategy is inclusive growth.

This is especially important because we have learned that trickle-down economics—which holds that if GDP goes up, the incomes of all (or most) will, too—simply doesn't work. Indeed, globalization (as it has been managed) may have simultaneously contributed to the increase in GDP and to the lowering of incomes of unskilled workers.

⁶ That is, the rules of the game—including those of government–labour relations, competition, and corporate governance—are critical in determining both the distribution of income and efficiency; see Stiglitz et al. (2015).

⁷ Section 7 explains why current arrangements often stymie development.

⁸ For an earlier discussion of the limitations of the Washington Consensus, see my 1998 WIDER Annual Lecture (Stiglitz 1998a); see also Stiglitz (2002).

We have learned also that greater inclusivity can lead to more robust growth, especially when inequality reaches the extremes that it has in some countries (such as the US and many developing countries), and when it originates in the way it does, from rent-seeking on one hand or lack of opportunities for the poor on the other (Berg and Ostry 2011; Ostry et al. 2014; Stiglitz 2012, 2015). Thus, there are policies that can simultaneously increase equality and growth.

Seeing equality and growth as complements rather than substitutes is a major change in development thinking.

Employment generation is central to inclusive growth (especially where the labour force is expected to grow rapidly, as in sub-Saharan Africa). Leaving large fractions of the labour force underutilized or unutilized not only leads to large inequities, it is also inefficient. And again, growth itself does not necessarily lead to the growth of employment, especially of jobs in the formal sector. In recent years (2004–09), for instance, India has had rapid growth, but in a period in which 50 million have entered the labour force, only about 1.1 million formal sector jobs were created.⁹

More instruments

This new development thinking is also characterized by making use of more instruments. The Great Recession, of course, led even developed countries to embrace more instruments for monetary policy, e.g. in quantitative easing (QE) and macro-prudential regulation. But there is a need for more instruments for macro-stability (now embraced in the new Institutional View of the IMF on capital controls; see IMF 2012); more instruments for developmental transformation—including industrial policies (to be discussed in Section 6), promoting not just manufacturing but also agriculture and services; and those making use of the insights of behavioural economics.¹⁰

Clearer distinctions between means and goals

One of the central failures of the Washington Consensus was the confusion between means and goals. Privatization, liberalization, deregulation, or even markets and GDP growth are not ends in themselves (see, for instance, Kanbur et al. 2018), but *may* be means to higher living standards or achieving the broader goals described earlier—or they could have just the opposite effects. The latter can especially arise because some policies that may increase static efficiency (like trade liberalization) may impede dynamic learning (Greenwald and Stiglitz 2006).

Other variables, such as inflation, budget deficits, and current account deficits, also need to be looked at through this lens. But not attending to some of these variables in a timely way may make it difficult to achieve the real goals of development.

⁹ According to India's National Sample Survey Office data (ICSSR Data Service 2016). A United Nations Development Programme report suggests that over a longer period of some two decades, India's employment performance, while still better than in the high-growth period, was disappointing: 'In India, the size of the working-age population increased by 300 million during the same time [1991–2013], while the number of employed people increased by only 140 million—the economy absorbed less than half the new entrants into the labour market.' See UNDP (2016).

¹⁰ There is a large literature on industrial and LIT (learning, industrial, and technology) policies; see references, including Greenwald and Stiglitz (2006, 2013, 2014), Stiglitz (2011), Stiglitz and Greenwald (2014, 2015), and Noman and Stiglitz (2012a, b, 2015a, b) for Africa. For the behavioural economics policies, see World Bank Group (2015).

Greater participation: A balance between markets, government, and society

One of the most important differences between the Stockholm Statement and earlier articulations of development strategy involves broadening the range of participants in the development process. The narrowness of the Washington Consensus, a consensus between 15th Street (the US Treasury) and 19th Street (the IMF), shaped its perspectives: its focus on markets was too narrow; development entails not just markets, but government and civil society, and it is essential to understand the roles each needs to play, how each can play these roles more effectively, and how best to facilitate the appropriate interactions.

For instance, all successful development has entailed government playing an important role—the *development state*. It has a multiplicity of jobs to do: providing enabling conditions for markets to work, including good physical and institutional infrastructure and an educated labour force; regulating markets—preventing negative externalities, including exploitation and excessive volatility; promoting development more directly, including the LIT policies to which we referred earlier; understanding the ‘big picture’, including the problems posed by excessively rapid population growth; and co-ordinating more broadly developmental strategies among the many different participants in a country’s development process.

One of the consequences of the Washington Consensus’ single-minded focus on markets, with policies that restricted what the government could and should do, was that it undermined the institutional development of the state, impeding its ability to be as effective an instrument for development as it could be (Khan 2012). Even when it was finally recognized that there had to be a role for the state, it was a very circumscribed role. The state was described as *enabling the private sector*, with the real responsibility for development conferred on the private sector.¹¹ But for reasons I explained in my 2015 WIDER Lecture, there are many arenas, even in developed countries, in which the private sector is likely to fail to meet societal needs, and this is even more so in developing countries.

As we come to understand the importance of market failures and the need for collective action, especially in the societal transformations that are central to development, government is pivotal, so development efforts have to focus on increasing the efficiency and efficacy of government, and that includes, importantly, how to improve governance (Khan 2012; Noman et al. 2012; Stiglitz 2016b). Here, the systems of checks and balances to which we referred earlier are critical, and in this, media and civil society play a pivotal role.¹²

Critics of government action cite the numerous instances of government failure, where government fails to accomplish what is intended, or, perversely, serves the interests of the elites. Of course, ‘to err is human’, and all human institutions are fallible. Over the years, we have learned how to reduce the risks of failure and increase the chances of success; there have been important institutional innovations. These are part of the process of societal learning. Importantly, critics of government action tend to overestimate the extent of government failure, suggesting that it is inevitable, and underestimate the extent of market failure. Successes in East Asia and elsewhere show that government failure can be overcome—governments can play and have played a pivotal

¹¹ For a discussion of this point in the context of Africa, see Noman and Stiglitz (2012b) and the other papers in Noman et al. (2012).

¹² As I argue in Stiglitz (forthcoming, 2019), there cannot be an effective *systemic* system of checks and balances in a world of excessive inequality: almost inevitably, those at the top will ensure that the political system serves their interests. Economic inequality gets translated into political inequality. See also Stiglitz (2012).

role in developmental transformation. By contrast, there are few if any instances of successful development where government did not play an important role.

4 Deconstructing the success of the manufacturing export-led model

In this section we ask what made the manufacturing export-led growth model so successful, as a prelude to asking, if that model is dead, is there some other way of getting the benefits that it provided?¹³

Exports (more broadly, an open economy) allowed developing countries to avoid several of the complexities that were at the centre of earlier developmental debates. On the supply side, the problem of material balances (ensuring that internal demand for each good was equal to internal supply) did not have to be addressed—all one had to have was enough foreign exchange. When some input was needed, it could always be obtained in international markets.¹⁴ Export-led growth generated the necessary foreign exchange. On the demand side, there no longer was a problem of ensuring that there was an adequate demand for the goods that were produced. At the right exchange rate, there was unlimited demand for a country's exports, especially for small countries.

Exports also provided the basis for *learning*, so necessary for the developmental transformation discussed earlier. As we also noted earlier, what separates developed and less-developed countries is a gap in knowledge, and export-led growth facilitated the transfer of that knowledge. Those engaging in trade had to interact with others, and those seeking to compete in export markets had to learn about manufacturing technology and international standards. Manufacturing is particularly well suited for learning, because it occurs in large and long-lived institutions (say, in contrast to agriculture, where, especially in developing countries, the unit of production is a small farm). There are large economies of scale in the production and absorption of knowledge, and greater incentives for large institutions to engage in learning.¹⁵

Most important in the process of learning is *learning by doing*.¹⁶ One can best (and sometimes only) learn how to increase productivity in manufacturing by manufacturing. Most relevant for development is that there are important spillovers of the learning and development in manufacturing to other industries. These spillovers include not just the direct technological spillovers (which may occur when processes in other sectors have some overlap with those in manufacturing), but also institutional spillovers (e.g. from the development of educational and financial institutions). The production of better-educated individuals and more of them, a requisite for success in manufacturing, is of benefit elsewhere in the economy. So, too, financial institutions,

¹³ For discussions of the East Asian manufacturing export-led growth model, see Amsden (1989), Birdsall et al. (1993), Stiglitz (1996), and Wade (1990) and the references cited there.

¹⁴ Except for China and perhaps India, even developing countries that have large populations have a relatively small GDP. Standard trade models that assume perfect competition assume that at the right exchange rate, there is an infinite demand. Demand curves are horizontal. In practice, demand curves are downward-sloping (partly because of imperfections of competition, partly because there are large transport costs, partly because of imperfections in information).

¹⁵ See Stiglitz and Greenwald (2014). The next paragraph highlights that because of the importance of learning by doing, openness, when not well managed, may have adverse effects on learning and productivity increases. For an empirical discussion, see Navaretti and Tarr (2000).

¹⁶ See Arrow (1962). Moreover, one not only learns how to do things by doing them, one learns how to learn by learning; see Stiglitz (1987).

which may have originated to finance commerce or manufacturing, can expand their reach into other sectors of the economy.

Of course, some transfer of technology could be accomplished in numerous other ways (buying technology or foreign direct investment), but these mechanisms are likely to have fewer deep learning benefits and spillovers.

Because of the importance and pervasiveness of learning and other spillovers from manufacturing exports, 'leaving it to the market' does not lead to the maximization of welfare or growth. Some form of government intervention is necessary to achieve desirable outcomes, including the industrial policies which we discuss at greater length below.

Exports also provided the basis for *tax revenues*. Finance is needed for government expenditures—for the publicly provided goods that are essential for development, including infrastructure, education, and the acquisition, adaptation, and dissemination of technology. It is hard to tax the informal sector, including small farmers. That's why, traditionally, tax authorities relied heavily on taxes imposed on trade: it was easier to monitor the flow of goods that went through the limited number of ports.

Finally, the manufacturing exports generated *employment* in the urban sector, which was key in supporting structural transformation and widely shared growth. They generated jobs for new entrants into the labour force and those leaving agriculture, and the (relatively) high and increasing wages in manufacturing (resulting from the ever-rising levels of productivity as a effect of learning and education) led to increasing demand for non-traded goods and higher standards of living.

4.1 Mechanisms for promoting exports

Not only did manufacturing exports generate this panoply of benefits, but there were also numerous ways in which East Asian countries could promote manufacturing exports. They provided limited direct support (e.g. through subsidies) but did provide access to credit at near-commercial rates to firms that were successful in exporting. This provided incentives for entrepreneurs to increase exports. And they had other instruments of industrial policy, including restrictions or taxes on competing imports and subsidies or credits for exports. Perhaps most important, though, was their provision of an enabling environment, including good infrastructure and an educated labour force.

One of the reasons, I suspect, for the success of the export-led model was that it proved relatively robust against corruption. There was a natural system of accountability. Support was given to firms that had proven themselves successful in the international marketplace. By contrast, with an import-competing growth strategy a firm can prove profitable by becoming a local monopolist and getting the government to limit foreign competition.

Export-led manufacturing thus naturally combined economic and demographic structural transformations, a move from traditional agriculture to more advanced production, from rural to urban, and a movement to a learning economy. Openness simplified the task of development: it meant one could simply focus on foreign exchange constraint (ensuring that one had the foreign exchange one needed), education, infrastructure, and job creation. Indeed, global financial

integration meant one didn't even need to focus on the generation of savings.¹⁷ One could develop an investment strategy under the presumption that the necessary funding could be found abroad.

5 A multi-pronged strategy

With the limited prospects for manufacturing exports for those countries that didn't take advantage of manufacturing export-led growth when it was available as the prime strategy for development, similar outcomes will require a multifaceted growth strategy, with different facets reflecting different aspects of what contributed to the success of manufacturing export-led growth.

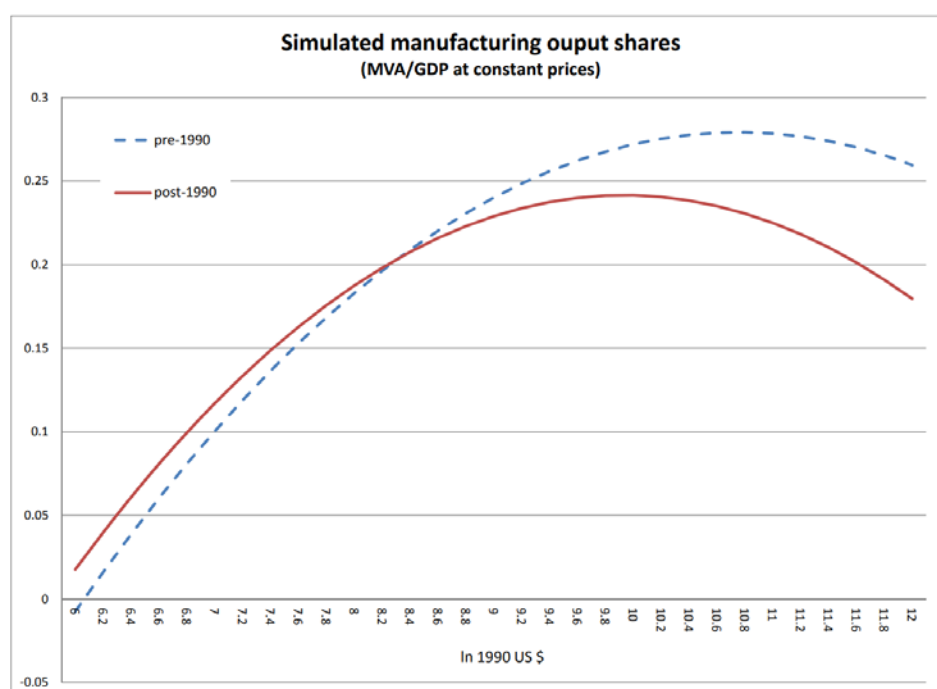
The region for which this is most true is, of course, sub-Saharan Africa (SSA). For Africa, the last 25 years of the twentieth century was a lost quarter-century. Per capita income in 2000 was barely at the level of the mid-1970s. Economic decline was particularly sharp during 1980–95, years in which East Asia was growing rapidly under the influence of manufacturing export-led growth. Africa's decline was partially a result of a plethora of conditionalities imposed on SSA in the years after independence. At independence, of course, the colonial powers had failed to leave a legacy of either physical or human capital that would have enabled SSA to have prospered. In the currency, debt, financial, and economic crises that followed, these countries felt they had no choice but to turn to the Bretton Woods institutions for help, and in return for that help these institutions extracted a high price.

The decline in agriculture, the basis of most African economies, by some accounts began even earlier, in the 1960s, and agriculture continued to be neglected, with its productivity stagnating. It was not until the beginning of this century that productivity was restored to the levels of four decades earlier (Block 2016).

While the fate of the agricultural sector was due largely to neglect, the fate of the industrial sector was the result of policies that were imposed on much of SSA. The share of manufacturing in GDP was once so highly correlated with per capita income that until some 15 or so years ago the IMF used the term 'industrial countries' to refer to high-income countries. Reflecting the diminished importance of manufacturing, the relationship became an inverted U-shaped one some two decades or so ago, and more recently the height of the inverted U has been declining (i.e. the peak level of income at which manufacturing's share begins to shrink has been falling) (see Figure 1).

¹⁷ Much of the earlier development literature, from Arthur Lewis on, centred around how policy could promote the savings required for the investments needed for rapid industrialization. Only by suppressing wages in the rural sector could one generate the surplus necessary for industrialization; see, for instance, Sah and Stiglitz (1992).

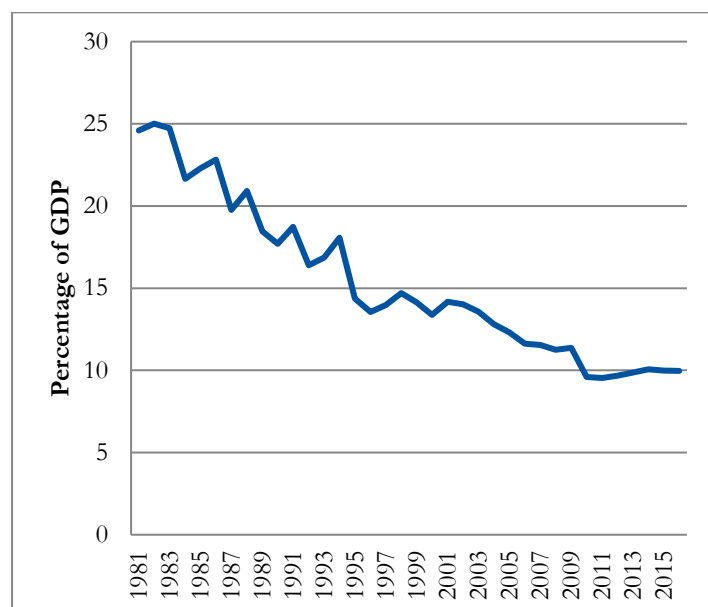
Figure 1: Simulated manufacturing output shares



Source: Rodrik (2015), reproduced with permission.

But under the IMF/Washington Consensus programmes, sub-Saharan Africa began its deindustrialization in the 1980s, much too prematurely and rapidly. Manufacturing as a share of value added to GDP decreased from 14.7 per cent in 1975 to 10.1 per cent in 2010 (see Figure 2 and Table 2).

Figure 2: Manufacturing value added (% of GDP) in sub-Saharan Africa



Source: Author's construction based on World Bank Group (2018).

Table 2: Deindustrialization in sub-Saharan Africa

Value added by sector (% of GDP)				
	1960	1975	1990	2010
Agriculture	37.6	29.2	24.9	22.4
Industry	24.3	30.0	32.6	27.8
Manufacturing	9.2	14.7	14.0	10.1
Services	38.1	40.7	42.6	49.8
Share of employment (%)				
	1960	1975	1990	2010
Agriculture	72.7	66.0	61.6	49.8
Industry	4.6	5.3	5.4	5.1
Manufacturing	4.7	7.8	8.9	8.3
Services	18.0	20.9	24.1	36.8

Source: Author's construction based on de Vries et al. (2015).

This history has one important implication for SSA relevant to the multi-pronged strategy that we are about to describe: this 'under industrialization' of SSA has rightly been interpreted to mean there is more scope for 'catch-up' industrialization, notwithstanding the headwinds posed by global technological trends. There is indeed more scope for catch-up, and especially so for the kind of high-transport-cost goods that are particularly targeted at consumers and producers in the continent. Still, industrialization will, as we have already emphasized, not be able to play the role it did for East Asia.

We now turn to a more detailed look at each of the prongs of our multi-pronged strategy.

5.1 Manufacturing

Manufacturing, as we have noted, will continue to play a role, but it will be more limited and will need to be more directed, where possible taking advantage of natural advantage (such as mineral resources). (As we have also already noted, though, because of robotization and artificial intelligence, developing countries' advantage in manufacturing, arising out of cheap labour, will diminish, and even if there is some success in expanding manufacturing, in most countries this expansion will not suffice to create enough jobs for those seeking employment in the modern economy.¹⁸)

Moreover, from now on the ability of manufacturing to generate tax revenues (one of its strengths) may be hampered as competition for low-skilled manufacturing among developing countries may result in a race to the bottom. This race would result in developing countries reaping at most limited benefits. The implication is that developing countries need to be careful in giving tax breaks, and more importantly, work together co-operatively to reach agreements that restrict the scope for this race to the bottom.¹⁹

¹⁸ There is another reason that manufacturing may play a less important role in Africa's development than it did in East Asia's. The construction of global value chains has, some would argue, enabled more of the value of the economic activity occurring within a country to be extracted by the multinationals, and has structured production in ways in which there is less learning and less linkage to the rest of the economy; see Andreoni (forthcoming, 2019).

¹⁹ The Independent Commission on Reform of International Taxation (ICRIT) has emphasized the adverse effects of this race to the bottom and has been urging an international agreement against tax competition; see ICRIT (2018).

Instead of this race-to-the-bottom tax competition, it would be far better to have a race-to-the-top competition to provide good physical and ‘institutional’ infrastructure, which enhances the productivity of the economy and returns capital.

This will be especially important because of restrictions imposed by international (World Trade Organization) trade agreements. A striking feature of these agreements is that they allow agriculture subsidies (harming the developing countries, which depend heavily on agriculture), while prohibiting manufacturing subsidies. And even the structure of tariffs has traditionally been designed to inhibit developing countries from moving up the value-added chain into manufacturing (Stiglitz and Charlton 2005). Of course, in the earlier stages of advanced countries’ development, they engaged in both manufacturing subsidies and protection; but now that they have succeeded, they want to ‘pull up the ladder’ (Chang 2002). Thus, the instruments that are at the disposal of developing countries today are more limited—and they will have to make all the use of these limited instruments that they can.

Industrial policies should be at the centre of these efforts. Section 6 will discuss these policies in greater detail.

5.2 Agriculture

Agriculture will continue to provide the most important basis of employment for most developing countries, but should be restructured in ways that are more *dynamic*, with more learning and learning to learn—a kind of transformation *in situ*.

The neglect of agriculture, with its resulting lag in productivity (data) means that, as in manufacturing, there is scope for catch-up and modernizing. Productivity is markedly lower than in East Asia, and an increase in agricultural productivity comparable to East Asia would have an enormous impact on incomes.

Thus, the African Center for Economic Transformation, in its second major report released in October 2017, argued:

Agriculture presents the easiest path to industrialization and economic transformation. Increasing productivity and output in a modern agricultural sector would, beyond improving food security and the balance of payments (through reduced food imports and increased exports), sustain agro-processing, the manufacturing of agricultural inputs, and a host of services upstream and downstream from farms, creating employment and boosting incomes across the economy. (ACET 2017)

Agriculture can have further benefits: for the many developing countries that import large amounts of foodstuffs, it can reduce the need for foreign exchange—leaving foreign exchange to be used for areas where it cannot be replaced. In some cases, there are opportunities for increasing exports of agricultural goods; the transformation should entail identifying high-value-added crops for which there is a demand elsewhere. Moreover, modern agriculture can be very ‘advanced’, serving as a basis of learning, with some of the skills having applicability to other areas.²⁰ Indeed, there are ample opportunities for non-labour-saving innovations—better crop mix, better fertilizers, better

²⁰ Indeed, some aspects of modern agriculture (e.g. the growing of flowers) are, in many respects, industrial in nature; see Cramer (forthcoming, 2019).

seeds, better planting patterns. The transformation of farming from traditional practices to modern farming can be an exemplar of general societal transformation entailing modernization.

Moreover, successful agricultural transformation will reduce the pressure arising from urban migration and the dilemmas it poses—for instance, whether to use scarce resources to build urban infrastructure, including housing. With limitations on the ability to create urban manufacturing jobs, excessive migration can be very destabilizing, giving rise to a large coterie of unemployed. And finally, the increase in productivity in agriculture will result in higher incomes, giving rise to multiplier effects and supporting an expanding non-traded service sector.

In short, the neglect of agriculture in development over the past four decades should always have been seen as a mistake. But the cost of this neglect will increase as developing countries struggle to find an alternative to manufacturing export-led growth. Increasing productivity in agriculture should be seen as an essential prong in the multi-pronged approach that will have to replace manufacturing export-led growth.

Mechanisms for promoting agriculture

Here, developing countries need to take a page out of the book of mechanisms by which agriculture was supported in the United States in the nineteenth century, when that sector was the predominant one. With small-scale production, there can't be the private investments in needed advances in technology. Government will have to provide the necessary research, and transmit that research to farmers through extension services. Since agricultural conditions can vary greatly from one locale to another, the relevant applied research has to be done at the local level (as it was in the US, through the land-grant colleges and universities).

Education systems need to be changed. Today, to a too-large extent, education is directed at enhancing the skills and knowledge required for urban jobs, reinforcing the expectation that success entails leaving the rural sector rather than becoming more productive within it. Success in modern agriculture, by contrast, requires a better-educated labour force, and more educational resources should be directed at enhancing the productivity of the large fractions of the population that will remain within the rural sector.

One way in which the landscape has changed since the Second World War is in the growth of intellectual property rights, with large multinational giants selling seeds (often genetically modified), herbicides, pesticides, and fertilizers, with often very adverse economic and social consequences. Developing countries need to be sure they adopt the right intellectual property regime—not the one foisted on them by the multinationals and Western governments (Cimoli et al. 2014a, b; Jayadev and Stiglitz 2010; Maskus and Merrill 2013).

There are also significant problems of information asymmetries in providing key inputs like seed and fertilizer to farmers. It is hard, if not impossible, to ascertain the quality at the point of purchase. In developing countries, reputation mechanisms often work imperfectly, and to the extent that they do, they can result in high degrees of imperfections of competition. When regulations fail, it may be desirable to, at a minimum, have the government certify the quality of the inputs, and perhaps market them directly because incentives and opportunities for scamming often seem just too irresistible for the private sector.²¹

²¹ Reflecting a more general point noted by Akerlof and Shiller (2015).

Another crucial input is credit, and this is another arena in which the private sector has excelled in exploitation. Non-profit micro-credit schemes have met with enormous success in Bangladesh, but when the ‘model’ was taken up by for-profit lenders, there was a massive failure (Haldar and Stiglitz 2013, 2016). Government should encourage these not-for-profits and co-operative lending programmes, and encourage the private sector to lend (at strictly controlled rates) to agriculture, e.g. by requiring that a minimal fraction of loans goes to small farmers (analogous to the Community Reinvestment Act requirements for lending to minorities in the US).

Finally, in many developing countries there are serious problems in marketing, with middlemen with market power taking a disproportionately large fraction of the value. At one time, the World Bank and IMF railed against government marketing boards, which proved often inefficient and sometimes corrupt. The assumption was that with government out of the way, a competitive market would flourish, and farmers would get full value for their crops. What happened instead was the growth of monopolistic middlemen (part of the original reason for the growth of government marketing boards). They might have been more efficient; they were certainly more efficient in exploiting farmers: what the latter received in some cases went down (Wilcox 2006; Wilcox and Abbott 2004).

5.3 Mining and other natural resources

Mining and hydrocarbons will continue to be important for foreign exchange for those countries that are lucky enough to have these resources. But the development of a country’s resources should be, to the extent possible, more than just a source of foreign exchange; it should be a central part of the development strategy.

The standard lessons of the resource curse²² have not yet been learned by most countries. Countries that are rich in natural resources not only grow more slowly than one would have expected; they also have more inequality, partly as a result of the rampant rent-seeking that is so often associated with natural resources. Four central insights have emerged on how developing countries that have natural resources can best manage this prong of the multi-pronged development strategy.

- They need to maximize the revenues that they obtain from natural resources. When the resources are held by the government, this means having well-designed auctions (of the right to develop the resource) and contracts. It may be necessary to auction off different parts of the production process rather than to have a bid for an overall ‘manager’ of the resource. Contracts need to exhibit ‘time consistency’; in particular, when the quantities of the resource or the cost of extraction turn out particularly favourably, the contract has to be designed so that the oil or mining company doesn’t walk off with an unwarranted bonanza. When the resources are held in private hands, then there should be as close as possible to a 100 per cent tax on the ‘pure rents’ associated with the resource. The resource should be thought of as belonging to all the people—it was part of the geography. The principle that pure rents should be taxed at 100 per cent is well-established (see, for instance, George 1871). When the government has sold or leased the resource at a below-market rate (sometimes as a result of corruption, sometimes out of pure incompetence),

²² The natural-resource curse is the observation that countries with more resources, by and large, do more poorly and have greater inequality than those without. Ensuring that natural resources are a blessing rather than a curse requires more than just the economics measures described below. It also requires managing the politics to prevent the kind of rent-seeking that is endemic in natural-resource economies. For a broad discussion, see Stiglitz (2007) and the other chapters in Humphreys et al. (2007).

the terms need to be renegotiated. A country is always sovereign over the resources that lie within it. Botswana's remarkable development was only possible because at the time of independence it renegotiated its diamond leases (Stiglitz 2002).

- Contracts need to be complemented by excess profit taxes. Contracts will never be perfectly designed, so that the foreign oil or mining company may well get substantial excess profits. Countries need to be careful not to sign investment agreements that circumscribe their ability to change taxes and regulations. Those that have signed such agreements should exit or renegotiate (as South Africa is doing).
- Countries need to establish sovereign wealth funds—both to manage cyclical variability and to prevent exchange-rate appreciation. Too often, the high exchange rate associated with natural resources weakens the development of other sectors of the economy, including agriculture and manufacturing. These other sectors generate more jobs and more learning. A well-managed sovereign wealth fund can also be an important instrument for ensuring that the fruits of the country's resources (which are typically limited in amounts) are shared equitably across generations.
- As we have noted, the development of a country's resources should be part of the development strategy. Countries should look for linkages with other sectors, and industrial policies should include strategies that enhance those linkages (Jourdan 2014; Stiglitz and Greenwald 2014). Sometimes there has been a concern that fostering such linkages would entail less growth. But that is a short-run perspective. There can be long-run benefits in learning and developing a dynamic comparative advantage. There needs to be a careful appraisal of the trade-offs. (The absence of current spillovers is not necessarily evidence that there can't potentially be important spillovers and highly profitable long-run linkages; it simply says that these linkages have not been developed under previous developmental strategies.) Countries should also look for good partners, willing to participate in this kind of broader development strategy. While the technical knowledge associated with mining may have limited relevance to other sectors, the organizational knowledge of a foreign partner can be of broader relevance. Moreover, there can be a variety of linkages to other sectors that can be enhanced: the fact that in the past such linkages appear to have been weak may only reflect the lack of effort in developing them. At the very least, domestic firms can supply a variety of the required inputs, for example, construction of housing. Private firms, of course, may have little incentive to do so. Government intervention may be required, and the contracts have to be designed to better align private incentives with societal needs. Writing a formal contract embedding all of this may be nearly impossible, which is why, where government has the required competencies, state agencies may be preferable.

5.4 Services

Services will be the growth sector of the future, but there will be many ramifications of the move to the service sector that developing countries need to be aware of.

Production units will be smaller. For developing countries, this is a good thing: it is easier for entrepreneurs in nascent stages of development to manage small- and medium-sized enterprises. But productivity growth may be more limited. Traditionally, productivity growth in the service sector is lower than in manufacturing. While this may be partially a measurement problem, it is partially real and expected: with smaller production units, each has less incentive for investment in research and development (R&D), and the benefits of learning by doing are less widely shared.

But this lower rate of productivity growth is not inevitable.²³ More to the point, there is enormous scope for developing countries to catch up to productivity levels in the service sector in the advanced countries. With the service sector comprising such a large fraction of the economy in advanced countries, disparities in productivity in the service sector are an important component of disparities in standards of living, and closing the gap in productivity should thus be an essential part of the development strategy.

As in agriculture, there is more need for co-operative and government R&D. (There are a few places around the world, such as Tuscany, where co-operative ventures have proved successful.)

The move towards a service sector economy is likely to be associated with other changes to the structure of the economy, which will require more active government intervention. The transition to a service sector economy may be associated with greater inequality, for several reasons. There will not be the kind of wage compression that typically occurs in large manufacturing enterprises (where wage differences across individuals are smaller than productivity differences). The result is that compensation is likely to be more linked to individual productivity. Moreover, there are likely to be larger productivity differences across firms (in turn, because the enterprises themselves will be less able and willing to invest in the acquisition of frontier knowledge). Finally, monopoly power may increase. The level of competition in local services is often lower than that of product competition among large international manufacturing firms, and this is especially so when there is a link between local services and the large manufacturing firms—there is likely, for instance, to be a single service provider for any car or tractor in a given locale. Indeed, many large manufacturers may generate much of their profits from these local services, precisely because there is limited competition there. Location matters. Moreover, in developing countries with high levels of unemployment, the imbalance of market power between firms and workers is likely to be even greater than in developed countries.

Again, there is an increased need for government action: to combat the increase in monopolization here, as in other areas of modern economies; to ensure that there is a greater balance of power between workers and firms (encouraging, for instance, unions among smaller enterprises and even individuals, like taxicab drivers); to redistribute income to curb excesses of inequality and address poverty; and to promote advances in technology. There is an increased need for government to push to create a learning society, to reduce productivity differences.

Many services can be more easily inserted into the global economy through the internet, especially if there can be standard-setting, with quality certification, either through peer monitoring or certification services possibly provided by the government. Success will entail an increasing need for skills training, including languages. But the dominance of a few tech giants and the role that the advanced countries play in setting international standards may result in an uneven playing field, enabling the advanced countries to receive a disproportionate share of the value of these advances in technology and inhibiting the ability of those in developing countries to become meaningful participants in the marketplace. At the very least, developing countries will need to resist demands by the US and other developed countries to accede to international agreements reflecting the economic interests of the tech giants; and they will have to find ways to tax the revenues generated within their countries by these digital multinationals.²⁴

²³ There is an important caveat: there are limits to increases in productivity in some service sectors, e.g. in the creation of works of art or in haircuts. This is sometimes referred to as *Baumol's disease* (Baumol 2013).

²⁴ Even European countries have become worried about the loss of tax revenues and are beginning to explore the best way to impose taxation.

The multiple forms of services

The term ‘services’ embraces a wide range of economic activities, with quite different characteristics. Some developing countries, for instance, have successfully promoted tourism. Developing a tourist industry can promote jobs and learning and generate considerable foreign exchange. Countries like Bhutan and Namibia have, moreover, managed the sector in ways that minimize impacts on the environment and the domestic culture.

Government plays an important role in many key service sectors (housing, education, and health), and understandably so. This means that as economies move towards a service sector economy, the role of the government should naturally increase.²⁵

Let me say a few words about housing and education.

Housing services

The process of urbanization will require large investments in housing, with a large job creation potential. Government will need to take an active role, including in planning ‘livable cities’ (an important part of wellbeing), in providing finance and local public transportation, and in ensuring that there is affordable housing for all income groups. In many cities, there is no affordable housing for low-income residents anywhere near the city centre, forcing people to travel long distances—a hidden tax. The benefits of agglomeration are often captured by those who happen to own real estate in the centre; a high tax on this real estate can recapture these windfall benefits for the public, and be used to ensure that cities are more economically integrated.

Private financial markets have, in many countries, done a dismal job of providing mortgages at low rates, and in forms that help individuals manage well the risks of home ownership. Governments should at least consider the possibility of providing income-contingent, long-term mortgages (when incomes fall below a certain level, payments are postponed and the mortgage is paid back over a longer period) to those who have paid income taxes for a number of years. Such a programme would encourage home ownership, reduce defaults, and have the further benefit of encouraging formality in the labour market.

Education

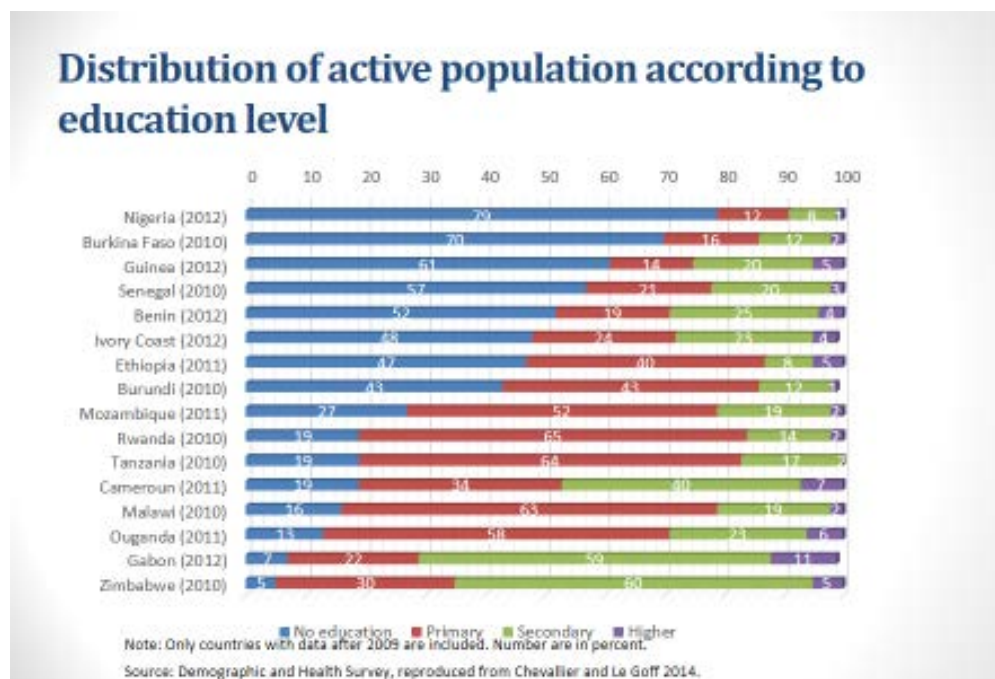
Good systems of education can both create jobs and enhance development. In many developing countries, recruitment of new enterprises is hindered by a lack of education—not just ‘quantity’ (average level of attainment, see Figure 3) but quality. Making education economically accessible through state support is an important step, but there have to be corresponding efforts to ensure quality. Otherwise there will be disappointment.

Low education levels also present an increasing challenge to continued modernization, as the importance of learning will grow.

The new tech giants pose serious problems not only for competition policy and taxation but also for privacy policies and democratic processes. A discussion of how these can and should be addressed would take us beyond the scope of this paper.

²⁵ Earlier, we described the important role for the government in providing agricultural services, in marketing of output, in the provision of inputs (credit, seeds, and fertilizers), and in extension services, improving agricultural technology.

Figure 3: Distribution of active population according to education level



Notes: Only countries with data after 2009 are included. Numbers are in per cent.

Source: Chevalier and Le Goff (2014), reproduced with permission.

Other service sectors

Many service sectors, like telecommunications and business services, can be as modern and hi-tech as manufacturing, with learning benefits similar to those in manufacturing. Unfortunately, many developing countries have allowed foreign companies to develop these sectors without any focus on encouraging learning.

Maximizing the development potential from foreign investment requires maximizing these learning spillovers. That may entail requiring joint ventures, as China has, or imposing local content and employment requirements.

6 Industrial policies and dynamic comparative advantage

We have already made clear that there is a need for government to take a large role in development and the associated structural transformation. Development and structural transformation are rife with market failures. It is costly to move from the 'old economy' to the new. Imperfections of capital markets become particularly evident in the process of transformation: the value of the assets of those in the 'old economy' are diminished, so firms and workers in the old economy don't have resources to make necessary investments or the collateral with which to obtain finance. Moreover, there are important learning externalities, which those making investments and production decisions don't take into account.

The need for government was made evident in the earlier transition in developed countries from agriculture to manufacturing, where the failure of government to assist in the movement of individuals out of agrarian-rural to urban manufacturing contributed to the Great Depression. It was only through an unintended government industrial policy—moving people to the urban sector

as part of the war effort²⁶—that the Great Depression was overcome and a successful transition was accomplished. But as we have already explained, the role of government in this transition to a service sector economy, through the multi-pronged approach described in the previous section, will entail an even greater role, e.g. in closing the knowledge gap between the small production units in the service sector and the best-managed enterprises around the world, and in promoting technological advances in both the service sector and agriculture.

Industrial policy is one of the important instruments that government will need to employ. It simply entails actions that aim to alter the allocation of resources (or the choice of technology) from what the market would on its own bring about. As we noted earlier, industrial policies are not confined to industry but include policies aimed at other sectors e.g. finance or IT and agriculture. Modern industrial policies might more accurately be called learning, industrial, and technology (LIT) policies. These policies are, in part, about *creating a learning society*, an essential part of modernization. Creating a learning society is more than just a matter of education; it entails trade and investment policies, labour policies, competition policies, and labour market policies—indeed, it touches on every aspect of a country’s legal and economic framework. There is often a conflict between policies that enhance static efficiency and those that contribute to learning, and thus to long-term growth. Striking the right balance is at the core of success. One of my criticisms of the neoliberal Washington Consensus policies is that they paid no attention to learning, seemingly unaware of the potential conflict, and thus failed to strike the right balance. Allocating resources in a way that is consistent with *static* efficiency, as desirable as it may seem, may actually impede development and growth.²⁷

LIT policies take many different forms. Rwanda used such policies to promote IT, Kenya to promote tea and flowers, Ethiopia to promote modern agriculture and shoes. The green revolution in South Asia was facilitated by agricultural price supports (setting a floor on output prices, thereby affecting the risk of using the new technology) as well as input subsidies, including, notably, for electricity, which enhanced the profitability of tube-well irrigation that was critical for the success of the new seeds. Industrial policies were central to almost all countries that ‘caught up’ (or nearly so) with the technological frontier and became developed.

These policies have, of course, played an important role even in advanced countries. As Mazzucato (2013) emphasizes in her book *The Entrepreneurial State*, government has played a central role in all of the major advances, including the internet. But the role of government in shaping the economy is pervasive. Because there is a widespread perception that without government assistance there would be an undersupply of credit to small enterprises, most advanced countries, including the US, have lending programmes directed at this ‘market failure’.²⁸ Industrial policies arise naturally in response to the multiple market failures that characterize development and structural change, from the capital market imperfections to the learning spillovers that we have already made note of.

Greenwald and Stiglitz (2014) go further: they argue that all countries have implicit industrial policies, though citizens in some countries don’t realize it. Markets don’t exist in a vacuum, and the way they are structured gives advantages to some, disadvantages to others. The priority given derivatives in bankruptcy in the US encouraged derivatives; and the rule that said that student loans could not be discharged, even in bankruptcy, provided encouragement to that sector. Moreover,

²⁶ Including the subsequent GI Bill, which provided education to returning veterans and helped them get housing.

²⁷ These ideas are elaborated upon in Stiglitz and Greenwald (2014).

²⁸ In the US, through the Small Business Administration. For the underlying theory, see Emran and Stiglitz (2009).

governments have to make decisions about what infrastructure to construct or how to design the educational system. These decisions about public expenditures help shape the economy. When citizens aren't aware of this, it means that the rules and patterns of expenditure are more likely to be determined by special interest groups, which are typically very aware of the consequences of these government actions. When these decisions are made in an open and transparent way, with full discussion of the implications for the country's growth strategy, the scope for this kind of rent-seeking is reduced.

Thus, we are arguing here that government must ask how the structure of its rules and regulations and expenditures can be used to promote those sectors and technologies that most enhance the country's long-run development strategy, e.g. promoting learning, with broad societal spillovers, and generating foreign exchange and jobs.²⁹

The identification of which particular forms/subsectors of manufacturing, services, or agriculture (or which particular technologies) are most conducive to development is a broader question beyond the scope of this paper (see Stiglitz and Greenwald 2015). Here, we simply note that there is a growing body of research associating development with complexity: more-advanced countries have the ability to produce a wide range of products, including, in particular, products entailing greater complexity (Hausmann et al. 2011; Tacchella et al. 2012). Thus, it may make sense for a country to consciously think about how it can move up the complexity scale; and how the knowledge associated with such production can be absorbed into the economy. China's strategy of joint ventures may perhaps best be thought of in this light. It was not (or not just) about stealing intellectual property, as the Trump administration has claimed. It was not about obtaining, for instance, otherwise secret blueprints. It was about learning, especially about tacit knowledge—the kind of knowledge that isn't written down, that one can't learn from a textbook. One only learns it through the process of production itself.

Some sectors are more amenable to learning, and some learning in specific sectors has more spillovers to others. The general principles of industrial policies apply in each area of the multi-pronged strategy, that is, not just to manufacturing, but to agriculture, services, and natural resources. Governments need to identify, for instance, 'learning' and 'learning spillover' service sectors and agricultural activities. These can have many of the benefits of the learning provided by manufacturing. And as we have noted, industrial policies need to exploit linkages with natural resources—one of the key comparative advantages of many African countries.

7 Reassessing comparative advantage

Older theories of development were based on countries exploiting their static comparative advantage. This implied, for instance, that in the 1960s, when Korea was formulating its development strategy after the Korean War, it should have focused on growing rice. But Korea realized that even were it to become the best rice grower in the world, it would still be poor, or at least poorer than the more advanced countries. To close the gap in incomes between itself and the more advanced countries, it had to close the gap in knowledge, and that entailed heavy investments in education and knowledge. It also meant, at that time, industrialization. Korea realized that a country's comparative advantage could change.

²⁹ This paper focuses on development. Industrial policies can and should be used to promote other societal objectives, such as protecting the environment and reducing inequality. See also Cimoli, Dosi, and Stiglitz (2009a, b).

Thus, the focus of a country's development strategies must be on dynamic comparative advantage, not static comparative advantage. But assessing dynamic comparative advantage is difficult; indeed, even assessing static comparative advantage in today's global economy is not so easy. Traditionally, using the Heckscher-Ohlin model, it has been argued that developed countries have a comparative advantage in capital-intensive, high-technology-(skilled labour)-intensive goods and developing countries in unskilled labour-intensive goods.

But capital is highly mobile, and many aspects of technical knowledge (especially when embedded in machines) are relatively mobile. So, too, is skilled labour relatively mobile.

What, then, is the real source of comparative advantage? It can't be based on mobile factors. It must rest on *placed-based* characteristics, the immobile 'factors'—most importantly, the embedded knowledge of society, its institutions and norms, the institutional infrastructure (its political system, and its stability; its rule of law; its systems of checks and balances), its physical infrastructure, its reputation ('branding'), and the skills, health, and discipline of its workforce. All of these affect ability to attract and retain talent and capital. Young people care about the environment, about 'meaning' in their work, and co-operation and challenge (including intellectual challenge) in the workplace.

It is hard—but essential—to change these in constructive ways. It is also essential not to change them in adverse ways: the move in many countries in recent years to more authoritarian governments has increased the uncertainties. It is a change that alters both long-run (dynamic) comparative and absolute advantages.

8 How can developed countries help?

Having characterized a new multi-pronged development strategy, the natural question is, how can developed countries help? There is a role that they can play in trade, finance, investment, and knowledge, in closing the resource and knowledge gaps that separate developed and developing countries. A fairer *pro-development* global trade regime would obviously help, especially in both agriculture and manufacturing. The current regime has agricultural prices depressed by massive subsidies in the developed countries, and yet inhibits the developing countries from assisting their economies in making transitions out of agriculture.³⁰

The investment regime that developed countries are attempting to impose is also adverse to development. It impedes the imposition of domestic requirements, which can facilitate learning. Investment agreements also impede renegotiation that would allow developing countries to get a fair share of the value of their natural resources. They also impede the imposition of regulations that protect the environment, health, and safety, and promote economic stability (Stiglitz 2018).

The global intellectual property rights (IPR) regime is also adverse to development. This was recognized in 2004, when the World Intellectual Property Rights Organization (WIPO) called for a development-oriented intellectual property regime. But the failure to achieve this parallels the failure to get a development-oriented international trade regime. While international trade agreements typically have provisions for compulsory licences, the advanced countries have put

³⁰ While the international community came together in 2001 seemingly with a commitment to promote development through what was called the development round of trade negotiations, by the end of 2015 the development-round negotiations were abandoned. The problems with the existing regime are set forth, e.g., in Stiglitz and Charlton (2005).

pressure on developing countries not to exercise those rights. The developed countries need to recognize that the IPR regime that is appropriate for a developing country is different from that appropriate for an advanced country—and the intellectual property regime in the advanced countries itself, a variant of which they have tried to impose around the world, is designed not to promote innovation but to promote profits in certain politically powerful sectors. The combined effects of the international trade and intellectual property regime hurts the ability of developing countries to industrialize and to create a modern agriculture sector, and it leads to increasingly large transfers from the developing countries to the developed.³¹

Moreover, the developed countries (especially the US) refuse to recognize the valuable environmental services (biodiversity) provided by the developing countries. The result of all of this is that there is a risk either of a growing knowledge gap or of a large flow of money from developing countries to developed—rather than the other way around.

At the same time, the developed countries have not done what they should to stymie the flow of corrupt funds out of developing countries—providing safe havens both in offshore secrecy havens and in onshore centres for money laundering.³²

The developed countries have, at the same time, not lived up to their commitment to provide support for developing countries, either in general assistance or in assistance targeted at climate change adaptation and mitigation.

There is a simple way of providing the resources that will, at the same time, promote global stability and growth (Greenwald and Stiglitz 2010; Stiglitz and Greenwald 2010). Every year, countries around the world put aside several hundred billions of dollars in reserves—as protection against the economic volatilities and uncertainties they face. These amounts increased significantly in the aftermath of the East Asian crisis, when developing countries saw the consequences of not having enough reserves: crisis and a loss of economic sovereignty, as the IMF imposed harsh and unreasonable conditions in return for assistance. But this money—income not spent—depresses global aggregate demand. At times, this is offset by countries spending beyond their means, but most countries have realized the dangers of doing so, so that overall there is a bias towards weak global aggregate demand.

Today, most countries hold their reserves largely in dollars (though also in gold, euros, and yen). This creates a problem known as the Triffin Paradox: as the reserve currency owes more and more money to those abroad, confidence in the country may erode (Triffin 1960). Thus, the current reserve system risks both weak aggregate demand and global macro-instability.

These problems can be easily rectified by creating a global reserve system—where countries agree to convert the global reserve currency into their own currency. The annual emissions of new global reserves can be designed to offset the amounts put into reserves, maintaining the global economy at near full employment. And the emissions can be transferred to the accounts of the developing countries, increasing their purchasing power but without subtracting from the purchasing power of those in the developed countries. The provision of these funds to developing countries should

³¹ See, e.g., Cimoli, Dosi, Nelson, and Stiglitz (2009); Cimoli et al. (2014b), including the concluding chapter summarizing the findings; and Dosi and Stiglitz (2014). See also Baker et al. (2017) and the references therein.

³² See, for instance, Peith and Stiglitz (2016) and Global Justice Now (2017). See also African Development Bank and Global Financial Integrity (2013).

be done with minimal conditionality, e.g. only requiring that they not engage in actions that harm the global community, like excessive carbon emissions or nuclear proliferation.³³

9 Concluding remarks: Reformulating development thinking

Success in development over the past 60 years was greater than anyone anticipated. Simply contrast Myrdal's predictions for Asia (he anticipated that the continent would continue to be mired in poverty, as it had been for centuries) with what happened (Myrdal 1968). There is an enormous gap that must be closed in both knowledge and resources. Most of the advanced countries are engaged in the service sector—in the US that sector accounts for 80 per cent or more of GDP. So if there are disparities in standards of living, they relate to productivity in these service sectors. There are huge disparities in productivity within countries, even greater between countries.

The basis of the success of growth over the past half-century was export-led growth. We have deconstructed what enabled manufacturing to provide this growth spurt, this structural transformation. It won't be able to do so in the future to anything like that extent. There has to be another strategy, one that performs some of the essential roles that manufacturing export-led development did.

Successful development policy will need to be explicitly more multi-pronged, addressing the separate 'challenges' that the manufacturing sector addressed simultaneously. We have shown how a co-ordinated (agriculture, manufacturing, mining, service sector) strategy has the prospect of attaining the same success as the old manufacturing export-led strategy.

9.1 Comprehensive development strategy

In short, what is needed is a comprehensive development strategy³⁴ leading to inclusive growth with inclusive participation, including a balance between markets, government, and society, based on the new understandings of what leads to successful economic and societal transformation, responding to the particular strengths of the country and addressing the particular challenges, including those posed by demographics and climate change. Most importantly, it must create new dynamic comparative advantages.

Resources will be needed. Current policies of advanced countries not only impede the possibility of developing countries learning, of their closing the gap between themselves and the advanced countries, but actually encourage a flow of resources out of developing countries.

We have put forward a simple proposal for a global reserve system that would generate revenues to finance large amounts of assistance to developing countries while at the same time contributing to global growth and stability.

The challenge facing the less-developing countries in coming decades is enormous. Even when successfully implemented, the multi-pronged strategy we have outlined is unlikely to provide

³³ There are a variety of institutional arrangements by which this could be done, including expanding the existing system of SDRs (special drawing rights); see the report of the Commission of Experts on Reforms of the International Monetary and Financial System (2010). See also Greenwald and Stiglitz (2010), Ocampo (2018), Stiglitz (2006), and Stiglitz and Greenwald (2010), and the references cited therein.

³⁴ This was an idea popularized in the late 1990s by the President of the World Bank, Jim Wolfensohn; see also Stiglitz (2001).

successes of the magnitude experienced in the East Asian miracle. And it is not an easy strategy to implement. It is far more complex than the manufacturing export-led strategy. The developed countries can provide substantial help. Helping the developing countries is a moral issue. But beyond that, there will be enormous economic and political consequences of not helping the developing countries, not the least of which will arise from the inevitable migration pressure that will result from an ever-increasing gap in income.

The central message of this paper is one of hope: there is hope for development in a post-industrial world. It will be harder. And it will require more assistance from the developed countries, or at least that they take down some of the impediments that they have placed in the way of developing countries' structural transformation. But it can be done.

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