

## A NEW GROWTH STRATEGY FOR DEVELOPING NATIONS

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Not so long ago, the development community was brimming with optimism on the developing world's economic prospects. Economic growth was up, extreme poverty sharply down, and there seemed to have emerged a clear consensus on the outlines of a growth strategy based on integration in the world economy. There were plenty of debates on the particulars of the strategy: the experience of China, which had engineered history's most spectacular poverty reduction, gave ammunition to advocates of both market-oriented and more state-directed approaches to development alike. But both sides agreed that, however achieved, export-oriented industrialization was the way to go.

This consensus has been shattered by several developments. Some of these were long-time in the making. In particular, technological changes have made manufacturing skill- and capital-intensive, and less and less labor-absorbing. This undercut the efficacy of industrialization as a growth strategy. The ability of the growth strategy to absorb labor was reduced at the same time as the comparative advantage of developing countries was at least attenuated. As Figure 1 shows, economic growth rates in the developing world were already dropping in the years preceding the Covid pandemic.

The pandemic itself accelerated and rendered visible other, more subtle trends. With lower growth, the debt problems of developing countries became crushing, and low- and lower-middle income countries lost access to financial markets. Geopolitical competition between the U.S. and China and the creeping backlash against hyper-globalization transformed the global economic landscape and rendered the world economy less hospitable to growth through trade. As incomes in the developed countries increased, there was a shift away from manufactured goods to services, so the share of global output in manufacturing was in decline. The impending climate-change crisis, and the requisite green transition, affected the agricultural sectors in many developing countries adversely. It also reduced global demand for material goods, especially those with a high carbon footprint, as opposed to services, and made the development of new technologies an imperative, further disadvantaging developing countries.

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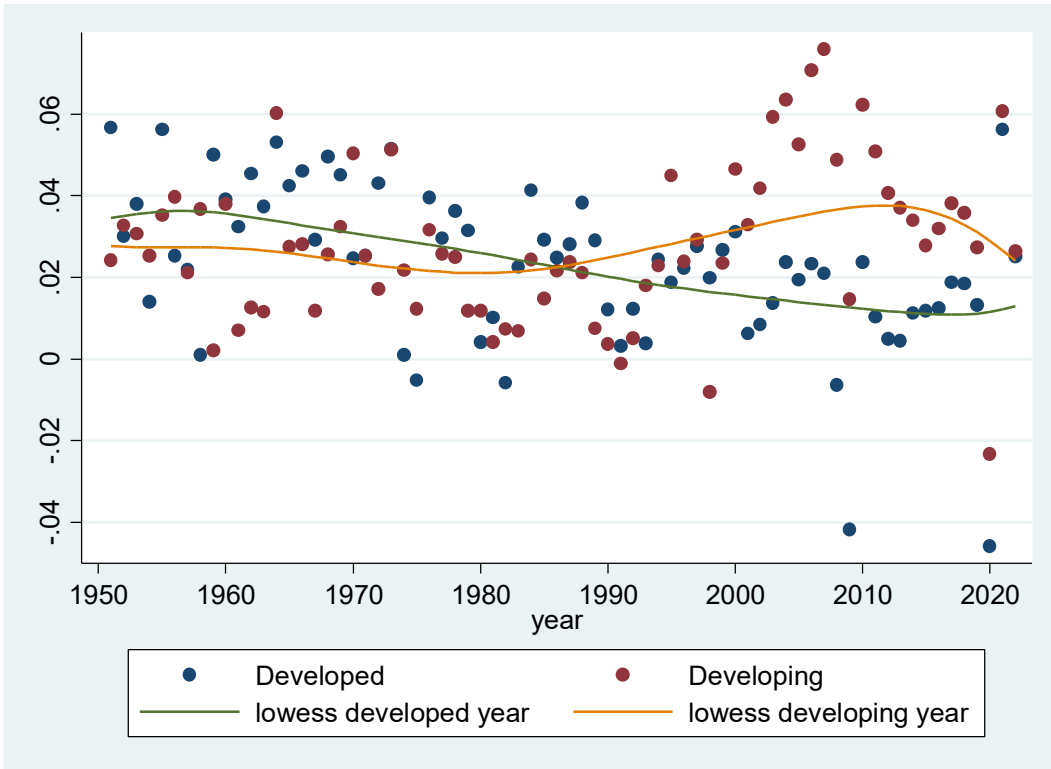


Figure 1: Growth rates for developed and developing countries since 1950

Sources and notes: Data are from Angus Maddison database, updated with data from World Bank, World Development Indicators. The curves labeled “lowess” depict the smoothed trends of the annual observations for each group.

We argue in this essay that we are at a turning point in development strategy. Strategies that worked well in the past are unlikely to do so in the decades ahead. In particular, the manufacturing- and export-based growth strategies that drove East Asia’s development miracles are no longer suited for today’s low-income countries; at the very least, they are insufficient. New technologies, the climate challenge, and the reconfiguration of globalization require a new approach for development emphasizing two critical areas: the green transition and labor-absorbing services. Unfortunately, policy makers do not have ready-made recipes or successful models to emulate. Confronting this challenge head-on will require therefore also building greater capacity to learn about new opportunities, constraints, and what works and doesn’t as governments experiment with new policies on a number of fronts.

#### The strategic approach to economic development

The fundamental source of economic development in the long-term is learning, both at the level of the individual, reflected in the accumulation of human capital and learning-to-learn,<sup>2</sup> and at higher levels—

<sup>2</sup> J. E. Stiglitz, “Learning to Learn, Localized Learning and Technological Progress,” *Economic Policy and Technological Performance*, P. Dasgupta and Stoneman (eds.), Cambridge University Press, 1987, pp. 125-153.

organizational and societal learning, including improved governance, which entails not just understanding the principles of what makes for good governance, but overcoming the impediments to their implementation. Sustainable economic growth requires patient building up these fundamentals – steady investment in education and skills and improvements in the quality of institutions.

While the accumulation of these fundamental capabilities is indispensable for development—it is a necessary condition—it is not sufficient; it is not a substitute for a strategy of economic development focused directly on structural transformation. In all successful cases of economic growth, in East Asia and elsewhere, these fundamentals improved alongside rapid economic growth. They are as much a result of growth as they were a precondition. Sustained rapid growth, in turn, requires structural transformation: countries that had rapid growth, say based on natural resources, and did not have structural transformation saw that growth eviscerate with the end of the commodity boom. Moreover, countries that have focused solely on fundamentals and invested in education and governance without successfully promoting successful structural change have reaped meager rewards in terms of economic growth. The supply of human capital and good institutions yields little growth without simultaneous changes on the demand side of the economy, which typically come from the promotion of new, modern economic activities, and the structure of production, which come from the industrial policies discussed below.

Still another essential element of strategy focuses on macroeconomics. Small open economies need to ensure they have exchange rates that are competitive, maintaining overall balance between aggregate supply and demand without leaving the country dependent on short-term foreign capital and hence subject to “sudden stops,”<sup>3</sup> and at as high a level of employment as possible. This has been a key failure of many resource rich countries, as well as a reason that many countries following Washington Consensus policies failed. Larger economies must ensure adequate aggregate demand to maintain high levels of capacity and employment.

The current focus in development economics on randomized controlled trials (RCTs) and other rigorous methods of causal inference has obscured the importance of structural change. RCTs have yielded many important policy insights, in public health, education and delivery of social services, and no doubt have contributed significantly to poverty reduction. But ultimately, long-term and sustainable economic development require more than a series of local interventions restricted to policy domains where such experimental methods are applicable. The most spectacular growth miracles of our time were the result of sectoral or economy-wide policy reforms that fostered new economic activities without the prior benefit of RCTs. China explicitly experimented by trying new policy arrangements in some provinces before launching them elsewhere. As these experiences show, learning from policy successes and failures is possible even when policy makers’ causal inference standards fall short of RCTs or other econometric techniques of “evidence-based policy making.” It would have been impossible to conduct RCTs to inform the choice of the big strategies that really mattered: policymakers gleaned what they could by carefully making inferences based on theory, history, econometric studies, and the limited experiments that could be conducted.

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<sup>3</sup> See, e.g. M. Guzman, J.A. Ocampo and J. E. Stiglitz, “Real Exchange Rate Policies for Economic Development,” World Development, 2018, Vol. 110, pp. 51-62, and D. Rodrik, “The Real Exchange Rate and Economic Growth,” Brookings Papers on Economic Activity, 2008:2.

Rapid sustained economic development thus requires an explicit strategy.<sup>4</sup> The common element running through all the rapid and sustained growth cases of our time was the strategy of industrialization. During the early postwar era, this strategy was import-substituting industrialization (ISI). Combining heavy state intervention with import barriers, ISI focused on building domestic manufacturing capacity – initially consumer goods, followed by intermediate and capital-goods industries. While not all countries did well under this strategy, many countries in Latin America, Middle East and Sub-Saharan Africa experienced rapid economic growth until the oil shock of the second half of the 1970s. East and Southeast Asian countries led by Taiwan in the late 1950s and South Korea in the early 1960s also heavily promoted industrialization through a wide variety of measures including access to credit and tax incentives, but pushed their nascent manufacturing enterprises early on to export.

This export-oriented industrialization (EOI) model in East Asia proved more sustainable, and eventually became the one to emulate for countries adopting more market-oriented approaches under the influence of the Washington Consensus. True to its markets focus and aversion to government “intervention,” however, the Washington Consensus focused largely on “fundamentals” – investments in education, governance, and macroeconomic stability -- and downplayed *structural transformation strategies* that were central to the success of the East Asia countries, including the role of explicit trade and industrial policies (used in East Asia) to foster learning and new industries. Largely as a result, the growth payoff to the Washington Consensus proved disappointing.

China was the most significant success story of the East Asian model. Once the Chinese government prioritized economic growth after 1978, its strategy combined market incentives with highly unconventional institutional arrangements – the household responsibility system and dual-track pricing in agriculture, township-and-village enterprises, special economic zones – to foster structural change, productive diversification, and new capabilities. Industrial policies promoting new manufacturing activities were a critical part of Chinese success. China was a beneficiary of increased globalization, but played the game largely by its own rules.

By the 1990s, globalization had reached new heights. Under the new model of hyper-globalization, removing or at least reducing transaction costs on international trade, finance, and investment (“deep integration”) became a primary objective of economic policy. Reduction in these costs along with technological advances rendered global value chains (GVCs) the predominant force shaping global

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<sup>4</sup> There is an extensive theoretical literature on why the government must do this and markets themselves can't be relied upon, focusing on *market failures*. Beginning with the work of Arrow, Debreu, Greenwald and Stiglitz (“Externalities in Economies with Imperfect Information and Incomplete Markets,” *Quarterly Journal of Economics*, Vol. 101, No. 2, May 1986, pp. 229-264. ), Stiglitz and Weiss (“Credit Rationing in Markets with Imperfect Information,” *American Economic Review*, 71(3), June 1981, pp. 393-410) and a host of others from the 1950's on, they developed an understanding of the range and nature of these market failures, and what government could do to overcome them, or at least mitigate their consequences. (See J. E. Stiglitz, *The Economic Role of the State*, Oxford, Basil Blackwell, 1989.) In the context of development and decisions about the structure of production, this led to a literature on industrial policies for developing countries (for a broad discussion, see B. Greenwald and J.E. Stiglitz, “Industrial Policies, the Creation of a Learning Society, and Economic Development,” In J.E. Stiglitz and J. Yifu Lin, eds., *The Industrial Policy Revolution*, Basingstoke and New York: Palgrave Macmillan, 2014 ; as discussions drew attention to the importance of innovation (see footnote below), these were dubbed Learning, Industrial, and Technology policies. (A. Noman and J. E. Stiglitz, “Strategies for African Development,” in *Good Growth and Governance for Africa: Rethinking Development Strategies*, A. Noman, K. Botchwey, H. Stein, and J.E. Stiglitz, eds., Oxford, New York: Oxford University Press, 2014, pp. 3-47.

production. Joining GVCs in turn became the main vehicle for promoting economic growth. Entering GVCs, the thinking went, would help promote new industries, increase productivity, and generate the structural change needed for growth.<sup>5</sup>

However, just as global economic integration, EOI, and GVCs became the corner pieces of economic development strategy, their benefits were being undermined by a process of “premature de-industrialization” in developing countries. The primary culprit was skill- and capital-biased technological changes in manufacturing. These changes increased labor productivity substantially in the advanced economies where innovations originate. But they also undercut the comparative advantage of low-income economies in traditionally labor-intensive manufacturing. The quality and technological standards set by leading firms in GVCs rendered labor-intensive production in export-oriented sectors even less viable.<sup>6</sup>

The result was that globally competitive formal manufacturing sectors in developing countries ceased being labor-absorbing sectors. They turned into “enclave” sectors where very few of these economies’ excess low-skilled labor could be employed. In countries where manufacturing output held its own, manufacturing employment shrank (as a share of total employment). In the few cases where manufacturing employment registered an increase, the rise was concentrated in small, informal, and low-productivity enterprises, while large, internationally-competitive firms generated little demand for labor.<sup>7</sup>

Structural transformation is the key dynamic that drives rapid economic growth.<sup>8</sup> As workers move from low- to higher-productivity sectors, they increase their earnings, aggregate productivity rises, and economic growth takes place. The key strategic question that needs to be answered to launch this process is: where will the better, more productive jobs come from?<sup>9</sup> While manufacturing will remain an important sector for most countries, we do not believe it can be the protagonist of economic growth in the way it was in East Asia and other successful economies of the past. Green industries and services

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<sup>5</sup> Trade barriers did not come down uniformly, and there was a big gap between rhetoric and reality. And what some would view as new trade barriers appeared – such as those associated with intellectual property.

<sup>6</sup> D. Rodrik, “Premature Deindustrialization,” Journal of Economic Growth, 21(1), March 2016; D. Rodrik, “Prospects for Global Economic Convergence Under New Technologies,” in David Autor et al., An Inclusive Future? Technology, New Dynamics, and Policy Challenges, Brookings Institution, Washington, D.C., May 2022. (In the context of Africa, this de-industrialization had set in earlier. Its causes, consequences, and potential remedies, are discussed in A. Noman and J. E. Stiglitz, *op. cit.*)

<sup>7</sup> X. Diao, M. Ellis, M. McMillan, and D. Rodrik, “Africa’s Manufacturing Puzzle: Evidence from Tanzanian and Ethiopian Firms,” January 2021.

<sup>8</sup> Some natural resource rich countries can manage periods of very rapid economic growth, but if the proceeds of the natural resources are not reinvested in structural transformation—which has typically been the case—the growth is limited. When the resources run out or prices come down, growth stops, and often reverses.

<sup>9</sup> Our concern here is not with the overall quantity of jobs or with full-employment, but with the structure of jobs. Reasonable macroeconomic policies (along with “flexible” labor markets) will ensure full employment, but the resulting structure can be sub-optimal from a developmental standpoint and not growth-promoting. We focus, therefore, on the creation of more jobs in the more productive sectors of the economy as a vehicle of structural transformation and growth, analogous to the role that industrialization has played historically.

must play an important role in filling the void, especially in the next few decades. In the next two sections, we take up each area in turn.<sup>10</sup>

### The green transition

Climate change imposes a large cost on low-income countries. They are especially vulnerable because of their location in zones that are most affected and because their low resources and limited fiscal space make the large-scale spending necessary for adaptation and response to the damage of climate change difficult, if not impossible. Their exposure to extreme weather events has increased, resulting in losses to crops and livestock. The drag on growth is already evident in many cases, and is also being reflected in higher borrowing spreads and reduced access to private finance.

In a world with complete and efficient markets and where governmental efforts are already optimized, the constraints imposed by climate change and the requisite adjustments would necessarily reduce well-being, and almost certainly growth. However, we are far from such a world. In our more realistic, second-best world, policy reforms in part induced by the need to respond to climate change could not only reduce the costs imposed by climate change, but also potentially produce better outcomes relative to the business-as-usual counterfactual. In particular, the climate challenge can become a growth opportunity if developing countries are able to turn it into an investment strategy.<sup>11</sup> As several large-scale global models have shown, it is possible for well-designed climate action to boost growth in developing countries.<sup>12</sup> But, and this is the key caveat, a plausible and desirable path towards a green transition will require large up-front investments.

There are multiple key investment priorities related to the green transition.<sup>13</sup>

The first is the transformation of the energy system, which entails moving from fossil fuels to renewable sources of energy. Without decarbonization of energy use in developing countries, and the phasing out of coal-fired power plants in particular, it is difficult to see how the world can reach a target of net zero by the middle of the 21<sup>st</sup> century. Rapid technological progress and the sharp decline in prices of

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<sup>10</sup> In his, "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," Stiglitz deconstructs why the EOI growth strategy was so successful and what a 21<sup>st</sup> century replacement—a multi-pronged strategy—might look like. (In *Inequality in the Developing World*, Carlos Gradi, Murray Leibbrandt, and Finn Tarp (eds.), UNU-Wider Studies in Development Economics, Oxford: Oxford University Press, 2021 (<https://oxford.universitypressscholarship.com/view/10.1093/oso/9780198863960.001.0001/oso-9780198863960-chapter-12>)).

<sup>11</sup> The reasons for this are set forth more fully in N. Stern, and J. Stiglitz, "Climate Change and Growth," Industrial And Corporate Change 32 (2): 277–303, 2023.

<sup>12</sup> H.P. Lankes, R. Macquarie, É. Soubeyran, and N. Stern, "The Relationship Between Climate Action and Poverty Reduction," The World Bank Research Observer, forthcoming.

<sup>13</sup> This discussion follows V. Songwe, N. Stern and A. Bhattacharya, Finance for Climate Action: Scaling up Investment for Climate and Development, November 2022, and N. Stern, and J. Stiglitz, *op. cit.*

renewable energy have made this goal more attainable. But it will require massive new investments in infrastructure and electrification and in new sources of energy such as solar, wind, and green hydrogen.

There will be requisite investments in each of the other systems that constitute a developing economy, and implementing some of them will be particularly difficult because of the decentralized nature of the investments that will be required. Transforming agriculture could lead to more productivity—higher standards of living for the large fractions of the population still dependent on that sector. Developing countries are also home to significant carbon sinks. They can make a substantial contribution to mitigating climate change by ensuring that their ecosystem resources are restored and well-protected. This will require a wide range of public investments in agriculture, forests, soils, and oceans. (This can be an especially important part of development strategies if there is success in putting into place arrangements that would compensate developing countries for the global environmental services they provide.)

Redesigning cities, with modern transportation systems and efficient housing, too could contribute to lowering emissions and greater productivity. (The traffic jams that mark large capitals of developing countries around the world are bad for the climate and bad for living standards.)

Another area is reducing the vulnerability of developing countries to damage from climate change. Since many of the adverse effects of climate change are already locked in by past emissions, there are significant needs in building defenses against rising sea levels, desertification, and extreme heat. Government will need to increase investments in food and water systems, resilience of infrastructure and urban areas, and disaster risk management.

Songwe et al. estimate that the total investment needed for such a strategy amounts to an additional 2 percent of GDP per year by 2025 and an additional 4 percent of GDP per year by 2030 (excluding China).<sup>14</sup> Many of these incremental expenditures reflect the up-front costs of replacing capital goods that would otherwise eventually have to be replaced earlier. Some of these incremental costs arise from the fact that many green technologies are more capital intensive than the corresponding non-green technologies—more labor now, but with the benefit of less labor in the future. This is evident in the case of EV, where maintenance and driving costs are a fraction of those associated with the internal combustion engine.

The feasibility of these actions depends heavily on the availability of external financial support. Assuming half of the investment needs is met through domestic resource mobilization (as Songwe et al. do), developing countries as a group would require an additional 2-4% of GDP of external resource flows in the years ahead. Short of concerted global action by leading creditors and multilateral lenders, it is difficult to see how this could be achieved. The pandemic and rising food and fuel costs have left the developing world with severe debt problems. While only few have defaulted, scores of developing countries are currently illiquid. Net financial transfers to Africa have slowed down to a trickle and low- and lower middle-income countries have essentially lost access to bond markets.

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<sup>14</sup> V. Songwe, N. Stern and A. Bhattacharya, *op cit*.

Bridging the investment gap will require a new growth-oriented liquidity facility to allow the resumption of financial flows to these countries as well as speedier debt resolution.<sup>15</sup> This will have to be supplemented with domestic mechanisms to ensure adequate access to finance by households and firms, regardless of size, for green investments. We note that action on this front is in the interests of the advanced economies as well, since the climate transition is a global public good. (See also the essays by Ocampo and Songwe in this collection.)

If financing becomes available, and if the investment is deployed wisely, this ramping-up of investment in the climate transition could be an important element of the new growth strategy. Such an investment program could yield an additional growth of 0.5-1.0 percent per annum for developing countries (assuming an ICOR of 4).<sup>16</sup>

From a global perspective, the timing of the green transition may be relatively good: we have a surplus of labor available to make the investments. Some have been worried about a savings glut or secular stagnation, suggesting a surfeit of savings; in any case, the global real interest rate has been low (despite recent increases in the nominal rate). A key problem has been the risk premium imposed on developing countries—and even on relatively safe investments within those countries.

### Better jobs in services

Investment in the green transition would turn what is essentially a cost for developing countries into a growth opportunity. But it is not clear that on its own it would answer the question: where will the better, more productive jobs come from? The climate transition could create new jobs in building solar and wind facilities, in infrastructure, and in mitigation activities. But it will also destroy actual (and potential) jobs in fossil-fuel dependent activities and in brown manufacturing. Even if on net it increases labor demand somewhat, developing countries still face the significant challenge of absorbing large amounts of additional labor from agriculture and informality into modern, productive sectors. The problem of job creation in Africa is particularly acute. The World Bank estimates that “the working age population in Sub-Saharan Africa is expected to increase by 740 million by 2050, more than doubling from its current level of 630 million people.”<sup>17</sup> In the absence of job creation in more productive sectors, the bulk of this labor supply will be absorbed by precarious, unproductive informal activities in urban areas (as is the case at present). On balance, it is unlikely that decarbonization-led structural transformation will produce on its own the jobs which would have been created in the past by industrialization.

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<sup>15</sup> Ishac Diwan and Dani Rodrik, “Bridging the Climate-Development Gap,” Project Syndicate, September 26, 2023, <https://www.project-syndicate.org/commentary/low-middle-income-countries-debt-development-climate-crisis-by-dani-rodrik-and-ishac-diwan-2023-09>.

<sup>16</sup> This is a transitory increase in output associated with the green investment drive. This is a simple supply-side calculation, assuming all the additional investment is incremental to the capital stock. In practice, some of it may go to replace dirty productive capacity, in which case the incremental supply side effect would be lower. There may be, however, additional demand-side effects, arising from reductions in under-employment and movement of labor from low-productivity to higher-productivity modern activities. This demand-side bonus can boost the growth rate further.

<sup>17</sup> <https://live.worldbank.org/en/event/2023/africa-pulse-regional-economic-update-growth-people-better-jobs#tabs-37ea1a9bb0-item-bbefb3d5ca-tab>



The same could be said of agriculture. Agricultural modernization using new technologies and diversification into cash crops have significant potential in many developing countries. But it is difficult to envisage agriculture as a labor-absorbing sector for the economy going forward. Most of the new technologies being introduced in agriculture are labor-saving and capital-intensive. Historically, productivity gains in agriculture have been associated with reductions rather than increases in farm employment. It remains to be seen whether we could experience a different path, in view of the new constraints posed by climate change and land scarcity.

Combined with the manufacturing trends we discussed earlier, then, it is difficult to avoid the conclusion that services will remain the main labor absorbing sector of the economy in developing countries. This poses a significant challenge for them. It is true that some countries, such as India and the Philippines, have been successful creating productive, indeed globally competitive, tradable service industries. But these are typically activities such as IT and BPO (Business Process Off-shoring) which are skill-intensive. Such service sectors face the same disadvantage from the developmental standpoint as today's GVC-oriented manufacturing firms. They have limited potential to create large numbers of employment for the typically low-educated, low-skilled workforce of a developing economy.

Today jobs are largely being created in a very different segment of the economy -- a hodge-podge of largely self-proprietorships or micro/small firms, typically non-tradable and often informal. The central question is: how can productivity and demand be increased in these labor-absorbing service activities? We propose a three-pronged strategy for governments. First, encourage lower-skill job creation by the larger firms that operate in non-tradable services. Second, provide public inputs and access to productivity-enhancing investments for smaller enterprises. Third, invest in technologies that complement rather than replace low-skill workers in service sectors.

We recognize that the bulk of small, informal enterprises in developing countries will never become very productive. It would not be realistic to aim for productivity increases across the board for all these firms. The best that can be hoped is that dualism can be reduced over time both by encouraging the expansion of existing formal firms, and by increasing productivity among some of the more dynamic smaller, informal firms. Therefore, a strategy targeting the domestic service sector must be necessarily selective. The general idea here is one of self-selection. The government would engage in a variety of programs that have the potential of simultaneously increasing employment and productivity. It would then let the more entrepreneurial and dynamic among service-sector firms, including micro- and small enterprises, to select into and take advantage of these programs.

We illustrate the three elements of the strategy with concrete cases. As an example of the first component, consider a partnership that the state government of Haryana, India, established in 2018 with the private cab aggregators Ola and Uber.<sup>18</sup> The partnership was motivated by the government's objective to increase employment for young people. The firms, for their part, sought drivers to expand operations. It was based on an explicit quid pro quo. The government helped the firms identify and hire drivers by changing some of the regulations that hampered the expansion of ride-sharing services, sharing with them targeted databases of unemployed youth in the state, and holding exclusive job fairs for the companies. The firms in turn made "soft" commitments to expand the number of youth they employed. It was understood that the promises, on each side, were not contractual obligations, but good-faith intentions subject to changing circumstances. They were meant to enable the accumulation

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<sup>18</sup> <https://www.samragovernance.in/blog/2019-11-21-how-haryana-is-working-with-cab-aggregators-to-solve-the-unemployment-puzzle/>

of mutual trust over time. In less than a year, the partnership is said to have created more than 44,000 new jobs for youth.

An example of the second type of program is provided by a Colombian initiative to reduce the time and financial costs of street fruit and vegetable vendors in Bogota.<sup>19</sup> Unlike large retail stores, these vendors have very inefficient “supply chains,” requiring them to spend inordinate amount of time looking for and buying the products they eventually sell. The typical vendor in Bogota gets up at 4:30 am and spends two hours in travel to purchase the produce from a central wholesaler. A social enterprise (Agruppa) came up with the idea that it could group and consolidate orders from the individual vendors, buy in bulk directly from the growers, and deliver the fruits and vegetables directly to the stores of the vendors. This would not only reduce the costs of the vendors, but also reduce prices for the customers, often poor households themselves. Using seed money from the World Bank, the initiative was launched with just a few products initially and then expanded. A World Bank evaluation found that it held promise, though the experiment eventually folded due to Agruppa’s inability to scale it up in time.

As both examples illustrate, local governments will be often better placed than national governments to create jobs-centered partnerships with entrepreneurs or firms providing services. Given the multitude of service activities, variation in local circumstances, and the heterogeneity in the size and shape of firms, local governments may also be better positioned to craft suitable arrangements. In either case, though, significant experimentation with different types of initiatives will be needed, given the dearth of successful precedents to emulate. Social enterprises have often taken the lead in the developing countries, as their approach is more conducive to experimentation.

There are some similarities between these programs and what was needed to bring advances in technology to farmers in the US in the nineteenth century: both entail many small enterprises scattered over the entire country. The US Federal government created the agricultural extension service, to engage in experimentation at the local level and to bring knowledge to local farmers. Similarly, governments in developing countries, both local and national, will have to become more entrepreneurial and more engaged with experimentation as well, and focus on bringing innovation insights to small enterprises, if the strategy is to make a significant difference beyond individual initiatives.

Finally, there is significant room to invest in and deploy new technologies that are especially friendly to labor employed in services. Automation and other innovations in manufacturing have been typically skill- and capital-biased, contributing to significant labor shedding in manufacturing globally. But the direction of technological change is not exogenous and pre-destined; it responds to economic incentives, government policies, and the prevailing social norms among the innovator community.<sup>20</sup> Explicit governmental efforts to stimulate the development of labor-friendly technologies can play an important role in services. There are already some prominent examples of how digital technologies and AI can empower lower-skilled workers to expand the range of tasks they can perform, taking over some of the

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<sup>19</sup> <https://openknowledge.worldbank.org/entities/publication/6fade0af-26aa-59cb-8de0-167fe290fa67>

<sup>20</sup> See Daron Acemoglu, “The Wrong Kind of AI? Artificial Intelligence and the Future of Labor Demand.” *Cambridge Journal of Regions, Economy and Society*, 2019; Daron Acemoglu, “AI’s Future Doesn’t Have to Be Dystopian,” *Boston Review*, May 20, 2021. For a broader discussion of the direction of innovation and its implications for development, see Anton Korinek, Martin Schindler, and J. E. Stiglitz, “Technological Progress and Artificial Intelligence,” in *How to Achieve Inclusive Growth*, Valerie Cerra, Barry Eichengreen, Asmaa El-Ganainy and Martin Schindler (eds.), Oxford: Oxford University Press, 2021.

responsibilities of more experienced and skilled professionals and becoming more productive in the process. AI cannot just *replace* labor; it can augment labor's productivity, and thus even increase the demand for labor and wages.<sup>21</sup>

In medicine and long-term care, digital tools enable the least-skilled caregivers to provide more advanced services to their patients. Specially designed software assists community health workers in India to serve their clients better by conducting timely visits and providing access to health and learning resources online in real time. In education, similar digital tools can enable less experienced teachers to engage in pedagogy that is more closely tailored to the needs of different groups of students. In retail, they allow workers to provide more detailed and specialized help to customers. In call services, conversational assistance by generative AI has been shown to significantly increase productivity of the least experienced customer support employees.<sup>22</sup>

Since such technologies already exist, developing country governments could facilitate their dissemination and use among their domestic firms. But it is also the case that the examples cited above barely scratch the surface of what could be a more fundamental transformation in how we regard technological change and its direction. Today it is widely recognized that governments have a critical role in fostering green technologies. Given the importance of promoting good jobs, it could be argued that they have an equally critical role in promoting labor-friendly technologies.<sup>23</sup> Since the bulk of innovation takes place in advanced economies, this is another area where rich nations could play a significant role in facilitating economic development. Insofar as rebuilding the middle class and overcoming labor-market polarization is a priority for them as well, investing in labor-friendly technologies is a task that serves their own immediate interests as well. Still, the technologies that are appropriate for advanced countries may (and almost surely will) differ from those that are best for developing countries. There is scope for an international effort to develop such technologies: Just like green innovation, labor-friendly innovation is a global public good.

Beyond the advanced economies, many middle-income countries such as Brazil, India, South Africa, or Turkey are today also becoming centers of innovation. There is some evidence that technologies and organizational forms that are more suited to developing-country context disseminate more rapidly among developing nations.<sup>24</sup> Hence these larger economies among the developing world face significant opportunities but also bear significant responsibility in this area.

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<sup>21</sup> See Anton Korinek and J. E. Stiglitz, "Artificial Intelligence and Its Implications for Income Distribution and Unemployment," in *The Economics of Artificial Intelligence: An Agenda*, Ajay Agrawal, Joshua Gans, and Avi Goldfarb (eds.), NBER/University of Chicago Press, 2019, pp. 349-390.

<sup>22</sup> For these and other examples, see the articles by Acemoglu cited above, and also: Dani Rodrik, "An Industrial Policy for Good Jobs," The Hamilton Project, September 2022; Michael Kremer et al., "Is Development Economics a Good Investment? Evidence on scaling rate and social returns from USAID's innovation fund, March 2021; Zeynep Ton, *The Case for Good Jobs*, Harvard Business School Press, 2023; Erik Brynjolfsson, Danielle Li, and Lindsey R. Raymond, "Generative AI At Work," NBER Working Paper No. 31161, November 2023.

<sup>23</sup> Within the standard market failures paradigm, there are a host of failures related to the pace and direction of innovation. See, e.g. J.E. Stiglitz and Bruce Greenwald, *Creating a Learning Society: A New Approach to Growth, Development, and Social Progress*, New York: Columbia University Press, 2014. Reader's Edition published 2015.

<sup>24</sup> Josh Lerner, Junxi Liu, Jacob Moscona, and David Yang. "Appropriate Entrepreneurship? The Rise of Chinese Venture Capital and the Developing World," Harvard University, 2023, in process.

Even in the best-case scenario, a services-based model is unlikely to deliver growth rates approaching those experienced in East Asia. For one thing, increasing productivity in labor-absorbing services is likely to prove more difficult than in manufacturing, even if the strategies outlined previously prove successful and even if there remains a significant gap in productivity in the services sector between developed and developing country. This is because manufacturing technologies are more standardized and have proved easier to copy despite large differences in the context of developing countries.<sup>25</sup> But there is another general-equilibrium reason as well. Under manufacturing-led growth strategies, a succession of export-oriented sectors – wigs, toys, garments, autos, steel – could take off one after the other without regard to domestic demand. By contrast, the expansion of non-tradable services – those that are most likely to absorb employment -- is ultimately limited by the size of the home market. Individual service sectors cannot keep growing if other service sectors are not also expanding and increasing their productivity; the growth of retail, say, depends on the growth of personal services, hospitality, and the rest of the economy. Otherwise, the profitability of the more rapidly expanding services would soon collapse. This complementarity on the demand side necessitates balanced growth and lowers the ceiling on the potential growth rate of the economy.<sup>26</sup>

The silver lining of the kind of growth strategy we've described is that it is more inclusive and equitable. It delivers direct income gains for poorer segments of society through better jobs and builds a middle class, rather than waiting for trickle-down from the export champions and largest firms. The quality of growth is higher, even if its quantity is lower.

#### New industrial policies for the green transition and for labor-absorbing services

Governments have a big role to play in the strategy we have outlined, both for investments in the green transition and for good-jobs programs in services. Markets left to their own devices do not foster the kind of structural changes needed on either front. In general, structural transformation is impeded by credit and risk market failures, coordination failures, externalities, and learning spillovers. That is why the most rapidly growing economies of the past all relied heavily on industrial policies promoting productive diversification and the growth of new industries. Such barriers are, if anything, even greater in the transition to green industries and productive, labor-absorbing services. Hence private markets and entrepreneurship will need to be augmented by a public vision and a supporting set of public incentives, inputs, and services.

In theory, market failures that impede dynamic efficiency can sometimes be addressed through targeted tax-subsidy schemes that result in private agents internalizing the full social consequences of their actions. Learning spillovers and climate-change externalities, for example, should be corrected through Pigouvian subsidies and taxes, respectively. The magnitude of these interventions should equal the

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<sup>25</sup> This fact is reflected in the finding that formal manufacturing sectors have long exhibited unconditional convergence in labor productivity. That is, these sectors tend to catch up to the global productivity frontier regardless of local conditions, such as the quality of institutions or human capital. This has not been a regular feature of the rest of the economy (traditional agriculture and most services). See D. Rodrik, "Unconditional Convergence in Manufacturing," Quarterly Journal of Economics, 128 (1), February 2013, 165-204.

<sup>26</sup> Moreover, "Baumol's disease" contends that the pace of innovation—the movement of the frontier itself—will be lower in services.

difference between private and social costs/benefits (at the margin), subject to second-best considerations (such as the deadweight loss of raising taxes) which may call for smaller interventions.<sup>27</sup>

In practice, governments face uncertainty on multiple dimensions, undermining the practical applicability of the standard recipe.<sup>28</sup> Problems associated with imperfections of credit markets<sup>29</sup> and the absence of insurance markets are not so easily handled by the standard Pigouvian approach. The specific sources of market failures, their respective magnitudes, the behavioral responses of firms, investors, innovators, and consumers, the range of possible technological trajectories, and the efficacy of different types of policies can vary from circumstance to circumstance. In such contexts, learning and capacity-building by the government have to be built into policy design, rather than assumed. And the relationship between the government and firms has to be conceptualized as an inherently dynamic one. Even though East Asian industrial policies are often portrayed as top-down policies implemented by autonomous, well-informed governments, the reality was quite different. Many of these governments started with little experience with and capacity to conduct extensive industrial policies. The requisite governmental capacity was not a precondition for their policies, but built over time. Successful industrial policies entail learning by society at large.<sup>30</sup>

The practice of industrial policy has five key inter-connected elements: embeddedness, coordination, monitoring, conditionality, and institutional development. The first of these refers to the establishment of a strategic dialog and collaboration with firms to elucidate the information on obstacles and opportunities for productive investments, including market failures. As the sociologist Peter Evans has discussed, in successful cases, states' relative autonomy from private firms (and hence ability to prevent regulatory capture) was combined with embeddedness, which Evans defines as "institutionalized channels for the continual negotiation and re-negotiation of goals and policies."<sup>31</sup> These channels of communication enable government agencies to understand private firms' constraints and potential, as

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<sup>27</sup> The implementation of such interventions faces important impediments in the presence of uncertainties and asymmetries of information. There is a large literature on the design of optimal schemes in such circumstances. When there are multiple market failures, as is the case in practice, there cannot just be a reliance on Pigouvian subsidies. See the next footnote and J. E. Stiglitz, "Addressing Climate Change Through Price and Non-Price Interventions," *European Economic Review*, Vol. 119, pp. 594-612, October 2019. Accessible at: <https://www.sciencedirect.com/science/article/pii/S001429211930090X?dgcid=author>.

<sup>28</sup> Martin Weitzman showed that quantity targets may dominate Pigouvian price instruments in the presence of uncertainty about demand and supply elasticities. The price instrument may minimize the efficiency costs of the policy, but risks undershooting and producing too small a behavioral response. Quantity targets may be superior when the social costs of missing the socially optimal target—reducing greenhouse emissions for example – are higher than the deadweight costs that may otherwise be created. Martin L. Weitzman, "Prices vs. Quantities," *The Review of Economic Studies*, 41(4), October 1974, pp. 477-491. More generally, non-linear interventions are preferable to either of the two extremes. In some contexts, governments actually implement such schemes.

<sup>30</sup> See Greenwald and Stiglitz, *op. cit.* A recent overview of the evidence on industrial policy is provided in R. Jukasz, N. Lane, and D. Rodrik, "The New Economics of Industrial Policy", *Annual Review of Economics*, 2024, forthcoming.

<sup>31</sup> P.B. Evans, *Embedded Autonomy: States and Industrial Transformation*, Princeton, NJ: Princeton University Press, 1995. Stiglitz discusses these in the context of the East Asia Miracle. See, e.g. "Some Lessons from the East Asian Miracle," *World Bank Research Observer*, 11(2), August 1996, pp. 151-177.

well as reshape their understanding in light of new information and changing circumstances. The channels can be ad hoc and informal, or formal such as joint councils, commissions, or roundtables.<sup>32</sup>

The second element is policy coordination. Unlike in the standard model, there is no presumption that Pigouvian taxes/subsidies will be adequate or that they can be specified ex ante. The requisite remedies may range from alterations in particular government regulations to the provision of specific training or technologies to financial incentives (recall the Haryana cab employment scheme). In many cases, finance and risk absorption has been crucial.<sup>33</sup> The nature of the needed remedies become clear over time, and cannot be determined at the outset. Appropriate responses may require action across different parts of the government and multiple departments/ministries. Therefore, government agencies charged with industrial policies need the ability to coordinate and mobilize these actions. If they lack the authority or capacity to do so effectively, they should be able to bump the task to a higher level of government authority, the governor's or president's offices, for example.

Third, government learning has to be systematized and reflected in subsequent actions and decisions. This requires an explicit effort to monitor and evaluate the outcomes of industrial policy decisions. Many of these decisions will inevitably lead to sub-optimal outcomes and mistakes. What matters for the success of industrial policies is not the ability to "pick winners," (or even identify projects with large externalities) but the ability to "let the losers go," a less difficult but still demanding requirement. Often, the phasing in or partial implementation of programs can allow rigorous evaluation of policies through RCTs or econometric tools (as in the case of the Bogota fruit vendor scheme). But even if formal evaluation methods cannot be deployed, it is possible to learn from outcomes and adjust policies appropriately. For examples, what stands out in Chinese practices of industrial policies is the willingness to experiment with new policies in designated zones or provinces, and to adjust incentive schemes when they produced excess capacity or blatant inefficiency.

Fourth, and relatedly, successful industrial policies have typically provided strong incentives for compliance. In East Asia, the financial support was not a gift; continued support required continued success on the part of the firm, often with objective indicators, like exports. Governments looked for enterprises with substantial net worth, so they could have "skin in the game," suffering significant losses in the event of failure.<sup>34</sup>

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<sup>32</sup> The "executive roundtables" (*Mesas Ejecutivas*) in Peru are discussed in P. Ghezzi, "Mesas Ejecutivas in Peru: Lessons for Productive Development Policies," *Global Policy*, 8(3):369–80, 2017. As summarized in Juhasz et al. (2024): "The objective of the roundtables was to institutionalize public-private dialog aimed at addressing coordination failures among firms and between the firms and the government, and thereby encourage productivity-increasing investments. The roundtables started as open-ended conversations to share information on and uncover constraints. Instead of lengthy industry reports, the focus was on developing an initial list of blockages or obstacles to productivity and means of removing them, to be revised as needed as more knowledge was acquired in the process. The responsibilities for action were divided into separate categories of "my problems" and "your problems." The former category refers to government responsibilities (e.g., removing red tape for exports or establishing a national phytosanitary agency); the latter refers to firms' actions (e.g., making specific investments in quality upgrading)."

<sup>33</sup> In the context of the East Asia Miracle, see M. Uy and J. E. Stiglitz, "Financial Markets, Public Policy, and the East Asian Miracle," *World Bank Research Observer*, 11(2), August 1996, pp. 249-276. In advanced countries, venture capital firms often play a role in coordinating the provision of critical inputs for the firms in which they invest.

<sup>34</sup> For a discussion of conditionality, see M. Mazzucato and D. Rodrik, "Industrial Policy with Conditionalities: A Taxonomy and Sample Cases," September 2023.

Fifth, successful industrial policies require new institutions and institutional development (as we've already discussed). In many countries, development banks played an important role. Creating institutional arrangements so that they were not captured, but at the same time were sensitive to market failures and social needs, was crucial. Some countries have been very successful in this regard.

These lessons derive largely from the experience with industrial policy in manufacturing, but are also broadly applicable to new challenges in decarbonization and services. They entail building a new kind of cooperative relationship between the government and private firms, with mutual responsibilities and obligations.

### Concluding remarks

Where developing countries are concerned, the future of economic growth will look very different from its past. The climate challenge, new technologies and digitalization, premature de-industrialization, the changing global geopolitical landscape, receding hyper-globalization together render the export-oriented industrialization strategies of the past less viable and effective. We have argued in this essay for a strategy with two key prongs: investment in the green transition and productivity enhancement in labor-absorbing, mostly non-traded services. We have briefly discussed key elements of such a strategy.

This does not mean that other sectors of the economy, and manufacturing and agriculture, in particular, are unimportant and should be neglected. In most low-income economies, agriculture will continue to employ considerable numbers of poor people. Improving their plight will require investments in agricultural productivity and making use of new technologies as well as diversification into non-traditional crops. But as agriculture modernizes, it will almost certainly continue to release labor to the rest of the economy, necessitating the creation of more productive jobs in urban areas.<sup>35</sup> In the past, manufacturing plausibly was the key sector which could absorb these new migrants, as well as workers from unproductive informal activities. Productive manufacturing sectors can still make important contributions to the economy (generating exports, tax revenues, and demand spillovers for other domestic sectors). There are opportunities for strengthening links between manufacturing exporters, whether domestically or foreign-owned, and domestic suppliers and input providers to increase productive employment and disseminate new technologies. But manufacturing's ability to absorb the bulk of the job-seekers will be much more limited than in the past. Hence our emphasis on labor-absorbing services.

Steering the requisite structural changes will require new modes of industrial policies, focused on these new strategic priorities. Economists traditionally view industrial policy as top-down interventions by "hard" states that keep business and other stakeholders at arms' length. This picture never accurately reflected how successful industrial policy was run in East Asia. For green industries and services, it is even less useful. The significant uncertainties in technological evolution, heterogeneities among production units, and the highly dynamic setting in these new areas require a new model of iterative, strategic collaboration between firms and government agencies (national and sub-national). The focus would be on experimentation and learning, with objectives, instruments, performance criteria and

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<sup>35</sup> Changes in consumption patterns may ameliorate this tendency somewhat. For example, flowers and vegetables use more labor than wheat.

institutions developed and shaped over time. Government capacity would be accumulated in the process, rather than presumed as given.

All government policies, either by commission or omission, shape the economy and affect economic growth. In that sense, every country has an industrial policy—it's just that some don't know it. An awareness of how the rules of the game, public expenditures and taxes, and explicit industrial policies shape the economy is not only important to prevent capture, but also to promote sustainable and inclusive growth.