INTRODUCTION

Industrialisation – Manufacturing (value-added) as percentage of GDP / manufacturing as percent of total employment / Manufacturing as percentage of total export / trade

Global Value Chains / Vertical Specialisation: The geographical fragmentation of production

Links between Industrialisation, Innovation, Economic growth and Economic development

Why East Asia?
As a result of industrial fragmentation in Asia, Asia became the world’s key player in international production sharing, mainly in the processing and assembling of manufactured goods. Intermediate goods constitute more than 60 per cent of Asia’s total imports. The share of exports in intermediates is around 50 per cent as Asia tends to transform imported intermediate goods into final goods for export. The major interregional flows in intermediate goods involved Asia either as the origin (exporter) or as the destination (importer) of trade flows, essentially with its core partners North America and Europe. China imports more intermediate goods than exports while Japan and Korea exports more intermediate goods than the import. 

**GVC Participation Over Time**

GVC share of total trade (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>GVC Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>30</td>
</tr>
<tr>
<td>1980</td>
<td>40</td>
</tr>
<tr>
<td>1990</td>
<td>50</td>
</tr>
<tr>
<td>2000</td>
<td>60</td>
</tr>
<tr>
<td>2010</td>
<td>70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>1961 Per capita Income</th>
<th>2003 Per capita Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>$402</td>
<td>$34,510</td>
</tr>
<tr>
<td>South Africa</td>
<td>$396</td>
<td>$2,780</td>
</tr>
<tr>
<td>Argentina</td>
<td>$378</td>
<td>$3,650</td>
</tr>
<tr>
<td>Chile</td>
<td>$377</td>
<td>$4,390</td>
</tr>
<tr>
<td>Columbia</td>
<td>$222</td>
<td>$1,810</td>
</tr>
<tr>
<td>Ghana</td>
<td>$179</td>
<td>$320</td>
</tr>
<tr>
<td>Taiwan</td>
<td>$122</td>
<td>$13,139</td>
</tr>
<tr>
<td>Morocco</td>
<td>$120</td>
<td>$1,320</td>
</tr>
<tr>
<td>South Korea</td>
<td>$82</td>
<td>$12,020</td>
</tr>
<tr>
<td>United States</td>
<td>$2,308</td>
<td>$34,610</td>
</tr>
</tbody>
</table>
Global manufacturing is NOW characterized by the geographical fragmentation of productive processes and the offshoring of industrial tasks.

Specialization is no longer based on the overall balance of comparative advantage of countries in producing a final good, but on the comparative advantage of “tasks” that these countries complete at a specific step along the global value chain.

China plays the role of assembler within the Asian region, its imports in intermediate goods accounting for more than 33 per cent of Asian imports of intermediates in 2009.

China was not only the top importer of intermediate goods in Asia, it was also the largest in the world. Its average growth rate of 17 per cent is significantly above the Asian average.

China, India and Viet Nam have been the most dynamic importers of intermediate goods within the last 15 years, with average growth rates of between 12 and 16 per cent, far beyond the regional average of 7 per cent.

After World War II, the East Asian economies – first Japan and then Taiwan, Singapore, Hong Kong, and South Korea (Korea) – achieved the fastest industrialisation in human history. These economies have grown at a rate of 5-6 percent in per capita terms during the second half of the 20th century.
Global Value Chains (GVCs) and world trade

- International demand
- Development of infrastructure and trade policy
- Industrial processing zones
- Offshoring-outsourcing strategies and FDI
- Increase of trade in intermediate goods
- Need for new statistical measures of international trade
- Domestic/territorial impact of GVCs
In the debate surrounding this spectacular economic transformation, the most contentious has been on the role of industrial policy.

While the earlier interpretations of the East Asian experience tended towards a free-market, free-trade story, now most commentators agree that these countries, except for Hong Kong, used a wide range of industrial policy measures.

Some argue that their success owes a lot to the intervention by their governments that involved promoting certain industries through a mixture of trade protection, subsidies, government-mediated mergers and acquisitions (M&A’s), regulations on entry and capacity expansion, technology licensing, and so on.

However, others believe that the East Asian industrial policies were not great successes and that, even if they were successful, they cannot be applied by other countries, as the East Asian success has owed so much to idiosyncratic factors, such as Confucian culture, meritocratic bureaucracy, and Cold War politics (See for instance, Chang 2006).
Over the past 5 decades, Japan and the other East Asian countries have promoted industries with high growth potential and widespread externalities through an array of means, which included:

- infant industry protection;
- export promotion through export subsidies and export marketing help; coordination of complementary investments;
- regulation of firm entry, exit, investments, and pricing intended to 'manage' competition;
- temporary subsidies and restriction of competition intended to help technology upgrading;
- subsidies to the private sector or establishment of state-owned enterprises (SOEs) in high-risk large-scale industries.

At the same time, these countries could successfully import and assimilate foreign technologies because their governments could:

- skillfully integrate their education and training policies with industrial policy;
- effectively initiate and subsidise private-sector R&D while also providing public-sector R&D in key areas; and
- deliberately regulate technology licensing and foreign direct investments by transnational corporations (TNCs) in a way that maximises technology spillover.
Japan provided *trade protection* (tariffs and quantitative restrictions) and various *subsidies* (export, investment, R&D, and infrastructure) as used by United States and Germany. It also used *indicative planning* (most famously used by France), *foreign exchange rationing* (used in all European countries), and special banks for *long-term industrial financing* (such as Development Bank of Japan, Long-Term Credit Bank, Industrial Bank of Japan). *Export promotion* through tariff rebate on inputs used for exported goods.

However, this is not to say that Japan was only repeating what other countries had done before. Japan’s *post-war industrial policy* involved some important policy innovations. Two of them are worth noting here.

One is the establishment of *deliberation councils for policy making* in key industries, comprising government officials, industry representatives, and more ‘objective’ observers.

Another notable Japanese innovation over past practices of its own and other countries, is *the improved technique of managing cartels*. 
The Korean government intervened much more aggressively than the Japanese government – Korea was technologically well behind Japan, needed more forceful government intervention to raise internationally competitive firms.

Korea’s industrial policy-making and -implementation were also more centralised than Japan’s.

Unlike Japan, which had no significant SOEs in the manufacturing sector since the late 19th century, the government of Korea SOEs when necessary.

The Korean government intervened much more aggressively than the Japanese government, even pushing private sector firms into ventures they did not want to take on. The most famous story in this regard is Hyundai’s entry into the shipbuilding industry in the early 1970s. The firm is one of the leading shipbuilders in the world today.
The Korean government was also a lot more involved in corporate restructuring in the private sector than the Japanese government. Especially when business downturns put firms into danger zone, it would wade in to initiate M&A and production rationalisation.

For example, in 1969, the proliferation of inefficient firms after a massive investment boom in the late 1960s prompted the Korean government to force dozens of inefficient firms into mergers, sales, and liquidation – sometimes sweetened by debt rollovers by the Korea Development Bank.

Also, in the aftermath of the 1970s state-led Heavy and Chemical Industrialisation (HCI), which led to temporary excess capacity in some major industries, the Korean state stepped in again with the Reorganisation of Heavy and Chemical Industries programme in 1980.

Another round of state-led mergers and liquidations of inefficient firms occurred between 1984 and 1988. The focus of this round of restructuring was the shipping, overseas construction, and fertiliser industries – all of them considered industries in decline.
Many of Taiwan’s industrial policy measures are like those used by Japan and Korea. For example, it also used trade protection, subsidies, government-led corporate restructuring, and other means of industrial policy.

Like the Japanese and the Korean governments, the Taiwanese government helped its firms develop technologies and open export markets through state agencies (government research institutes and government export marketing agency, for example).

In terms of the control mechanism, it used state-owned banks as Korea (but not Japan), while using foreign exchange rationing as both Japan and Korea. However, industrial policy in Taiwan differs in some important respects from those of Japan and Korea.
Taiwan did not have many large firms in the private sector. Most large firms in the Taiwanese economy have been SOEs or companies known as ‘party enterprises’ (Amsden 1985, Fields 1995).

Taiwan had to be more open to working with TNCs more than Japan or Korea, although it was not even very open to FDI by international standard. (The share of FDI in Korea’s investment was one of the lowest in the world, after Japan).

The Taiwanese government was more flexible on the question of ownership structure of TNC subsidiaries.

Only about 5 percent of TNC subsidiaries in Korea were wholly-owned by foreign investors, whereas the corresponding figure was 50 percent for Mexico and 60 percent for Brazil. Taiwan was somewhere between Korea and Latin America, with approximately one-third of the TNC subsidiaries being wholly-owned by foreign investors as of 1985 (Schive 1993).
Singapore had to differ even more from the Japanese template than Korea and Taiwan in the design and conduct of its industrial policy.

Infant industry protection was deemed to be too costly. As a result, it adopted a free-trade regime, making its industrial policies clearly distinct from other East Asian countries.

Singaporean government decided to work with TNCs much more closely than the other East Asian countries. Hence, it has one of the highest share of FDI in total investment in the world, well before laissez-faire Hong Kong.

**Singaporean government set up SOEs** (called government-linked corporations, GLCs for short), rather than inviting TNCs. All large firms in Singapore that are not TNC subsidiaries are SOEs would not be an overstatement.
Rather than taking a hands-off approach to FDI and let the TNCs decide what to do, the Singaporean government worked hard to attract FDI into certain areas regarded as important for the country by investing types of manpower and infrastructure and providing custom-designed financial incentives.

Singapore stands out by not pursuing trade protection, but strongly encouraging FDI.

Governments in Taiwan and Singapore used SOEs much more widely and played a bigger role in R&D than Japan or Korea, where large private sector enterprise groups were promoted and given a leading role in organising R&D.

In Korea and Taiwan, the government was much more deeply involved in corporate restructuring than in Japan or Singapore. In terms of promoting small and medium-sized enterprises (SMEs), Taiwan and Japan are closer to each other than to the other countries.
## Industrial Policy by the Four Countries

<table>
<thead>
<tr>
<th>Policy</th>
<th>Japan</th>
<th>Korea</th>
<th>Taiwan</th>
<th>Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Industry protection</td>
<td>Very Strong</td>
<td>Very Strong</td>
<td>Very Strong</td>
<td>None</td>
</tr>
<tr>
<td>Export promotion</td>
<td>Strong</td>
<td>Very Strong</td>
<td>Very Strong</td>
<td>Indirect</td>
</tr>
<tr>
<td>SOEs in manufacturing</td>
<td>Not used</td>
<td>Only in Critical Industries</td>
<td>Most Upstream industries</td>
<td>Key capital-intensive industries</td>
</tr>
<tr>
<td>Large private-sector firms</td>
<td>Strongly promoted</td>
<td>Strongly promoted</td>
<td>Discouraged</td>
<td>Not Promoted</td>
</tr>
<tr>
<td>SMEs</td>
<td>Promoted</td>
<td>Weakly Promoted</td>
<td>Promoted</td>
<td>Weakly promoted</td>
</tr>
<tr>
<td>Private-sector corporate</td>
<td>Some involvement</td>
<td>Very deep involvement</td>
<td>Deep involvement</td>
<td>Some involvement</td>
</tr>
<tr>
<td>restructuring</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TNCs</td>
<td>Strongly discouraged</td>
<td>Strongly discouraged</td>
<td>Discouraged</td>
<td>Strongly promoted</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Private-sector led</td>
<td>Private-sector led</td>
<td>Government-led</td>
<td>Government-led</td>
</tr>
<tr>
<td>Policy Implementation</td>
<td>Japan</td>
<td>Korea</td>
<td>Taiwan</td>
<td>Singapore</td>
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<td>---------------------------------------</td>
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<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Centralisation in policy making</td>
<td>Strong</td>
<td>Very Strong</td>
<td>Very Strong</td>
<td>Strong</td>
</tr>
<tr>
<td>Government-Private sector relationship</td>
<td>Two way cooperation</td>
<td>Top-down direction</td>
<td>Mixture</td>
<td>Local private sector unimportant</td>
</tr>
<tr>
<td>Role of private-sector associations</td>
<td>Very Important</td>
<td>Important, Govt controlled</td>
<td>Important, Govt controlled</td>
<td>Local private sector unimportant</td>
</tr>
</tbody>
</table>
These countries cannot be put along a single spectrum.

In terms of trade policy, Singapore might be considered much less interventionist than Japan or Korea, but in terms of relying on SOEs, it is way more interventionist than Japan or, to a lesser extent, Korea.

In terms of government involvement in corporate restructuring, Singapore and Japan are similar to each other. In terms of the importance of SOEs, Singapore is closer to Taiwan than the other countries.

In terms of promoting SMEs, Japan is closer to Taiwan than it is to Korea. And then, in terms of promoting local private-sector enterprise groups, Japan is closer to Korea than it is to Taiwan.

In sum, there was NOT one industrial policy template for all countries, but there have been several variations on the theme.
First, the East Asian countries did not attempt to make too big a leap. It matters how realistically the target industries are selected considering the country’s technological capabilities and world market conditions.

Second, the East Asian experience shows that it matters a lot how closely industrial policy is integrated with an export strategy. For one thing, for smaller countries, scale economies cannot be achieved without entering the export market early.
Third, the success of industrial policy depends critically on how willing and able the government is to discipline the recipients of the rents that it creates through various policy means (tariffs, subsidies, entry barriers).

Fourth, how competent and politically insulated the implementing bureaucracy is also plays a critical role for the success of industrial policies. The East Asian bureaucracies improved through continuous efforts, not because of some magical historical legacy that others cannot aspire to have.

Fifth, ‘embedded autonomy’, government needs to have roots in the society/private sector (‘embeddedness’) but also has to have its own will and power (‘autonomy’) in order to be effective in its intervention.
### Concluding Remarks/Options for Africa

<table>
<thead>
<tr>
<th>Remarks/Options</th>
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<tbody>
<tr>
<td>Strategic approach towards openness</td>
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<tr>
<td>Exchange rate management</td>
</tr>
<tr>
<td>Import substitution and Export promotion</td>
</tr>
<tr>
<td>Selective approach towards FDI inflow</td>
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<tr>
<td>State-owned enterprises</td>
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<tr>
<td>Enterprise development</td>
</tr>
<tr>
<td>Financial/ Investment incentives</td>
</tr>
<tr>
<td>Technological capability building &amp; soft IP regime</td>
</tr>
<tr>
<td>Dynamic industrial policy</td>
</tr>
<tr>
<td>Favourable external factors</td>
</tr>
</tbody>
</table>
STRATEGIC APPROACH TOWARDS OPENNESS

Openness for the export sector but restrictive for importing sectors.

Trade openness is defined as the ratio of exports plus imports over GDP.
Exchange rates can be undervalued over long periods to strengthen competitiveness of domestic industries in the world market. e.g. Japan used the depreciated exchange rate of yen to boost competitiveness of its exports until the Plaza Accord of 1985.

In the early years of industrialization, RoK rationed foreign exchange, giving priority to importers of capital goods and intermediate inputs (Chang and Zach 2019:203).

The Chinese government adopted initially a dual-track exchange rate system, allowing the market-determined exchange rate to operate parallel with the overvalued official exchange rate, and the dual-track system converged to a managed floating system in 1994 (Lin 2019).
The East Asian countries have generally combined the elements of both import substitution and export-orientation to exploit the economies of scale.

Before embarking on the export-oriented manufacturing in 1970s focused on electronics and textiles, Malaysia had focused on import substitution during 1957-67. In 1981, it launched another import-substitution focusing on heavier industries followed by export-oriented phase from the mid-1980s with greater emphasis on fostering domestic technologies (KozulWright and Poon 2019).

The South Korea government embarked on the Heavy and Chemical Industrialization (HCI) programme in 1973 when the country was at a relatively low level of development by protecting domestic ‘infant industries’ until 1980.
South Korea and Taiwan, following Japan, relied on non-equity modes to tap the resources of multinational enterprises (MNEs) such as technology licensing, managerial and technical assistance from Japanese companies such as Nippon Steel and Kawasaki Shipbuilding to build world class industries.

RoK and Taiwan also extensively used the special economic zones (SEZs) or export processing zones (EPZs) in a strategic manner to leverage FDI for building export capabilities but ensured domestic linkages by imposing local content requirements (Kozul-Wright and Poon 2019:142).

China engaged MNEs into strategic bargaining, leveraging its high-quality infrastructure in its SEZs, disciplined skilled workers, and large domestic market, to impose informal conditions on local sourcing, export commitments, or technology-transfer (Nayyar 2019a).

The East Asian countries were able to manage FDI inflows crowd-in domestic investments rather than FDI crowding-out them through the selective approach unlike the South Asian countries where FDI generally crowded out domestic investments (Kumar and Pradhan 2015).

Hence, the quality of FDI received by the East Asian countries was perceived to be better (Kumar 2002).
East Asian countries have also heavily relied on public sector to develop sectors that were considered strategic or where private sector was not willing to enter, e.g. POSCO, in 1968 as a state-owned enterprise (SOE) in South Korea, privatized in 2001, is now the fourth largest steel producer in the world (Chang and Zach 2019).

China has extensively used SOEs, use of subsidized credit through state-owned banks, public procurement and public investments (Chang and Zach 2019). SOEs in China did not have to bear any cost for capital before the transition in 1978 after which appropriation was replaced by bank loans at artificially repressed interest rates (Lin 2019).
East Asian countries provided support to selected firms to nurture their managerial or technological capabilities, or encourage their horizontal and vertical expansion, so that they were able to realize scale economies, not only in production but also in marketing to develop global brand names and create large international firms, as Korea and Taiwan employed to create national champions like Samsung, LG and Foxconn.

Korea promoted the large and highly diversified industrial conglomerates in an effort to harness scale economies.

China facilitated mergers in an effort to create large scale national champions (Chang and Zach 2019).
East Asian countries also intervened to develop sunrise industries through use of subsidized credit in Korea and by tax credits in Taiwan.

In 1973, Korea government created the National Investment Fund (NIF) to provide funds to financial institutions which would lend for long terms investment in heavy and chemical industries. NIF accounted for 70% of total manufacturing investment lending by institutions.

In the late 1970s, China established the China Development Bank, among other financial institutions, to finance large scale infrastructure and industrial projects by providing long-term financing as a part of the high investment growth strategy and has received periodic capital infusions from the government for bolstering their lending capacity.
East Asian countries employed several measures to promote local technological capabilities including establishment of public R&D institutes, conditional subsidies to public and private R&D.

Korea created a powerful S&T Agency in the Prime Minister’s Office in 1967 besides a network of government research institutes such as Korea Institute for S&T and the Korea Advanced Institute of Science in the late 1960s which also received assistance from the US besides the political patronage (Wade 2019).

Taiwan established the Industrial Technology Research Institute (ITRI) in 1973 to support strategic industries with key technology projects (such as semiconductors and personal computers) that had the potential to guide.

After building domestic production capabilities, China focused on development of local R&D capacity, expansion of domestic linkages and vertical diversification especially in strategic sectors. Japan, RoK, Taiwan, China, Thailand, among others have also used petty patents or utility models to promote incremental innovations by domestic enterprises including the SMEs that could not stand rigorous scrutiny that patent examinations have to undergo (Kumar 2003)
The East Asian countries have been adjusting the focus of the industrial policy and the tools employed in accordance with the changing requirements. Korea initially focused on labour intensive products (toys, textiles and garments, shoes) in the 1960s, started heavy and chemical industries in the early 1970s as wage costs started to rise to stay competitive and focus on emerging industries such as automobiles and electronics.

Similarly, China upgraded its export structure from simple toys, textiles, and other cheap products in the 1980s and 1990s to high-value, technologically advanced machinery and ICT products in the 2000s (Lin 2019)
the East Asian industrialization was also facilitated by a number of external factors or enabling conditions. For instance, the role of the US assistance to its three Northeast Asian allies in the post-World War and post-Korean War period has played an important role in their industrialization.

In the wake of the Korean War 1950-53, Japan became the main source of American procurement.

Between the late 1940s and mid-1960s, the US supported Japan, RoK and Taiwan to create the development state and receive ‘tens of billions of dollars in grants, loans, tech transfer, and preferential markets from Johnson and Nixon governments’ (Wade 2019:486).

Japan was to serve as the core of restored Northeast Asian regional economy with RoK and Taiwan as lower cost semi-peripheries, receiving easy access to the US market, preferred in public procurement, on account of their importance for security matters.

The East Asian countries have also exploited the potential of regional economic integration in the form of regional production networking linking them with the ASEAN countries especially since the turn of the Century (ADB 2020). South Asia has also lagged behind in exploiting the potential of intra-regional trade and investment and remains among the least integrated subregions (UNESCAP 2019c).
East Asian success at industrialization was driven by sensible industrial policy in a coordinated manner, implemented by effective developmental state, corroborating the existing literature (Amsden 1989, 2001; Chang 2002, Lall 2005, among many others).

The rapid industrialization of RoK, Taiwan, Singapore, Malaysia, Thailand, China, Vietnam, following Japan, has been achieved through extensive strategic interventions by the governments to build domestic production capacities, ensure competitiveness through harnessing scale economies, foster technological upgrading and innovation, and create national champions and global brands.
THANK YOU VERY MUCH