APRIL 2021

South-South Integration and the SDGs:
Enhancing Structural Transformation in Key Partner Countries of the Belt and Road Initiative

UNCTAD/BRI PROJECT/RP7

Indonesian Industrialization and Industrial Policy: Peer Learning from China's Experiences

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Abstract

China has experienced industrialization earlier than Indonesia and reveals a rapid growth of industrialization involving varies policies. While Indonesia tends to be a premature deindustrialization that may have not growth-driven properties owned by the manufacturing industry. This paper scrutinizes the process and experiences of industrialization in Indonesia and China's. The paper also discusses lesson learned from China's industrialization process.

Key words: Industrialization, Indonesia's industrial policy, China's industrial policy

UNITED NATIONS

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Acknowledgements

This paper has been prepared under the project South-South Integration and The SDGs: Enhancing Structural Transformation in Key Partner Countries of the Belt and Road Initiative, funded by UNPDF Sub-Fund for SDG. The authors are grateful to UNCTAD staff for their comments and suggestions on the previous versions of this paper.

Introduction

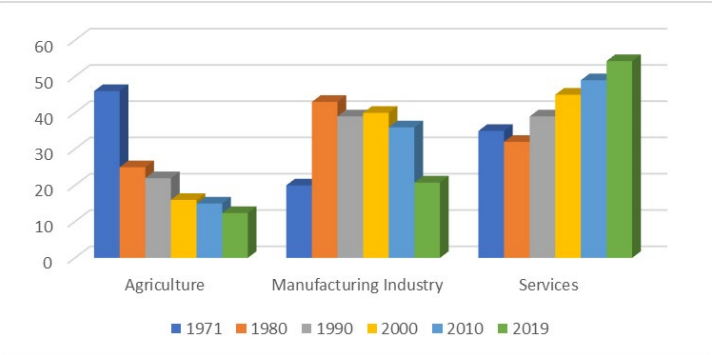
Since the last of the 20th century, China's manufacturing industry has developed continuously and rapidly. A complete range of independent industrial systems have also been built, as well as forming a strong impetus for the industrialization and modernization process. It has been widely acknowledged that China's effective development policy is essentially attributed to its policy experimentation and adaptation to the local circumstance. This can provide a reference point toward other countries when they design their growth policies. This paper aims to describe Indonesia's industrial policy in order to understand the relevance of China's industrial strategy. Then another objective of this paper is to identify what elements can be useful for Indonesia given the country's own circumstances, structural characteristics, and challenges towards the path of the transformation.

1. Indonesian Industrialization

The industrialization was started in Indonesia since the mid-1980s after oil dropped characterized by an economic structure transformation from agriculture toward industry. The employment share of agricultural sector steadily declined, while the share of the manufacturing and services sectors increased simultaneously. Since then, manufacturing sector has become the engine of economic growth.

Figure 1 revels the transformation that has taken place in the Indonesian economy as the relative shares of the three sectors in GDP have changed. Since the late 1960s the share of agriculture in GDP has decreased continuously which fell from 46% in 1971 to be 25% in 1980. Then it continued to decline to 22% in 1990, 16% in 2000, and 15% in 2010. Nine years later it was only 12% in 2019.

Figure 1: Share of Indonesian GDP by sector (percent) from 1971 to 2019



Source: BPS (2020)

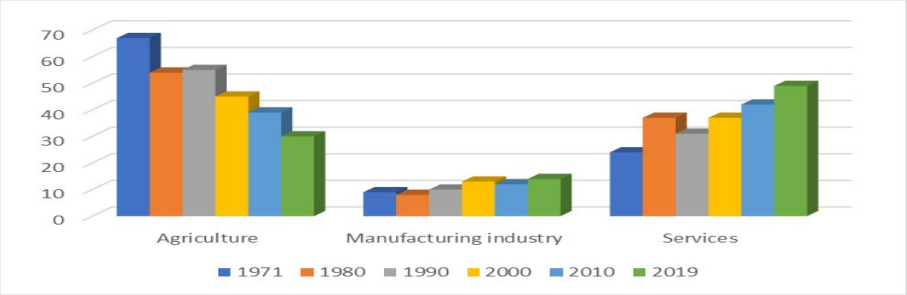
During the early phase of transformation, increasing role of manufacturing industry tended to strengthen into industrialization. Between 1971 and 1980, the share of industrial output more than doubled from 20% to be 43%. However, in 1990 the share had fallen back to 39%. It was at 40% in 2000, and then continued to decrease to reach 36% in 2010 and 21% in 2019. The deterioration over the last two decades can be

attributed to some reasons. *First*, it was caused by an unfavourable business climate for labour-intensive manufacturing industries, (Bird and Manning 2008; Suryahadi et al., 2012). *Second,* it was due to negative deindustrialization (Dewi, 2010; Andriyani and Irawan, 2018).

From Figure 1 it is also shown that the services sector is obviously the leading contributor to output. After initially declining from 35% in 1971 to 32% in 1980, its contribution increased continuously to 39% in 1990, 45% in 2000, 49% in 2010, and 54% in 2019. This means that more than half of Indonesia's total output is now produced by the services sector.

The changes of Indonesian economic structure transformation also can be seen from the structure of employment as shown on Figure 2. The sectoral employment trends are likely the trends in GDP. Reflecting the decreasing in its share of output, the share of the agricultural sector in employment declined continuously from 67% in 1971 to 54% in 1980. Although in 1990 it increased by 55%, it continuously dropped to 45% in 2000, 39% in 2010, and 30% in 2019. The rate of reduction in employment share, though was slower than the rate of reduction in GDP share. As consequence, labour productivity in agriculture also declined sharply, from 0.67 in 1971 to 0.20 in 2019 (BPS, 2020).

Figure 2: Share of employment by sector (percent) from 1971 to



Source: BPS (2020)

The industrial sector expanded its share in employment from 9% in 1971 to 13% in 2000. Although in 2010 its share declined by 12%, it then continued to rise to 14% in 2019 despite a decline in GDP share. This reflects the change in Indonesia's industrial development strategy in the mid-1980s from capital-intensive import substitution to labour-intensive export orientation.

On the other hand, the share of the services sector in total employment has increased continuously since 1971. Despite a decline in GDP share, it rose sharply during the country's early development phase, from 24% in 1971 to 37% in 1980-2000. Although after a decade of rapid expansion of manufacturing employment, the share of the services sector managed to continuously increases to 42% in 2000 and 49% in 2019.

Although it still supports the second-largest share of total GDP after services, industry does not absorb as much labour as either agriculture or services. In fact, the sector's share of employment has declined steadily from its peak in the 1990s. The low and declining capacity of the industrial sector to absorb labour perhaps reflects the

increased use of labour-saving technology, which has made industry more capital and skill-intensive since the late 1990s (Hill 1997; Suryahadi et al., 2012).

Industrialization process has been occurred in Indonesia. However, the increasing contribution of the manufacturing has reached its peak in early 2000s. There was a shifting of economic structure from manufacturing sector to other sectors such as services and informal sectors. This is known as deindustrialization which is identified from the shifting of employment (Dasgupta and Singh, 2006; Suryahadi et al., 2012), decreasing of manufacture investment (Hayashi, 2005), and declining of GDP manufacturing sector (Suryahadi et al., 2012). From figure 2 it is shown that share of employment in manufacturing industry has decreased from 13% in 2000 to be 12% in 2010. While service's share of employment has increased progressively from 42% in 2000, to become 42% in 2010 and 49% in 2019. This driven by the government policy and increasing Small and Medium-sized Enterprises (SMEs) roles. Relaxing policies on foreign direct investment in the service sector is the cause of improvements in the service sector (Duggan, Rahardja and Varela, 2013). Service sub-sectors such as transportation, telecommunication, trade, and finance including hotel, restaurant and tourism have grown strongly and steadily and contributed for employment. Moreover about 41% of numbers of SMEs engaged in the service sector (BI, 2015) and they contributed to the high absorption of employment.

However, the deindustrialization in Indonesia is included as negative deindustrialization (Suwarman, 2006; Dewi, 2010; Rasbin, 2011; Andriyani and Irawan, 2018). Negative deindustrialization indicates a bad economy performance. It is not the natural impact of highly development process (Andriyani and Irawan, 2018). Dasgupta and Singh (2006) name it as "premature deindustrialization" occurred in some developing countries. The declining of manufacturing share in total employment is occurring at lower level of per capita income. In the early stages, the share of the agricultural sector in Indonesia was declining and replaced by the manufacturing sector in the national output (GDP). Nevertheless, before the national industry grows strong and entrenched in a short time, the national economy has shifted to the services sector. It seems happen in Indonesia. A growing service sector in the premature deindustrialization may have not growth-driven properties owned by the manufacturing industry (i.e., increasing return to scale, increasing cumulative productivity coverage, strong correlations with other sectors, and technological advances) (Tregenna, 2015). When premature deindustrialization occurs, service sector activities that may replace the manufacturing industry are more low skill, non-tradeable, retail, or have no large return-to-scale properties.

The negative deindustrialization in Indonesia was due to shock of domestic factors and globalization. Dewi (2010) identified factors contributing to the negative deindustrialization i.e., a decline in fixed capital investment, a decline in foreign trade performance, a decline in the value of imports of raw materials, a flood of imported products, especially consumer goods. A study by Rasbin (2011) showed that lack of infrastructure, limited energy supply, supply abundance of import materials, limited loan, many disincentives in industrial sectors, and poor performance of exports are

determinant factors of the deindustrialization in Indonesia. It seems that the impact of liberalization in triggering the acceleration of deindustrialization is more pronounced.

Under premature deindustrialization, a country will experience disappointing development since its transition to the middle-income status. It has not been able to steadily move up the “value chain" vis-a-vis the technological sophistication of their manufactured goods and have failed to join the club of “high income countries" (Atolia et al., 2018).

2. Indonesian Industrial Policy

Following Indonesian deindustrialization history, some characterize outcomes, and the policy environment can be identified as shown in Table 1. After its independence, Indonesian economy was dominated by agricultural sector as the machine of growth and followed by a decade of stagnation. Annual industrial growth was only at least 9 percent. Under the government of President Sukarno, he privatized domestic and nationalized foreign companies. During the cabinet of Natsir (1950-1951) an Economic Urgency Draft (RUE) was created and aimed to develop a modern manufacturing industry. President Soekarno strongly intervened in the development of industrial strategies and focused on State-Owned Enterprises (BUMN) engaged in manufacturing (Kuncoro, 2007). The BUMN was given supports of bank credit, subsidies, and foreign exchange. Since the government implemented foreign exchange control policies, this in turn resulted in scarce imported raw materials and spare parts. The poor economy condition was exacerbated by the low investment of the industrial sector encouraging hyperinflation, economic depression, and foreign debt accumulation.

Indonesia began to experience a rapid industrialization following the major political change and economic reforms of 1966–67 leaded by President Soeharto (Aswicahyono et al., 2011). In that period agricultural based development and import substitution were the principal drivers of the economy.

In the period of 1970s-1980s named as rehabilitation dan stabilization period was begun by oil boom phenomenon which helped to get out from the economic hardship. The oil revenues were recycled into large-scale investment in state-owned enterprises in sectors such as iron & steel, petroleum, aluminium, and fertilisers. The focus of the policy during the rehabilitation and stabilization period was the development of import substitution industries, which were primarily aimed to meet the basic needs through agricultural based development. The industrialization was achieved via offering assistances for the basic industries i.e., fertilizer, cement, chemicals, pulp, and textiles. The priority of stabilization was creation of jobs and development of the domestic raw material industries. The government focused on developing labour-intensive industrial sectors to increase exports. As consequence there were a large degree the movement of employment from agriculture to industry.

Table 1: Industrial policy in Indonesia

Period	Outcomes	Policy environment
Before 1960s Stagnation dan recession	• Agriculture as the rising sector • Developing manufacturing industry • Inward looking	• Privatization of domestic and nationalized foreign companies • Industrial strategies development
1960s – 1970s Rehabilitation dan stabilization	• Industrial growth • Inward looking	• Development of agricultural basis • Import substitution
1970s – 1980s Oil boom	• Industrialization • Inward looking	• Oil-driven growth • Development of agricultural basis • Initiating labor-intensive industrial sectors to rise exports
1980s – 1990s Declining of oil price	• Deepening and strengthening the industrial structure • Mastery of technology • Outward looking	• Capital-intensive import substitution to labour-intensive export orientation • Industrial development through the mastery of technology in aircraft, engines, and shipping.
1990s – 2000s Global monetary crisis and recovery	• Revitalisation, consolidation and restructurisation of industry • Inward and outward looking	• Revitalisation, consolidation and restructurisation of industry • Export-led recovery
2000s – 2010s	• Revitalisation, consolidation and restructurisation of industry • Shifting of economic structure from manufacturing sector to other sectors such as services and informal sectors • Inward and outward looking	• Development of competitive advantage industries with cluster approach
2010s – now	• National competitiveness improvement • Inward and outward looking	• Ten industries priority • Deregulation of business licenses and tax amnesty • Industrial zoning outside Java Island

Source: Kuncoro (2007); Dewi (2010); Suryahadi et al. (2012); Jacob (2004)

After the oil boom was ended around in 1983, President Soeharto decided to deregulate numerous policies. He fully focused on industrialization which oriented on the development of the substitution industry by deepening and strengthening the industrial structure. The fall in oil prices coupled with a slowing down of economic growth during the 1982-1986 period led to the liberalisation and opening up of the economy. The deregulation measures involved reductions in tariff and non-tariff barriers, liberalisation of foreign investment regulations, financial sector reforms and efforts to reduce monopoly power of the big businesses through state-induced divestiture. As consequence the industrial sector was assigned to become an export-oriented industry. While domestic industrial development was directed on the mastery of technology in several commodities i.e., aircraft, engines, and shipping (Kuncoro, 2007) and experienced considerable variations at the sectoral level in the degree of protection, monopoly power, ownership structure, etc (Thee, 2002).

The industrial policy oriented on import substitution and export orientation has been changed since the global monetary crisis hit Indonesia in 1997. During the crisis, industrial sector managed to record a contraction of 3.0%. Services suffered an even larger contraction of 4.6%. The whole economy suffered an average contraction of 3.1% annually during this period (Suryahadi et al., 2012). This caused the government made strategies to recover the crisis such as revitalisation, consolidation and restructurisation of national industry. Indonesia adopted export-led recovery or increasing export to regain from the crisis (Jacob, 2004).
One sweet story from the relatively success of the policy at the beginning of the period but ended sadly is electronic sector. In the 1970s Indonesia implemented initially import substitution policies for electronics products. Then in the 1980s Indonesia adopted a policy of export-oriented industrialisation strategy. This caused foreign electronics companies were then attracted for making Indonesia as their export bases due to the relatively low production costs (Oktaviani and Puspitawati, 2015). Then electronics firms

in Indonesia were dominated by foreign companies from Japan and Korea, while China dominated the supply of electronics parts to Indonesia. Since the 1990s there has been virtually no pro-electronic policy to improve the electronics sector, except Batam, Bintan and Karimun Special Economic Zone (BBK-SEZ), then Indonesia played more roles as assembler and tester.

In the post-crisis period, from 2000s to 2010s, the Indonesian economy rebounded to record average annual growth of 5.1%. There was a shifting of economic structure from manufacturing sector to other sectors such as services and informal sectors. Much of the economy was driven by the services sector, which grew by 6.5% per annum. The industrial sector lost its position as a driver of economic growth during this period, growing by only 3.9% annually, or just above the rate for agriculture of 3.3%. To rebound the industrial performance, the government applied a policy of competitive advantage industries using cluster approach.

The policy of competitive advantage industries using cluster approach is stated in Presidential Regulation No. 28/2008 concerning National Industrial Policy. It explains the vision of the National Industrial Development which is Indonesia becomes a tough industrial state in 2025. The regulation governs that Indonesia's industrial sector must be able to meet six basic criteria (Ministry of Industry Republic of Indonesia, 2017) including: 1) Having a high role and contribution to the national economy; 2) SMEs has a balanced capability with large industries; 3) Having a strong industrial structure (complete and deep industrial trees); 4) Advanced technology has been the spearhead of market development and creation; 5) Having a strong industrial service which is a support industrial international competitiveness; and 6) Having competitiveness to face fully liberalization with APEC countries. To realize those policies, the government set 35 roadmaps for development of priority industrial clusters.

In the period of 2010 until now, some policies related to industrial development have been created. Some of the fiscal policies have been taken by the government to deal with the global economic downturn. Various policies package on structural reform, deregulation of business licenses, and tax amnesty were answers of economic challenges currently faced by Indonesia. Positive impact from policy packages enhanced business environment while applied consistently and continuously. Therefore, improving the investment climate and accelerate infrastructure development were expected to stimulate investment in the business sector and finally can improve national competitiveness.

In early March 2015, President of Republic of Indonesia has established Government Regulation No. 14 Year 2015 concerning Master Plan of National Industry Development (Rencana Induk Pembangunan Industri Nasional/RIPIN) for 2015-2035. RIPIN is drafted to fulfil the mandate of Law No. 3 Year 2014 concerning Industry, in line with RPJMN 2015-2019, and also serves as a guidance for the government and industrial stakeholders. Since then, the government set phasing of the Indonesia industrial development 2015-2035 into three phases. *First,* phase of 2015-2019 is for increasing the added value of the natural resources in agricultural, mineral, and oil processing based upstream industry, followed by the development of supporting and reliable industry selectively through the preparing of the skillful and competent industrial human resources and increasing the mastery of technology. *Second,* phase of 2020-2024 will be for achieving competitive advantage and environmental insight through reinforcement of industrial structure and technological mastery, and qualified human resources. *Third,* phase of 2025-2035. It will be a period for achieving Indonesia as a strong industrial country, which has strong and deep industrial structure, highly global

competitiveness, and innovation and technological basis. Facing the digital era 4.0 that we have already in it, it seems that the industrial policy in Indonesia does not support yet. Technological mastery and basis are applied in the second and third phases.

The Government Regulation also was set to be a guide of strategies of national industry development which are as follows: (1) Developing the upstream and intermediate industry based on natural resources; (2) Controlling the export of raw materials and energy resources; (3) Improving the mastery of industrial technology and the quality of industrial human resources; (4) Establishing Industrial Development Region (Wilayah Pengembangan Industri/WPI); (5) Developing Central Region of Industrial Growth (Wilayah Pusat Pertumbuhan Industri/WPPI), industrial-designated regions, industrial estates and centres of small and medium industry; (6) Providing the affirmative action such as policy formulation, strengthening institutional capacity and providing facilities to small and medium industry; (7) Developing the industrial facilities; (8) Developing the green industry; (9) Developing the strategic industry; (10) Increasing the utilization of domestic products; and (11) Increasing the international industrial cooperation.

The Indonesian government has several targets of industrial development that must be achieved in 2035. They are as follows:

- Two-digit growth of industry in 2035 to improve the contribution of industrial sector in GDP at 30%
- Improvement in domestic and international market-share by reducing the dependency to imported raw materials, auxiliary materials, and capital goods, as well as increasing the export of industrial products
- Acceleration of industrial deployment and distribution to all regions of Indonesia
- The increase of small industry contribution to national industrial growth
- The increase of innovation development and technology mastery
- The increase of employment rate of the industrial competent human resources; and
- The strengthening of industrial structure with the growth of natural resources based upstream and intermediate industry.

Those strategies and targets of national industry development look like a perfect plan. However, they are difficult to be implemented. The high targets of the strategies however require synergy from various stakeholders since every strategy has a different technical ministry in charge. For example, function of developing the upstream and intermediate industry based on natural resources is at Ministry of Industry's responsibility. Task of controlling the export of raw materials and energy resources is under Ministry of Energy and Mineral Resources. While State Minister for Research and Technology takes responsibility on industrial technology and the quality of industrial human resources. In fact, coordination among ministries and state ministers or even institutions and sectors in Indonesia is expensive thing. Sectoral ego still exists in Indonesia.

The determinant of priority industrial sectors is also ambiguous, every sector has the priority, from mainstream to upstream. For example, for mainstream industry, the

priority sectors include food industry, pharmacy, cosmetics and health equipment industry, textile, leather, footwear and various industry, transportation industry, information and communication technology (ICT) industry, and power plant industry. For supporting industry, there are capital goods industry, components industry, auxiliary material industry, and industrial services as the priority sector. While the industrial priority of upstream industry is on agro-based upstream industry upstream industry, basic metal and non-metallic mineral industry, oil, gas, and coal based chemical industry.

3. Indonesian Challenges in Transformation Process

Industrial sector has a vital role in Indonesian economy. *First,* it contributes relatively high more than 20% of national output. *Second,* although it is low, still relied upon in national employment. *Third,* the industrial sector also has a role to encourage and attract new investment in productive sectors, so that the creation of added value will be more optimal. *Finally,* the sector has a special characteristic which has a linkage, both forward and backward, with supporting and supported industries and other sectors. The forward linkage of industry is when the industry produces components or raw materials for other industries, so that other industries have the opportunity to add values to these products. As for the backward linkage industry, the raw material producing industry has the opportunity to supply its user industry. Therefore, industrial sector needs to be maintained to strengthen the industrial structure.

The thing that needs attention is the supply chain flow and the relationship between the upstream industry and the downstream industry in Indonesia is still weak. The existence of the industry that connects the upstream industry to the downstream industry is not sufficient either in terms of quality or quantity. This can be seen from Indonesia's import component in 2018 which is still dominated by raw materials and supporting materials around 75.01%, while for capital goods 15.88% and consumption goods 9.11%. This condition shows that the domestic industry is still quite dependent on imported raw materials/auxiliaries. This is compounded by a surge in import values that are higher than the increase in export values.

Indonesian economic structure faces challenges in facing the transformation process. One of the big challenges is negative deindustrialisation which is an economic failure when (1) industry is in severe difficulties; (2) labour shed from the manufacturing sector because of falling output or rising productivity and will not be reabsorbed into the service sector; and (3) unemployment will therefore increase. Those characteristics occurred in Indonesia. Indeed, studies by Andriyani & Irawan (2018), Dian (2010); Basri (2009) confirmed that premature and negative deindustrialization occurred in Indonesia.

Factors influencing negatively deindustrialization can be viewed from two sides i.e., global, and domestic. From the global or external side, the negative deindustrialization identified from the net exports shifting away from manufactures towards other goods and services (Rowthorn & Wells, 1987; Tregenna, 2008) can be caused by the government policy on trade causing competitiveness lost. Impromptu liberalisation on products of steel, for instance, causes steel industry in Indonesia is left behind and not competitive in the global market. Some countries use trade remedies to protect their domestic products (Indonesian Investment Coordinating Board, 2017). From the domestic or internal side such as inappropriate industrial policy, forward and backward

linkage among industrial sectors, independence of import content, and employment flexibility moving to other sectors are determinant factors of negative deindustrialization.

Rodrik (2015) mentions that deindustrialization had been occurring in developed countries, where it was associated with loosing good jobs, rising inequality, and decreasing in innovation capacity. For many other reasons, it is much bigger problem for developing countries. They can experience premature deindustrialization. These countries are transformed into service-based economies without experiencing an established industrialization process. Those worries hit on Indonesian industry.

The deindustrialization process in Indonesia in the last few years are not the natural impacts of success Indonesia's economic development, but rather caused by a number shock to the economic system (Rasbin, 2011). Factors contributing to deindustrialization in Indonesia are as follows. *Firstly,* poor quality and quantity of infrastructure. Logistical costs in Indonesia are highest among other ASEAN countries. This is due to the uneven distribution of infrastructure facilities throughout the region resulting in increased investment costs. *Secondly,* lack of guaranteed energy supply. In 2014, the price of industrial electricity increased from Rp723 / kWh to Rp1,191/kWh, which resulted in an increase in the price of hot rolled production (HRC) to USD34/ton. Every additional price of 1 sen/kWh electricity, the cost of producing HRC increases every USD 8ton / kWh. However the increasing electricity price is still not followed by quality and service improvement. *Thirdly,* high supply of imported raw materials. the level of industry dependence in Indonesia on imported raw materials relatively high. *Fourthly,* declining industrial credit and high interest rate. *Fifth,* policies that do not support the industrial sector, such as uncompetitive bank interest rate policy, and labour regulation particularly on local wages. *Finally,* poor manufacturing export performance. Industry-based market share manufacturing is getting smaller, while the industry is based on natural resources continue to strengthen. Although some policies set prohibition for export of raw materials, Indonesian products now must face bans from trade partners.

Tregenna (2015) warned when premature deindustrialization occurs, service sector activities that may replace the manufacturing industry are more low skill, non-tradeable, retail, or have no large return-to-scale properties. It also can be shown from the low rate of investment that will tend to decrease the share of manufacturing (in both employment and GDP), since a disproportionately large share of investment expenditure is accounted for by manufactures. All these threats will continue to overshadow industrial development in Indonesia.

The threat of middle-income trap is a warning to the Indonesian government about hazard of deindustrialization. A country might experience a middle-income trap if it is in the middle-income group based on the size of income per capita but cannot penetrate into the high-income group. McKinsey Global Institute (2012) reveals that the middle-income trap is the position of a country trapped with per capita GDP below $7000 and manufacturing cannot penetrate 30%. Indonesia faces a very real risk of falling into the middle-income trap. Gross capital formation share in Indonesia was 0.22 in 2011 (Basri & Putra, 2016) and still under 0.30 in 2019. Meanwhile Indonesian per capita income in 2019 was $4.174, still far below $7000. In fact, from total Indonesian population in 2019, 47 percent belong to the productive age group, while 70 percent of them are in the middle-income group. If Indonesia wants to escape from the middle-income trap, it must increase its industrial investment about 2.8 times (Minister of Industry Republic of Indonesia, 2018). Policies that help attract foreign direct investment and promote

domestic saving and exports of manufactured goods are more likely to overcome the barriers of technology transfers.

The lesson learned from China experience is if Indonesia wishes to escape the middle-income trap, then its economy must achieve above 30 percent of gross capital formation share as soon as possible and maintain it continuously. This is not easy since Indonesia has never achieved a 30 percent ratio since this share is extremely sensitive to crisis.

A serious consequence to the economy and politics also can be caused by the negative deindustrialization. On the economic side, it reduces the potential of economic growth and the possibility of convergence with income levels from developed countries. The political consequences of premature deindustrialization can make democratization more vulnerable.

4. Learning from China's Experiences

As an initial step to strengthen the structure of the domestic industry, one of the efforts that can be done is to learn the success stories of the strategy of strengthening industries in other countries that have already developed. China's experience is better to be learnt as China showing a rapid industrial growth and wide variations of policies.

Industrialization in China has gone through an ongoing process which firms adopted and deepened capabilities of manufacturing. China's industry has experienced robust growth under persistent structural reform since 1978 (Chen et al., 2011). After more than three decades of double-digit growth, the Chinese economy is going through a period of rebalancing and continuing structural adjustment. By structural adjustment, reallocation from less productive industries or sectors to more productive ones for production factors is meant. A contracting labour force and slower investment and export growth have reduced the annual rate of growth to less than 7% (DRC & OECD, 2017). Domestically, China rebalancing the economy involves shifting emphasis from investment to consumption, from external to internal demand, and from manufacturing to services.

China succeeded to implement an important policy reform from heavy-industry-oriented before the reform in 1978 to base on the parallel importance of light and heavy industry. The mean of capital stock in heavy industry is close to two times the size of the light industry, while the mean of industrial value-added and labour in the light industry is less than those in the heavy industry. To respond the impact of the global financial crisis, Chinese government issued a policy to increase substantially investment in infrastructure and real estate. The immediate policy increased demand for heavy industry products and led to mounting environmental pressures (DRC & OECD, 2017). Moreover, it has released great productive energy, leading to more stable and higher than average growth rate of industrial GDP (Chen et al., 2011).

From the success story of policy reform above, it shows that the policy is not aimed directly to the targeted industry, heavy industry. It is an induced policy influencing for other sectors to increase heavy products' demand. It seems that the government wants to create a stimulus on one sector that can create a stimulus on other sectors. This in turn will generate a greater economic multiplier effect. Indonesia should learn how China design their policies that can result positive impacts in the long run.

Moreover, for Indonesia, it is critical to develop policy guiding the direction of industrial transformation development using demand-side policy. Kuo et al. (2019) identified some demand side policies adopted by China i.e., improving the financial support policies, improving national manufacturing innovation capability, improving national manufacturing innovation capability, enhancing the brand building in quality, promoting the depth of integration of informatization and industrialization, actively developing service-oriented manufacturing and producer services, deepening the reform of institutional mechanisms, improving the financial support policies, increasing the support of fiscal and taxation policies, improving multi-level personnel training system, improving the small and medium micro-enterprise policy, and further expanding the opening-up of manufacturing.

Other of success keys of China's industrialization is openness to the international economy (Table 2). Openness is essential for the access it allows to new technology and know-how through foreign direct investment (FDI), imports of intermediates and capital equipment, and the movement of people and ideas (Brandt et al., 2016). In the early industrial efforts Chinese government often involved individuals with modern education and/or overseas experiences. Industrial development in Manchuria, for instance, involved Japanese, and fashion industrial reform utilized expertise for both the township village (TVE) firms and emerging private sector manufacturers (Brandt et al., 2016). Then Chinese diaspora has been utilized as substantial source of financial and human capital.

China maintains the openness policy via always upgrading propels a shift of the industry to be more skilled-labour and capital-intensive of products and processes. The quick upgrading frequently happened when there was opportunity for interaction of openness and market liberalization and helped back institutional restriction in the deepening capabilities process (Brandt et al., 2016).

China's experience above teaches us that at the initial stage of industrialization, openness to gain new technology through foreign investment, imports of intermediates and capital equipment, and the movement of people and ideas is essential and beneficial. In the long run, however, the utilization of its own resources is more important.

Domestic market liberalization is an important source of new opportunities and competitive pressure on incumbents and entrants to upgrade through product improvement and cost reductions, thus channelling resources to firms and sectors with high returns. For a huge continental economy like China's in which the domestic market has typically absorbed upwards of eighty five percent of industrial output. Some policies to support it are as follows:

- Regulation reformation to allow coastal regions to leverage their favourable location and superior resources of education, skill, and market experience to regain their share of national production, nationwide infrastructure expansion along with steeply rising land and labour costs in coastal cities encouraged growth in the central and western regions (Brandt et al., 2016)

- Urbanising rural migrant workers by removing threshold barriers to urban residency and ensuring equal access to social housing, education, health, and social protection (Huw & Ligang, 2012)

— Policy shifting from textiles and other light industry toward defence-related industries.

Table 2: Success keys of China's Industrialization

Outcome	Policy environment	Success keys
• Great productive energy • More stable and higher average growth rate of industrial GDP	• Deregulation from heavy-industry-oriented to based on the parallel importance of light and heavy industry • Demand-side policies	• Policy reform of industry oriented • Demand-side policy priority
Better knowledges and experiences	Allowing new technology and know-how through foreign direct investment (FDI), imports of intermediates and capital equipment, and the movement of people and ideas	Openness to the international economy
• Competitiveness and product improvements • Cost reductions • High returns from channelling resources to firms and sectors	• Regulation reformation to allow coastal regions to leverage their favourable location and superior resources of education, skill and market experience • Urbanising rural migrant workers by removing threshold barriers • Policy shifting from textiles and other light industry toward defense-related industries	Domestic market liberalization
• Incoming investment	• Tax incentives and business tax exemption incentives for the transfer of qualified technology, development, and consultation and related technology services	Providing tax incentives to industries
Leading manufacturing power globally	• Privatization (largely to insiders) or shut down large numbers of small, inessential or poorly performing State Owned Enterprises (SOEs) • Innovation by state-owned enterprises and institutions, focusing on developing new industries, pioneering in the use of new technology, joint developments with private enterprises	• Remodeling the pattern of division of labor for internationalized industry • Integration of industrial processes and systems • A robust multilayer talent development structure
Boosting export	Export-oriented policy	Increasing integration in Global Value Chains (GVCs)
Advanced manufacturing	• Environmental-side policy, political, legal and regulatory, and public service policies • Eight strategic emerging industries	Revitalization of industry development using innovative manufacturing systems for Industry 4.0

Source: Brandt et al. (2016); Huw & Ligang (2012); Kuo et al. (2019)

The success key of domestic market liberalization in China reveals that the main obstacle for industrialization is inefficiency, and high cost of production, transportation, and distribution. They can in turn lead less competitiveness on exported Chinese's products. The Chinese government solves its domestic problems first, before reaches the manufacturing power.

To strengthen the structure of its industry, China is pushing for incoming investment by providing tax incentives to the industry. There are several tax incentives provided, including business tax exemption incentives for the transfer of qualified technology, development, and consultation and related technology services. The Chinese government for example reduced taxes by 50% on R&D expenditures related to product development or new technology for pharmaceutical industry. Furthermore, reducing income tax by 15% for the field of new and sophisticated technology businesses (High New Tech Enterprise-HNTE), tax exemption for 2 years, and a 50% tax reduction for the next 3 years if HNTE is centralized in areas chosen by the government: Shenzhen, Zhuhai, Shantou, Xia'men, Hainan, Pudong. The Chinese government also provides a

waiver or reduction of income tax from technology transfer, as well as imposing import duty exemptions for major equipment and returning VAT when R&D activities use local goods.
Like China, Indonesian government has applied and provided subsidies or incentives to support the domestic industry. However, the policy faces some obstacles such as inefficiency program, declining tax compliance rates and tax avoidance practices, and weak enforcement of tax bill particularly for wealthier.

China has an ultimate goal of industrial development which is to be a leader of global manufacturing power. Initiatives such as “Made in China 2025” and “Internet Plus” including Belt and Road Initiatives (BRI) aim to elevate China to the rank of the world’s top manufacturing powers within the next decade, and to lower energy and resource consumption and pollution emissions per unit of industrial value added. Moreover, innovation by state-owned enterprises and institutions, focusing on developing new industries, pioneering in the use of new technology, and joint developments with private enterprises are also applied for the manufacturing power ambition.

The integration of industrial processes and systems succeeds in China since it is supported by governance system of the national policy. Government policy in China is set by leading groups, or ‘steering committees’, in both party and state at all levels of government (Kenderdine, 2016). The core strategic leading groups mostly are leaded by the President Xi Jinping. The policies are formed by the party, set into administrative regulation by the state bureaucracy and finally moulded into legislation for passage through the National People’s Congress.

Learning from China’s experience, Chinese industry is very dependent on the full implementation of integration of industrial processes and systems, and a tenacious multilayer development structure. Success of China’s strategic emerging industries plan over the course of the coming 5 years is largely dependent on the industrial complementarities of all sectors upgrading at a uniform pace. If Indonesia wants more successful and inclusive industrialization and escaping from middle trap income, Indonesia needs to coordinate tightly the planned/transition economy.

The predominance of China to achieve as a global manufacturing power has been driven primarily by a large and fast-expanding domestic market as well as the country’s increasing integration in global value chains (GVC). The interactions between industrialisation, urbanisation, progressive opening-up of the economy, real estate and infrastructure development have been mutually reinforcing and created strong demand for the products of the industry sector (DRC & OECD, 2017). Export-oriented policy has been imposed. Since 1995, China’s main exports shifted from low-tech goods for instance textiles to high-tech products for example ICT and electronics, transport equipment and electrical machinery (DRC & OECD, 2017). China also have developed its industry in cooperation with multinational enterprises (MNEs). Chinese firms have worked with and upgraded within MNEs’ value chains in domestic market.

Over a long period of industrialization process, China is persistent on its industrial development strategy preparing to be manufacturing global power. The strategy includes innovation and building an innovation-oriented nation, further upward R&D investments in enterprises, reformation of state-owned enterprises, boost their innovation capability to occupy the high-end of the global value chain in the certain period of global industrial adjustment, drive the economic restructuring, and change of economic development mode through improvement of high-tech industry’s innovation capability.

China experienced a success industrial reform in 1980s and 1990s indubitably led to the substantial structural change and rapid growth of productivity. However, it must be paid with expense such as wasteful investment, high energy consumption, heavy pollution, and other environmental damage. Then China adjusted the economic structure became the main consideration of future reform. In 2015 the China government announced the next stage of industrialization with sustainable development strategy and committed to promoting the transformation and upgrading of manufacturing. China has issued some policies, named Made in China 2025, that have orientation on environmental-side, political, legal, and regulatory, and public service (Kuo et al., 2019). By integrating all the orientation into revitalization of Industry 4.0 policy planning, both the necessary resources and the potential outcomes can be optimized.

The lesson learned from China above is that industrialization process needs policy adjustment in favourable periods but keeps on one final goal of vision in the long run. China does not hesitate to change its policy orientation following the challenges and the changing era. The first long run goal of China development is being leader of global manufacturing power. It is also an attempt to leverage China's growing economic power and influence to strengthen and expand cooperative interactions. It also aims to create an integrated mutually beneficial economic, social, and political ties, and ultimately lower distrust and enhance a sense of common security.

5. Conclusion

China has experienced industrial transformation process or industrialization taking a long time, going through rebalancing and continuing structural adjustment. China is recognized as having advantages successfully supporting the transformation process such as strong and effective central government, abundant and cheap and productive labour, a huge and growing domestic market, high quality of infrastructure, and a culture of patience, persistence, innovation, and frugality. China industrialization shows a rapid industrial growth and wide variations of policies. Although Chinese's policy has been adjusted in favourable periods, but China keeps on one ultimate goal of vision in the long run of development.

While Indonesia is currently under threat of premature deindustrialization where reached the highest contribution of the manufacturing to output in early 2000s. Afterward however there have been a shifting of economic structure from manufacturing sector to other sectors such as services and informal, and net exports have shifted away from manufactures towards other goods and services and then losing its competitiveness. Those condition are reasons of middle-income trap in Indonesia. The industrial investment must be risen about 2.8 times and its gross capital formation share must be above 30 percent for escaping from the middle-income trap.

Although its contribution to GDP has declined, industrial manufacturing sector still has an important role in Indonesian economy. It is as employment absorption, encouraging and attracting new investment in productive sectors, creator of added value, and having forward and backward linkage among sectors. Hence the sector needs to be retained to strengthen the industrial structure. Service sector that gets an abundance of labour from manufacturing and agricultural sectors, can be utilized to strengthen industrialization. Information technology changes in competitive structures within the service sector. Technological developments will likely make it feasible for some services to grow faster. Then the service sector will undergo significant internal structural

changes. Product innovation in manufacturing will continue to be essential, in as much as it provides spill over effects to productivity growth in services.

Indonesia still faces some obstacles in the process of industrialization such as lost or low competitiveness, poor quality and quantity of infrastructure, limited development fund, lack of guaranteed energy supply, high supply of imported raw materials, decreasing industrial credit and high interest rate, unsupported policies for industrial development, poor manufacturing export performance, limited industrial investment, and potency of social and political unstable.

Indonesia can obtain lesson learned from China experience regarding its success story of the industrialization process. *First,* coordinating and integrating are an absolute condition to successfully pass the industrial transformation. Current Indonesian policies in this field could be better integrated or coordinated, and more efforts are needed to improve the synergies between different sets of measures and stakeholders. *Second,* industrial policy must generate stimulus of high multiplier effects and more demand-side. The policy will push other sectors particularly upstream sectors work. *Third,* openness to gain new technology via foreign investment, imports of intermediates and capital equipment, and the movement of people and ideas is needed at the initial industrialization process; but afterwards utilization of its own resources must be the priority. *Fourth,* it is important to liberalize domestic market first before following international liberalization or global value chains through removing domestic barriers. Domestic market is more vital since it actually absorbed upwards of 85% of industrial output. *Fifth,* focusing on sector priority is demanded rather than all sectors are as priority. The priority sectors can be chosen based on the key sectors of new emerging technology in the future transformation. *Sixth,* industrialization process needs innovation policies that aware on the challenges and current development. China has applied an innovative industrial policy to fulfil the vision of industrial revitalization via Industry 4.0.

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