

*Review*

# **Labor-intensive focused industrial policy in Ethiopia: Potentials, latecomer's advantage and binding constraints**

**Desta Tesfaw**

School of National Development, Institute of South-South Cooperation and Development, Peking University, China.

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**This study deals with industrial policy, an issue that has been hotly debated in economic development. It argues that strategic and proactive industrial policy is a key to unlock the potential and wade through industrialization for low-income countries such as Ethiopia where market failures are pervasive. More specifically, it argues that industrial policy should be tailored to factors endowment structure. In the case of Ethiopia, as its economic structure is yet to transform substantially from agriculture to manufacturing, the current policy focus should be on labor-intensive sectors. Using the analytical framework of new structural economics supported with the primary survey data covering 80 manufacturing firms and secondary data sources, a comprehensive analysis has been conducted to explore the potentials, latecomer's advantages, and the binding constraints of labor-intensive manufacturing industries in Ethiopia. Accordingly, it proposes five policy domains to unlock the labor-intensive manufacturing potentials of Ethiopia: Facilitating the linkage between agriculture and manufacturing industry along the value chain; fostering industrial park and cluster-based industrial development; strengthening the cooperation between government and the private sector; improving doing business environment; enhancing the industrial upgrading and diversification along with the changing endowment structure.**

**Key words:** Industrial policy, industrialization, labor-intensive manufacturing, structural transformation.

## **INTRODUCTION**

A journey from poverty to prosperity requires successful structural transformation along the process. A structural transformation from low to high productive sectors is vital in achieving sustained economic development (Chenery, 1979; Syrquin, 1988). To this end, manufacturing has played an engine role for economic growth, structural change, and catch-up (Sugihara, 2007). Indeed,

industrialization is the central process of growth and transformation in developing countries (Syrquin, 1988). However, successful industrialization requires proactive industrial policy to facilitate the structural transformation and to remove the bottlenecks for industries to become competitive in domestic and international markets (Lin, 2014). Nevertheless, industrial policy is one of the hotly

E-mail: [dtesfaw23@gmail.com](mailto:dtesfaw23@gmail.com).

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debated and controversial issues in economic development (Di Maio, 2014). The industrial policy debates and practices have experienced ups and downs over time, from overall consensus on its merits during the mercantilism phase in the 16th to 18th centuries and the period of structuralism of import-substitution strategy in the 1950s and 1970s, to outright rejection in the 1980s and 1990s of neo-liberal prescriptions (Altenburg, 2011). More recently, the failure of the neoliberal alternative in developing countries coupled with the East Asian countries' late industrialization successes, has brought the industrial policy back into the development agenda (Lin, 2012; Noman and Stiglitz, 2012; Lin and Monga, 2013). The 2008 global financial crises in the developed countries, mainly caused by the laissez-faire policies also contributed to the revitalization of the industrial policy (Wade, 2015).

The New Structural Economics (NSE) proposed and advocated by Professor Justin Lin, has emerged as the new development thinking. According to the NSE, both a facilitator state and an efficient market is vital for successful economic development. It proposes an industrial policy that targets industries having a latent comparative advantage at present, and facilitating the industrial upgrading along with the factor endowment changes of a country (Lin, 2012; Lin, 2014; Lin and Monga, 2017). Moreover, it proposes the Growth Identification and Facilitation (GIF) Framework that helps policymakers in developing countries to identify the industries with latent comparative advantages and suggest ways to remove the binding constraints for those industries' development (Lin, 2012).

From a practical perspective, the post-World War II industrialization process is characterized by the sharp contrast of the miracle economic development successes of the East Asian countries and the failures in Sub Sharan Countries (SSA) (Carbonnier et al., 2010). The most significant factor that explains East Asia's development success was its manufacturing-driven dynamic structural transformation (Felipe, 2018). On the contrary, SSA countries experienced premature deindustrialization, which is mainly characterized by the stagnation or the decline of the manufacturing growth at the earlier stage of countries' development before reaching its expected level (Rodrik, 2016). Consequently, many people in SSA are still living under the poverty line. World Bank (2018b), in its report on poverty and shared prosperity, reveals that while the average poverty rate for other regions stood below 13% in 2015, it remained at about 41% in SSA. However, African countries do hold a lot of human and material potential that would enable them to compete favorably with the rest of the world if they follow proper policies (Nzau, 2010). Proactive policy formulation and implementation, such as facilitating the growth of unskilled labor-intensive industries, is necessary to transform SSA countries' economies (Stiglitz et al., 2013).

Ethiopia has registered rapid economic growth (10.6% annual average from 2004 to 2017) after centuries of stagnation and steady decline (World Bank, 2018a). Despite such promising achievements, the economy has been challenged by macroeconomic imbalance such as inflation, debt burden, shortage of foreign currency and unemployment (Ethiopian National Planning Commission (ENPC), 2018). The economy also has not yet experienced a structural change from low to high productive economic sectors. The contribution of the manufacturing sector to the GDP is very low (only 6.3% in 2017), which is lower than 10% of the SSA average in 2017 (World Bank, 2018a).

The government has formulated and implemented a labor-intensive focused and export-oriented industrial strategy since 2004. Textile, leather, and agro-processing are the major targeted manufacturing sectors selected in the strategy. Based on these policy directions, the government envisioned "to become a light manufacturing hub in Africa in 2025" (ENPC, 2016b, p. 82). It has invested in industrial park development and other infrastructure to foster the industrialization process. Despite all these efforts, the performance so far is below the aspirations and targets of the government.

The issue is one of the least researched areas despite the attempts of some researchers. Oqubay (2015) had a comprehensive study on the industrial policy in Ethiopia, and he concludes that the industrial policy outcomes have been distantly uneven. According to him, the policy has produced better outcomes in the flower industry and weak outcomes in the leather due to industry-specific factors, the varying scope for linkage effects in different sectors, and the disparity in political commitment. Gebreeyesus (2016) also states that there is a better industrial policy outcome on the flower industry than on the leather and textile industries, which were selected by the government as strategic sectors, and he associated the performance difference with the strategic selection of the sectors. Altenburg (2010), on the other hand, associated the performance difference between the flower and leather sectors are due to the nature of the sectors and recommended different types of policy interventions. The existing researches, therefore, have a gap in analyzing the feasibility of the labor-intensive focused industrial development strategy of Ethiopia in comprehensive way. The feasibility of the labor-intensive focused industrial policy direction to transform the Ethiopian is not well researched issue.

Thus, this study is aimed to answer three research questions: does Ethiopia have the potentials and latecomer's advantage to be competitive in labor-intensive light manufacturing industries? what are the binding constraints that affect the performance of the manufacturing firms? how does the government perform in formulating and implementing the industrial policy to unlock the potentials and overcome the binding constraints?

## LITERATURE REVIEW

The study reviews the main theoretical and empirical literature related to the research issue. Literature on definition and scope of industrial policy, debates and theoretical justifications of industrial policy and labor-intensive industrialization pathway were briefly reviewed.

### Definition and scope of industrial policy

There is no common and agreed definition of industrial policy among scholars. Some of them define it narrowly as the tool of the industry sector development. According to Robinson (2009), industrial policy is “the government’s deliberate attempt to promote industry” (p. 62). For Pitelis (2006), industrial policy is “a set of measures taken by a government and aiming at influencing a country’s industrial performance towards the desired objective” (p. 435).

Some others define it as the tool of structural transformation of the economy. For example, Noland and Pack (2003) defines industrial policy as “an effort by the government to alter the sectoral structure of production towards sectors it believes offer greater prospects for accelerated growth than would be generated by the typical process of industrial evolution according to static comparative advantage” (p.10). Others define industrial policy broadly as the tool of structural transformation and business environment improvements. Among these, Warwick (2013) adopts the definition of Pack and Saggi (2006) and defines industrial policy as “any type of intervention or government policy that attempts to improve the business environment or to alter the structure of economic activity toward sectors, technologies or tasks that are expected to offer better prospects for economic growth or societal welfare than would occur in the absence of such intervention” (p. 19). This study uses the industrial policy definition of Warwick by taking into consideration the pervasive market failure that hinders structural change and the presence of poor business environment in low-income countries like Ethiopia.

In terms of scope, different kinds of literature categorized industrial policy into two types, namely horizontal/functional and vertical/selective. While horizontal policies dealt with the operation of markets in general, selective industrial policies aimed to promote certain industries and firms over others (UNCTAD, 2016). Horizontal or functional industrial policy is the provision of inputs that can be utilized by firms across different sectors, such as transport infrastructure for transport and other services (Felipe, 2015). Nevertheless, several authors have argued that the distinction between functional and selective industrial policy might be less relevant than what the literature has suggested, as “even the most ‘general’ policy measures favor some sectors

over others” (Salazar-Xirinachs et al., 2014:20; Rodrik, 2008).

### Debates and theoretical justifications of industrial policy

The debates for and against the industrial policy are highly linked with the issues of market failure and government failure. While the proponents of the industrial policy argue market failure as their justifications, the opponents argue government failure as the base of their arguments. Apart from the oldest argument of the infant industry, there are three specific arguments in favor of an industrial policy that constitute the main theoretical justifications namely dynamic scale economies and knowledge spillovers; coordination failures; and informational externalities (Pack and Saggi, 2006).

On the other hand, the opponents of industrial policy justified government failure as the bases of their argument. As it is reviewed by Di Maio (2014), in most of the literature, two main arguments are presented against the industrial policy. The first is that the government has no better information to intervene effectively and to select better sectors or activities. The second is related to rent-seeking and corruption behavior and activities of the government officials.

By taking these debates and controversies, different authors have categorized the stands into three major theoretical approaches of industrial policy. According to Cohen (2006), in addition to the two mainstream approaches, that is, structuralist approaches and neoclassical approaches, a pragmatic approach inspired by new growth and development theories has emerged as the third category of industrial policy theoretical approach.

### *Structuralist approach*

This approach justifies and favors the intervention of the government to overcome the pervasive market failures in developing countries. Government intervention justified mainly through the infant industry argument, which is associated with trade protection. From the structuralist perspective, “both functional and selective interventions are needed to promote development, and that governments are capable of carrying them out” (Kosacoff and Ramos, 1999, P. 46). The structuralist approach proposes an industrial policy that focuses on capital-intensive industries. After independence, most of the leaders in Africa and other least developed countries aspired to catch up with the developed nations. To that end, they engaged in heavy and capital-intensive industries in the 1950s and 1960s based on the import-substitution strategies of structuralism. However, the strategy failed to achieve sustained growth, while it

consumed limited domestic resources and increased foreign debt, thereby significantly affecting the long-term development of the countries (Lin, 2012, Noman and Stiglitz, 2012).

### ***Neoclassical approach***

This approach proposes market mechanisms as the best instrument to solve market failures and alleges government failures to justify its minimalist state prescriptions. As it is explained by Kosacoff and Ramos (1999), the neoclassical approach assumes that “markets are perfect and lead to optimal resource allocation, thereby leading to the maximization of growth” (p. 46). This approach believes structural transformation would take place automatically without the intervention of the government (UNICTAD, 2016). The neoclassical economists strongly oppose the sectoral or vertical industrial policy. As it is mentioned by Cohen (2006) their criticism against sectoral industrial policies is that “the state has neither the necessary information nor adequate incentives to make better choices than the market” (p. 88).

Privatization, liberalization, and deregulation were among the “Washington Consensus” prescriptions implemented in Africa and other developing countries in the 1980s and 1990s. Nevertheless, none of the prescriptions were successful in achieving sustained and long-term economic development in most of the developing countries (Rodrik, 2008; Noman and Stiglitz, 2012; Lin and Monga, 2013; Wade, 1990). Most of the SSA countries’ economies have not shown any structural transformations from low productivity sectors to higher ones. Instead, their economy is mainly characterized by premature deindustrialization as it is defined by Rodrik (2016, p. 2) as “turning into service economies without having gone through a proper experience of industrialization”. Consequently, many people (41%) in SSA are still living under the poverty line (World Bank, 2018b).

### ***Pragmatic approach***

This was initiated based on the new growth and development theories, which advocates the necessity of striking a balance between the role of government and the market (Primi and Peres, 2009). The ‘information externality’ argument of Ricardo, Hausmann and Dani Rodrik (2002) is among these justifications. New Structural Economics (NSE) is also one of the newly emerged development thinking.

NSE is a framework of “rethinking economic development and industrial policy based on the analysis of the nature of modern economic growth” (Lin, 2014, p. 54). It postulates that sustained economic development

is the result of changes in factor endowments (given at a time and changeable over time) and continuous technological innovation (Lin, 2012). Structural transformation in developing countries requires “the upgrading of the factor endowment structure from one that is relatively abundant in labor and natural resources to one that is relatively un-abundant in the capital, the introduction of new technologies, and the corresponding improvement in infrastructure to facilitate economic operations” (Lin, 2012, p. 7).

According to the NSE, both a facilitator state and an efficient market are vital for successful economic development. An efficient market is essential for coming up with relative prices that can reflect the relative abundances of factor endowments, and a facilitating state is essential for rapid industrial upgrading, economic diversification, and technological innovation because of the need to address externalities and solve coordination problems (Lin, 2012). For such a facilitating state, industrial policy is a useful instrument for prioritizing the use of limited government resources. NSE acknowledges the contribution of the industrial policy in modern economic development both in history and in the present. Lin (2014) argues that “all countries that have transformed their economy have had governments that played a proactive role in assisting individual firms in overcoming the binding constraints” (p. 52). Hence, NSE justified industrial policy as a useful instrument for such a facilitating state and proposed an industrial policy that targets industries that have a latent comparative advantage at present and facilitating the industrial upgrading (Lin, 2012; Lin, 2014; Lin and Monga, 2017). According to Lin (2014), latent comparative advantage refers to “an industry in which the economy has low factor costs of production, but the transaction costs are too high, due to inadequate soft and hard infrastructure, to be competitive in domestic and international markets” (p. 62).

However, there are critics on the comparative advantage conforming industrial policy approach of the NSE. For instance, Chang in the debate with Justin Lin argued that state intervention should not just be about facilitating the exploitation of a country’s comparative advantage, but the comparative advantage should be merely used as the baseline and that a country needs to upgrade its industry (Lin and Chang, 2009). Although both Lin and Chang agreed that the government has to target strategic industries, they have differences in how the industries can be selected and which sectors can be targeted.

### **Labor-intensive focused industrialization pathway**

The comparative advantage of a nation depends on its factor endowments. According to Case and Fair (2002) in Chari et al. (2013), “the Heckscher-Ohlin theorem

explains that the source of the comparative advantage of nations comes from its factor endowments" (p. 52). The principal goal of a nation is to produce a high and rising standard of living for its citizens, and the ability to do so depends on the productivity with which a nation's labor and capital are employed (Porter, 1990, p. 76). It is evident that developing countries are endowed with relatively abundant labor or natural resources but have relatively scarce capital (Lin and Monga, 2013). Thus, a developing country which is relatively endowed in labor resource has to focus on labor-intensive sectors and gradually has to shift to capital-intensive sectors to foster industrialization.

Different empirical studies clearly show that labor-intensive focused industrial policy is one of the success factors of the late industrialized nations. Sugihara (2007) argued that the East Asian late industrialization path is mainly a labor-intensive manufacturing pathway built on quality labor resources cultivated in the traditional sector. According to Dinh et al. (2012), "labor-intensive light manufacturing led the economic transformation of most of the successful developing countries". Labor-intensive light manufacturing industries, such as textiles and clothing, leather goods, agricultural processing, and woodworks have represented the leading edge in the industrialization process both historically and today (Dinh et al., 2013).

Labor-intensive manufacturing industries have received particular attention in China's post-1978 reform and opening-up program. Wen (2016) states that China's growth miracle since the 1978 reform is based on the notion of comparative advantage with the correct development strategy relying first on labor-intensive industries and shifting gradually to capital-intensive technologies. Sahoo and Bhunia (2014) conclude that the policy measure used to transfer its rural labor surplus into the town and village enterprises was one of the policy successes that drove China's rise as a manufacturing powerhouse. According to Brandt et al. (2016), "labor-intensive sectors like garments and beverages were designated by the government as competitive industries".

One of the remarkable features of China's economic development is its rural industrialization. In 1978, only 9.5% of the rural labor force was engaged in industrial activities, and only 7.6% of rural income originated from the non-farm sectors; by 1996, 29.8% of the rural laborers were working in the local industry, and non-farm income accounted for 34.2% of total rural income (Lin and Yao, 2006). China has successfully used Special Economic Zones to transform its economy from an agricultural to an industrialized based (UNDP, 2015). According to Zeng (2015), China's best practices are at the forefront of using industrial parks to achieve a far-reaching economic transformation. Furthermore, the labor-intensive clusters have promoted China's industrialization and helped employ many migrant workers (Wang and Mei, 2009).

The post-WWII trend of economic development of

developing countries is mainly characterized by the sharp performance difference of East Asian countries and Sub-Saharan Africa (SSA) countries. Africa's experience with industrialization has been disappointing: the average share of manufacturing in GDP in SSA was 10% in 2010 (unchanged from the 1970s), and the SSA's share of global manufacturing has fallen from about 3% in 1970 to less than 2% in 2010 (Page et al., 2016). Despite the relatively abundant labor advantage, most SSA countries have not yet unlocked the labor-intensive light manufacturing potentials. The competitiveness of the light manufacturing industries in SSA countries is affected by binding constraints such as input supply problems, lack of access to industrial land and finance, poor trade logistics, and the limitations of entrepreneurs' and workers' skills (Dinh et al., 2012). As different studies confirmed that the industrial parks established in SSA are not successful in most cases. According to Farole (2011), the African zones included in the study have underperformed because of ineffective strategy and planning, such as focusing on sectors in which the country lacks a comparative advantage. The Export Processing Zone programs in Africa have largely failed in achieving the intended objectives (Mosle, 2019).

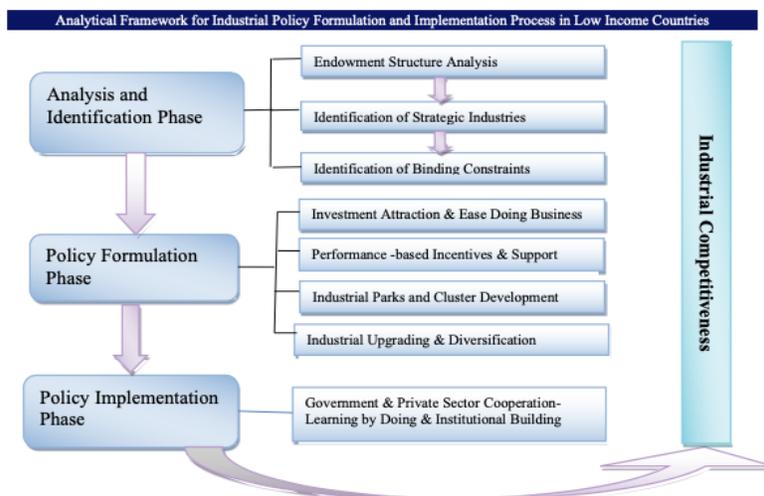
## CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY

NSE proposed the Growth Identification and Facilitation (GIF) Framework to guide the role of government in the dynamics of structural transformation. The framework aimed to help policymakers in developing countries to identify the industries and ways of removing binding constraints to facilitate private firms' entry into those industries. The framework is designed based on the theories of comparative advantage and the advantage of backwardness as well as the successful and failed experiences of industrial policies (Lin, 2012). The GIF framework has the following six comprehensive steps (Lin and Monga, 2010, pp. 22-23).

**Step one:** the government in a developing country can identify the list of tradable goods and services that have been produced for about 20 years in dynamically growing countries with similar endowment structures and a per capita income that is about 100-300% higher than their own.

**Step two:** among the industries in that list, the government may give priority to those in which some domestic private firms have already entered spontaneously, and try to identify: the obstacles that are preventing these firms from upgrading the quality of their products; or the barriers that limit entry to those industries by other private firms.

**Step three:** some of those industries on the list may be



**Figure 1.** Analytical framework of the study. Source: own formulation based on GIF and GIFIUD.

entirely new for domestic firms. In such cases, the government could adopt specific measures to encourage firms in the higher-income countries identified in the first step to invest in these industries.

**Step four:** in addition to the industries identified on the list of potential opportunities for tradable goods and services in step 1, developing country governments should pay close attention to successful self-discoveries by private enterprises and provide support to scale up those industries.

**Step five:** in developing countries with poor infrastructure and an unfriendly business environment, the government can invest in industrial parks or export processing zones and make the necessary improvements to attract domestic private firms and/or foreign firms that may be willing to invest in the targeted industries.

**Step six:** the government may also provide limited incentives to domestic pioneer firms or foreign investors that work within the list of industries identified in step 1 to compensate for the non-rival, public knowledge created by their investments.

According to UNIDO (2015), “Lin’s NSE approach has generated a great interest in the world’s development community”. Based on the NSE principles and GIF approach, UNIDO developed Growth Identification and Facilitation for Industrial Upgrading and Diversification (GIFIUD) as a development tool for low-income developing countries in accelerating structural transformation. GIFIUD acts at three levels- Analysis Phase, Strategy/Policy Establishment Phase, and Implementation Phase (UNIDO, 2015). The Analysis Phase encompasses three steps, namely, identification of

latent comparative advantage, identification of industrial sectors and, identification of binding constraints on selected industries. Targeted FDI promotion, focused industrial upgrading and modernization, industrial parks and cluster development, and special incentives for newcomers are the Strategy/Policy Establishment focuses. The implementation phase focuses on UNIDO technical cooperation (capacity building on policy implementation).

GIFIUD uses most of the proposals of GIF and added two more factors- the industrial upgrading and diversification in the policy establishment phase and UNIDO technical cooperation as the implementation phase. Categorizing the GIF steps into three levels is the proper approach. However, the implementation level factor is narrowly scoped only with the role of UNIDO.

Thus, this study uses the NSE approach of GIF by taking into consideration the contribution of UNIDO with its toolkit, GIFIUD, with some modification. The three levels of building blocks adjustment of GIFIUD is adopted with some naming adjustments, as shown in Figure 1. The UNIDO technical cooperation factor of the policy implementation stage is replaced by government and private cooperation through learning by doing and institutional building approach.

As shown in Figure 1, the analytical framework of this study encompasses three phases and eight essential factors. The analysis and identification phase comprise three sequential steps: identification of factor endowment, identification of strategic sectors, and identification of binding constraints. The policy formulation phase mainly focuses on the formulation of strategies and policies that are important in tapping the potential and overcoming the binding constraints in the identified strategic sectors. The primary focus areas are investment attraction and ease of

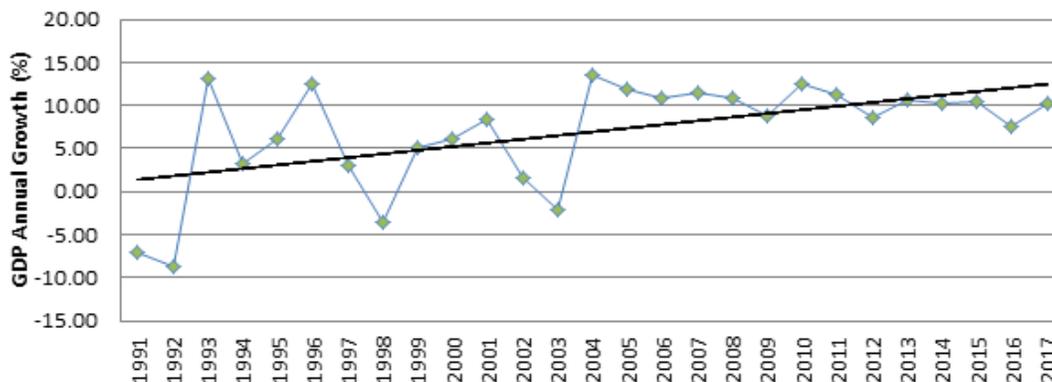


Figure 2. GDP Annual Growth (%) in Ethiopia (1991-2017). Source: World Bank (2018a).

doing business, industrial upgrading and diversification, performance-based incentives and supports, and industrial park development. The implementation phase focuses on government and private sector cooperation through learning by doing and institutional building.

A mixed research method, both quantitative and qualitative, is used as a research strategy. Both secondary and primary data gathering methods are used. The secondary data has been mainly gathered from the Central Statistics Agency of Ethiopia, the National Planning Commission, and other public institutions, previous researches, the reports of the government, and different organizations. The World Bank's Development Indicators database, and World Trade Integrated Solution, ILO, and other international data sources are used.

The primary data was mainly gathered through a structured survey questionnaire. Interviews and field visits have been conducted as a supportive tool for the survey. The firm-level survey has been done through a structured questionnaire in the medium and large-scale manufacturing firms of the textile, apparel, leather, and leather products sectors. According to the Ethiopian Central Statistics Agency (CSA) (1995-2017), the total number of textile and leather medium and large-scale manufacturing firms is 269.

The sample size of the study is 80 manufacturing firms (30% of the total population). The sample manufacturing firms have been selected using purposive sampling selection methods. Size, ownership, and location of the manufacturing firms are considered in the selection of the sample. The primary data collected from 80 manufacturing firms is processed and analyzed using Statistical Product and Service Solutions (SPSS), an IBM product since 2009 (Hejase and Hejase, 2013, p. 58).

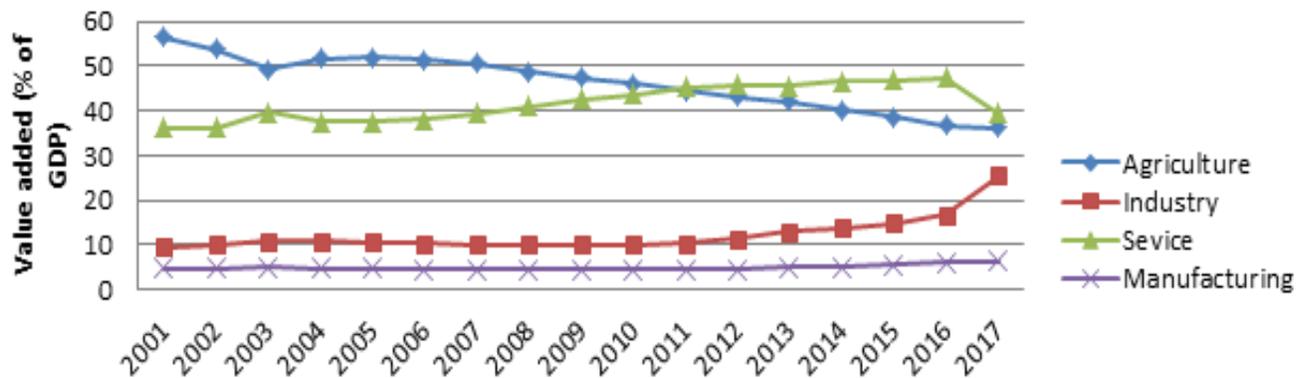
### Economic growth and transformation trends in Ethiopia

The government of Ethiopia adopted Agricultural

Development Led Industrialization (ADLI) in 1994 as the primary economic strategy. Various sector-specific strategies and policies such as rural and agriculture development, industrial development, and urban development strategies and policies have been formulated and implemented since 2003 within the developmental state approaches. Following the implementation of the strategies and policies, Ethiopia has become one of the fastest-growing economies by registering rapid economic growth. It has registered an annual GDP growth in 1991-2003 and 2004-2017 of 2.9% and 10.6%, respectively (Figure 2). As the data clearly shows, the economic growth pace has increased significantly after the government had formulated economic sector policies. Following the economic growth, the per capita real GDP of the country has also grown from 136 US dollars in 1992 to 863 US dollars in 2017 (Ministry of Finance and Economic Development (MOFED), 2018). Moreover, the share of the population living below the national poverty line has declined from 45.5% in 1996 to 23.5% in 2016 (Ethiopian National Planning Commission (ENPC), 2018). Encouraging results have also been registered in infrastructure, education, health, and other economic and social sectors.

As far as the structural change is concerned, the contribution of agriculture to GDP has declined from 51.9% in 2004 to 35.8% in 2017 (Figure 3). The contribution of the service sector, on the other hand, has increased from 34.1 to 38.9% in the same years. The commerce sub-sector in the service played a lion share. The contribution of industry (including construction) has also increased from 11.4 to 25.3%, and the construction sector contribution has risen from 7.2 to 18% in the same years. However, the contribution of the manufacturing industry to the structural change remains very weak despite the slight incremental trends noticed since 2015 after a long period of stagnation.

According to International Labor Organization (ILO) (2018) estimated data, the employment share of the agriculture sector has decreased from 85% in 2000 to 68% in 2017. The share of the industry has increased



**Figure 2.** Economic sectors value added (% of GDP) 2001- 2017 in Ethiopia. Source: own compilation from National Bank of Ethiopia (NBE) (2017).

from 3.7% in 2000 to 9% in 2017, and the service sector had also increased from 10.5 to 22.4% in the same years. Construction is the major contributor to employment within the industrial sector. However, agriculture still played a predominant role in terms of job creation. Nearly 70% of the labor force is engaged in agriculture, mainly in low labor productivity sectors. The manufacturing contribution to employment is meager which is estimated below 2%.

Hence, the structure change trend that has been noticed for the consecutive 14 years in Ethiopia is not from low to high productive sectors. The performance of the manufacturing industry, which is expected to play an engine role in structural transformation, is weak despite the incremental trends in terms of value-added annual growth. The manufacturing sector has registered 12.6% of value-added yearly average growth from 2004 to 2017 (World Bank, 2018a). However, the contribution of the manufacturing industry to the GDP is low (only 6.3% in 2017), which is lower than the 8% of the low-income economies average and 10% of SSA average in 2017 (World Bank, 2018a). The manufacturing contribution to the merchandise exports (12.5% of the total export in 2017) is low and far from 23.9% of the Sub-Saharan Africa average as well. Its contribution to employment is also small.

In general, the trends of the Ethiopian economic performance show the presence of prospects and challenges to sustain rapid economic growth. As a prospect, the rapid economic growth of the country has been accompanied by social and economic development gains. On the other hand, the economy has been encountered with macroeconomic and structural challenges. Unemployment, inflation, shortage of foreign currency, debt burden, and unfavorable trade deficit are among the challenges. The economy has not yet begun the structural transformation from agriculture to manufacturing. Thus, enhancing the industrialization process has become critical in sustaining the rapid economic growth of the country.

## POTENTIALS OF LABOR-INTENSIVE MANUFACTURING IN ETHIOPIA

### Labor as major factor endowment in fostering industrialization

Ethiopia is the second-most populous country in Africa after Nigeria and 12th among the countries in the world with a population size estimated at nearly 105 million in 2017 (United Nations, 2017). The annual population growth had shown a declining trend from 3.5% in 1991 to 2.8% in 2015, and it has the most considerable population density relatively among its neighbors with 105% in 2017 (World Bank, 2018a). Ethiopia is a youthful nation with significant potential for the working population. 56% of the population is with the age range of 15-64, and 41% of the population is below the age of 15 years.

According to the Ethiopian Ministry of Education (2017) data, nearly 50% of the total population of the country, that is, 51,595,198 of students were enrolled at different levels of education (From pre-primary to postgraduate levels) in 2017. The same data source shows that undergraduate enrolment (government and private) had increased from 447,693 in 2010/11, to 593,571 in 2013/14. Likewise, total Masters’ enrolment in public higher education institutions increased from 7,211 in 2007/08 to 27,643 in 2013/14. The number of graduates reached 290,813 total graduates in 2017 in TVET (31,097), undergraduate (141,700), and postgraduate levels (18,016).

The availability of inexpensive skilled and semi-skilled labor, with daily laborer \$2/day and salaries of fresh university graduates \$100-200/month, provides for a high potential to be competitive in labor-intensive industries (Ministry of Industry of Ethiopia (2016)). In general, Ethiopia has untapped labor-potential to be competitive in labor-intensive industries. On the other hand, the economy is not generating the required job opportunities for the rapidly growing working force, including the

graduates of the higher education institutions. Currently, the country is experiencing unemployment challenges. According to the CSA (2018b) survey, the rate of urban unemployment in Ethiopia increased to 19% in 2018. Most of the working force is also engaged in low productivity sectors, mainly in agriculture. Therefore, a labor-intensive focused industrialization pathway is both a means and an end for Ethiopia. As a means, the country has to utilize its primary factor endowment potential, which is labor, to sustain its rapid economic growth and transform its economy. As an end, the economy has to generate sufficient jobs for the highly growing labor force.

### **Land and related resources as industrialization potential**

The land size of Ethiopia is 1,140,331 sq. Km and ranking 8th in Africa and 27th in the World. 45% (513,000 sq.km of the total land) is arable and suitable for agriculture, and 10 million hectares of irrigable land (only 3% utilized). Ethiopia has a suitable climate for agricultural production and productivity. It has a surprisingly temperate climate due to its elevation. Ethiopia has an elevated central plateau varying in height from 2,000 to 3,000 m above sea level. It is also suitable for the production of food crops - cereals, pulses, oilseeds, a wide range of fruits and vegetables, coffee, tobacco, sugar cane, tea and spices, forestry (including rubber tree plantation, fiber crops: (cotton, jute) animal husbandry among others (Ethiopian Investment Commission EICb, 2017). This shows that the country has huge potential for agro-processing industries. Moreover, the country has a huge land potential suitable for the production of cotton for the textile and garment industries. The estimated land area suitable for cotton cultivation, 3 million hectares, was equal to about 10% of the global cotton area in 2015/2016. At the same time, less than 3% of the 3 million hectares suitable for cotton cultivation is presently under cotton cultivation.

Ethiopia also has a raw material potential for leather manufacturing industries. Ethiopia is the first in Africa in the livestock population. According to CSA (2018a), the country has 60.4 million, 31.3 million, and 32.7 million cattle, sheep, and goats respectively in 2017. The country has potentials quality sheepskin suitable for the glove, shoe upper, and other leather products. It also has a potential of goat skins with high tensile strength.

Ethiopia is endowed with water resources with great potential for electric power generation. Ethiopia has the second-largest hydropower potential in Africa after to DR Congo. Ethiopia has estimated potential up to 45,000 MW, and approximately 30,000 MW is expected to be economically feasible. The country has around 124 billion cubic meter surface water resources potential and more than 30 million cubic meter ground water potential, and the hydro power generation potential of major Rivers and Rift valley lakes is also estimated about 160,000

Megawatt/year (Ayalew, 2018). The Grand Ethiopia Renaissance Dam with 6450 MW, which is under construction, is the largest hydroelectric power plant in Africa and the seventh-largest in the world. The electric power production price of the country is also one of the cheapest in the world.

### **Capital as scarce factor endowment**

Ethiopia's GDP at the current price is 80.6 billion USD in 2017 (National Bank of Ethiopia NBE, 2017). In terms of GDP, Ethiopia is 66th in the world (World Bank, 2018a). Its tax revenue of GDP is very low (11.6% in 2017). Above all, the country's economy is challenged by the debt burden. International Monetary Fund (IMF) (2020) states the situation as "Notwithstanding recent policy restraint, external risks have increased, and the updated, Debt Sustainability Analysis (DSA) suggests that Ethiopia is at high risk of debt distress" (IMF, 2020: 9).

In general, Ethiopia is currently characterized as a labor abundant and capital scarce country in a relative sense. It is also relatively endowed with resources such as land suitable for agriculture, water, and livestock. The country also has a suitable climate for a variety of agricultural products and livestock productions, including products such as cotton and leather, which are essential inputs for the labor-intensive manufacturing industries.

### **Identification of strategic industries**

#### **Selection of benchmarking countries**

According to Lin and Monga (2010), the benchmarking countries have to fulfill three criteria: 100 to 300% higher (or a similar per capita income about 20 years ago); dynamically growing for the last 20 years, and have identical endowment structure. Based on the first criteria (per capita income), countries that have GDP per capita about 100-300% higher than Ethiopia in 2017 are listed in Table 1 and countries that had a similar per capita income 20 years ago as Ethiopia in 2017 are listed in Table 2. Among the list of countries in the two tables, countries that have registered more the 6% average GDP annual growth are selected using the second criteria. As a result, 12 countries: Cambodia, Ghana, Nigeria, Myanmar, Angola, Vietnam, Uzbekistan, Lao PDR, India, Timor-Leste, and China are identified.

Population size and structure of their economy, mainly the MVA, are used to identify countries that have similar endowment structure to Ethiopia. Countries with relatively small size and low population density, as well as the contribution of the manufacturing sector to the GDP, are taken as the screening criteria. Timor-Leste with 1.3 million and Lao PDR with 6.9 million have the smallest population size. Cambodia, Ghana, Angola, and Uzbekistan, with 16, 28.8, 32.4, and 29.9 million respectively; they also have smaller population size than

**Table 1.** Countries with GDP per capita about 100-300% higher than Ethiopia.

Country	GDP per capita, PPP, 2017	Percent to Ethiopia	GDP annual growth 1998-2007	GDP annual growth 2008-2017	GDP annual growth 1998-2017
Ethiopia	1729.9	100.0	6.3	10.1	8.2
Bangladesh	3524	203.7	5.4	6.3	5.8
Mauritania	3597.6	208.0	5.5	3.4	4.4
Cote d'Ivoire	3601.0	208.2	0.8	5.7	3.2
Cambodia	3645.1	210.7	9.5	6.2	7.9
Zambia	3689.3	213.3	5.5	6.1	5.8
Marshall Islands	3819.2	220.8	1.7	1.4	1.5
Papua New Guinea	3823.2	221.0	2.0	5.1	3.5
Ghana	4227.6	244.4	4.9	7.3	6.1
West Bank and Gaza	4449.9	257.2	3	5.5	4.2
Sudan	4466.5	258.2	6.7	3.4	5.1
Honduras	4541.8	262.5	4.3	3.2	3.7
Congo, Rep.	4881.4	282.2	3.4	3.4	3.4
Pakistan	5034.7	291.0	4.7	3.7	4.2
Moldova	5190.0	300.0	3.5	3.8	3.7
Nicaragua	5321.4	307.6	4	4.1	4
Nigeria	5338.5	308.6	7.9	4.4	6.2
Tonga	5425.6	313.6	1.5	2.1	1.8
Myanmar	5591.6	323.2	12	7.9	9.9
Angola	5819.5	336.4	10.6	4.3	7.4
Samoa	6021.6	348.1	4.4	1.3	2.9
Vietnam	6171.9	356.8	6.6	6	6.3
Cabo Verde	6222.6	359.7	9	2.2	5.6
Uzbekistan	6253.1	361.5	5.7	7.9	6.8
Lao PDR	6397.4	369.8	6.4	7.7	7.1
India	6426.7	371.5	7.2	7	7.1
Timor-Leste	6570.1	379.8	21.1	-0.4	8.5
Bolivia	6885.8	398	3.3	5	4.1

Source: own computation from World Bank (2018a), world development indicators.

Ethiopia. Angola (23.9 people per sq.km of land area) and Lao (29.7 people per sq.km of land area) have the lowest population density.

In terms of MVA contribution in GDP, Timor-Leste, Ghana and, Angola, and Lao PDR have low performance; despite some improvements in recent years, the performance of Nigeria is also low. The economic growth of these countries is mainly achieved by the contribution of natural resources. Therefore, Timor-Leste, Ghana, Angola, Lao PDR, Cambodia, and Nigeria are excluded from the list in the screening process. As far as India is concerned, the contribution of manufacturing to GDP is relatively low and has shown a stagnated trend. Thus, China and Vietnam are selected as a benchmark of Ethiopia based on the GIF criteria.

### **Identification of tradable goods**

After the selection of the benchmark-countries, the next

step is to identify tradable goods produced in these target countries, where Ethiopia would have potential comparative advantages. A typical way of completing this task is to quantify what produced and compare aggregate export of each subsector at the beginning of the 20th year in 1995 with the level of production at the end of the 20th year in 2015 and analyze the trend.

As it is shown in Table 3, the export performance of China clearly indicates that the labor-intensive industries played a significant role at the earlier years and show declining trends in later years. For instance, textile and clothing, footwear, and food products ranked 1st, 3rd, and 7th, respectively, in 1992. Machine and electronics products have taken the leading role from textile and clothing since 2000, and the role of other labor-intensive industries has been declining over time in terms of their share from the total exports.

Table 4 shows that the performance of Vietnam's export has also shown similar trends, even though labor-intensive products are still playing a lion share. The

**Table 2.** Countries with a similar per capita income level 20 years ago to Ethiopia's in 2017.

Country	GDP per capita, PPP	Percent from Ethiopia	GDP annual growth 1998-2007	GDP annual growth 2008-2017	GDP annual growth 1998-2017
Ethiopia	1729.9	100.0	6.3	10.1	8.2
Senegal	1765.8	102.1	4.6	4.4	4.5
Bosnia and Herzegovina	1826.1	105.6	7.0	1.6	4.5
Kiribati	1891.1	109.3	2.0	2.4	2.2
Vietnam	1954.8	113.0	6.6	6.0	6.3
Sudan	1960.6	113.3	6.7	3.4	5.1
Lao PDR	2023.6	117.0	6.4	7.7	7.0
Zambia	2029.5	117.3	5.5	6.1	5.8
India	2036.8	117.7	7.2	7.0	7.1
Ghana	2066.2	119.4	4.9	7.3	6.0
Kenya	2204.4	127.4	3.8	5.0	4.4
Uzbekistan	2242.1	129.6	5.7	7.9	6.7
Georgia	2294.8	132.7	6.6	3.7	5.2
Cameroon	2383.7	137.8	4.3	4.2	4.3
Solomon Islands	2399.5	138.7	0.7	4.1	2.4
Cabo Verde	2423.3	140.1	9.0	2.2	5.8
Angola	2465.4	142.5	10.6	4.3	7.6
Zimbabwe	2488.3	143.8	-4.4	5.1	0.1
China	2564.1	148.2	10.0	8.3	9.2
Moldova	2605.4	150.6	3.5	3.8	3.7
Vanuatu	2609.4	150.8	2.9	2.6	2.8
Tuvalu	2666.8	154.2	2.3	2.6	2.4
Nigeria	2750.1	159.0	7.9	4.4	6.2

Source: own computation from World Bank (2018a), world development indicators.

textile and clothing products took the leading role from fuel products in 2010, and machines and electronics took the prominent part from textile and clothing in 2015. On the other hand, the rank of machine and electronics export has increased from 6th in 2000 to 1st in 2015 Indian export.

As it is mentioned earlier, the sectors to be selected as a target have to be beginning to decline in the comparator/benchmarking countries. Revealed Comparative Advantage (RCA) analysis can be used to identify the sectors that are declining in the export share of the benchmarking countries identified as a benchmarking for Ethiopia. The analysis includes Ethiopia just to show the overall trend. The primary purpose of the RCA analysis is, therefore, to identify tradable goods over which the benchmarking countries have begun losing comparative advantages. The RCA of Ethiopia and benchmark countries (China and Vietnam) in selected product categories shows that Ethiopia has the lowest in capital intensive industries (Machine and electronics and metal products), and emerging RCA in labor-intensive manufacturing (textile and clothing and footwear) (Table 5). Despite the differences among the countries, the benchmark countries, on the other hand, have the highest RCA in labor-intensive manufacturing sectors

with the declining trend, and the emerging RCA in Capital intensive manufacturing.

Thus, the manufacturing sectors are evaluated, and the strategic sectors are selected using the two main criteria—the RCA advantage status in benchmark countries and the factors production potential of Ethiopia. Based on these criteria, products such as textile and apparel, leather and leather products; meat and meat products; and other agro-processing products are the major strategic sectors to be targeted. The country has already exported some of the products in these sectors.

In general, the analysis clearly shows Ethiopia has factor endowment potential and latecomer's advantage in labor-intensive light manufacturing industries in its current stage of development. Therefore, the labor-intensive focused industrialization pathway is a feasible strategic direction. The performance of the sectors and the binding constraints that affect their competitiveness are analyzed in the following section.

### **Performance and binding constraints of labor-intensive industries**

The third step of the identification stage of the analytical

**Table 3.** China's major export in selected years (1992-2015).

<b>Product categories</b>	<b>Export (US\$ million)</b>	<b>Rank</b>	<b>Product categories</b>	<b>Export (US\$ million)</b>	<b>Rank</b>
	<b>1992</b>			<b>2005</b>	
All products	84940.01		All Products	761953.41	
Textiles and clothing	24617.17	1	Mach and Electronics	322008.13	1
Mach and electronics	11542.53	2	Textiles and Clothing	107661.24	2
Footwear	5144.00	3	Metals	57085.50	3
Fuels	4692.42	4	Transportation	28409.98	4
Metals	4550.88	5	Plastic or Rubber	23285.51	5
Vegetable	4419.61	6	Footwear	22773.07	6
Food products	3294.81	7	Stone and Glass	17789.72	7
Hides and skins	2912.52	8	Fuels	17622.65	8
Animal	2783.25	9	Hides and Skins	15600.62	9
Stone and glass	2289.94	10	Wood	12683.30	10
Transportation	2096.52	11	Food Products	11196.04	11
Plastic or rubber	1828.98	12	Vegetable	8566.20	12
Wood	1698.62	13	Animal	6700.68	13
Minerals	924.90	14	Minerals	3297.50	14
	<b>1995</b>			<b>2010</b>	
All products	148779.50		All Products	1577763.8	
Textiles and clothing	35877.67	1	Mach and Electronics	698387.52	1
Mach and electronics	27667.21	2	Textiles and Clothing	199534.31	2
Metals	12079.53	3	Metals	110807.95	3
Footwear	8158.6	4	Transportation	88874.75	4
Hides and skins	5642.6	5	Plastic or Rubber	49790.6	5
Fuels	5332.11	6	Footwear	43910.21	6
Food products	4627.02	7	Stone and Glass	39758.82	7
Vegetable	4594.67	8	Fuels	26674.61	8
Animal	4473.68	9	Wood	23593.42	9
Stone and glass	4408.64	10	Hides and Skins	23245.7	10
Plastic or rubber	4281.45	11	Food Products	19370.28	11
Transportation	3969.63	12	Vegetable	16294.55	12
Wood	3255.08	13	Animal	12017.23	13
Minerals	1388.6	14	Minerals	3700.65	14
	<b>2000</b>			<b>2015</b>	
All products	249202.55		All Products	2273468.2	
Mach and electronics	72884.73	1	Mach and Electronics	957412.79	1
Textiles and clothing	49378.69	2	Textiles and Clothing	273464.73	2
Metals	16608.45	3	Metals	176567.35	3
Footwear	11958.41	4	Transportation	107214.63	4
Transportation	9267.56	5	Plastic or Rubber	86355.11	5
Plastic or rubber	7948.91	6	Stone and Glass	85553.7	6
Fuels	7855.47	7	Footwear	68210.44	7
Hides and skins	7505.21	8	Wood	40190.57	8
Stone and glass	6566.98	9	Hides and Skins	35038.67	9
Vegetable	5333.44	10	Food Products	27911.22	10
Food products	5165.51	11	Fuels	27903.74	11
Wood	4531.76	12	Vegetable	22950.32	12
Animal	4352.89	13	Animal	17356.89	13
Minerals	1345.27	14	Minerals	3815.16	14

Source: own computing from wits data.

**Table 4.** Major exports of Vietnam in selected years (2000-2015).

<b>Product Categories</b>	<b>Export (US\$ Million)</b>	<b>Rank</b>	<b>Product Categories</b>	<b>Export (US\$ Million)</b>	<b>Rank</b>
<b>2000</b>			<b>2010</b>		
All Products	14482.74		All Products	72236.66	
Fuels	3824.76	1	Textiles & Clothing	13303.73	1
Textiles & Clothing	2095.36	2	Mach and Elect	10221.16	2
Vegetable	1968.18	3	Vegetable	8011.39	3
Animal	1583.01	4	Fuels	7979.70	4
Footwear	1507.92	5	Footwear	5404.35	5
Mach and Elect	1151.17	6	Plastic or Rubber	4306.74	6
Plastic or Rubber	294.53	7	Animal	4260.81	7
Wood	262.69	8	Stone and Glass	3666.31	8
Stone and Glass	214.25	9	Metals	2791.48	9
Hides and Skins	195.9	10	Food Products	2078.86	10
Food Products	193.56	11	Wood	1411.24	11
Metals	126.93	12	Transportation	1281.35	12
Chemicals	111.85	13	Chemicals	1234.40	13
Transportation	99.87	14	Hides and Skins	1104.44	14
Minerals	40.14	15	Minerals	343.26	15
<b>2005</b>			<b>2015</b>		
All Products	32447.13		All Products	162016.704	
Fuels	8358.05	1	Mach and Elect	57413.103	1
Textiles and Clothing	5308.42	2	Textiles & Clothing	27270.008	2
Vegetable	3372.49	3	Footwear	12783.604	3
Footwear	3184.43	4	Vegetable	12115.606	4
Mach and Elect	2736.46	5	Metals	5713.503	5
Animal	2593.61	6	Animal	5201.102	6
Plastic or Rubber	1352.19	7	Plastic or Rubber	5189.806	7
Food Products	729.16	8	Fuels	4996.602	8
Metals	678.78	9	Food Products	4746.803	9
Wood	540.44	10	Hides and Skins	3286.406	10
Stone and Glass	475.79	11	Wood	3270.803	11
Hides and Skins	420.24	12	Transportation	3111.909	12
Transportation	396.25	13	Chemicals	2592.408	13
Chemicals	340.76	14	Stone and Glass	2421.602	14
Minerals	129.75	15	Minerals	1081.303	15

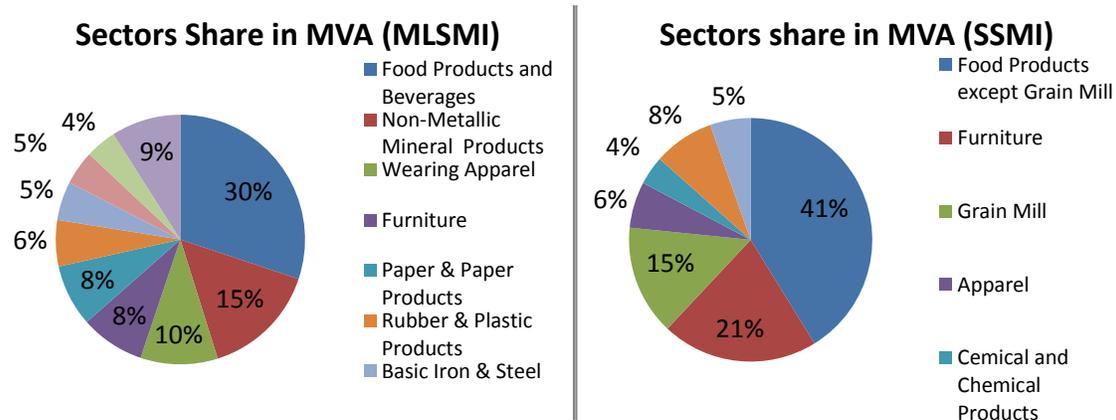
Source- Own Computing from WITS data

framework of this study is the identification of the binding constraints that affect the competitiveness of the manufacturing firms in targeted industries. Thus, the performance of the labor-intensive sectors vis-à-vis the capital-intensive industries and the binding constraints that affect their performance is analyzed as follows. As Figure 4 shows, the labor-intensive industries are playing a significant role in terms of MVA share. While food and beverages, non-metallic mineral products, apparel, and furniture contributed 62% of the total MVA in MLSMI, the capital-intensive manufacturing sectors such as basic iron and steel and chemical and chemical products contribution is very low. In SSMI, the labor-intensive

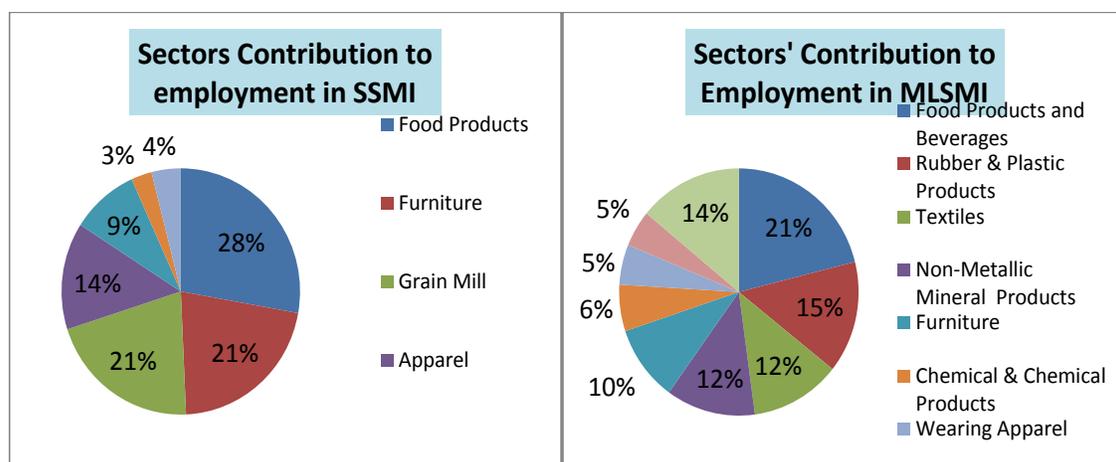
manufacturing industries, food products except for grain mill, furniture, and apparel contributed 68% of the total MVA. Moreover, Figure 5 shows that the labor-intensive sectors contributed the largest share in job creation. In SSMI food products, furniture and apparel contributed 63% of the total employment. In MLSMI, food products and beverage, textile, apparel, and leather products contributed 54% of the total job. The contribution of capital-intensive sectors such as metal and chemical is very low both in SSMI and MLSMI. Ethiopia's export is mainly dominated by primary agriculture products and is exported without value addition. Given this basic fact, the labor-intensive manufacturing sectors mostly textile,

**Table 5.** Revealed comparative advantage (1995-2016).

Type	Product Category	Country	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016
Labor Intensive Manufacturing	Textile and Clothing	China	3.3	3.0	2.7	2.7	2.7	2.7	2.6	2.4	2.2	2.3
		Vietnam		2.5	3.4	4.7	4.7	4.1	4.1	4.1	3.7	3.5
		Ethiopia	0.6	0.3	0.4	0.7	1.0	1.0	1.3	1.1	0.8	1.1
	Footwear	China	8.1	7.0	4.8	4.1	4.1	3.9	3.7	3.3	3.0	2.9
		Vietnam		18.8	18.6	14.9	13.8	11.9	11.1	11.4	10.2	9.8
		Ethiopia	0.0	0.1	0.1	0.5	0.5	0.9	1.3	1.3	1.5	1.9
Capital Intensive Manufacturing	Machine and Electronics	China	0.8	1.1	1.7	1.9	2.0	2.1	2.1	2.0	1.9	1.8
		Vietnam		0.2	0.3	0.7	0.9	1.4	1.6	1.6	1.5	1.5
		Ethiopia	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.3
	Metal	China	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.1
		Vietnam		0.1	0.2	0.4	0.5	0.5	0.4	0.4	0.4	0.4
		Ethiopia	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0



**Figure 3.** MVA by sub-sectors in SSMI and MLSMI (2017). **Source:** own computation from CSA (1995-2017), CSA (2002, 2009, 2017) Surveys.



**Figure 5.** Employment by sub-sectors in SSMI and MLSMI (2017). **Source:** own computation from CSA (1995-2017), CSA (2002, 2009, 2017) Surveys.

**Table 6.** Summary of Major constraints that affect the manufacturing firms' performance.

Rank	Job creation and labor productivity	Installed investment utilization	Export production
1	Employees' turnover	Raw material supply problems	Shortage of foreign currency
2	Weak working culture	Shortage of foreign currency	Low labor skill
3	Low-quality education and training	Shortage of skilled labor	Shortage of raw materials
4	Weak employees' motivation system	Shortage of electric power	Low market demand
5	Lack of adequate on job training	Shortage of working capital	Transport cost

Source: own survey

apparel, and leather and leather products have registered promising results in terms of export earnings (NBE, 2017). Despite such promising performances, the labor-intensive manufacturing sectors are performing far below the potential and expectations. Therefore, it is critical to understand the reasons for the low performance of the sector. As the analysis of the survey result of this study show, the manufacturing firms' performance is affected by binding constraints as summarized in Table 6. The top five constraints for each performance category of the manufacturing sector are identified. The job creation and labor productivity performance of the manufacturing firms are mainly affected by employees' turnover, weak industrial working culture, low-quality education and training system, and ineffective employees' motivational systems. Shortage and quality of raw materials, shortage of foreign currency, and shortage of skilled labor force are the top critical problems that affect the performance of manufacturing firms in the utilization of their installed investment.

In general, these constraints can be categorized into weak input-output linkages, financial constraints, the skill of employees (low productivity), access to electric power, and transport cost. These are the major factors that currently need a policy focus to unlock the potentials of Ethiopia in labor-intensive industries.

### Industrial policy formulation and implementation in practice

The industrial policies in Ethiopia are explained in a broader and selective approach in different policy, legal, and strategic planning documents. The Industrial Development Strategy of Ethiopia (IDSE) adopted in 2002 is a comprehensive strategic document that encompasses the basic principles, the strategic sectors, and the implementation directions of industrial development (Ethiopian Ministry of Information, 2002). The strategy puts seven guiding principles of industrial development: focusing on labor-intensive industries, export-led industrial development, agricultural led industrial development, the integration of foreign and domestic investors and partnership among stakeholders, the leading role of the government, and an engine role of the private sector.

Textile and garment industries; meat and leather industries; agro-processing industries are selected as the strategic manufacturing sectors. The horizontal industrial policy directions are also stated in the strategy document. Creating macroeconomic stability, modernizing the financial system, creating dependable physical infrastructure services, developing useful human resource, and creating efficient civil service and judiciary system that supports development are the principal directions.

Within these broader perspectives, the performance and practical experiences are analyzed based on the five key policy areas identified in the analytical framework of this study.

### Investment attraction and ease of doing business

The effectiveness of government services such as investment and business licenses, land supply, electricity supply, water supply, tax administration, and the like have significant impacts on the attraction of new investors as well as in enhancing the competitiveness of the existing manufacturing firms. The surveyed manufacturing firms were requested to rank the efficiency of the government services based on ten variables with five-level evaluation categories. As it is shown in Figure 6, the average efficiency level of all the ten indicators is 2.8 points, which means that the satisfaction level of the respondents is only 56%. The investment license/renewal, trade license, and import and export permit are relatively efficient, and land supply, electric power supply, and telecommunication services are inefficient services.

In addition to the efficiency, affordability of services (payments and fees paid for government services) is one of the essential factors to improve the investment climate. As indicated in Figure 6 the mean of the ranking of the 9 indicators is 2.43 out of 5, which is below 50%. Fees and payments for license and work permit, water, and electric power are relatively cheap, while loan interest rates, transport for import and export, and bank loan interest rates are expensive services.

### Incentive and supports

The government of Ethiopia has designed different

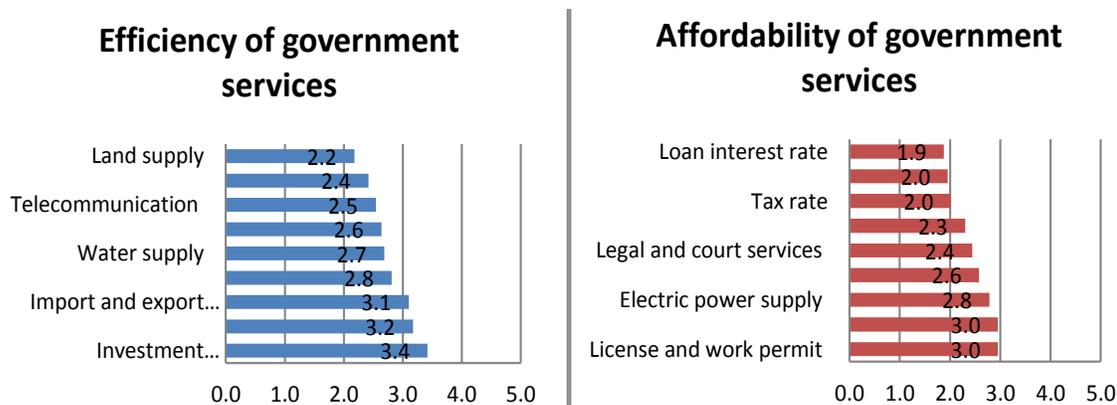


Figure 4. Efficiency and affordability of government services. Source: own survey.

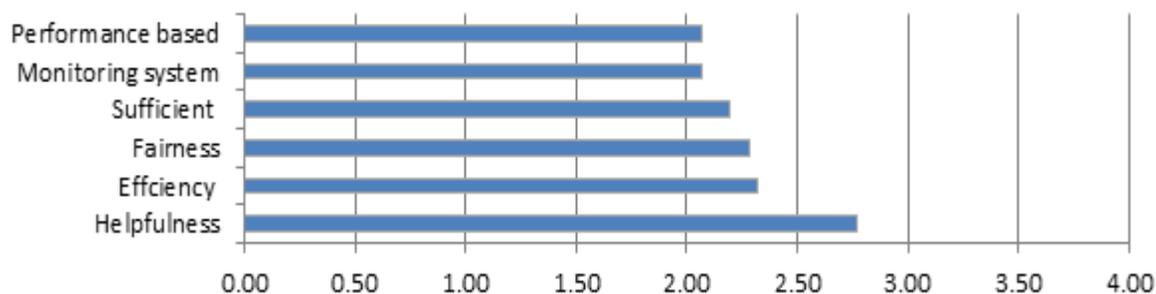


Figure 5. Performance of incentives and supports. Source: own survey.

incentive mechanisms for investors. Various fiscal and non-fiscal incentives are provided to the manufacturing and other economic sectors (Ethiopian Investment Commission (EIC)a, 2017). All the manufacturing sub-sectors are eligible for customs duty exemptions, that is, 100% of the imported capital goods and 15% of the spare parts. In terms of income tax exemption, different categories are ranging from 1 year to six years. The investors who are investing out of Addis Ababa and its surroundings have some preferential treatment with 1 or 2 years of income tax exemptions. In terms of the different industrial groups and sub-sectors, the incentive ranges from 1 year to 6 years. The range of income tax exemption in other textile and leather products varies from 2 to 6 years, except the tanning of unfinished leather, which is not eligible for income tax exemption. The surveyed manufacturing firms were requested to rank the incentives and supports of the government based on six variables with four-level evaluation categories (Figure 7). The average mean point of the ranking is 2.28 (57%). The lowest ranking is given to the performance-based and managed by strong institutional mechanisms. The respondents also recommended that more focus needs to be given for the performance and the strategic importance of the industries. Most of them

believe the incentive mechanism provides no significant difference between the strategic sectors selected by the government and other sectors.

### Industrial parks and clusters

Ethiopia is implementing an industrial parks program to accelerate its industrial development. The construction of industrial parks was started by the government, private and/or jointly between government and the private sector, during the first GTP (2010/11 2015/16) period (ENPC, 2016a). Seventeen federal government industrial park projects are under development in different parts of the country (Industrial Parks Development Corporation (IPDC), 2018). Bole Lemi, Hawassa, Kombolcha, Mekele, and Addis Industrial village are operational. Others are at a different stage of construction and preparation for construction. When most of these federal government parks are completed and are fully functional, they are expected to create around 250,000 jobs. To date, the national operational parks have created 36,563 jobs. The country is also planning to construct 19 agro-processing industrial parks in different parts of the country by the regional states. Most of the federal, as well as the

regional state industrial parks, are dedicated to labor-intensive industries, mainly textile, apparel, leather, and leather products.

One of the Chinese overseas Special Economic Zones (SEZ) called Easter Industrial park is the first pioneer park established in Ethiopia. The park is located in Dukem, which is around 40 km from Addis Ababa. As Ethiopia's first industrial park, since its inception seven years ago, "Eastern Industrial Park has been showcasing the positive impact of Chinese industrial development and has become a place for manufacturing excellence and a platform for developing and transferring skills" (UNIDO, 2018, p. 23). Huajian Light Industrial City is another private owned Chinese industrial park being operational recently. Modjo Industrial Zone, owned by Taiwanese George Shoe, is also another private industrial park.

The surveyed manufacturing firms were asked to rank the overall performance of the industrial parks. Availability of the employees' residence services, availability of incentives for low salary employees, and the linkage with the local economy are the factors with the weakest performance.

The new attempt of industrial park development had shown results in export performance in labor-intensive manufacturing firms. However, it is difficult to conclude the feasibility of the current industrial parks to return the public investment incurred to them. The assessment of this study shows there is a limitation in conducting a proper feasibility study to establish industrial parks. There are no specific and clear criteria to select the location of the industrial park in Ethiopia. The absence of resident services and the lack of incentive mechanisms for low wage employees are critical problems. The cluster-based industrialization approach has not gotten the necessary attention by government policies. As far as the knowledge of this study researcher, the only attempt of the clustering approach is the establishment of the leather clusters in Addis Ababa with the assistance of UNIDO.

### **Industrial upgrading and diversification**

The selection of proper strategic sectors is the foundation of industrial policy formulation and implementation. From the Ethiopian context, manufacturing sectors, which are labor-intensive and using mainly agriculture products for production, are the strategic sectors to foster successful industrialization. Indeed, the industrial strategy of the country has been designed based on this fundamental principle. The Strategy also foresees the industrial upgrading within the strategic sectors as well as from light and labor-intensive industries to heavy and capital-intensive industries.

The strategy sets the industrial upgrading directions in the textile and leather industries in terms of export. It is

clearly explained that the focus of the export to be from cotton to apparel and textile, exporting of apparel or garment is the priority area at the earlier stages. In the leather industry also upgrading from hides and skins to finished leather and leather products is the major strategic direction. One of the experiences of how the government policy can facilitate the upgrading of industries is the upgrading of the tanneries production from unfinished leather to finished leather. To facilitate this process, the government levied 150 export taxes to the unfinished leather products. The main objective of the policy is to export value-added products and to solve the raw material shortage of leather product factories. This policy intervention forced the tanneries to upgrade their production activities from unfinished leather to finished leathers.

However, the industrial upgrading and diversification in Ethiopia are not managed with clear roadmap and policy directions. There are inconsistencies in priority sectors and policy approaches in the national plans of the country as well.

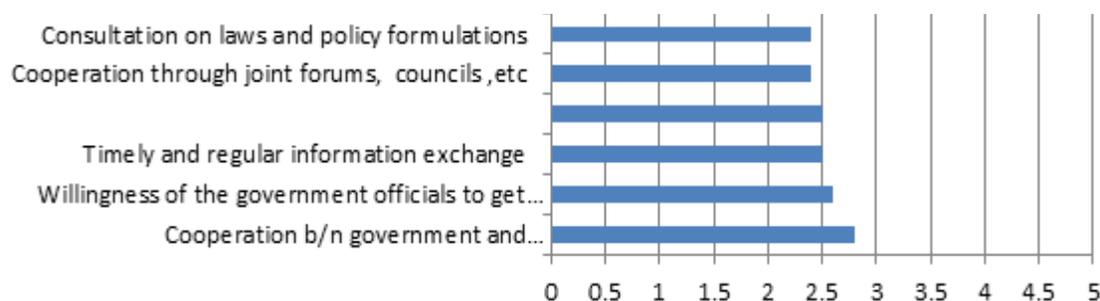
### **Government and the private sector cooperation**

The cooperation between government and the private sector is vital for successful industrial policy implementation. The private sector is an engine for industrial development in the market economy, and the main role of the government is to guide and facilitate the industrialization process. They have to work in collaboration and synergy to achieve the intended objectives. The establishment of the joint council at the national level and forums at different levels, information exchange, and the like are useful mechanisms to institutionalize the cooperation.

The industrial associations are serving as the platform to link the government institutions and the manufacturing firms. The Textile Industry Association and the Leather Industry Association are among such platforms. 63% of the surveyed manufacturing firms are members of one of these associations. Among the members of the associations, 54% responded that the associations are weak or very weak in carrying out their responsibility. The remaining 46% responded that the associations are strong or very strong.

The manufacturing firms were asked to rank the performance of the cooperation between the government and the private sector. The average mean point is 2.53 out of 5 points. This shows the cooperation between the government and the private sector in general, and in some factors such as the consultation on laws and policy formulation, joint forums and councils, and conducting regular meetings, in particular, is weak (Figure 8).

In terms of the government institutions, the Ministry of Industry is the main policy-making federal government body responsible for the manufacturing industry. Under



**Figure 6.** Performance of government and private sector cooperation.  
Source: own survey.

the Ministry of Industry of Ethiopia, 9 sector-specific federal institutions are established. Establishing a sector-specific institution is very important for facilitation and support. However, there is no clear coordination strategy between the industry sector institutions and other sectors, such as agriculture, following the value chain. For example, the effectiveness of the leather product manufacturing is linked to the livestock sector to get quality and sufficient raw material. Similarly, the ginning manufacturing industries' effectiveness is determined by the supply of cotton plantation. However, this study reveals that the institutional coordination along the value chain is very weak in Ethiopia. The coordination between the federal and regional institutions is also very weak.

## CONCLUSION AND POLICY IMPLICATIONS

This paper argues that industrial policy should be tailored to factors endowment structure of a country to transform its economy. Accordingly, the findings of this study show that Ethiopia's labor-intensive focused industrialization policy direction is the proper pathway as far as its factor endowment potential is concerned. Labor-intensive focused industrialization is both a means and an end for Ethiopia. As a means, the country has to utilize its primary factor endowment potential (labor) to transform its economy. As an end, the economy has to generate sufficient jobs for the highly growing labor force.

The semiskilled and trainable youth workforce, suitable climate and fertile land, the largest livestock population, and hydroelectric power generation capacity are the significant potentials of the country. This study has also confirmed that Ethiopia has a latecomer's advantage over labor-intensive manufacturing industries mainly because of the rising wages in China (the largest labor-intensive manufacturing exporter) and other transforming economies. The revealed comparative advantage analysis confirmed that the benchmarking countries (China and Vietnam) have started losing their comparative advantage in labor-intensive manufacturing goods because of the rising labor cost.

Thus, Ethiopia currently has the potentials and latecomer's advantage to be competitive in labor-intensive industries such as textile, apparel, finished leather, footwear, glove, and agro-processing products. Therefore, the study's findings are in line with the Growth Identification and Facilitation (GIF) of the NSE that mainly proposed countries have to target sectors that have a latent comparative advantage. Moreover, the findings are in line with the studies conducted on the industrialization pathway of East Asian countries reviewed in the literature review section, such as Sugihara (2007), Dinh et al. (2012), Wen (2016), and Brandt et al. (2016).

On the other hand, this study confirmed that the competitiveness of the existing labor-intensive manufacturing firms is affected by binding constraints such as weak input supply problems, financial constraints, the skill of employees (low productivity), electric power supply constraints, and high logistic costs. This finding is also in line with the existing studies such as Dinh et al. (2012), which identified the binding constraints of labor-intensive manufacturing industries in Africa. The study also prevails that industrial policy formulation and implementation in Ethiopia are relatively weak in facilitating input-output linkage within the value chain, the cooperation between the government and the private sector, the linkage of industrial parks with the local economy, and improving doing business environment. The technology advancement such as robotics technology may negatively impact labor-endowed countries like Ethiopia. However, their impact is likely to be relatively low in manufacturing sectors like garments in the short run.

Thus, unlocking the huge potentials and overcoming the labor-intensive manufacturing industries' binding constraints require enhancing proactive and robust industrial policy formulation and implementation. This study suggests the following five policy domains to foster the industrialization process in Ethiopia at its current stage of development.

First, facilitating the linkage between the agriculture and the labor-intensive manufacturing sectors is vital in fostering structural transformation. The coordination

failures in input-output linkage along the value chain have to be addressed with proper policy and institutional mechanisms. Establishing national councils in the strategic sectors such as textile, leather and agro-processing industries is helpful to coordinate the fragmented activities of different institutions of the federal government and regional states. Moreover, there is a need to formulate and implement a rural industrialization strategy to transform the agriculture potential into a competitive advantage.

Second, enhancing industrial park and cluster-based industrial development is critically important to foster a structural transformation from agriculture to the manufacturing industry. This study confirmed that the new attempts of industrial parks development had shown results in export performance in labor-intensive manufacturing firms. However, the industrial parks have a weak linkage to the local economy. There are no specific and clear criteria to select the location of the parks, and the absence of resident services and the lack of incentive mechanisms for low-wage employees. Ethiopia has to learn from the success stories from China and other East Asian countries. Solving the challenges through proactive government policy is the primary lesson from successful countries like China. The new attempts of the integrated agro-industrial parks development in the regional states have to be enhanced. Likewise, a proper feasibility study has to be conducted before establishing industrial parks with predetermined and precise location selection criteria. A cluster-based industrialization approach is highly recommended to overcome the weak economies of scale disadvantages of the manufacturing firms in the country.

Third, strengthen the cooperation between government and the private sector through institutional mechanisms and learning by doing approach is paramount important. The current institutional arrangements are not robust enough to enhance the interaction and cooperation between the government and the private sector. The performance-based monitoring system has to be strengthened with strong institutional setups. The government institutions responsible for the coordination and facilitation of industrialization have to be strengthened. The activities among different federal institutions and between the federal government and regional states need to be coordinated through proper legal and policy frameworks.

Fourth, improving the doing business environment is vital in unlocking the country's labor-intensive manufacturing potential. Currently, Ethiopia is ranked 159 out of 190 countries in ease of doing business (World Bank, 2020). This study is also confirmed that the manufacturing firms are negatively affected by doing business-related constraints. Thus, reforming government institutions needs to be enhanced to deliver better services and facilitate the industrialization process.

Finally, clear policy facilitation of industrial upgrading and diversification along the endowment structure

changes is essential in fostering successful industrialization. Upgrading and diversifying within the strategic labor-intensive manufacturing sectors as well as from the labor-intensive focused industries to capital-intensive and technology-intensive industries requires a clear roadmap and policy directions.

### **Contributions and implications for further research**

From a policy perspective, the study provides research-based feedbacks for the policymakers. The research is timely and relevant to understand the efficacy of the labor-intensive focused industrial policy through systematic and scientific analysis. Accordingly, the study came out with findings, policy implications, and recommendations within the perspectives of the theoretical foundations and practical experiences. From the academic perspective, the study shows that the NSE has proposed valuable ideas and a framework for industrial policy formulation and implementation in developing countries.

However, this study implies that the NSE approaches can be enriched by including the implementation aspects such as cooperation between government and private sector and institutional building through learning by doing in the Growth and Identification Framework. The policy domains recommended in this study, such as the value chain linkage, feasibility studies on industrial parks, industrial upgrading and diversification, and cooperation between government and the private sector, require depth researches. Above all, the political aspect of the industrial policy in the Ethiopian context requires further study.

### **CONFLICT OF INTERESTS**

The author has not declared any conflict of interest.

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