Manufacturing Competitiveness in Ethiopia: Developments, Challenges and Prospects

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Ethiopian Development Research Institute (EDRI)
# Table of Contents

List of Tables ........................................................................................................... vi
List of Figures ........................................................................................................ vii
Abbreviations ......................................................................................................... viii
Abstract .................................................................................................................... 1

1. Introduction .......................................................................................................... 2
   1.1. Background .................................................................................................... 2

2. Ethiopia`s Competitiveness in Manufacturing .................................................. 5
   2.1. An Overview on Global Competitiveness of the Ethiopian Manufacturing .... 5
   2.2. Ethiopia`s Manufacturing Competitiveness vis-à-vis Selected Countries ....... 6

3. Challenges, Prospects and Microeconomic Determinants of Competitiveness .... 12
   3.1. Introduction .................................................................................................... 12
   3.2. Challenges and Prospects within the Ethiopian Manufacturing ................. 13
      3.2.1. Views of Government Officials and Association Leaders .................. 13
             3.2.1.1. Views on the Prospect of the Sector as a Whole ................. 13
             3.2.1.2. Views on Competitiveness of the Subsectors ................. 14
      3.2.2. Views of Firms` Representatives ....................................................... 15
             3.2.2.1. Views on Competitiveness of Ethiopian Manufacturing Sector .... 15
             3.2.2.2. Views on Competitiveness within the Subsectors in the Global Market .... 16
      3.3. Triangulation of Findings ......................................................................... 16
      3.4. Microeconomic Determinants of Manufacturing Competitiveness in Ethiopia .................. 17

4. Global Value Chains Participation ...................................................................... 22
   4.1. Introduction .................................................................................................... 22
   4.2. Overview of Ethiopia`s GVCs Position ....................................................... 22
   4.3. Ethiopian firms` GVCs links vis-à-vis comparator countries ..................... 27
   4.4. Drivers, Benefits, and Constraints Related to GVCs Participation ............. 32

5. Concluding Remarks ............................................................................................ 33

References .............................................................................................................. 35

Annex ...................................................................................................................... 39
   Annex A: Export Performance of the Main Manufacturing Subsectors .......... 39
   Annex B: Manufacturing Diversification by Subsectors, Jobs, and Labor Earnings .... 39
   Annex C: Major Obstacles for the Operation and Competitiveness Firms in Ethiopia .... 40
   Annex D: Challenges, Firm Plans and Required Government Support for Competitiveness .. 41
Annex E: Innovations and Upgrading in the Subsectors..................................................41
Annex F: Institutional Support and Cooperation within the Subsectors .......................42
Annex G: Tables and figures of the Global Value Chains part (part IV).........................43
List of Tables

Table 2.1: Recent Global Competitive Position of Ethiopia .......................................................... 5
Table 2.2: The Global Competitive Position of Ethiopia in 2016 in terms of the 12 Pillars .......... 6
Table 2.3: Productivity, Wages and ULCs Relative to the USA, for the Years 2000 and 2011 ...... 8
Table 2.4: Manufacturing Wages/ Salaries vis-à-vis PCIs in Years 2000 and 2011 ................. 11
Table 3.2: Major Challenges in the Global and Domestic Markets ........................................... 15
Table 3.3: Opportunities and Useful Government Support for Manufacturing Competitiveness .. 15
Table 3.5: Factor Conditions ....................................................................................................... 18
Table 3.7: Favorable Demand Conditions .................................................................................... 20
Table 3.8: Firm Strategy and Rivalry Related Conditions .......................................................... 21
Table 4.1: Contribution of Subsectors to Domestic Value-added in 2011 ................................. 24
Table 4.2: Contribution of sectors to gross exports and jobs contained in exports in 2011 ....... 25
Table 4.3: Labor intensity of exports and output in Ethiopia in 2011 (by sector) .................... 26
Table 4.4: GVCs Participation within the Subsectors ................................................................. 31
Table 4.5: Import Features of GVCs Participation within the Manufacturing Sector ............ 31

List of Figures

Figure 2.1: Labor Productivity Trends in Selected Countries Relative to the USA (USA = 1) ....... 9
Figure 2.2: Wages Trends in Selected Countries Relative to the USA (USA = 1) ..................... 9
Figure 2.3: Unit Labor Cost Trends in Selected Countries Relative to the USA (USA = 1) ....... 10
Figure 2.4: Unit Labor Costs Trends in Selected Countries relative to Ethiopia (Ethiopia = 1) .... 10
Figure 3.1: Microeconomic Determinants of Manufacturing Competitiveness in Ethiopia .... 17
Figure 3.2: The Generalized Double Diamond Model ............................................................. 18
Figure 4.1: Evolution of the relative contribution of sectors to the number of jobs contained in
exports between 2004 and 2011 (%) ......................................................................................... 25
Figure 4.2: Percent of firms exporting ....................................................................................... 28
Figure 4.3: Percent of firms exporting directly or indirectly, according to ownership .......... 29
Figure 4.4: Percent of firms using material inputs and/or supplies of foreign origin ............ 29
Figure 4.5: Proportion of total inputs of foreign origin ............................................................. 30
Figure 4.7: Percent of firms with internationally-recognized quality certification ................. 32
Abbreviations

FDI- Foreign Direct Investment
GCI- Global Competitiveness Index
GDP- Gross Domestic Product
GTP- Growth and Transformation Plan
GVCS- Global Value Chains
IPs- Industrial Parks
KII- Key Informant Interviews
MVA- Manufacturing Value Added
PCI- Per Capita Income
PPP- Purchasing Power Parity
RULC- Relative Unit Labor Cost
SMEs- Small and Medium Enterprises
SEZs- Special Economic Zones
SSA- sub-Saharan Africa
ULC- Unit Labor Cost
UNIDO- INSTAT- United Nations Industrial Development Organization’s Industrial Statistics
WB- World Bank
WBES- World Bank’s Enterprises Survey
WDI- World Development Indicators
WEF- World Economic Forum
WITS- World Integrated Trade Solutions
Abstract

The recent economic growth in Ethiopia has not been accompanied by significant improvement in manufacturing shares of GDP and employment and thus a desired structural transformation. Yet certain studies have reported glimmers of hope on competitiveness the Ethiopian manufacturing. Using both qualitative and quantitative data, this study explores factors that have triggered the observed competitive performance or the lack thereof. We found that though Ethiopian manufacturing wages are small enough to compete against comparators in Asia and sub-Saharan Africa, poor labor productivity in the sector is eroding such an advantage. Furthermore, the main challenges to competitiveness of the Ethiopian manufacturing relate to poor public service delivery, limited capacity in the sector, and shortage of quality raw materials. Daily operation of firms is also deterred by factors such as frequent power breakage, limited access to credit, and lack of support industries, while excessive bureaucracy, lack of foreign currency and high tariff rates are deterring manufacturers from backward integration benefits of GVCs links. However, Ethiopia has got advantages- in form of abundant and inexpensive workforce, natural resources, closeness to global markets and growing domestic demand for manufactures- that could help boost competitiveness of its manufacturing. The government’s commitment towards development of the sector is an opportunity to seize upon. Yet more is desired in that government should keep on improving in areas of investment on human capital, infrastructure and industrial parks, its law enforcement capacity and incentive provisions, while private sector should exercise industry and export disciplines. Finally, though we didn’t observe clear cut causality between GVCs links and competitiveness, government’s enthusiasm towards vertical integration within manufacturing probably indicates its intention to nurture the whole supply chain domestically. Competitiveness might then depend on an ability to provide manufacturers with high quality domestic raw materials through the development of support industries, innovative capacity, and proper integration with agriculture.

Keywords: Manufacturing Competitiveness, Global Markets, Labor Costs, Productivity
JEL Classification: C43, D24, F21, L60
1. Introduction

1.1. Background

Enhanced manufacturing competitiveness is an important driver for structural transformation and broad-based growth. At the initial stage of industrial development, the manufacturing sector is relatively more labor-intensive, requires modest skill sets, exhibits higher returns to scale, and is associated with gains in productivity that generates spillover effects to the rest of the economy (Rodrik, 2013). By absorbing labor from the agricultural sector and using agricultural output as its main source of raw materials, the manufacturing sector spurs productivity growth in the agricultural sector. Manufacturing also offers opportunities for improvement in both capital accumulation and economies of scale than can be realised under agriculture and services. Furthermore, attaining technological advancement is much easier under manufacturing and can easily be diffused to other economic sectors. Backward and forward linkages and spillover effects are also stronger in manufacturing than in the other sectors. As incomes rise, the share of agricultural expenditure declines and that of manufactures increases (Engle’s law), and manufacturing economies would benefit accordingly. Similarly, Szirmai (2012) stated that there exists a positive empirical correlation between the degree of industrialization and per capita income in developing countries. Economic growth has also been shown to be more pro-poor when it’s driven by manufacturing value-added rather than agriculture or services (Cadot et al., 2015).¹

Pursuant of these potentials benefits of manufacturing, the government of Ethiopia has given the manufacturing sector due emphasis in its various development plans, such as the ‘Plan for Accelerated and Sustained Development to End Poverty I and II (PASDEP I & II)’ and the ‘Growth and Transformation Plan I and II (GTP I and II)’. Besides, in line with its ‘Vision 2025’, the government is exerting a concerted effort to uplift Ethiopia into a manufacturing powerhouse in sub-Saharan Africa (SSA), particularly with focus on light manufacturing for employment generation. It has also prioritized manufacturing subsectors based on resource availability, labor absorption capacity, level of linkage to agriculture, export potential, and extent of technological entry barriers. The government’s commitment to design specific policy instruments so as to support large, medium and small enterprises within the sector, develop adequate infrastructure, supply skilled workforce, create decent business environment, set up support industries, and attract foreign direct investment (through Industrial Parks (IPs) and Special Economic Zones (SEZs)) are all manifestations of the level of emphasis accorded to the sector recently.

Albeit all those efforts, manufacturing in Ethiopia is characterized by low productivity, high labor turnover, and an inability to bring the intended structural change. Besides, though it has registered an impressive economic growth in the last thirteen years, the country’s overall competitiveness level has remained low. For instance, for the year 2015/16 alone, it ranked 109th out of 144 countries and its scores were below the African average on export diversification, productivity and technological upgrading (World Economic Forum (WEF), 2016). Like other sub-Saharan African (SSA) countries, rather than the role of agriculture being replaced by an expanding manufacturing, the decline in the share of value addition and employment of agriculture has largely been offset by a continuously expanding service sector (WEF, 2015)². Its contributions towards total employment, Gross Domestic Product (GDP), and GDP growth were respectively 5%, 4%, and 0.5% for the year 2014/15, while its share in merchandise export rarely

---

¹Cadot et al. (2015) argues that the elasticity of poverty to growth is both significantly positive and larger in the manufacturing sector than in the other sectors.

²At the early stage of development, increased agricultural productivity followed by the growth in labor intensive manufacturing industry is believed to be an engine of economic growth and a typical path out of poverty. Such growth process has been observed in East, South and South East Asia since the 1990s but not in most of African countries including Ethiopia. Low-income Asian countries have so far shown a greater ability to enter into the global market for labor-intensive manufactures than their counterparts in SSA (Cegłowski et al., 2015). Africa’s growth process is proceeding along a very different trajectory.
exceeded 10% for long (World Bank, 2016). The Ethiopian manufacturing industry has also been operating at an average of 43% capacity utilization and growing at a rate less than 11% [far lower than the targeted plan of 22% under the GTP-I period].

Notwithstanding these poor performance indicators, there are glimmers of hope that Ethiopia can still catch up with countries like China and Vietnam in labor intensive light manufacturing (The Economist (2016) and Dinh et al. (2012)). Such an assertion from the media and scholars in the area and the recent commitment of the country towards this sector on one side and the relatively poor performance indicators about the sector on the other side call for an exploratory and rigorous study on the prospect of Ethiopia's manufacturing competitiveness. In line with this, there is also a need to revisit the structure and development pattern of the sector and identify the opportunities and challenges within it.

1.2. Objectives of the study

The main purpose of this study is to assess the competitiveness prospect of the Ethiopian manufacturing sector. In doing so, we aim to understand the overall development pattern and structure of the sector and identify the main opportunities and constraints associated with it. Pursuant to our general objective, we review the global competitive position of the country and assess the dynamics of its manufacturing competitiveness vis-à-vis some selected African and Asian countries. In addition, we identify the macro and micro level determinants of competitiveness of the Ethiopian manufacturing sector. We further buttress our analysis by assessing the extent of Global Value Chains (GVCs) participation of the manufacturing sector and by scrutinizing the main challenges and prospects associated with it.

1.3. Methodology and Data Sources

We employ a mixed methodology that integrates quantitative with qualitative research approaches. Such an approach would help us thoroughly understand mechanisms that lead to enhanced competitiveness or the lack thereof in the Ethiopian manufacturing sector. Recent research methodology studies, such as Bamberger et al. (2010), highlight the advantages of using mixed methodology over a singular method. However, the use of mixed methodology may force us to impose a structure on our qualitative approach which in turn could limit the richness of information we generate through our instruments.

Extensive literature review, textual analysis of policy documents, Key Informant Interviews (KIs) with government officials and sectoral association leaders, and face to face interviews with selected firm managers in the sector are all conducted to qualitatively analyze the main challenges, opportunities and prospects for competitiveness of the Ethiopian manufacturing. We triangulate the responses from these stakeholders so as to capture similarities and differences in perspectives. Besides, for analytical purpose, we use the generalized double diamond model as a guiding framework.

The quantitative part of the study involves both descriptive and comparative analyses. We make use of the Relative Unit Labour Cost (RULC) index as the principal tool to assess the competitiveness of Ethiopia’s manufacturing vis-à-vis that of countries with similar sector structure. Since labor is one of the most important non tradable inputs- particularly in a labor intensive manufacturing- we have justifiably preferred the RULC index as the main measure of competitiveness. Here it is worth mentioning that though infrastructure is an important non-tradable input, studies such as Golub et al. (2015) argue that both quality and cost of infrastructure are partly reflected within the RULC index (through its impact on labor productivity). Finally, we analyze the extent of Ethiopia’s Global Value Chains (GVCs) participation so as to further understand the competitiveness prospect of the manufacturing sector in the ever changing global market. We would particularly assess the Ethiopian manufacturing exports in terms of their domestic value addition and labor intensity, compare and contrast the
manufacturing firms’ GVCs links vis-à-vis firms in comparator countries and identify the drivers, benefits and constraints in relation to GVCs participation of the Ethiopian manufacturing sector. The quantitative study utilizes existing local and international data sources. Our main data sources are the National Bank of Ethiopia, the United Nations Industrial Development Organization’s Industrial Statistics (UNIDO- INSTAT, 2016), Penn World Tables (2016), and various databases of the World Bank, such as World Integrated Trade Solutions (WB-WITS, 2016), the export database (2017), the enterprise survey (2016) and World Development Indicators (WDI, 2016).

1.4. Structure of the Paper

The remaining sections are organized as follows. The next section presents an overview of dynamics of Ethiopia’s global competitiveness in general and that of its manufacturing sector in particular in the recent past. Section three summarizes our findings on the challenges, opportunities and prospects within the sector. It also presents the main microeconomic determinants of competitiveness of the Ethiopian manufacturing. In section four, we discuss the extent of GVCs links of the sector and the opportunities and challenges associated with it. Section five concludes the study.
2. Ethiopia`s Competitiveness in Manufacturing

Different scholars and institutes define competitiveness differently. The very concept of competitiveness also varies with micro and macro level studies on competitiveness. The macro level definition frames competitiveness as the set of institutions, policies, and factors that determine the level of productivity and long-term prosperity of a nation (WEF, 2017). At micro level, Balkyte and Tvaronaviciene (2010) define competitiveness as the ability of firms to produce and sell goods and services of the right quality at the right price and time. The competitiveness of firms is dictated not only by their productive efficiency but also their performance in terms of quality, innovation, marketing, and cost. In this section, we assess the competitive position of the Ethiopian manufacturing sector using the macro approach and postpone discussions on firm level competitiveness to the next chapter.

2.1. An Overview on Global Competitiveness of the Ethiopian Manufacturing

With an ambition of becoming a light manufacturing powerhouse in Africa, the government of Ethiopia has been exerting a concerted effort to boost the competitiveness of the sector with particular focus on labor intensive industries. It has geared its industrial strategy towards the manufacturing sector through the development of IPs & SEZs and an active involvement of the Small and Medium Enterprises (SMEs). Its latest policy prescription emphasizes the importance of availing land, developing infrastructure, and facilitating customs and logistics services to the IPs (GTP II, 2016). It also mandates the state owned banks (commercial bank of Ethiopia and development bank of Ethiopia) to provide preferential credit services to the manufacturers.

Despite such a determined effort, the manufacturing sector is yet to significantly improve its global competitiveness standing. The WEF’s latest global competitiveness report ranks Ethiopia 109th out of 140 countries in 2016. Though the country has not registered a kind of spurt in its overall competitive position, it has gradually improved its standings over the last five years. The following table presents the summary of Ethiopia’s global competitive position along with its overall scores between 2012 and 2016.

**Table 2.1: Recent Global Competitive Position of Ethiopia**

<table>
<thead>
<tr>
<th>Year</th>
<th>Rank</th>
<th>Total no. of Countries</th>
<th>Score (1-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>121</td>
<td>144</td>
<td>3.6</td>
</tr>
<tr>
<td>2013</td>
<td>127</td>
<td>148</td>
<td>3.5</td>
</tr>
<tr>
<td>2014</td>
<td>118</td>
<td>144</td>
<td>3.6</td>
</tr>
<tr>
<td>2015</td>
<td>109</td>
<td>140</td>
<td>3.7</td>
</tr>
<tr>
<td>2016</td>
<td>109</td>
<td>138</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Source: Authors’ compilation using WEF’s various years GCI reports

According to WEF (2017) and Sala-X-Martin (2015) the major determinants of competitiveness vary across countries and their stage of development. At their initial stage of development, countries compete on factor endowments. Thus, well-functioning public and private institutions, well-developed infrastructure, stable macroeconomic environment, and healthy workforce with basic education are major requirements for countries such as Ethiopia to develop a globally competitive labor intensive manufacturing sector. Accordingly, the recent improvement in Ethiopia’s global competitiveness ranking is mainly due to improvements in its relative institutional and macroeconomic environment and gains in labor market efficiency, innovation, and market size (see Table 2.2). However, if the Ethiopian manufacturing is to further improve

---

3 A lower ranking and higher score corresponds to a more competitive economy.

4 The GCI combines 114 indicators that capture productivity and long-term prosperity. The indicators are grouped into 12 pillars. The pillars are organized into 3 sub-indexes: basic requirements, efficiency enhancers, and innovation & sophistication. The 3
its global competitiveness, WEF (2017) suggests that other priorities areas such as infrastructure and health and primary education need to improve too. It is also worth mentioning that the country lags behind in terms of efficiency enhancers, such as technological readiness and higher education. The report further suggests third level pillars (innovation and sophistication factors) are not currently much important to be worried about for the competitiveness of the sector.

Table 2.2: The Global Competitive Position of Ethiopia in 2016 in terms of the 12 Pillars

<table>
<thead>
<tr>
<th>Pillars</th>
<th>Rank</th>
<th>Score</th>
<th>Pillars</th>
<th>Rank</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>109</td>
<td>3.77</td>
<td>Goods market efficiency</td>
<td>105</td>
<td>4.01</td>
</tr>
<tr>
<td>1. Basic Requirement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutions</td>
<td>106</td>
<td>3.96</td>
<td>Labor market efficiency</td>
<td>70</td>
<td>4.24</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>75</td>
<td>3.85</td>
<td>Financial market development</td>
<td>102</td>
<td>3.51</td>
</tr>
<tr>
<td>Macroeconomic environment</td>
<td>78</td>
<td>4.52</td>
<td>Technological readiness</td>
<td>131</td>
<td>2.43</td>
</tr>
<tr>
<td>Health &amp; primary education</td>
<td>111</td>
<td>4.77</td>
<td>Market size</td>
<td>66</td>
<td>3.83</td>
</tr>
<tr>
<td>2. Efficiency enhancers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher education and training</td>
<td>117</td>
<td>3.47</td>
<td>Business sophistication</td>
<td>93</td>
<td>3.67</td>
</tr>
<tr>
<td></td>
<td>127</td>
<td>2.79</td>
<td>Innovation</td>
<td>57</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Source: Authors’ compilation using WEF’s GCI for the year 2017

2.2. Ethiopia’s Manufacturing Competitiveness vis-à-vis Selected Countries

Empirical studies, such as Fukunishi (2004) and Gelb et al. (2013), found that labor cost is a key determinant of the location of labor-intensive manufacturing industries and thereby the competitiveness of countries in light manufacturing. Yet studies such as Ark et al. (2005) argued that countries with rapid productivity growth are rather globally more competitive in manufacturing as they are better positioned to sell their products and services at lower prices. There are also other studies, such as Golub et al. (2007) and Ceglowski et al. (2015) that emphasize the importance of both cost and productivity of non-tradable inputs such as labor and infrastructure in determining competitiveness in light manufacturing. This is mainly because, they argue, the combination of the two is more effective in boosting competitiveness.

The RULC index combines labor cost and labor productivity into a single measure of labor cost per unit output. This index informs us if a country can improve its competitiveness by either reducing its labor cost per person employed or raising productivity performance or combining the two. Hence, the index helps us assess the effectiveness of these alternative strategies to enhance manufacturing competitiveness of countries.

Accordingly, we calculated the RULC index as a measure of Ethiopia’s manufacturing competitiveness vis-à-vis some selected African and Asian countries which have similar trade structure5. Following scholarly works such as Ark, B. et al (2005) and Ceglowski, J. et al (2015), we can define the Unit Labor Cost (ULC) as the ratio of labor costs to labor productivity. This represents the labor cost incurred to produce one unit of output in a particular industry or sector. We can define the unit labor requirement (the inverse of productivity) in manufacturing, denoted by a, as

\[ a = \frac{L}{Q} \]  \hspace{1cm} (1)

where Q is Manufacturing Value Added (MVA) and L is total labor employment within manufacturing. Average Labor Earning (ALE) is calculated as the ratio of employees’ total labor

sub-indexes accord different weights in the calculation of the overall index, depending on each economy’s stage of development. For Ethiopia the first, second, and third sub-indexes are given weights of 60%, 35%, and 5% respectively (WEF, 2017).

5 With the exception of China, our sample countries have fairly similar trade structure and product diversification. For instance, the major value adding, labor absorbing and labor income generating manufacturing subsectors in these countries are foods and beverages, non-metallic mineral products, and chemicals & chemical products industries (see Annex B- Tables 1, 2 and 3).
compensation to the total number of employees in the industry. Assuming labor as the only factor of production and denoting average earning per worker in manufacturing by \( w \), the ULC for a given domestic country (say Ethiopia), can be expressed as:

\[
ULC(\text{domestic}) = aw
\]  

(2)

By the same token, the ULC for a foreign country in terms of the domestic currency can be expressed as

\[
ULC(\text{foreign}) = a^*w^*e
\]  

(3)

where \( * \) refers to the foreign country and \( e \) is the market exchange rate (domestic currency per unit of foreign currency). The RULC can therefore be defined as the ratio of the ULCs of domestic country and foreign country:

\[
RULC = \frac{aw}{a^*w^*e} = \left(\frac{a}{a^*}\right)\left(\frac{w}{w^*e}\right)
\]  

(4)

This last expression decomposes the RULC into relative productivity and relative wages measured in a common currency unit. The home country will have a competitive advantage in manufacturing if \( RULC < 1 \).

In this study productivity is measured in real terms and hence Purchasing Power Parity (PPP) exchange rates are used for international productivity comparisons so that the effects of exchange-rate volatility on measure of real output can be eliminated. However, we use market exchange rates to convert wages/average earnings into a common currency unit for international comparisons. Thus, equation (4) can be reformulated as:

\[
RULC = \left(\frac{a}{a^*}\right)\left(\frac{w}{w^*e}\right)(\frac{e^{\text{PPP}}}{e})
\]  

(5)

where \( e^{\text{PPP}} \) represents the PPP exchange rate for manufacturing and is defined as the ratio of domestic price levels \( (p) \) to foreign price levels \( (p^*) \) for manufactures. Substituting \( e^{\text{PPP}} \) with the respective price ratios and rearranging terms, we get the expression:

\[
RULC = \left(\frac{a}{a^*}\right)\left(\frac{w/p}{w^*/p^*}\right)(\frac{e^{\text{PPP}}}{e})
\]  

(6)

Equation (6) implies that the competitive position of a country in manufacturing depends on its labor compensation, labor productivity and bilateral real exchange rate. In an attempt to run equation (6), we made used data mainly from UNIDO- INSTAT (2016) on manufacturing value added, employment, and labor compensation (wages and salaries) for all our sampled countries, while data for market and PPP exchange rates were obtained from WDI (2016) databases. Here it is worth mentioning that, at the time of study, the latest data available from the UNIDO-INSTAT database was for the year 2011.

We calculated real labor productivity as a deflated value of manufacturing value added per employee, MVA/L, where the deflator is the PPP equivalent of manufacturing value-added.\(^6\) Wages (\( w \)) was computed as the total labor compensation per employee, (Wages and Salaries)/L, converted to USD at the market exchange rate. Due to data unavailability and dissimilarity in trade pattern of countries, we computed the RULC index only for seven African and three Asian countries for the period 2000 to 2011. Table 2.3 summarizes the relative

---

\(^6\) Data on manufacturing value added deflator is not available for most developing countries; hence we had to use GDP deflator as its proxy variable.
productivity, relative wages and RULCs for the years 2000 and 2011 for all selected seven African and three Asian countries relative to those of the USA.

Table 2.3: Productivity, Wages and ULCs Relative to the USA, for the Years 2000\(^7\) and 2011

<table>
<thead>
<tr>
<th>Sub-Saharan Africa</th>
<th>Relative Productivity</th>
<th>Relative wages</th>
<th>RULC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>0.13</td>
<td>0.08</td>
<td>0.01</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>0.11</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Kenya</td>
<td>0.15</td>
<td>0.04</td>
<td>0.06</td>
</tr>
<tr>
<td>Mauritius</td>
<td>0.10</td>
<td>0.07</td>
<td>0.09</td>
</tr>
<tr>
<td>Morocco</td>
<td>0.13</td>
<td>0.07</td>
<td>0.12</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.29</td>
<td>0.17</td>
<td>0.22</td>
</tr>
<tr>
<td>Tanzania</td>
<td>0.09</td>
<td>0.03</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>Asian Countries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.15</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>0.05</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>China</td>
<td>0.18</td>
<td>0.20</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Source: Authors’ computation using data from UNIDO-INSTAT (2016) and WDI (2016) databases

We can observe from Table 2.3 that relative labor productivity in the manufacturing sector declined from year 2000 to 2011 for all sampled countries but China. Though one cannot observe a clear pattern on the movement of relative wages, either they have remained stable or increased in some cases [Mauritius, South Africa, all three Asian sampled countries]. Tanzania and Ethiopia are the only countries that experienced declines in relative wages between 2000 and 2011. The RULC increased from 2000 to 2011 in all the sampled countries, with most of them crossing the ‘RULC = 1’ threshold. The exceptions here are China, Indonesia and Ethiopia.

The following figure depicts the relative labor productivity trend between 2000 and 2011 for some of our sampled countries. It can be observed from the figure that all the comparator countries except China experienced a continuously declining labor productivity trend. This is particularly the case for the African countries. Yet Indonesia and South Africa had gained some improvements lately. According to Ceglowski et al. (2015), lack of improvements in technology and workers’ skill are the major explanations for the gradual deterioration of labor productivity in the African countries.

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\(^7\) Data was not found for year 2000 for Tanzania and China, thus we took the available data for earliest year, 2003.
We developed a similar sketch on relative manufacturing wages of these countries so as to observe the trends. As stated earlier, Ethiopia and Tanzania experienced a decline in relative manufacturing wages between 2000 and 2011. Manufacturing wages remained relatively stable in Kenya, while they increased for the rest of the sampled countries. Ceglowski et al. (2015) found a more or less similar result and attributed the rise in manufacturing wages to increasing competition from sectors such as service, limited pool of skilled labor within the domestic markets, and labor market inefficiency within the economies.

Figure 2.3 depicts RULC index trends of our sampled countries for the period 2000 to 2011. The RULCs of South Africa, Mauritius and Kenya were greater than one and continuously rising, implying deterioration in the competitive position of their manufacturing. The RULCs of China,
Indonesia, Ethiopia and Tanzania were less than one consistently, implying that these countries did have relatively more competitive manufacturing sector in the global market.

Figure 2.3: Unit Labor Cost Trends in Selected Countries Relative to the USA (USA = 1)

Source: Authors’ computation using data from UNIDO- INSTAT (2016) and WDI (2016) databases

These three figures depict that relative productivity levels usually move in tandem with relative manufacturing wages which in turn results in a more or less similar relative unit labor costs. This implies that competitiveness of a high-wage economy may not necessarily be beaten by lower wage economies as economies with lower wage levels are also likely to be characterized by lower productivity levels.

We can also present the above findings on the RULCs by treating Ethiopia as our point of reference and compute labor productivity, manufacturing wages and ULCs of all the other sampled countries relative to those of Ethiopia. For instance, the following figure depicts RULCs trends in those countries for the period 2000 to 2011.

Figure 2.4: Unit Labor Costs Trends in Selected Countries relative to Ethiopia (Ethiopia = 1)

Source: UNIDO-INSTAT (2016) database
This figure indicates that RULCs (against Ethiopia) were very high in all sampled African countries in the early 2000s. Besides, though RULCs gradually dropped in these countries, they remained above one throughout this period, implying that manufacturing unit labor costs in these countries were consistently higher than those in Ethiopia. In other words, Ethiopia was more competitive than those countries between 2000 and 2011. However, except in 2009, the RULCs in China remained less than one throughout the period, implying that, during the same period, Ethiopia was less competitive than China in labor intensive light manufacturing. During this same period, unit labor costs in the Indonesian manufacturing were at rough parity with Ethiopia. In addition, the RULCs in Indonesia were slightly more than one between 2001 and 2006 and slightly less than one thereafter.

Before winding up our discussion on RULC index as a measure of manufacturing competitiveness, it is worth mentioning that, during the years 2000 to 2011, the lower manufacturing wages had helped Ethiopia fill the gap on its poor productivity performance and remain as competitive as its African comparators. But, the same cannot be said of Ethiopia’s manufacturing competitiveness against its Asian comparators, where the latter had gradually dwarfed the labor productivity position of the former to a level the former couldn’t compensate for such a gap through wages advantages.

A comparison between manufacturing wages and Per Capita Incomes (PCIs) can also reveal some realities within the labor market and hence the manufacturing competitiveness prospect of countries. We found higher manufacturing wages- per capita income ratio in the SSA countries than Asian countries in both 2000 and 2011. The ratio remained more than two for most SSA countries (exceptions were Mauritius and South Africa) by 2011. This means an average worker in manufacturing earned more than a fold of what an average worker in other sectors would do so. However, for the East African countries- Ethiopia, Tanzania and Kenya- the gap between PCIs and manufacturing wages had significantly declined by 2011. In the Asian countries, the ratio was around one, implying that workers in manufacturing sector earned almost the same as the average worker in other sectors did in both 2000 and 2011.

Table 2.4: Manufacturing Wages/ Salaries vis-à-vis PCIs in Years 2000 and 2011

<table>
<thead>
<tr>
<th>Sub-Saharan Africa</th>
<th>2000 (USD, current)</th>
<th>2011 (USD, current)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wages</td>
<td>PCI</td>
</tr>
<tr>
<td>Botswana</td>
<td>180.5</td>
<td>3333.2</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>771.1</td>
<td>124.1</td>
</tr>
<tr>
<td>Kenya</td>
<td>2117.9</td>
<td>409.0</td>
</tr>
<tr>
<td>Malawi</td>
<td>435.5</td>
<td>155.8</td>
</tr>
<tr>
<td>Mauritius</td>
<td>3254.2</td>
<td>3861.0</td>
</tr>
<tr>
<td>Morocco</td>
<td>4122.9</td>
<td>1265.4</td>
</tr>
<tr>
<td>South Africa</td>
<td>7980.5</td>
<td>3099.1</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2530.1</td>
<td>325.6</td>
</tr>
<tr>
<td>Asian Countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>929.1</td>
<td>780.1</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>802.2</td>
<td>433.3</td>
</tr>
<tr>
<td>China</td>
<td>1456.6</td>
<td>1280.6</td>
</tr>
</tbody>
</table>

Source: Authors’ computation using UNIDO- INSTAT (2016) database

Data was not found for year 2000 for Tanzania and China; thus we took the available data for earliest year, 2003.
3. Challenges, Prospects and Microeconomic Determinants of Competitiveness

3.1. Introduction

In the previous section, we dissected some macroeconomic factors that determine competitiveness in the global market. Using the macro level indices developed by the WEF, we showed that Ethiopia has been poorly competing in the global market. We also showed how the Ethiopian manufacturing sector has been faring in terms of labor cost and labor productivity against a sample of African and Asian comparator countries. Here, we deal with the main microeconomic factors that dictate competitiveness of the Ethiopian manufacturing sector. We start with revealing the main challenges to the manufacturers then discuss on their prospects for survival in the ever changing global environment and conclude with identifying the main factors that dictate the prospects of competing in the global market.

In the microeconomic literature, price, quality, marketing, innovation, human resource development, and adherence to standards are frequently discussed as important factors that determine competitiveness of manufacturing firms (Bessant (1991), Hill (1993), and Lamming (1993)). Besides, a strand of literature works, such as Porter (1990), Rugman & D'Cruz (1993), and Moon et al. (1998) came up with a framework that could capture factors that dictate competitiveness of nations. These studies integrated a number of variables into one model consisting of four main components: factor conditions, demand conditions, existence of related and supporting industries, and firm strategy, structure, and rivalry.

In line with this framework, the WB’s investment climate survey (2012) found skill shortage, business operation related constraints and entry barriers as the major obstacles to competitiveness of the Ethiopian manufacturing sector. Similarly, the WEF’s executives’ opinion survey (2015) shows that inefficient government bureaucracy, foreign currency regulations, access to finance, corruption, and inadequate infrastructure are the five main challenges to doing business in Ethiopia (see Annex C- Figure 1). These studies argue that the major determinants, challenges and opportunities pertinent to manufacturing competitiveness vary across countries and among subsectors within the sector. This entails an approach that undertakes country and subsector specific study on manufacturing competitiveness. To this end, we conducted KII with relevant business association leaders and government officials and an enterprise survey with managers of selected firms in the sector.

The KII was conducted on officials at federal ministries of industry and trade, industry development institutes, the chambers of commerce, and manufacturers’ business associations. We reached out to covered 4 government offices and 5 sectoral associations on basis of their relevance to the study. The discussion focused on major challenges to the competitiveness of the sector in both the global and domestic markets, prospects of the sector in terms of its competitiveness, and the important roles government and other relevant stakeholders could play to enhance competitiveness of the sector.

The face to face interviews were conducted on representatives of 42 firms using a semi structured questionnaire that comprised detailed competitiveness related questions. The firms were purposely selected on basis of specific criteria such as subsector type, firm size, ownership and legal status. The industries covered were tanneries, shoe factories, other leather product manufacturers, textile factories, garment factories, and agro-processers. Each of these six industries was represented by seven management level respondents. Among our sampled firms, about three in four are private limited companies, 65% of the firms are domestic- private owned firms, and 5% of the firms are state owned. The average age of the firms is 18 years. More than

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9 Porter’s (1990) single diamond model was a pioneering work in the area. However, his model was incomplete mainly because he did not adequately incorporate multinational activities. Moon et al. (1998) developed the generalized double diamond model that allowed incorporating multinational activities on Porter’s original model.
two third of the sampled firms are located outside the industrial parks. And, only one in four of the firms have sister companies. In what follows a summary of the main findings from our expert interviews and enterprise survey is presented. Responses from association leaders, government officials and firm managers are also triangulated. It is also worth stating that we follow the generalized double diamond model as our main framework of analysis to identify the microeconomic determinants of competitiveness of the manufacturing sector.

3.2. Challenges and Prospects within the Ethiopian Manufacturing

This section summarizes findings on factors that hinder competitiveness, the available opportunities that could help strengthen competitiveness, and the roles government and other relevant stakeholders could play to enhance competitiveness of the sector in general and the three subsectors in particular. Findings are presented in three separate subsections: the first on basis of views of government and associations, the second on basis of views of firms, and the last as a synthesis of the two together.

3.2.1. Views of Government Officials and Association Leaders

3.2.1.1. Views on the Prospect of the Sector as a Whole

Here we raised various questions that relate to challenges, opportunities and possibilities with which the Ethiopian manufacturing sector could be defined and made able to succeed. Regarding challenges within the sector, the assessment from association leaders and government officials were split on a few occasions. For instance, associations leaders believe that poor supply chain with agriculture, poor labor productivity, lack of economies of scale in production, lack of punctuality in delivery, and poor law enforcement capacity of the public sector are the major impediments to competitiveness of the sector in the global market. But, government officials argued that lack of capacity within the sector (signals are poor technical expertise within firms, weak market negotiation power of firms, shortage of working capital, and poor firm strategies), inefficiencies in logistics and other services provision, price and demand volatility, lack of honest and constructive dialogue between government and private sector and small industry population are the main challenges towards competitiveness in the global market. Besides, both sets of the key informants underscored that both foreign and domestic owned firms usually face similar challenges in relation to inefficient public services (such as frequent power cut, poor logistics services and inefficient tax administration). Yet in comparison with domestically owned firms, the informants stated that foreign owned firms are better equipped with technology and skill, marketing network, organizational structure, industry culture and self-reliance in solving day-to-day challenges. Hence, such capabilities yield foreign owned firms the leverage to compete better in the global market. Within the domestic market, the associations leaders argued that high labour turnover, lack of finance, illicit trading and lack of industry culture are the main challenges to competitiveness. However, government officials emphasized malpractices, such as unfair pricing and contraband, and lack of sophisticated demand as more formidable challenges within the domestic market.

The Ethiopian manufacturing sector does also have certain opportunities to optimize. Opportunities in form of relatively cheap utility services, bold & visible government commitment, extended global market opportunities, abundant arable land, and young and relatively inexpensive workforce can all offer the necessary edge for competitiveness. However, it was suggested that certain areas of intervention require further attention. The government should improve its implementation capacity in areas of domestic market protection [say through quality standardization and controlling]. It should deliver incentive packages to the right firms and impose export and industrial disciplines. Government also needs to streamline its activities. Government should gear its effort towards technology transfer within the sector. Establishing chamber of manufacturers will also help consolidate firms within the sector.
Regarding current national strategies of the country, respondents appreciated government’s effort to import new technology and know-how. A number of subsector based industrial development institutes have been established in the last five years, all with the mission of capacity building and technology transfer. These institutes offer trainings to employees within the sector and support universities to open departments that can feed graduates to the market. They also engage in monitoring knowledge transfer from expatriates to local workers. Government’s effort on machinery leasing, joint venturing, IPs development, and foreign investment screening were all mentioned as parts of its industrial strategy meant to introduce new technologies. However, the key informants revealed that even though the university-industry linkage strategy has alleviated the labor demand-supply gap, the current education system has yet to satisfy industry needs on quality, particularly in areas related to technology.

3.2.1.2. Views on Competitiveness of the Subsectors

Here our discussion focuses on three priority subsectors- agro-processing, textile & garment, and leather.

A. Agro-processing:

Frequent power interruption and poor tax administration service were raised as severe challenges within the industry. Moreover, government is not strictly implementing the import substitution policy on strategic agricultural commodities. The subsector’s development institute is a new establishment and hence not ready for bold interventions to mitigate those challenges. But, it has supported firms on bureaucratic handicaps. The Ethiopian chamber of sectoral associations has executed its fair share in creating an environment for local investors to form joint ventures with foreign companies. It has also created a platform for firms to participate in local and international trade fairs.

Regarding the competitive advantages of the subsector, opportunities in form of suitable agro-ecology, abundant arable land, and abundant easily trainable young workforce were raised frequently. Similarly, the university-industry linkage strategy and investment on IPs were appreciated as moves on to the right direction. The informants also suggested that integrated agro industries would improve efficiency in public service delivery. Proper screening of foreign investment would also help the country avoid footloose companies that deter sustainable competitiveness of the subsector.

B. Textile and Garment Manufacturers

According to the informants, lack of scale economies, shortage of foreign currency, poor firm strategy, and poor work discipline are all severe challenges to competitiveness of the subsector. The business associations within the industry are delivering advocacies and trainings to mitigate effects of those challenges. Furthermore, the industry development institute has been lobbying the government to address liquidity shortages within the subsector. Regarding opportunities within the subsector, the young workforce, geography, cheap utility, and abundant land and suitable climatic condition for cotton production were all listed as valuable assets to optimize. Moreover, the association leaders suggested that improved access to finance, better supply chains, human capital investment, and continuous technology upgrading will all enhance competitiveness of the subsector. But, the government officials emphasised two basic issues: inducing professionalism in the subsector- through proper organizational structure and accountability practices- and ensuring continuous investment on work discipline.

C. Leather and Leather Products Factories

Our key informants rated lack of trust with local raw material suppliers, limited global market access, lack of finance, poor quality of raw materials, frequent power interruption, and poor connectedness to GVCs as severe challenges in the subsector. In an attempt to alleviate the challenges, the associations have created conducive environment for dialogues between government and private sector. Besides, they actively engage on forums and present common
challenges and feasible solutions to the relevant body. The leather industry association provides members a mechanism for joint training, marketing and business promotion activities. The industry development institute offers trainings and develops teaching modules for universities. In terms of competitive advantages of the industry, respondents raised the naturally high quality hides and skins, abundant and trainable workforce, better education-industry linkages, and development of IPs as hopes for the industry. In addition, they underscored the importance of further collaboration between government and private sector. Government shall improve the business environment, screen and inject quality FDI and improve its implementation capacity in service delivery. The private sector should work towards meeting market demand on both quality and quantity standards. It should also improve its organizational structure and marketing intelligence.

3.2.2. Views of Firms' Representatives

In this section we present firms' perspective on challenges and opportunities in relation to the Ethiopian manufacturing in both the global and domestic markets. On basis of our enterprise survey, we specifically analyze challenges, prospects and feasible areas of intervention that can enhance competitiveness both at sectoral and sub-sectoral levels.

3.2.2.1. Views on Competitiveness of Ethiopian Manufacturing Sector

The challenges to the competitiveness of Ethiopian manufacturing were classified into those in the global market and those in the domestic market. Though firms raised a number of challenges in both markets, we summarize those that were frequently raised on the following table.

Table 3.1: Major Challenges in the Global and Domestic Markets

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Response, %</th>
<th>Challenges</th>
<th>Response, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited capacity within manufacturing</td>
<td>68</td>
<td>Unfair competition within market</td>
<td>62</td>
</tr>
<tr>
<td>Shortage of skilled labor</td>
<td>49</td>
<td>Limited capacity within manufacturing</td>
<td>59</td>
</tr>
<tr>
<td>Poor public service delivery</td>
<td>42</td>
<td>Unsophisticated consumer demand</td>
<td>36</td>
</tr>
<tr>
<td>Poor quality of raw materials</td>
<td>32</td>
<td>Poor public service delivery</td>
<td>31</td>
</tr>
</tbody>
</table>

Source: Authors’ computation on basis of own enterprise survey

Limited capacity of manufacturers (signals are obsolete technology, poor firm management skill, small productivity and production volume, and poor product quality) is considered the major challenge in both markets. While shortage of skilled labor is another major challenge for competitiveness in the global market, unfair competition is the rather pronounced challenge in the domestic market. In relation to available opportunities and useful government support schemes for competitiveness, we summarize those frequently raised responses on the following table.

Table 3.2: Opportunities and Useful Government Support for Manufacturing Competitiveness

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Response, %</th>
<th>Intervention needed</th>
<th>Response, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bold government commitment</td>
<td>60</td>
<td>Human capital investment</td>
<td>44</td>
</tr>
<tr>
<td>Better suited labor force</td>
<td>53</td>
<td>Improvement in incentive packages</td>
<td>39</td>
</tr>
<tr>
<td>Nature, population size and geography</td>
<td>43</td>
<td>Investment on IPs, infrastructure &amp; utilities</td>
<td>39</td>
</tr>
<tr>
<td>Capacity improvement in manufacturing</td>
<td>35</td>
<td>Improve. in rules &amp; implementation capacity</td>
<td>37</td>
</tr>
<tr>
<td>Integration with rest of world</td>
<td>23</td>
<td>Market promotion &amp; coop. with investors</td>
<td>29</td>
</tr>
<tr>
<td>Improved supply of raw materials</td>
<td>18</td>
<td>Improvement in public service delivery</td>
<td>24</td>
</tr>
</tbody>
</table>

Source: Authors’ computation on basis of own enterprise survey
Though there exist shortage of skilled labor and poor work discipline/culture among employees, firms believe that the country is blessed with large young and easily trainable workforce. Nature [in the form of suitable climatic condition and untapped natural resources], huge population size [which can be potential demand for manufactures] and geographic suitability to international markets can all be optimized for the competitiveness of the sector. Government’s commitment in form of infrastructure and IPs investment, easing access to working premises, attractive investment policies, and low service charges on utilities is appreciated by the firms. Yet, as underscored among the main challenges to the sector, firms expect further commitment. Government should further engage in areas of human capital, infrastructure, IPs and utilities investment, and improve the incentive packages, public service delivery, and access to finance. Furthermore, improvement in rules and rules’ implementation capacity [such as ensuring fair competition within domestic market], market promotion, and cooperation with investors [such as promoting joint ventures and trade fairs] are additional assignments of the government that can help manufacturers compete in both domestic and global markets.

### 3.2.2.2. Views on Competitiveness within the Subsectors in the Global Market

In addition to **sectoral** level challenges, prospects and feasible interventions for competitiveness, we held discussions with our respondents on challenges, firms’ specific plans to alleviate those challenges, and those essential government support schemes firms expect within the specific **subsectors** to compete globally. A summary table of findings from these discussions is attached in Annex-D.

With regard to challenges in the global market, about 30% of firms in the textile and garment subsector rated poor productivity, poor public service delivery and delay in delivery as the three major challenges to competitiveness. Within the leather industry, about 68% of the firms rated poor quality of raw materials as the one to worry much about, while a quarter of the firms listed high price competition as the major constraint in this market. In an attempt to alleviate those challenges and enhance their competitive ability, firms in the three subsectors indicated some of their specific plans. Firms in the textile and garment industries are striving to improve in areas of labor efficiency, raw material quality and product quality. The leather factories aim to improving raw material quality through value chains development and better marketing strategies. The agro-processors are trying to improve their marketing strategies, expand their capacity, and secure brand for their products so as to join the global market.

Some areas of government intervention are indicated as essential for competitiveness in the global market. Firms operating in all 3 subsectors stated that improving public service delivery and human capital investment are essential for competitiveness. Improving on existing incentive schemes was also rated crucial by some firms in the agro-processing and textile industries. About half the firms in the leather industry mentioned market search requires government’s support.

### 3.3. Triangulation of Findings

While triangulating the findings from the KII and the firm survey, we found that lack of capacity within manufacturing, poor public service delivery, poor quality of local raw materials, and poor work discipline are the major challenges that hinder competitiveness of the sector in global markets. Regarding factors that impede competitiveness in the domestic market, firm managers emphasized limited capacity of manufacturers and unfair competition within market, while government officials underscored impacts of malpractices, such as over/under pricing and contraband. In addition, both sets of respondents didn’t differ in their assessment of existing potentials that could be harnessed to boost competitiveness of the sector. The respondents also unanimously appreciated government’s commitment towards the sector, like in areas of investment on human capital, infrastructure and IPs, and incentives provision. However, on areas that require further attention, while the firms emphasised improving public services delivery,
human capital investment and incentives provision, the public officials and association leaders prioritized domestic market protection, export and industry disciplines, and technology transfer.

3.4. Microeconomic Determinants of Manufacturing Competitiveness in Ethiopia

At the outset of this chapter we discussed the rationale for identifying the microeconomic determinants of competitiveness of sector. Here we summarize those main determinants of competitiveness in Ethiopia on basis of ratings by the key informants and firm managers on a standard list of microeconomic factors that determine manufacturing competitiveness. The following chart summarizes our findings.10

Figure 3.1: Microeconomic Determinants of Manufacturing Competitiveness in Ethiopia

![Chart showing microeconomic determinants of manufacturing competitiveness in Ethiopia]

Source: Authors’ computation on basis of own enterprise survey and KIs

Among the standard microeconomic determinants of competitiveness, responsiveness to consumers’ preference, punctuality in delivery, quality of raw materials, and branding are found as very important attributes for competitiveness. After-sales services is the least rated attribute by government officials. Better distribution channels are rated as very crucial by the association leaders. Difference in ratings among respondents was observed on sales promotion. While associations’ leaders consider sales promotion as a very important factor, government officials and firm managers rated it either as moderately important or even as having minor importance for competitiveness. In relation to designing, all the three respondent groups rated better designs far more important than having larger number of designs. Finally, it is worth noting that price of output is not considered the most important determinant of competitiveness by all the three respondent groups.

Using enterprise survey and generalized double diamond model (Moon et al. 1998) as a framework of analysis, we further dealt with major determinants of manufacturing

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The list of microeconomic determinants rated by the respondents were: price of output, better design, increasing number of designs, quality of raw materials, better distribution channel, sales promotion/advertisement, responsiveness to customer preferences, punctuality in delivery, after-sales service, and branding. In addition, ratings were made on four points scale (1 = not important; 2 = minor importance; 3 = moderately important; and 4 = very important).
competitiveness in Ethiopia. As we discussed earlier, this framework is the refined form of the original competitiveness measurement model developed by Porter (1990). The following figure represents the generalized double diamond model of Moon and his colleagues. We shall note from the figure that the outside diamond represents a global diamond and while the inside one is the domestic diamond. The space between the two (the in-between boxes) represent effects of multinational activities such as the movement of capital (foreign direct investment) and foreign demand for goods produced domestically.

**Figure 3.2: The Generalized Double Diamond Model**

Source: Moon et al. (1998)

We adopted the framework to existing realities of competitiveness within the Ethiopian manufacturing. We used a standard set of challenges within a given manufacturing sector and requested our respondents to rate those challenges. The data generated was analyzed using each component of the framework so as to deduce the major factors that determine competitiveness.

### A. Factor Conditions

Here, we split existing factor conditions within the sector into those which are favorable and those which are unfavorable to competitiveness of the manufacturing firms.

**Table 3.3: Factor Conditions**

<table>
<thead>
<tr>
<th>A. Favorable Factor Conditions</th>
<th>B. Unfavorable Factor Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minor Problems</strong></td>
<td><strong>Major and Modest Challenges</strong></td>
</tr>
<tr>
<td>High rental cost of working premise</td>
<td>Frequent power interruption</td>
</tr>
<tr>
<td>Insufficient water supply for production</td>
<td>Poor quality of local raw materials</td>
</tr>
<tr>
<td>Limited access to land</td>
<td>High cost of raw materials</td>
</tr>
<tr>
<td>Poor road infrastructure</td>
<td>Delays in supply of raw materials</td>
</tr>
<tr>
<td>Poor location of working premise</td>
<td>High shipping or freight cost</td>
</tr>
<tr>
<td></td>
<td>Poor work discipline of unskilled labor</td>
</tr>
<tr>
<td></td>
<td>High inland transport cost of goods</td>
</tr>
<tr>
<td></td>
<td>Lack of skilled labor</td>
</tr>
<tr>
<td></td>
<td>High cost of skilled labor</td>
</tr>
<tr>
<td></td>
<td>Limited access to credit (availability)</td>
</tr>
</tbody>
</table>

Source: Authors’ computation on basis of own enterprise survey

Challenges were scaled as: 1=not a problem; 2=minor problem; 3=modest problem; 4=major problem; 5=very severe problem.
The findings on the above table indicate that firms recognize some factor related challenges, such poor location of working premises and limited access to land as minor and believe that they can handle them. However, there are other challenges, such as those related to power interruption and raw materials which firms within the sector rate as major or moderate to competitiveness. Here under, we classify and analyze these findings into 5 factor categories: human resources; innovations, technology and business environment; physical resources; access to finance and foreign exchange; and infrastructure.

a) Human Resources

Firms stated the presence of abundant and low cost labor as one of their competitive advantages. This is in conformity with the finding we had in chapter 2 in that manufacturing wages are lower in Ethiopia than those African and Asian countries whose manufacturing structure is comparable. This suggests that Ethiopia's abundant and inexpensive labor can be used as leverage for competitiveness in labor intensive light manufacturing. However, the relatively poor labor productivity within the Ethiopian manufacturing (against these same countries) could be explained by the shortage of skilled labor and poor work ethics among the low skilled workers and can be a restraint to the competitiveness of the sector.

b) Innovation, Knowledge Transfer and Business Environment

Shortage of skilled labor within the sector is a major deterrence on the effort to introduce innovative ideas related to product designs, production methods, labor management, marketing, and procurement which in turn could hinder the ability to compete in the ever-changing global markets. Regarding efforts in relation to innovation and knowledge transfer, we found that firms within the sector have been engaged on certain capacity building activities. During the last three years alone, about 65% of all firms interviewed have improved their product qualities; about half the firms in both agro-processing and textile and garment industries have made major machinery investment; and about 55% of textile and garment firms and 40% of leather producing firms have upgraded the skills of their employees. In terms of main sources of technological innovations, we found that more than half the firms within textile and garment industry benefit from innovations embodied within machinery and experts from abroad, while most firms in the leather industry acquire technological innovations through experts from abroad. Experts from the local market have also been sources of innovation (though rarely and mainly by the leather producing firms). A summary table on the main sources, upgrading, and related challenges with acquiring new technologies is attached as Annex- E.

More than 50% of the firms stated that there has been improvement in the overall business in the last 12 months. Reasons for such improvement relate to the emergence of new demand, acquisition of better skills, and higher domestic competition. Besides, during the same period, firms have practiced certain innovative marketing activities. Agro-processing and leather producing firms have secured business websites and participated in trade fair, while the leather and textile and garment producers have created new distribution channels. Such innovative practices will enhance competitiveness of the sector.

c) Physical Resources

The abundant land resource in the country is a potential that could be used to harness competitiveness of firms within the Ethiopian manufacturing. In this regard, firms rated challenges in relation to working premises and water supply as only minor in their daily operations. In addition, Ethiopia’s geographic location is well suited to European and Middle East markets. Climatic conditions are also thought to be favorable for agricultural production which in turn can help alleviate the challenges of integrating manufacturing with agriculture. However, both poor quality raw materials and high cost of raw materials were rated among the major challenges to competitiveness. As Ethiopia is a landlocked country, firms are also faced with
Relatively high cost of transport on both outbound and inbound transportation of goods, supplies and inputs. This in turn could curb competitiveness of manufacturing firms in the global market.

d) Access to Credit and Foreign Currency

The survey result reveals that most sampled firms within the three subsectors are faced with shortage of both working capital and foreign currency. This is quite in contrast to the preferential financing services afforded to the sector. The literature on credit accessibility indicates that firms faced with limited access to credit are forced to pass up profitable and growth opportunities, efficiency gains, and opportunities to adopt new technologies. These in turn will deter the potential for competitiveness in international markets. Shortage of foreign currency could be expressed by the length of time it takes to open Letter of Credits (LCs) and the amount firms are allowed to utilize while importing production inputs.

e) Infrastructure

Majority of the firms rated frequent power interruption as one of the most severe challenges to competitiveness. Power disruption restrains firms from utilizing their production capacity. But, poor road infrastructure was rated as a minor problem. However, it should be noted that high costs of transport and delays in delivery are still challenging the competitiveness of firms on the global market. This is particularly the case for firms supplying fashionables to the international market. In addition, most firms believe that telecommunication services in Ethiopia are relatively poor (particularly internet and mobile services). In the absence of efficient and well developed internet and mobile services, it would be costly to find appropriate sources of raw materials and competitive markets for manufactures.

B. Demand Conditions

Our findings from the enterprise survey indicate that there exists favorable demand condition that can be optimized to boost the competitiveness of manufacturing firms in Ethiopia. Ethiopia, being the second populous country in Africa, has huge potential demand for manufactures. This potential demand allows local firms to observe in advance the dynamics of consumers’ needs and tastes (before rival foreign firms do) and innovate and adapt faster accordingly. The firm managers consider the Ethiopian urban domestic buyers sophisticated and demanding enough. Income and population size in rural areas are also increasing. These developments will undoubtedly invigorate the domestic demand for textile, garment and leather products. The table below summarizes findings on challenges related to demand conditions within the market.

Table 3.4: Favorable Demand Conditions

<table>
<thead>
<tr>
<th>Minor problems</th>
<th>Score ≤ 2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stringent standard requirement of buyer</td>
<td>2.2</td>
</tr>
<tr>
<td>Supplier search and reach cost</td>
<td>2.2</td>
</tr>
<tr>
<td>Lack of sophisticated domestic demand</td>
<td>2</td>
</tr>
<tr>
<td>Lack of trust of buyers (local)</td>
<td>2</td>
</tr>
<tr>
<td>Lack of trust of buyers (abroad)</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Source: Authors’ computation on basis of own enterprise survey

We can observe from the table that challenges related to trust, supplier search and reach cost, demand sophistication, and standard requirements are all minor problems and hence believed to be insignificant impediments towards competitiveness of the manufacturing sector.
C. Firm Strategy, Structure and Rivalry

Though government officials and association leaders consider lack of firm strategy as one of the major factors that hinder competitiveness, the sampled firms rated it as a minor problem. Both poor competitions from rival firms and poor connectedness to the GVCs are also considered minor challenges to their competitiveness. Firms are rather more concerned with activities in the informal sector. Firms' commitment towards marketing innovation could be considered the justification for such ratings. The following table summarizes findings on firm strategy and rivalry related challenges.

Table 3.5: Firm Strategy and Rivalry Related Conditions

<table>
<thead>
<tr>
<th>Problems</th>
<th>Score (1 to 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practices of competitors in the informal sector</td>
<td>3.1</td>
</tr>
<tr>
<td>Poor competition from rival firms</td>
<td>2.1</td>
</tr>
<tr>
<td>Poor firm strategy</td>
<td>2</td>
</tr>
<tr>
<td>Poor connectedness to GVCs</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Source: Authors’ computation on basis of own enterprise survey

D. Related and Supporting Industries

The Ethiopian manufacturing sector suffers severely from lack of related and support industries within the economy. Competitiveness of the sector is hampered by shortage of strategic inputs supplying industries. For instance, majority of the tanneries we discussed with argued that shortage of locally produced chemicals is severely restraining their competitiveness. Similarly, the majority of garment firms we discussed with argued that shortages of export standard fabric, chemicals, and garment accessories within the domestic market are major challenges to their competitiveness in global markets. We also found that the information exchange among firms as well as with support industries is quite low. Firms have low level of cooperative interactions among themselves. Besides, firms believe that they are not getting the institutional support required to solve the problems. Though there are significant interaction and cooperation with raw materials suppliers and output buyers, the level of interaction with government institutes and support industries is modest at best. A summary table on findings related to institutional support and cooperation within the sector is attached in Annex-F.

We windup our findings in relation to microeconomic determinants of manufacturing competitiveness by summarizing our main findings that (1) factor conditions related to availability and cost of raw materials and power breakage are major challenges that need attention, while physical resources such as land and suitable climatic conditions could be optimized to uplift the competitive position of the sector; (2) though abundant and relatively inexpensive young workforce can be leverage for competitiveness, shortage of skilled labor is deterring productivity enhancing efforts; and (3) the sector faces acute shortage of support industries that could supply strategic inputs, and there is also poor information exchange and cooperation among firms within the sector. Both also need attention of players within the sector.
4. Global Value Chains Participation

4.1. Introduction

As it is the case with conventional trade metrics such as exports shares, countries’ or firms’ participation in Global Value Chains (GVCs) can be considered both as a measure as well as driver of competitiveness (Plane and Da Piedade, 2017). In other words, firms’ ability to connect with global buyers and sellers may reflect other factors of competitiveness (price, quality, innovation), but it can also be considered a factor of competitiveness in itself in the current context of highly fragmented and internationalised trade and production processes. The literature on GVCs has actually documented a positive impact of GVCs participation on manufacturing competitiveness. Kowalski et al. (2015) argued that GVCs would enhance productivity, sophistication and diversification of exports of the African manufacturers, while WEF (2015) stated that participation in GVCs is associated with economic benefits in SSA. Participation in GVCs creates the room for global buyers to assist local firms achieve particular quality standards. GVCs can also provide local firms with supply of raw materials or intermediate inputs, help them organize exchanges of personnel as a way to diffuse new technologies to the firms’ production facilities, and assist them with firm management practices. Proponents of GVCs participation argue that developing countries can specialize only in a single or few segment/s of international production processes while maximizing their production capacities.

Defining and quantifying a country’s position in GVCs is not straightforward. A sound analysis requires using a wide range of indicators and concepts, including macro and micro data (Taglioni and Winkler, 2016). Usually, analyses rely on three types of data and measures: standard trade data (including trade in value added – TiVA) to measure GVCs participation by country and sector, network analysis of international trade to assess the centrality of a country, and firm-level data as a country’s integration in GVCs reflects firms’ GVC links.

Here we adopt the same methodology as in previous parts of this paper, providing first a global overview of Ethiopia’s position in GVCs, and then giving a range of firm-level indicators characterising the Ethiopian firms’ GVC links vis-à-vis comparator countries. Regarding firm-level data, we use the World Bank Enterprises Surveys (hereafter WBES) to allow international comparisons, and our enterprise survey to address important questions in greater detail. Comparator countries are the same as in section 2, plus countries firms’ managers cited as their main competitors in our survey (namely India, Bangladesh and Pakistan, see table G1 in Annex G).

4.2. Overview of Ethiopia’s GVCs Position

Research and analytical works have already been done on Ethiopia’s position in GVCs. Using GVCs participation indicators (mainly backward integration13) to assess trade integration in SSA, Allard et al. (2016), showed that Ethiopia is among the five countries that have made the largest strides into GVCs – along with Kenya, Seychelles, South Africa, and Tanzania – having seen the share of foreign value-added in its exports increase by 10 percentage points between 1991-95 and 2008-12. However, Ethiopia’s improvement in integration emanates mainly from its

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12 Because production and trade have become increasingly fragmented, gross exports give only a partial picture of the actual trade patterns. A number of concepts and measures have been proposed to estimating domestic and foreign value added in a country’s exports (and imports). Different international organizations (the OECD-WTO, the World Bank, etc.) started to develop TiVA databases. Mattoo et al. (2013) present these new measures of “trade in value added”.

13 The primary measures of a country’s participation in GVCs are backward integration, which occurs when a country sources foreign inputs for its export production, and forward integration, which occurs when a country provides inputs for a foreign country’s export production. Combining the two yields the measure of a country’s total GVCs participation.
agriculture, food and beverages. Foreign value added contained in the manufacturing sector has remained stagnant at around 5 percent. Focusing on three labour-intensive light manufacturing sectors (apparel and footwear, vehicles, electronics), and using both trade in intermediates and TiVA data, Shepherd (2017) showed that while Ethiopia has seen some improvement in the clothing subsector, the electronics and vehicles subsectors still remain at early stages. The seemingly good export performance in the clothing sector might be explained by the fact that Ethiopian firms are not able to source quality inputs at reasonable prices through imports.

To complete this picture and assess the potential of Ethiopian exports in terms of domestic value-added and jobs, we use the World Bank Export of Value Added database (EVAD) and two recent databases which are first steps to quantify the labour market dimensions of GVCs: the LACEX database which attempts to measure the labour content of gross exports (in terms of wages), and JOCEX which informs us the number of jobs contained in exports (see Calì et al., 2016 for more details). Using these databases, tables 4.1 to 4.3 and figure 4.1 were developed. These results help us draw important lessons which basically go in the same way as the studies cited above:

- The structure of Ethiopian exports is highly concentrated, with agricultural goods still accounting for half of the gross exports and transport (mainly the Ethiopian Airlines) for 20% (Table 4.1).

- The relative contribution of agricultural goods exports to domestic value-added is even higher. Taking into account backward linkages (i.e., spillover effects of direct exports of a sector on the other sectors of the Ethiopian economy), the share of agricultural goods is lower, but the bigger picture remains fairly stable.

- The manufacturing sector has considerable potential in terms of jobs and labour value-added (i.e. wages), but this potential is yet to be realized. Agriculture and public services actually account for half of jobs contained in exports (Table 4.2). However, taking into account backward linkages, manufacturing sector becomes the first employer (28% of jobs contained in exports), followed by agriculture and transport and communication. Yet this share has remained fairly stable since 2004, while the shares of agriculture and transport have risen (Error! Reference source not found.). Trade, sales and accommodation sector is the one which benefits the most from exports in other sectors (forward linkages). As for jobs contained in export based on backward linkages, agriculture and transport benefit more from exports than the other sectors in 2004. These stylised facts might reflect the continuous success of Ethiopian Airlines and coffee exports, as well as the recent boom in the exports of cut flowers.

- In terms of labour value added intensity, Table 4.3 reaffirms the dominance of agricultural goods: trade and transport services sector accounts for one quarter of exports but as it isn’t much labour intensive (especially unskilled), its relative contribution to the total labour value added of exports remains low. On the contrary, textiles, leather, and wearing apparel are labour intensive but given the low level of exports, the potential is yet to be unleashed.

### Table 4.1: Contribution of Subsectors to Domestic Value-added in 2011

<table>
<thead>
<tr>
<th>Share of Direct</th>
<th>Domestic value-added</th>
</tr>
</thead>
</table>

14 Boosted mainly by the success in export of cut flowers.

15 It should be borne in mind that these data rely on input-output tables. As a consequence, they should be interpreted with extreme caution. Indeed, missing data in the IO table are filled through optimization procedures which by nature do not provide exact and precise measures of actual production and trade patterns of a given country.
Table 4.2: Contribution of sectors to gross exports and jobs contained in exports in 2011

<table>
<thead>
<tr>
<th>Sector name</th>
<th>Direct exports (gross value)</th>
<th>Jobs contained in exports</th>
<th>Jobs contained in exports, including backward linkages</th>
<th>Jobs contained in exports, based on forward linkages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public services</td>
<td>5.76%</td>
<td>25.34%</td>
<td>16.93%</td>
<td>14.69%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>51.29%</td>
<td>24.07%</td>
<td>20.77%</td>
<td>15.64%</td>
</tr>
<tr>
<td>Transport and communication</td>
<td>23.93%</td>
<td>19.27%</td>
<td>21.47%</td>
<td>13.92%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>13.16%</td>
<td>12.70%</td>
<td>28.04%</td>
<td>9.71%</td>
</tr>
</tbody>
</table>
Other commercial services 0.65% 8.14% 5.18% 10.87%
Trade, sales and accommodation 1.17% 5.04% 3.28% 25.40%
Financial services 1.28% 3.35% 2.04% 5.66%
Mining and Energy 0.62% 0.78% 0.73% 0.51%
Real estate, renting 1.54% 0.69% 0.81% 2.85%
Construction 0.47% 0.52% 0.65% 0.39%
Electricity, gas and water 0.11% 0.12% 0.10% 0.37%
100% 100% 100% 100%

Source: Authors’ computation based on the World Bank’s Jobs content of export dataset

**Figure 4.1: Evolution of the relative contribution of sectors to the number of jobs contained in exports between 2004 and 2011 (%)**
Table 4.3: Labor intensity of exports and output in Ethiopia in 2011 (by sector)

<table>
<thead>
<tr>
<th>Sector name</th>
<th>Skilled wages shares of output</th>
<th>Unskilled wages shares of output</th>
<th>Shares in gross exports</th>
<th>Labor intensity of exports, bwd linkages</th>
<th>Labor intensity of output, bwd linkages</th>
<th>Total labor value-added in exports (bwd linkages) to total gross exports</th>
<th>Total value-added (bwd linkages) in output to total gross output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agri, Forestry, Fisheries</td>
<td>4.71%</td>
<td>48.64%</td>
<td>51.29%</td>
<td>59.09%</td>
<td>47.62%</td>
<td>30.30%</td>
<td>14.71%</td>
</tr>
<tr>
<td>Textiles</td>
<td>2.80%</td>
<td>32.36%</td>
<td>1.42%</td>
<td>61.25%</td>
<td>50.57%</td>
<td>0.87%</td>
<td>0.47%</td>
</tr>
<tr>
<td>PubAdmin/Defence/Health/Educac</td>
<td>26.94%</td>
<td>26.45%</td>
<td>5.76%</td>
<td>63.81%</td>
<td>63.59%</td>
<td>3.68%</td>
<td>3.75%</td>
</tr>
<tr>
<td>Paper Products, Publishing</td>
<td>2.09%</td>
<td>24.12%</td>
<td>0.04%</td>
<td>37.53%</td>
<td>10.73%</td>
<td>0.01%</td>
<td>0.04%</td>
</tr>
<tr>
<td>Minerals NEC</td>
<td>1.98%</td>
<td>19.55%</td>
<td>0.62%</td>
<td>31.15%</td>
<td>3.87%</td>
<td>0.19%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Beverages and Tobacco Products</td>
<td>1.51%</td>
<td>17.45%</td>
<td>0.08%</td>
<td>36.83%</td>
<td>32.24%</td>
<td>0.03%</td>
<td>0.43%</td>
</tr>
<tr>
<td>Wood Products</td>
<td>1.26%</td>
<td>14.51%</td>
<td>0.03%</td>
<td>37.64%</td>
<td>13.30%</td>
<td>0.01%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Processed Foods</td>
<td>1.01%</td>
<td>11.65%</td>
<td>2.00%</td>
<td>36.75%</td>
<td>33.24%</td>
<td>0.73%</td>
<td>1.85%</td>
</tr>
<tr>
<td>Ferrous Metals</td>
<td>0.97%</td>
<td>11.17%</td>
<td>0.00%</td>
<td>30.19%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Mineral Products NEC</td>
<td>0.93%</td>
<td>10.69%</td>
<td>0.20%</td>
<td>30.80%</td>
<td>23.65%</td>
<td>0.06%</td>
<td>0.29%</td>
</tr>
<tr>
<td>Construction</td>
<td>2.99%</td>
<td>10.34%</td>
<td>0.47%</td>
<td>35.43%</td>
<td>29.06%</td>
<td>0.17%</td>
<td>3.03%</td>
</tr>
<tr>
<td><strong>Trade and Transport Services</strong></td>
<td><strong>12.92%</strong></td>
<td><strong>7.47%</strong></td>
<td><strong>22.94%</strong></td>
<td><strong>29.88%</strong></td>
<td><strong>4.41%</strong></td>
<td><strong>6.85%</strong></td>
<td><strong>0.78%</strong></td>
</tr>
<tr>
<td>Other Private Services</td>
<td>10.94%</td>
<td>7.11%</td>
<td>5.64%</td>
<td>30.90%</td>
<td>8.37%</td>
<td>1.74%</td>
<td>0.82%</td>
</tr>
<tr>
<td>Manufactures NEC</td>
<td>0.60%</td>
<td>6.97%</td>
<td>0.27%</td>
<td>32.99%</td>
<td>21.98%</td>
<td>0.09%</td>
<td>0.32%</td>
</tr>
<tr>
<td>Chemical, Rubber, Plastic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Products</td>
<td>0.32%</td>
<td>3.64%</td>
<td>0.41%</td>
<td>18.35%</td>
<td>11.18%</td>
<td>0.07%</td>
<td>0.12%</td>
</tr>
<tr>
<td>Metal Products</td>
<td>0.30%</td>
<td>3.43%</td>
<td>0.05%</td>
<td>29.27%</td>
<td>3.95%</td>
<td>0.02%</td>
<td>0.07%</td>
</tr>
<tr>
<td>Electricity, Gas, Water</td>
<td>5.43%</td>
<td>3.29%</td>
<td>0.11%</td>
<td>13.18%</td>
<td>6.78%</td>
<td>0.01%</td>
<td>0.11%</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>0.28%</td>
<td>3.22%</td>
<td>0.44%</td>
<td>29.41%</td>
<td>15.13%</td>
<td>0.13%</td>
<td>0.16%</td>
</tr>
<tr>
<td><strong>Wearing Apparel</strong></td>
<td><strong>0.17%</strong></td>
<td><strong>1.94%</strong></td>
<td><strong>1.04%</strong></td>
<td><strong>30.31%</strong></td>
<td><strong>30.13%</strong></td>
<td><strong>0.31%</strong></td>
<td><strong>0.67%</strong></td>
</tr>
<tr>
<td>Metals NEC</td>
<td>0.13%</td>
<td>1.54%</td>
<td>3.31%</td>
<td>28.05%</td>
<td>17.22%</td>
<td>0.93%</td>
<td>0.09%</td>
</tr>
<tr>
<td><strong>Leather Products</strong></td>
<td><strong>0.12%</strong></td>
<td><strong>1.42%</strong></td>
<td><strong>3.35%</strong></td>
<td><strong>32.91%</strong></td>
<td><strong>31.89%</strong></td>
<td><strong>1.10%</strong></td>
<td><strong>0.43%</strong></td>
</tr>
<tr>
<td>Machinery and Equipment NEC</td>
<td>0.01%</td>
<td>0.16%</td>
<td>0.54%</td>
<td>28.02%</td>
<td>25.60%</td>
<td>0.15%</td>
<td>0.37%</td>
</tr>
<tr>
<td>Dwellings</td>
<td>0.05%</td>
<td>0.05%</td>
<td>0.00%</td>
<td>0.60%</td>
<td>0.60%</td>
<td>0.00%</td>
<td>0.01%</td>
</tr>
<tr>
<td>Energy Extraction</td>
<td>0.00%</td>
<td>0.01%</td>
<td>0.00%</td>
<td>20.68%</td>
<td>4.07%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Source: Authors’ computation based on the World Bank’s LACEX database.

Notes: NEC = not elsewhere classified.
4.3. Ethiopian firms’ GVCs links vis-à-vis comparator countries

In our firm survey, we discussed with firm managers on various issues related to GVCs participation in the three manufacturing subsectors. About 40% of the firms stated that they currently participate in GVCs (see Table 4.4 below). To make comparisons with peer countries, several indicators of firms’ GVCs links can be extracted from the WBES. Exporting directly or indirectly (i.e. through a third party that exports products) and importing inputs are the first straightforward insights of firms’ participation in the international networks of production and trade. Error! Reference source not found. to Error! Reference source not found.

Table 4.4 and Table 4.5 illustrate the main characteristics of firms’ GVCs links in Ethiopia.

- In Ethiopia, the proportion of firms exporting directly (9%) is lower than those in Kenya (23%), Vietnam (19%), Bangladesh (19%) and Morocco (18%), but relatively comparable with (or better than) other peer countries such as Tanzania (9%), Malawi (9%) and Botswana (5%). However, when we include firms that export indirectly, the gap widens, and Ethiopia ranks last, suffering the biggest drop in ranking between the two indicators, while the other countries suffer smaller variations (Error! Reference source not found.). This suggests a missing link between Ethiopian firms and global buyers and sellers. Interestingly, while there are more exporters among local subsidiaries of multinationals in Ethiopia than among their domestic counterparts, the proportion is still very small, and the difference with foreign enterprises in other countries is even more striking (Error! Reference source not found.). At a first sight, Ethiopia does not appear as a manufacturing hub where foreign enterprises locate to transform imported inputs into final or semi-finished goods for exports. Taking into account the proportion of sales instead of the proportion of exporters do not change the overall picture, which is worse for GTP-II targeted sectors in terms of country ranking (not in absolute terms) (see Figure G1 to G2 in Annex G).

- In terms of backward integration, WBES firm-level data as well as our survey confirm what studies based on trade data suggest: Ethiopian firms rely more on domestic inputs than their African counterparts (Error! Reference source not found.). However, for the few firms that export (directly or indirectly), the pattern is quite similar with their African counterparts: 82% of exporters rely on foreign inputs or materials, a proportion that doesn't differ much from Tanzania, Mauritius, Morocco and Kenya (Error! Reference source not found.).

- In comparison to Figure G3 in Annex G,

- Table 4.5 suggests that importing firms are over-represented in our sample, especially in the textiles and garments sectors. Indeed, in our sample, most firms (more than 70%) in all three subsectors are engaged in importing intermediate inputs, and the share of imported intermediate inputs from total inputs of production was much higher in the textile/garment subsector (62%, versus 26% according to the 2015 WBES) than in the other two subsectors (about 25% each). Agro-processing firms imported inputs significantly from India (about 33% of their total imported intermediate inputs) in 2007EC. The other two subsectors imported significant amount of intermediate inputs from China (about 40%), though Italy [for leather producers] and Turkey and India [for textile and garment producers] were also their major origins of intermediate inputs. Most firms in these subsectors, 100% and 95% in case of agro-

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17 GTP II targeted sectors correspond to divisions 15, 17, 18 and 19 of the ISIC Rev.3.1: Manufacture of food products and beverages (15), of textiles (17), wearing apparel (18) and tanning and dressing of leather (19).
processors and textile/garment firms respectively, use imported intermediate inputs for production of final products.

- Our survey shows that firms in Ethiopia also participate in contracting out part of their production processes. About 45% of the agro-processing firms contract-out their production parts, while about 30% of firms in the other two subsectors involve in such practices. In the last two years, while firms in agro-processing and textile/garment subsectors have contracted out activities on average to two firms, those in leather and leather products subsector have done so on average to three firms. Firms in the 3 subsectors have contracted out part of their production process to firms within the country.

- While importing the inputs, firms in these subsectors face certain challenges. For instance, bureaucratic procedures are the major challenges for the textile/garment and leather/leather products subsectors, and they are probably responsible for the high number of days needed to clear imports through customs procedures (see figure G4 in Annex G). Foreign exchange shortages and high tariff rates were mentioned by firms in all three subsectors, though with weaker tone, as major challenges to importing intermediate inputs. The World Trade Organization report (2014) states that integration into GVCs at initial stage of development typically leads to a productivity-enhancing movement of labour from agriculture to manufacturing. Thus, if manufacturing is to prosper and compete at global markets, it is imperative that developing countries such as Ethiopia support their manufacturers to participate in GVCs with relative ease. The intervention required would include alleviating excessive bureaucratic procedures, shortage of foreign exchange, and high tariff rates.

**Figure 4.2: Percent of firms exporting**

![Figure 4.2: Percent of firms exporting](source: Adapted from Enterprises Surveys (World Bank).)

28
Figure 4.3: Percent of firms exporting directly or indirectly, according to ownership

Source: Adapted from Enterprises Surveys (World Bank).

Figure 4.4: Percent of firms using material inputs and/or supplies of foreign origin

Source: Adapted from Enterprises Surveys (World Bank).
Figure 4.5: Proportion of total inputs of foreign origin

Figure 4.6: Percent of exporters using material inputs and/or supplies of foreign origin

Source: Adapted from Enterprises Surveys (World Bank).
### Table 4.4: GVCs Participation within the Subsectors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Agro-Processing</th>
<th>Textiles and Garments</th>
<th>Leather and Leather Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in GVCs</td>
<td>Responses</td>
<td>Av.%</td>
<td>Responses</td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>2 Main benefits from participating in GVCs</td>
<td>Technology transfer</td>
<td>50</td>
<td>Market access improvement</td>
</tr>
<tr>
<td>Product quality improvement</td>
<td>50</td>
<td></td>
<td>Product quality improvement</td>
</tr>
<tr>
<td>Firm features that allowed connections</td>
<td>Advanced production process</td>
<td>100</td>
<td>Brand recognition</td>
</tr>
<tr>
<td>Low prices</td>
<td>50</td>
<td></td>
<td>Environmental certificates</td>
</tr>
<tr>
<td>Firms that contract out part of their production processes</td>
<td>_</td>
<td>43</td>
<td>Product quality certificates</td>
</tr>
</tbody>
</table>

Source: Authors’ computation on basis of own enterprise survey

### Table 4.5: Import Features of GVCs Participation within the Manufacturing Sector

<table>
<thead>
<tr>
<th>Variables</th>
<th>Agro-Processing</th>
<th>Textiles and Garments</th>
<th>Leather and Leather Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firms that import intermediate inputs</td>
<td>Yes</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Main challenges while importing intermediate inputs</td>
<td>Forex shortage</td>
<td>40</td>
<td>Bureaucratic procedures</td>
</tr>
<tr>
<td>High tariff rate</td>
<td>20</td>
<td></td>
<td>High tariff rate</td>
</tr>
<tr>
<td>Main origins of intermediate inputs imports and their share from total intermediate inputs imports in 2007</td>
<td>India</td>
<td>33</td>
<td>China</td>
</tr>
<tr>
<td>Others</td>
<td>77</td>
<td></td>
<td>Turkey</td>
</tr>
<tr>
<td>Share of imported material inputs in 2007</td>
<td>_</td>
<td>18</td>
<td>Others</td>
</tr>
<tr>
<td>Import to export ratio</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ computation on basis of own enterprise survey
4.4. Drivers, Benefits, and Constraints Related to GVCs Participation

We stated at the outset of this section that it is difficult to know if GVCs indicators should be considered as drivers, measures or even impacts of GVCs participation on competitiveness. For instance, only 7.8% of firms in Ethiopia have internationally-recognized quality certificates, while the figures are 29% in Kenya, 22% in Tanzania and 18% in Vietnam (see Error! Reference source not found.). Is quality upgrading a driver or an impact of GVCs participation? A similar question can be raised on benefits of foreign technology and ICT (see graphs G5 to G7 in annex G). Causality probably goes in both directions, and answering this question would require much deeper analysis. Nevertheless, our enterprise survey gives first-hand insight. We showed on Table 4.4 that the main benefits of participations in GVCs are technology transfer, better market access and product quality improvement. The agro-processors claimed that advanced production process and the capability to offer competitive prices enabled them to connect with global lead firms. The textile and garment producers stated that environmental certificates, product quality certificates and brand recognition were helped them develop such connections. Product quality and better design were the main factors that helped leather producers connect with the global players.

Figure 4.6: Percent of firms with internationally-recognized quality certification

Albeit the uncertainties with causality, since the government is more enthusiastic towards vertical integration within the sector, it might prefer to develop the whole supply chain domestically, as in the cut flower sector. Competitiveness might then depend on the ability to provide the manufacturers with high quality raw material/ supplies. Indeed, we have shown in the previous chapter that lack of access to high quality raw material is among the serious constraints to manufacturing competitiveness in Ethiopia.
5. Concluding Remarks

Enhanced manufacturing competitiveness is an important driver of structural transformation and broad-based growth. At the early stage of development, increased agricultural productivity followed by growth in labor intensive manufacturing is considered an engine of economic growth and a typical path out of poverty. Such growth process has been observed in East and South East Asia in the later part of the 20th century but not so far in African countries such as Ethiopia. However, given the potential benefits of manufacturing, the Ethiopian government has geared its effort towards development of the sector recently. Notwithstanding such an effort, manufacturing is yet to deliver the intended results. According to the WEF (2017), Ethiopia is ranked 109 out of 144 countries in 2016 in its overall competitiveness. It also scored below the African average on capacity utilization in manufacturing production, export diversification, labor productivity and technological upgrading. The contribution of manufacturing towards total employment, exports and GDP has also remained stagnant. Besides, the recent declines in share of agricultural value added and employment have largely been offset by an expanding service.

However, our RULC result reflects some glimmers of hope for the Ethiopian manufacturing in the global competition for production and supply of light manufactures. Decomposing the RULC result into its components we found relatively low manufacturing wages in Ethiopia which in turn could enable firms compete in world markets. The unit labor costs in the African countries were significantly higher than those in Ethiopia in the 2000s. Yet labor productivity differentials with the Asian countries in the 2000s could be insurmountable for the Ethiopian manufacturing. The ratio of manufacturing wages to per capita income was also higher in Ethiopia than in the comparator Asian and African countries in the 2000s. Given existing poor labor productivity in the sector, rising wages will remain a hiccup to competitiveness of the sector. This calls for attention of the policy makers to consider impacts of external factors such as rising urban living costs on wages and devise appropriate policy instruments accordingly.

The KIIs and enterprise survey results indicate that lack of capacity within manufacturing, inefficient public service delivery, poor quality of local raw materials and poor work discipline of the workforce are major challenges to the global competitiveness of the Ethiopian manufacturing. Regarding factors that impede competitiveness in the domestic market, firms emphasized limited capacity of manufacturers and unfair competition within market, while government officials underscored impacts of malpractices within the sector. Nevertheless, we found that government’s commitment towards the sector - in form of investment on human resource, infrastructure and IPs, incentives provision, and cheap utility services - are all appreciated. Yet both the officials and the firms expect much more from the government, the former emphasizing domestic market protection, industry and export discipline, and technology transfer while the latter stressing on efficient public services, more incentives and human capital investment.

Our analysis on microeconomic determinants of manufacturing competitiveness indicate that Ethiopia has competitive advantages in areas of cheap and abundant labor supply, closeness to international markets, and growing domestic demand for manufactures. Yet the sector is also challenged by frequent power breakage, limited access to credit and foreign exchange, weak innovative capacity, high inland and outbound transport cost, and acute shortage of reliable input suppliers and support industries. Hence, if the Ethiopia is to optimize its prospects of competing in labor intensive manufacturing, these binding constraints on the daily operation of manufacturers should be addressed accordingly.

The findings on GVCs participation revealed that manufacturing is far behind the other sectors in terms of contributions to domestic value addition and jobs contained in exports. Regarding backward integration, we found that the Ethiopian firms heavily depend on domestic inputs of production. This relates to excessive bureaucratic procedures, shortage of foreign currency and high tariff rates. If the sector is to integrate to world markets, firms should be able to operate with relative ease. Finally, though we didn’t find a clear causality direction between GVCs participation and competitiveness of the sector, the government’s enthusiasm towards vertical
integration within the sector probably indicates its intention to nurture the whole supply chain domestically. Competitiveness might then depend on the ability to provide manufacturers with high quality domestic raw materials through the development of, among other things, support industries, innovative capacity, and integration with agriculture.
References


Annex

Annex A: Export Performance of the Main Manufacturing Subsectors

Figure 1: Trends in Export Performance of the main Manufacturing Subsectors in Ethiopia


Annex B: Manufacturing Diversification by Subsectors, Jobs, and Labor Earnings

Table 1: Three dominant subsectors in shares in manufacturing value added, 2000-2012

<table>
<thead>
<tr>
<th>Country</th>
<th>1st Subsector</th>
<th>Share,%</th>
<th>2nd Subsector</th>
<th>Share,%</th>
<th>3rd Subsector</th>
<th>Share,%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>Foods and Beverages</td>
<td>45</td>
<td>Non Metal Minerals</td>
<td>12.3</td>
<td>Chemicals &amp; Chem. Pro.</td>
<td>5.4</td>
</tr>
<tr>
<td>Kenya</td>
<td>Foods and Beverages</td>
<td>29</td>
<td>Non Metal Minerals</td>
<td>13.5</td>
<td>Rubber &amp; Rubber Pro.</td>
<td>6.3</td>
</tr>
<tr>
<td>Mauritius</td>
<td>Foods and Beverages</td>
<td>33.3</td>
<td>Wearing Apparels</td>
<td>32.8</td>
<td>Foods and Beverages</td>
<td>8.8</td>
</tr>
<tr>
<td>China</td>
<td>Basic Metals</td>
<td>11.7</td>
<td>Chemicals &amp; Chem. Pro.</td>
<td>11</td>
<td>Motor Vehicle &amp;others</td>
<td>8.1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Foods and Beverages</td>
<td>15.2</td>
<td>Chemicals &amp; Chem. Pro.</td>
<td>11.9</td>
<td>Wearing Apparels</td>
<td>7.3</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Foods and Beverages</td>
<td>20.9</td>
<td>Non Metal Minerals</td>
<td>9.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Own Computation on basis of UNIDO- INSTAT (2016) database

Table 2: Three dominant subsectors in shares in manufacturing jobs, 2000-2012

<table>
<thead>
<tr>
<th>Country</th>
<th>1st Subsector</th>
<th>Share%</th>
<th>2nd Subsector</th>
<th>Share%</th>
<th>3rd Subsector</th>
<th>Share%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>Foods and Beverages</td>
<td>30.3</td>
<td>Textiles</td>
<td>19.2</td>
<td>Non Metal Minerals</td>
<td>9.1</td>
</tr>
<tr>
<td>Kenya</td>
<td>NA</td>
<td>_</td>
<td>NA</td>
<td>_</td>
<td>NA</td>
<td>_</td>
</tr>
<tr>
<td>Mauritius</td>
<td>Wearing Apparels</td>
<td>56.8</td>
<td>Foods and Beverages</td>
<td>14.1</td>
<td>Textiles</td>
<td>7.1</td>
</tr>
<tr>
<td>China</td>
<td>Textiles</td>
<td>9.7</td>
<td>Chemicals &amp; Chem. Pro.</td>
<td>8.8</td>
<td>Foods and Beverages</td>
<td>7.6</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Chemicals &amp; Chem. Pro.</td>
<td>15.4</td>
<td>Textiles</td>
<td>12.3</td>
<td>Wearing Apparels</td>
<td>11.2</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Wearing Apparels</td>
<td>17.6</td>
<td>Leather and Leather Pro.</td>
<td>17.3</td>
<td>Foods and Beverages</td>
<td>13.8</td>
</tr>
</tbody>
</table>

Source: Own Computation on basis of UNIDO- INSTAT (2016) database
Table 3: Three dominant subsectors in terms of shares in labor earnings, 2000-2012

<table>
<thead>
<tr>
<th>Country</th>
<th>1st Subsector</th>
<th>Share,%</th>
<th>2nd Subsector</th>
<th>Share,%</th>
<th>3rd Subsector</th>
<th>Share,%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>Foods &amp; Beverages</td>
<td>36.3</td>
<td>Textiles</td>
<td>13.4</td>
<td>Non Metal Minerals</td>
<td>8.8</td>
</tr>
<tr>
<td>Kenya</td>
<td>Foods % Beverages</td>
<td>32.2</td>
<td>Textiles</td>
<td>11.8</td>
<td>Non Metal Minerals</td>
<td>8.4</td>
</tr>
<tr>
<td>Mauritius</td>
<td>Wearing Apparels</td>
<td>46.1</td>
<td>Foods and Beverages</td>
<td>20.6</td>
<td>Textiles</td>
<td>6.3</td>
</tr>
<tr>
<td>China</td>
<td>Basic Metals</td>
<td>9.4</td>
<td>Chemicals &amp; Chem. Pro.</td>
<td>9</td>
<td>Textiles</td>
<td>6.9</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Foods &amp; Beverages</td>
<td>13.2</td>
<td>Wearing Apparels</td>
<td>10.8</td>
<td>Textiles</td>
<td>8.8</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Wearing Apparels</td>
<td>16.1</td>
<td>Leather &amp; Leather Pro.</td>
<td>13.8</td>
<td>Foods and Beverages</td>
<td>13.2</td>
</tr>
</tbody>
</table>

Source: Own Computation on basis of UNIDO-INSTAT (2016) database

Annex C: Major Obstacles for the Operation and Competitiveness Firms in Ethiopia

Figure 1: Most Problematic Factors for Doing Business in Ethiopia

Source: WEF (2015)-Executives Opinion Survey
### Annex D: Challenges, Firm Plans and Required Government Support for Competitiveness

#### Variables

- **Agro-Processing**
  - Three main challenges that hinder competitiveness in export markets (weigh. av.): NA
  - Major and very severe challenges on day to day operation and competitiveness:
    - Poor quality raw materials: Major
    - High tax rates: Major
    - Corruption: Major
    - Freq. power interruption: V. severe
  - Main plans of firms to improve competitiveness (weighted av.): Marketing strategy improve. 43%
  - Government support that could enhance competitiveness in global market:
    - Incentive provision: 83%
    - Human capital investment: 33%
    - Efficient public service: 33%

- **Textiles & Garments**
  - Responses Av.%
  - Responses Av.
  - Responses Av.
  - Poor productivity 28%
  - Poor public service delivery 28%
  - Delay in delivery 22%
  - High price competition 25%
  - Shortage of raw materials 14%

- **Leather & Leather Products**
  - Responses Av.
  - Responses Av.
  - Responses Av.
  - Poor quality of raw materials 68%
  - High price competition 25%
  - Shortage of raw materials 14%
  - High quality of raw materials 25%
  - High quality of raw materials 14%

#### Source
Authors’ Computation on basis of Own Enterprise Survey

### Annex E: Innovations and Upgrading in the Subsectors

#### Variables

- **Agro-Processing**
  - Three main ways of acquiring technological innovations:
    - Experts from abroad: 43%
    - Input suppliers: 43%
    - Consultants: 43%
  - Three main upgrading made in last 3 years:
    - Product quality: 73%
    - Better design: 57
    - Machinery investment: 43
  - Three main innovative marketing activities conducted in last 12 months:
    - Owning business website: 71
    - Changing packaging: 57
    - Trade fair participation: 43

- **Textiles & Garments**
  - Innovations embodied in machinery: 62
  - Experts from abroad: 54
  - Client firms: 31
  - Product quality: 62
  - Employees’ skill: 54
  - Machinery investment: 46
  - Changing customer service: 69
  - Creating new distribution channels: 62
  - Assembling information booklets: 46

- **Leather & Leather Products**
  - Experts from abroad: 95
  - Trade fairs: 5
  - Experts from local markets: 33
  - Product varieties: 67
  - Product quality: 57
  - Employees’ skill: 38
  - Trade fair participation: 95
  - Owning a business participation: 71
  - Creating new distr. channels: 67
Firms that made major improvement in business in last 12 months

<table>
<thead>
<tr>
<th>Main reason for the business in last 12 months</th>
<th>Improvement in last 12 months</th>
<th>2 main reasons for the business</th>
<th>Source: Authors’ Computation on basis of Own Enterprise Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergence of new demand</td>
<td>Higher dom. competition</td>
<td>Acquisition of better skill</td>
<td>Acquisition of better skill</td>
</tr>
<tr>
<td>Higher domestic competition</td>
<td></td>
<td>Acquisition of better skill</td>
<td>Acquisition of better skill</td>
</tr>
<tr>
<td>Lack of finance</td>
<td></td>
<td>Lack of finance</td>
<td>Lack of finance</td>
</tr>
</tbody>
</table>

Main challenge to innovation

| Source: Authors’ Computation on basis of Own Enterprise Survey |

Annex F: Institutional Support and Cooperation within the Subsectors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Agro-Processing</th>
<th>Textiles &amp; Garments</th>
<th>Leather &amp; Leather Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Responses</td>
<td>Av.%</td>
<td>Responses</td>
</tr>
<tr>
<td>Three main special facilities/ incentives of government (ever used)</td>
<td>Indirect tax refund, incl. VAT 100</td>
<td>Duty exemption on imports 71</td>
<td>Access to land 100</td>
</tr>
<tr>
<td>Alo</td>
<td>Duty exemption on imports</td>
<td>57</td>
<td>Duty exemption on imports</td>
</tr>
<tr>
<td></td>
<td>Access to land</td>
<td>57</td>
<td>Tax holidays</td>
</tr>
<tr>
<td>2 main special facilities/ incentives of government (currently being used)</td>
<td>Indirect tax refund, incl. VAT 100</td>
<td>Duty exemption on imports 43</td>
<td>Access to land 85</td>
</tr>
<tr>
<td></td>
<td>Duty exemption on imports</td>
<td>57</td>
<td>Duty exemption on imports</td>
</tr>
<tr>
<td></td>
<td>Access to land</td>
<td>57</td>
<td>Tax holidays</td>
</tr>
<tr>
<td>Three main services of business associations (ever used)</td>
<td>Platform for joint training 86</td>
<td>Platform for joint training 71</td>
<td>Platform for joint training 86</td>
</tr>
<tr>
<td></td>
<td>For joint promotion</td>
<td>71</td>
<td>Government lobbying</td>
</tr>
<tr>
<td>Two main services of business associations (currently being used)</td>
<td>Platform for joint training 86</td>
<td>Platform for joint training 71</td>
<td>Platform for joint training 46</td>
</tr>
<tr>
<td></td>
<td>For joint promotion</td>
<td>71</td>
<td>Government lobbying</td>
</tr>
<tr>
<td>Extent of cooperation on info. and experience sharing with:</td>
<td>Significaf 57</td>
<td>Very Significant 31</td>
<td>Significant 67</td>
</tr>
<tr>
<td>Raw material suppliers</td>
<td>Significant 57</td>
<td>Very Significant 31</td>
<td>Significant 67</td>
</tr>
<tr>
<td>Output buyers</td>
<td>Significant 57</td>
<td>Very Significant 39</td>
<td>Very Significant 43</td>
</tr>
<tr>
<td>Domestic rivals</td>
<td>Slight or not at all 86</td>
<td>Not at all 69</td>
<td>Not at all 33</td>
</tr>
<tr>
<td>FDI rivals</td>
<td>Not at all 71</td>
<td>Not at all 46</td>
<td>Not at all 57</td>
</tr>
<tr>
<td>Support Industries</td>
<td>Moderate 100</td>
<td>Moderate 46</td>
<td>Very Significant 43</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation on basis of Own Enterprise Survey

Table G1. Competitor countries (as cited by firms’ managers in Ethiopia)

<table>
<thead>
<tr>
<th>Name</th>
<th>Firm managers who said serious competitors are located in ... (no.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>12</td>
</tr>
<tr>
<td>India</td>
<td>9</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>5</td>
</tr>
<tr>
<td>Pakistan</td>
<td>5</td>
</tr>
<tr>
<td>Italy</td>
<td>2</td>
</tr>
<tr>
<td>Turkey</td>
<td>2</td>
</tr>
<tr>
<td>USA</td>
<td>1</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1</td>
</tr>
<tr>
<td>Philippines</td>
<td>1</td>
</tr>
<tr>
<td>Taiwan</td>
<td>1</td>
</tr>
<tr>
<td>Thailand</td>
<td>1</td>
</tr>
<tr>
<td>Vietnam</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation on basis of Own Enterprise Survey

Figure G1. Proportion of sales that are exported

Figure G2. Percent of firms exporting

Source: Adapted from Enterprises Surveys (World Bank).

Only Manufacture of food and beverages, textiles, wearing apparel and tanning and dressing of leather
Figure G3. Proportion of total inputs of foreign origin
Ethiopia, 2015, by sector

Source: Adapted from Enterprises Surveys (World Bank).

Figure G4. Days to clear direct import through customs

Source: Adapted from Enterprises Surveys (World Bank).

Figure G5. Percent of firms using technology licensed from foreign companies

Source: Adapted from Enterprises Surveys (World Bank).
Figure G6. Percent of firms having their own website

Source: Adapted from Enterprises Surveys (World Bank).

Figure G7. Percent of firms using E-mails to communicate with clients/suppliers

Source: Adapted from Enterprises Surveys (World Bank).